Vietnam Development Forum (VDF)-TOKYO

National Graduate Institute for Policy Studies

THE THIRD
VDF-TOKYO CONFERENCE
ON THE DEVELOPMENT OF VIETNAM

PROCEEDINGS

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About Vietnam Development Forum

Who Are We?

- The Vietnam Development Forum (VDF) was established in 2004 by the joint research project between the National Graduate Institute for Policy Studies (GRIPS) in Tokyo and the National Economics University (NEU) in Hanoi.
- VDF-Tokyo is a branch office of VDF in Tokyo, which was established in October 2004, superseding the Japan-Vietnam Economist Club (JVEC)–an informal volunteer group, which was set up in 2003 by Professor Kenichi Ohno (GRIPS), Professor Tran Van Tho (Waseda Univ.) and Vietnamese graduate students studying in Japan in order to promote research on Vietnamese economy.
- The VDF aims at innovating research methodology and dissemination for policy impact. For this purpose, young talented Vietnamese people are mobilized.
- The VDF bridges the gaps between academic research and policy formulation. We build open networks where researchers and policy makers can meet, discuss and help each other.
- The VDF initiates and coordinates studies on Vietnam's development. We also happily publicize excellent research produced by scholars and organization outside the VDF.
- The VDF is an academic unit and not a consulting business. It is financially supported by the Japanese government until 2008.

How Can We Help?

Policy Makers: We will listen to you and discuss with you concrete policy issues related to Vietnam's development, and explore ways to solve them together.

Researchers: We will offer opportunities to development and present your ideas, interact with other researchers and policy makers, and publish your output (subject to review).

Everyone: We are happy to work with you and help you build an intellectual network.

Principal Project Areas

VDF is prepared to support any research topic relevant to Vietnam's development and conducted by capable researchers. Our research portfolio includes:

- Formulation of industrial strategies and master plans under integration (with the Ministry of Industry)
- Sector studies including electronics, motorbike, automobile, steel, electricity and supporting industries

- Social issues under market-orientation and globalization such as social security, street children and drug addiction
- Trade and environmental analysis using input-output tables and other data
- Aid partnership and modality

Activities

- Continuous networking and cooperation with MOI, MOLISA, MPI, ADB, Japanese government, domestic and foreign business communities and other research organizations.
- Research competition in which talented Vietnamese researchers are supported academically and financially.
- Logistic and financial supports for visits by Vietnamese and foreign researchers.
- VDF-organized research trips to HCMC, Japan, Thailand, Malaysia, etc.
- Hosting two international conferences (with ADB and MOI), a national conference with Hanoi's People Committee. So far, VDF-Hanoi held 86 workshops, while VDF-Tokyo held 32 workshops.
- VDF published 8 books, 8 working/discussion papers, 2 policy notes, and many issue papers and drafts.
- Frequent appearance and contribution to newspapers, press and broadcasting media.

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List of Publications

Publication		Title	Author(s)	Language	Download *
Discussion Papers	No.1	Designing a comprehensive and realistic industrial strategy	Kenichi Ohno	E, V	VDF
	No.2	The pension scheme in Vietnam: Current status and challenges in a aging society	Giang Thanh Long	E, V	VDF
	No.3	A comparative study on production efficiency in manufaturing industries of Hanoi and Ho Chi Minh city	Nguyen Khac Minh	E, V	VDF
	No.4	Cong nghiep Viet Nam: Danh gia co cau, hoat dong, nhung co hoi va thach thuc den nam 2020	MOI	V	VDF
	No.5	Xuat nhap khau Viet Nam: Danh gia co cau, hoat dong, co hoi va thach thuc	MOI	V	VDF
	No.6	Street children in Vietnam: Interactions of old and new causes in a growing economy	Duong Kim Hong & Kenichi Ohno	E, V	VDF
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	Which institutions are critical to sustain long-term growth in Vietnam?	ADB&VDF (eds.)	E, V	VDF
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	Building Supporting Industries in Vietnam, (Volume 1)	Kenichi Ohno (ed.)	E	VDF/ VDF Tokyo
	Social Issues under Economic Transformation and Integration in Vietnam (Volume 1)	Giang Thanh Long & Duong Kim Hong (eds.)	E, V	VDF/ VDF Tokyo

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Note: E – English; J – Japan; V - Vietnamese

Vietnam Development Forum TOKYO

National Graduate Institute for Policy Studies

The Third VDF-Tokyo Conference on the Development of Vietnam

Tokyo, June 02, 2007

PROGRAM

Time	Event	Presenter	Venue
09:00 - 09:45	Registration		Room 3C
09:45 - 09:50	Opening Remarks		
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MORNING SESSION <KEYNOTE PRESENTATIONS>			
10:00 - 10:30	Drafting Motorbike Master Plan under Market Orientation and Globalization	**Prof. Kenichi Ohno** (GRIPS/VDF)	Room 3C
11:00 - 11:30	Vietnam: Economic Update 2006 and Prospects to 2010	**Dr. Adam McCarty** (Mekong Economics Ltd.)	
12:00 - 13:15	*Lunch Reception*		1F Canteen
AFTERNOON SESSION <PAPER PRESENTATIONS>			
Chairperson: Prof. Kenichi Ohno (GRIPS/VDF)			
13:30 - 13:55	Growth and Efficiency Performance of the Vietnamese Economy since *Doi moi*	**Prof. Nguyen Khac Minh** (National Economics Univ., Vietnam)	Room 3C
14:10 - 14:35	Determinants of Remittances: Recent Evidence using Data on Internal Migration in Vietnam	**Dr. Yoko Niimi** (The World Bank)	
14:50 - 15:15	Remittances in Vietnam during Economic Integration: Characteristics and Impacts on Household Welfare	**Prof. Wade Pfau** (GRIPS, Japan)	Room 3C
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15:50 - 16:15	What is the Place of a Consumer Movement in a Transitional Economy? The Case of VINASTAS in Vietnam	**Dr. Virginie Diaz Pedregal** (CIRAD, France)	Room 3C
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17:40 - 17:45	Closing Remarks	**Prof. Kenichi Ohno** (GRIPS/VDF)	

MORNING SESSION

<Keynote Presentations>

Drafting Motorbike Master Plan under Market Orientation and Globalization*

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Research Director, Vietnam Development Forum (VDF)
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1. Introduction

1.1. Methodology and Content

As the process of market orientation and international integration deepens in Vietnam, industrial strategy formulation must adapt to the changes which are brought about by this process. Market forces and global competition increasingly determine the performance of each industry as well as the winners and losers among enterprises. In many industries, private enterprises, including foreign private enterprises, are becoming major players instead of state-owned enterprises. Multinational corporations decide products, output, production sites, procurement, investment, export and import as integral parts of their global business strategies. This means that a large portion of industrial activity in Vietnam is now taking place outside the direct control of the government. These trends are also visible in the motorcycle industry. This master plan tries to respond to these changes by adopting a new drafting methodology and a new content structure.

With respect to drafting methodology, *stakeholder involvement* and *inter-ministerial coordination* have been strengthened. For any industrial master plan, the most important stakeholders are business enterprises that must carry out the plan. In the second quarter of 2006, the Joint Working Group (JWG) was formed to draft the motorcycle master plan under the official recognition of and in close cooperation with the Ministry of Industry. Its members included policy makers, businesses and experts. The Vietnam Development Forum, a joint research project between the National Economics University in Hanoi and the National Graduate Institute for Policy Studies in Tokyo, acted as a coordinator. JWG conducted a large number of internal discussions, and received information and views from motorcycle-related enterprises and researchers as broadly as possible. In preparing each chapter and determining policy measures, consultations with related ministries and agencies were held. These methodological innovations were pursued within a relatively tight schedule under which JWG worked. Except for a few confidential cases, key documents and meeting minutes of JWG were uploaded in a website for openness and transparency.

With respect to content structure, demand-side issues are given approximately the same weight as supply-side issues. User concerns such as traffic safety, congestion and air pollution are analyzed fully in separate chapters, in addition to more standard chapters dealing with

* This manuscript is combination of the first two chapters in the preliminary draft on Motorbike Master Plan. The draft was prepared by the Motorbike Joint Working Group (JWG), which included producers, experts and officials, in the period from April 2006 to April 2007. The Vietnam Development Forum (VDF) coordinated its activities. Producers, experts and officials outside the Motorbike JWG were also consulted. This draft is an open document made available to everyone for comments. For inquiries or comments, please contact VDF at hellovdf@vdf.org.vn or +84-4-9362633. The full draft can be read at http://www.vdf.org.vn/jwg.htm.

production, demand forecasts and industrial capability. The future of motorcycles is considered to be not only an industrial issue but also a social issue. This is necessitated by the fact that motorcycles take up a very unique position in the Vietnamese society, whose popularity and density in use, especially in urban areas, have an enormous bearing on the quality of life of all people, including motorcycle riders and non-riders. For this reason, the present master plan covers a much wider ground than the existing guideline for master plan content set forth by the Ministry of Planning and Investment and the Ministry of Industry.

1.2. The Role of Government

In an increasingly integrated market with a large presence of foreign producers, such as the motorcycle market in Vietnam, the basic role of the government should be to *support the healthy growth of the industry* by understanding and responding to its needs instead of dictating it. Private business enterprises are the primary decision-makers and executors of industrial dynamism, but the government also has an important role of providing supportive visions, rules and measures to ensure that the industrial playground is predictable, fair, and in line with the general interest of the nation.

More specifically, three roles of the government are identified as crucial for the healthy growth of the motorcycle industry, and chapters are arranged accordingly to discuss them. First, the government should clarify policy orientation and make indicative projections so that enterprises can use them as a basis for their business decisions (chapters 1-3). Second, the government should set and enforce realistic and meaningful standards for quality, safety, environment and intellectual property rights (chapters 5-9). Third, the government should help to upgrade Vietnam's industrial capability with particular attention on supporting industries and industrial human resources (chapters 4 and 9).

This master plan contains projections of motorcycle use, sales and production in chapters 2 and 3. These are the results of intensive discussion among businesses, policy makers and experts. They are meant to be indicative and guiding, and subject to modification as circumstances change, rather than rigid targets that are set officially and must be fulfilled under any circumstances.

1.3. About Policy Measures

Chapters 4, 5, 6, 7 and 8 contain general policy directions. Some of them are developed into proposals of concrete policy measures in chapter 9. Other policy directions are desirable but not developed into concrete measures. This selectivity is partly due to the limited time and human resources available to JWG, and partly for the purpose of increasing the possibility of properly implementing proposed measures in the current policy environment of Vietnam.

2. The Role of Motorcycles in Vietnamese Society

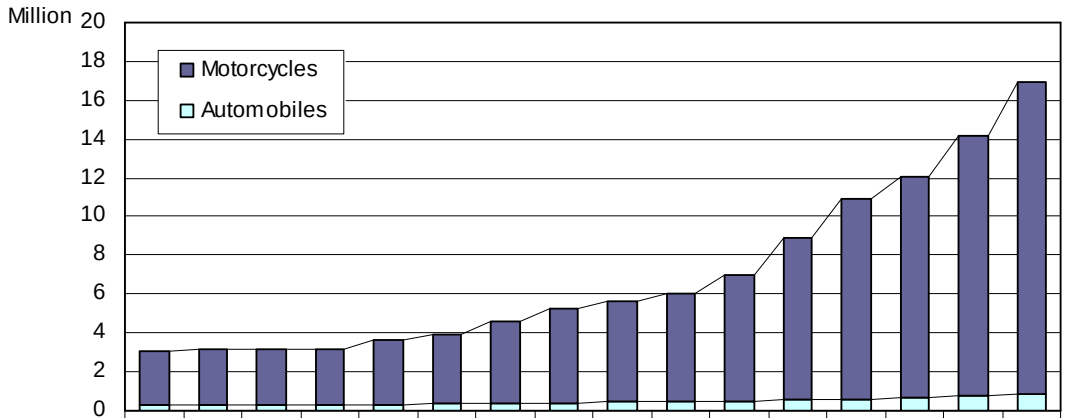
2.1. Overview

When society develops, demand for personal and commercial transport also rises. The means of transport must respond to increasing demand in all aspects of quantity, quality, and modal diversification. Each transport means has its merits and demerits. The problem is to select and combine each transport means in a way that maximizes merits and overcome demerits, under the specific natural, economic, and social conditions of our country in this particular development stage. We must satisfy people's travel need by providing convenient transport modes while at the same time ensuring traffic safety, clean environment, and other social demands.

During the period 1995-2006, the Vietnamese economy continued to operate under the market mechanism with socialist orientation, achieving relatively high growth of 8% or

higher in consecutive years. As a result, the speed of urbanization as well as demand for trips and commercial transport also increased. Since public transport systems are currently underdeveloped, people tend to possess personal means of transport such as motorcycles and automobiles to satisfy their travel demand.

Figure 1: Motorcycles and Automobiles in Circulation



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Motorcycles	2.77	2.81	2.85	2.90	3.28	3.58	4.21	4.83	5.20	5.60	6.48	8.36	10.27	11.38	13.38	16.09
Automobiles	0.25	0.30	0.29	0.30	0.32	0.34	0.39	0.42	0.44	0.47	0.49	0.56	0.61	0.68	0.77	0.89

Source: National Traffic Safety Committee. Auto data in 1990-1994 are obtained from VRA.

According to the data of the National Traffic Safety Committee and the Traffic Police Road and Railroad Department (Figure 1), motorcycles and automobiles have long been the two principal means of transport in Vietnam in terms of absolute volume as well as contribution to cargo transport in the whole country, especially urban areas and economically developed areas. Between them, motorcycles are by far the dominant means of transport.

At the end of 2005, Vietnam had 16.09 million registered motorcycles and 0.89 million registered automobiles in use. Compared with the year 1990, this is an increase of 5.8 times for motorcycles and 3.6 times for automobiles. The use of both transport means rose very rapidly, especially motorcycles.

The studies of Hanoi and HCMC urban planning by the Ministry of Transport and JICA confirm that motorcycles are the dominant transport mode of residents in large cities[1]. In 2005, motorcycles served 62.7% (Hanoi) and 77.9% (HCMC) of travel needs, while the shares of passenger cars and taxis were only 3.5% (Hanoi) and 5.9% (HCMC), and the shares of buses were 8.4% (Hanoi) and 5.9% (HCMC). Clearly, the motorcycle is the preferred choice of urban population, providing personal mobility in relatively short distances and frequent trips, under the condition that public transport is underdeveloped, cars are beyond the reach of the general public at the current income level, and motorcycles often travel faster than automobiles. Many people also use motorcycles to make living.

Although the "Master Plan for Transport Infrastructure in Hanoi and Ho Chi Minh up to

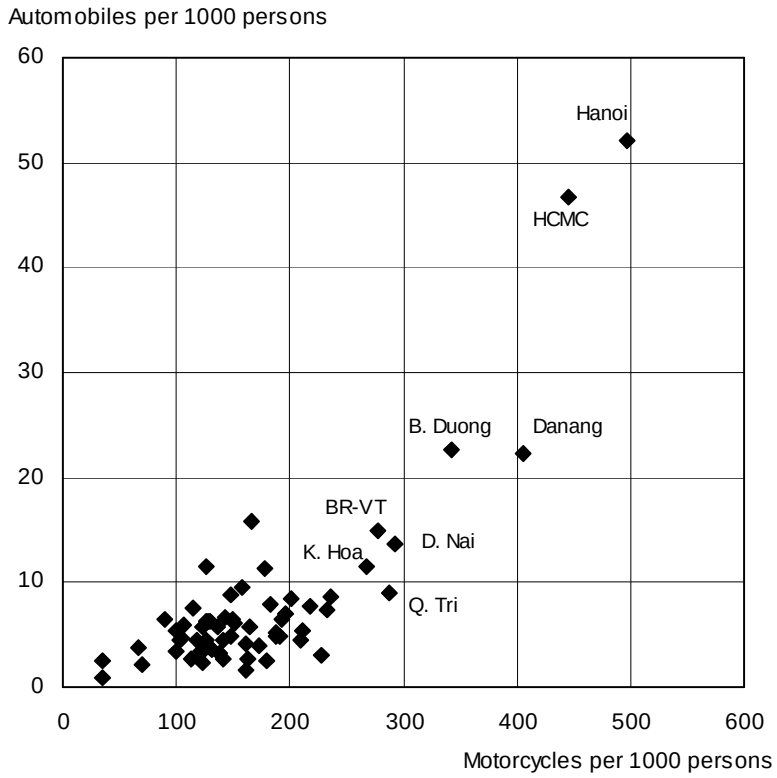
[1] The Study on the Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area (HOUTRANS), 2004, and the Hanoi Integrated Development and Environmental Programme (HAIDEP), 2007. Both plans were supported by JICA technical assistance.

the Year 2020" prioritizes investment in transport infrastructure such as roads, railroads, subways, and public buses, it also foresees that the use of motorcycles in Hanoi and HCMC will remain relatively high in the future, namely 30% in Hanoi and 35% in HCMC in 2020.

At the same time, living conditions in rural areas are expected to improve by 2020, and rural road systems are also likely to be upgraded. Under these circumstances, rural demand for motorcycle use will surely rise, especially in light of the fact that current density of motorcycle use in rural areas is still very low.

At present, the geographical distribution of motorcycle use is not uniform within Vietnam. In absolute volume, the registration and circulation of motorcycles are concentrated naturally in cities and provinces with a large population or a dynamic economy, or both. They include HCMC, Hanoi, Dong Nai, Hai Phong, An Giang, Thanh Hoa, and Nghe An. In terms of density of use, Hanoi and HCMC again lead the nation with one motorcycle for every two persons, followed by Da Nang, Binh Duong, Dong Nai, Quang Tri, Ba Ria-Vung Tau, and Khanh Hoa, where there is at least one motorcycle for every four persons. All other cities and provinces have fewer motorcycles per person. Incidentally, the density of automobile use is positively correlated with the density of motorcycle use (Figure 2).

Figure 2: Motorcycle and Automobile Density by Province, 2005



Source: National Traffic Safety Committee. See appendix to chapter 1 for original data.

The above considerations lead us to the conclusion that motorcycles will continue to contribute significantly to road transportation in Vietnam, at least up to the year 2020. Thus, the development of motorcycles is an objective requirement for Vietnam, and we should continue to study how motorcycles can co-exist harmoniously with other transport means and how they can better serve consumers' needs.

2.2. Development of the Motorcycle Industry from 1990 to 2005

Before 1995, Vietnam had a relatively small motorcycle stock in use, at about 2-3 million units, and it increased slowly by tens of thousands of units per year. Most of the motorcycles were imported.

During the period 1995-1999, FDI motorcycle assemblers invested in Vietnam and began production, at first using imported parts but gradually increasing parts localization. Consumers' demand for motorcycles increased annually. However, production volume remained relatively low during this period, and prices were high in comparison with the income level of most people.

Around 2000, local motorcycle assemblers suddenly increased in number, producing motorcycles with parts originating mostly in China, with average to moderate quality and at reasonable prices relative to people's income. From 2000 to 2003, this type of motorcycles occupied as much as 60-70% of the domestic market. In response, FDI enterprises adjusted business strategies and changed models to regain market share. Some FDI producers introduced popular, low-priced models while other FDI producers targeted up-markets with fashionable style and new colors. At the same time, people's living conditions continued to improve. As a result, motorcycles in use increased rapidly by about 2 million units per year, except in 2003 when Hanoi and HCMC applied policies to limit the number of motorcycles.

At the end of this process, over-capacity and severe competition exerted significant downward pressure on the prices of "Chinese" motorcycles produced by Vietnamese assemblers. Many consumers also turned away from their products which failed to satisfy their quality demand. This prompted them to revise business strategies for survival, which included enhancing in-house production, becoming suppliers of FDI assemblers, building supplier networks, turning to sales and marketing, or exiting from the industry. Direct parts import from China fell and domestic production of "Chinese" parts increased.

From around 2003 to present, motorcycle demand continued to expand strongly, with market shares shifting decisively back to FDI assemblers. Apart from robust income growth, motorcycle demand has been fueled by the removal of demand-restrictive measures such as parts import quotas (2002-2005) and registration control in large cities (2003-2005). By 2006, Vietnam's motorcycle market reached nearly 2 million units per year, with an expectation of further expansion in the future. This domestic demand size is sufficient for major assemblers to aggressively introduce new models and for parts suppliers to willingly invest in Vietnam.

2.3. International Comparison and Vietnam's Uniqueness

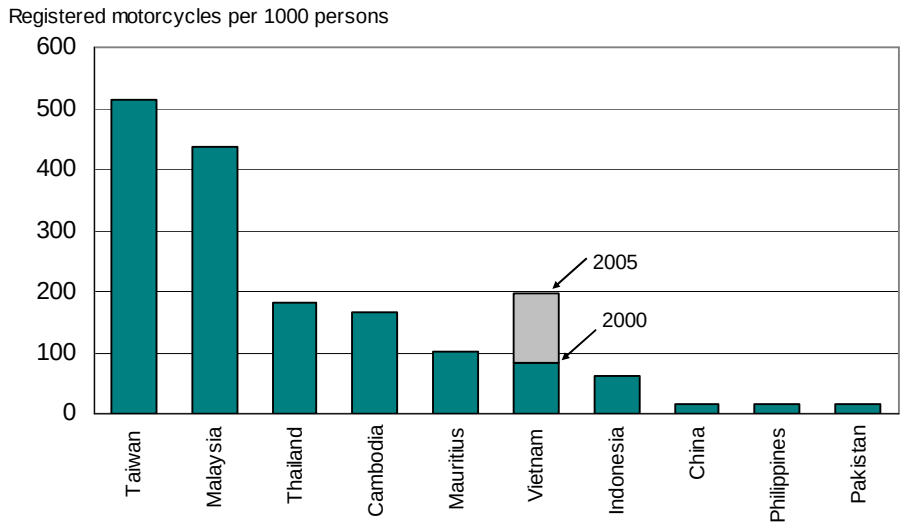
Asia dominates the global market of motorcycles, with roughly 95% of total production originating in several Asian countries. Asian markets are also dynamically growing in sharp contrast to saturated markets in developed countries. China, India and Indonesia are the top three producers, with annual production volumes of 17.2, 12.7 and 5.1 million units each. Japan, Thailand and Taiwan also have significant production size, with each producing 1.8, 1.5, and 1.4 million units in 2005[2]. With an expected production volume of over 2 million units in 2007, Vietnam has now joined the group of largest motorcycle producers in the world.

There are three reasons for the popularity of motorcycles in Asian developing countries. First, the region contains large tropical and subtropical areas with high temperature and frequent showers, a climate particularly suitable for motorcycle use. Second, rapid income growth, and associated industrialization and urbanization, are boosting individual trip needs. Third, despite that, public transportation generally remains underdeveloped. For example, Bangkok, Jakarta, Manila, Hanoi and HCMC have no or few urban rail lines in comparison

[2] Honda, *World Motorcycle Facts and Figures*, 2006.

with more advanced cities such as Tokyo, London, Paris and New York which have extensive networks of commuter rails and buses, subways, sky trains and other urban mass rapid transit (UMRT) systems.

Figure 3: Motorcycle Holdings in Asia, 2000



Source: Fukuda, Nakamura, and Takeuchi (2004)—see footnote 4.

But even by Asian standards, Vietnam's use of motorcycles is highly intense and unique. The motorcycle is a "popular vehicle" in Vietnam across all ages, genders and occupations. It is used not only for delivering commercial goods but for virtually all personal purposes—commuting, shopping, dating, visiting friends, shuttling children to and from school, and even for sheer fun[3]. Motorcycle use is particularly heavy in urban areas, where it is by far the preferred means of transport for all residents. Both Hanoi and HCMC have flat terrain, compact urban areas relative to population size, and deep and narrow lanes crisscrossing the built-up areas. These characteristics are particularly amiable to motorcycle use. The contrast between severe shortages of automobile parking and well-developed motorcycle parking at present also tends to sustain the popularity of motorcycles. Thus, the motorcycle is the key determinant of the mobility, comfort, safety, and health of the Vietnamese people, with great influence on their life style and life quality.

Additionally, the motorcycle market in Vietnam has the following features which are not seen in most other developing countries.

First, motorcycle use in Vietnam is disproportionately high relative to its automobile use. There are only 12 countries in the world where the number of registered motorcycles surpasses that of registered automobiles[4]. Among them, Vietnam is by far the leading country,

[3] The survey by Prof. Atsushi Fukuda (Nihon Univ.) conducted on 130 families in Hanoi in March 2003 shows that 97% of families possess at least one motorcycle, and each motorcycle is often used by more than one person. Top reasons for the primary user are commuting (54%), going to school (14%), relaxing (10%), going to hospital (7%), shopping (4%), and dating (3%). Top reasons for other users are relaxing (28%), commuting (18%), going to school (10%), shopping (15%), additional study (8%), and dating (7%). It can be said that most people use motorcycles for multiple purposes, in addition to the basic use of commuting or going to school.

[4] Compiled from Atsushi Fukuda, Fumihiko Nakamura, and Kenzo Takeuchi, "Current Situation of Motorcycle in Metropolis of Southeast Asia and its Issues," *Kokusai Kotsu Anzen Gakkaishi* (Journal of

with the ratio of motorcycle stock to automobile stock of 13.3 in 2000 and 18.1 in 2005. According to the 2000 data, the next country in this ranking was India (5.6), followed by Thailand (5.4), Indonesia (4.6), Cambodia (4.2), China (3.1), Pakistan (3.0), Taiwan (2.4), Bangladesh (2.4), Philippines (1.6), Mauritius (1.3), and Malaysia (1.3). Vietnamese people are extremely fond of motorcycles, and this fact should be taken into account in formulating transport policy.

Second, as noted above, there is a significant urban-rural gap in motorcycle use. Motorcycles in Vietnam are concentrated in two largest cities and their vicinities. In rural and remote areas where income levels are still low, fewer motorcycles are owned per person (Figure 2). Vietnam's urban markets are near saturation in terms of number of motorcycles, but rural markets are likely to grow strongly and the urban-rural gap is expected to narrow in the medium to long run. Although Taiwan, Malaysia and Thailand had higher motorcycle-per-person ratios than Vietnam in 2000 (Figure 3), cars are far more visible than motorcycles in Taipei, Kuala Lumpur or Bangkok. This is because motorcycles in these countries are more uniformly spread geographically[5]. National average comparison hides the unevenness of motorcycle distribution within Vietnam.

Third, the Vietnamese motorcycle market is very dynamic. Not only the sale has increased, but what consumers expect from motorcycles is also changing rapidly. Until the late 1990s, the motorcycle was considered a means of saving that retained good value over time as well as a practical means of transport. Around 2000, with a large inflow of cheap but low-quality "Chinese" products, the motorcycle suddenly became a commodity. After 2003, the popularity of "Chinese" motorcycles declined as demand shifted toward high-quality, stylish motorcycles and scooters, especially in urban areas. These shifts are brought about by an interaction of changing consumer tastes, international influences, and manufacturers' business strategies. Now, with a domestic market of over 2 million units per year, motorcycle assemblers will have many business options including the broadening of market segments with new models and reorganizing domestic and global suppliers.

2.4. Transport Modal Balance

Cars, motorcycles and public transportation systems are three pillars of transportation in any developing country. Each of these transport modes has merits and demerits. It is people who make the final modal choice based on their income, travel need, climate and geography, and the existing state of transport infrastructure. However, policy can also make a significant difference by guiding people's choice. The crucial policy question is how to combine the three principal modes to achieve maximum transport benefits while reducing social and economic costs. This will require encouragement of certain modes and restraint on others with effective policy instruments under a consistent roadmap.

The motorcycle excels in personal flexibility, allowing the rider to make door-to-door trips at any time without waiting, walking or transfer. It is also efficient in space use, occupying about one-fourth of space on road and in parking in comparison with a car when motorcycles are dominant, and about one-half of space of a car in mixed traffic. Its small size

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International Association of Traffic and Safety Sciences), vol.29, no.3, Dec. 2004 (in Japanese). However, numbers in the text should be treated with care since international comparison data are somewhat inconsistent.

[5] In Thailand, the urban-rural gap is not very large. In 2003, there were 2.47 persons for each motorcycle in Bangkok, and 3.61 persons for each motorcycle in all other areas, with the national average of 3.46 persons per motorcycle (IDE-JETRO, *Motorbike Industries in Asia*, 2005, in Japanese). In Vietnam, the corresponding figure in 2005 for Hanoi and HCMC was 2.16 persons for each motorcycle, and 6.14 persons for each motorcycle in the rest of the country, with the national average of 5.11 persons per motorcycle (see Appendix). Hanoi and HCMC have higher motorcycle density than Bangkok, but rural Vietnam has lower motorcycle density than rural Thailand.

and agility permit faster urban travel than a car, which reduces congestion and overall pollution. However, if motorcycle use and maintenance are unregulated, there is a risk of excessive traffic accidents and exhaust emission.

The strength of the automobile is comfort and privacy. In closed air-conditioned space with soft seats, travelers can enjoy scenery, audio or conversation, or just take a rest. For this reason, private car use becomes increasingly popular as income rises. However, automobiles are generally not very efficient in space and energy use, especially in single occupancy. If urban road capacity is insufficient, peak-hour travel time becomes very long and highly unpredictable in comparison with other modes.

The urban mass rapid transit (UMRT) system, which combines commuter rail networks with rapid bus transit, is highly desirable in modern cities with large travel demand. If it is operated competently and used by most people, it can significantly reduce road congestion, traffic accidents and environmental damage. Cities such as Tokyo, Seoul, London and Paris all have extensive UMRT systems that crisscross the entire urban and suburban areas. While public transport commuters in these cities sacrifice personal flexibility, comfort and privacy, they usually feel better off because air is cleaner, travel time is shorter and more predictable, and there is no need to compete with other drivers.

Table 1: Comparison of Three Principal Modes in Vietnam's Urban Travel Setting

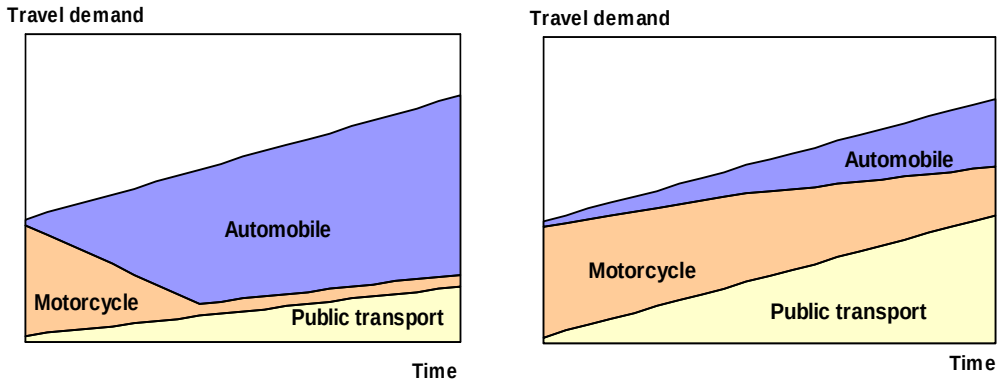
	Motorcycles	***Automobile (personal use)***	***Urban Mass Rapid Transit (UMRT)***
Personal flexibility	**High**	High to moderate	Low
Comfort and privacy	Moderate	**High**	Low
Space efficiency	High to moderate (moderate if mixed traffic)	Low (depends on occupancy)	**High**
Energy efficiency	Low to moderate (depends on occupancy)	Low (depends on occupancy)	**High**
Predictability of peak-hour travel time	Moderate	Low	**High**
Traffic safety	Low (if unregulated)	Moderate (if unregulated)	**High**
Environment friendliness	Low (if unregulated)	Low (if unregulated)	**High**

Motorization, or the expansion of personal car use, is inevitable in any rapidly growing developing country, but its speed is controllable by policy. In more developed countries, personal means of transport shifted from motorcycles to automobiles as income rose. Vietnam's motorization is at a very early stage, and it is expected to continue for a considerable time, provided that robust GDP growth is sustained. However, a rapid increase of automobiles from a small base even now is already causing traffic conflicts with motorcycles and bicycles in urban areas. Vietnam's cities are not yet equipped with infrastructure required for a large number of automobiles, such as expressways, bypass and ring roads, multi-lane trunk roads, overpasses, bridges, tunnels, and parking facilities. Building them in sufficient numbers will take time and large financial resources.

The need for public transport systems, such as commuter rails, subways, sky trains, and rapid bus transit, is keenly recognized in Hanoi and HCMC. Many projects are planned, and

some are already under construction. In the long run, public transport should become the main means of urban and suburban mobility in Hanoi and HCMC as in the large cities of advanced countries. This will greatly reduce road congestion as car and motorcycle use is reduced. However, completing these infrastructure projects will also take a large amount of time and money. While very desirable, an efficient and comprehensive UMRT system cannot be realized in the short run, and can only be partly realized in the medium run, in Vietnam.

Figure 4: Rapid Motorization vs. Controlled Motorization in Urban Areas



Scenario A
- Rapid motorization - Strong restriction on motorcycles - Slow construction of transport infrastructure

Scenario B
- Controlled motorization - Gradual phase-out of motorcycles - On-time construction of transport infrastructure

Figure 4 illustrates two hypothetical modal combinations in a rapidly developing country. In Scenario A, motorcycle use is discouraged by policy while motorization proceeds rapidly without restraint. Building of transport infrastructure, including UMRT, is assumed to be slow. In this scenario, severe urban congestion is inevitable, and commuters are forced to spend a long time in gridlocks in the absence of alternative transport means. With severe congestion, fuel consumption rises and air quality deteriorates. This is a situation observed in many mega cities around the world, including Bangkok in the early 1990s where one had to allow at least two hours to get from one part of the city to another. In contrast, Scenario B suggests one possible way to avoid such a disastrous situation, by allowing motorcycles to be phased out only gradually and building public transport sufficiently and on time. As a result, motorization proceeds modestly, and traffic time loss and environmental damage can be minimized.

The view that motorcycle use should be curbed immediately by administrative measures to reduce pollution, congestion and accidents is short-sighted. Suppressing travel demand by depriving people of motorcycles, without giving them alternative transport modes, can be considered a policy failure. Traffic demand is predictable, and there should be a long-term strategy to respond to it well in advance. Both Hanoi and HCMC have drafted urban master plans[6] which aim to provide public transport services for about 30-50% of total travel demand by 2020, as compared with less than 10% today. These goals are highly consistent with the policy direction of this master plan. Motorcycles should be the principal mode of urban transport in Hanoi and HCMC until new public transport systems are introduced,

[6] See footnote 1.

step-by-step, to replace them. Moreover, this transport strategy must be accompanied by another set of policies to deal effectively with the problems associated with continued motorcycle use, as explained below.

2.5. Policy Direction

Policy that affects the use and production of motorcycles should be designed from a broad perspective, which includes the life style and life quality of the people, urban and traffic planning, and industrial promotion. Motorcycle policy should be consistent with, and constitute an integral part of, an overall transportation master plan as well as an overall industrial master plan. For this purpose, all related ministries and organizations should have close and continuous consultation to coordinate their policies.

Motorcycle policy should pursue the following four objectives.

(i) *People's mobility and convenience*--in the circumstance of rising income and increasing travel demand, people's mobility and convenience associated with transportation should be ensured. At present, the residents of Hanoi and HCMC enjoy relatively shorter commuting and more frequent trips than the residents of other large cities in the region (chapter 5). This situation should be maintained while modal options for non-motorcycle transport should be expanded.

(ii) *Quality of life*--traffic congestion, traffic accidents and air pollution associated with transportation should be reduced for the safety, health and comfort of the people. Even though travel demand increases, these situations should be improved, not just be prevented from worsening, in comparison with the current situation.

(iii) *Reasonable cost and timing of building transport infrastructure*--Vietnam must build many subways, trains, expressways, roads, bridges, tunnels, and so on. However, the total cost of building them is enormous, and time required for planning, financing, resident relocation and construction is substantial. Motorcycle use should partly cover the increasing traffic need while new transport infrastructure is being built at a reasonable and realistic speed.

(iv) *Leveling-up of industrial capability*--Vietnam's motorcycle industry has reached a domestic demand size which is sufficiently large for aiming at production efficiency and supporting industry development. With proper policy support, the motorcycle industry should strengthen its role as a core industry for industrial agglomeration and technology improvement, with spillover effects to other industries. Capability of parts production should be raised with respect to quality, cost and delivery. Industrial property rights should be protected and illegal copies should be eliminated.

These objectives can be restated as follows: *motorcycles should continue to be used to ensure people's mobility and reducing infrastructure cost per year, provided that sound and sustainable solutions are found and effectively implemented to cope with traffic congestion, traffic accidents, environment, and industrial property rights. At the same time, the motorcycle industry should become the principal industry by which supporting industry base is built and indigenous industrial capability is promoted.*

It is noteworthy that, in the case of motorcycles, the Vietnamese government does not have to worry about the competitiveness of major producers, since motorcycle production in Vietnam is dominated by FDI assemblers with high technology and global reputation. The government has to be engaged in close dialogue with them to compile and revise policies, but there is no need to dictate their production, investment, marketing, export or R&D activities. These are decided by markets as well as business strategies of individual companies. Instead, supply-side policies should be mainly directed to the promotion of supporting industries and

industrial human resources, which improves local capability and indirectly helps FDI assemblers, and additionally to reorganize or streamline Vietnamese assemblers. Apart from supply-side policies, people-oriented policies to improve motorcycle use, as discussed above, are extremely important in the case of motorcycles, since motorcycles have great impact on the general welfare of Vietnamese people.

Motorcycle industry promotion and addressing the problems associated with motorcycle use are not contradictory. In fact, from the long-term perspective, addressing these problems adequately is the pre-condition for the healthy growth of Vietnam's motorcycle industry. Industrial development and comfortable life have been achieved simultaneously in many advanced countries. Motorcycle manufacturers should not pursue, and policy makers should not allow, unregulated expansion of motorcycle sales at the severe social cost of increasing deaths, injuries, and health problems of the general public. The industry can develop sustainably and competitively only if producers accept corporate social responsibility associated with their products and if the government adopts policies to cope with them effectively.

Appendix: Registered Motorcycles and Automobiles by Province, 2005

City or Province	*Population x1000*	*Number of Motorcycles*	*Number of Automobiles*	*Motorcycles/ 1000 persons*	*Automobiles/ 1000 persons*
Ha Noi *	3,145	1,565,641	163,796	498	52.1
HCMC *	5,891	2,619,525	275,160	445	46.7
Da Nang *	777	315,041	17,311	405	22.3
Binh Duong	915	313,002	20,775	342	22.7
Dong Nai	2,193	640,143	29,913	292	13.6
Quang Tri	622	178,920	5,605	288	9.0
Ba Ria-Vung Tau	913	253,990	13,640	278	14.9
Khanh Hoa	1,123	301,272	12,900	268	11.5
Can Tho *	1,135	268,001	9,722	236	8.6
Tay Ninh	1,039	242,062	7,593	233	7.3
Hai Phong *	1,793	409,229	5,352	228	3.0
Lam Dong	1,161	252,009	8,996	217	7.7
Tien Giang	1,701	357,664	9,026	210	5.3
Phu Yen	861	180,187	3,892	209	4.5
Thai Nguyen	1,109	222,809	9,352	201	8.4
Thua Thien-Hue	1,136	222,797	7,972	196	7.0
Dak Lak	1,711	329,385	10,994	193	6.4
Binh Thuan	1,151	220,155	5,587	191	4.9
Ninh Thuan	562	105,737	2,922	188	5.2
Quang Ngai	1,269	237,587	6,180	187	4.9
Binh Dinh	1,557	283,446	12,417	182	8.0
An Giang	2,194	393,462	5,541	179	2.5
Gia Lai	1,115	198,743	12,612	178	11.3
Long An	1,413	243,945	5,638	173	4.0
Quang Ninh	1,079	180,049	16,991	167	15.7
Quang Nam	1,463	240,007	8,396	164	5.7
Dong Thap	1,655	268,252	4,560	162	2.8
Ving Long	1,055	170,386	4,364	161	4.1
Ben Tre	1,352	217,577	2,166	161	1.6
Hai Duong	1,711	271,244	16,352	158	9.6
Kon Tum	375	56,790	2,299	151	6.1
Binh Phuoc	796	118,980	5,181	149	6.5
Phu Tho	1,328	196,855	11,644	148	8.8
Bac Ninh	998	147,935	4,883	148	4.9
Vinh Phuc	1,169	166,740	7,679	143	6.6

Tuyen Quang	727	103,232	3,252	142	4.5
Tra Vinh	1,028	145,205	2,807	141	2.7
Nam Dinh	1,961	270,991	6,508	138	3.3
Bac Giang	1,582	217,321	4,974	137	3.1
Ninh Binh	919	125,595	5,316	137	5.8
Bac Lieu	798	104,795	2,866	131	3.6
Ha Tay	2,526	325,896	15,786	129	6.3
Yen Bai	732	94,275	2,796	129	3.8
Lang Son	739	94,971	4,678	128	6.3
Dak Nong	398	50,435	4,544	127	11.4
Quang Binh	842	106,472	3,807	126	4.5
Lao Cai	576	72,644	3,617	126	6.3
Hung Yen	1,134	140,647	4,165	124	3.7
Thai Binh	1,861	230,223	4,443	124	2.4
Bac Kan	299	36,611	1,692	122	5.7
Kien Giang	1,655	199,828	5,660	121	3.4
Nghe An	3,042	360,325	13,596	118	4.5
Cao Bang	515	58,652	3,864	114	7.5
Soc Trang	1,272	142,964	3,436	112	2.7
Ha Tinh	1,301	138,697	7,608	107	5.8
Son La	989	103,385	4,532	105	4.6
Hoa Binh	813	83,231	3,701	102	4.6
Thanh Hoa	3,677	367,736	12,418	100	3.4
Dien Bien	450	44,875	2,421	100	5.4
Ha Nam	823	74,007	5,265	90	6.4
Ca Mau	1,219	84,498	2,671	69	2.2
Ha Giang	673	45,297	2,578	67	3.8
Hau Giang	791	27,733	648	35	0.8
Lai Chau	314	10,958	805	35	2.6
Total or average	***83,120***	***16,251,066***	***887,865***	***196***	***10.7***

Note: The asterisk (*) shows five cities under central administration.

Source: National Traffic Safety Committee

Vietnam:
Economic Update 2006 and Prospects to 2010

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Acronyms and Abbreviations

CHI: Compulsory Health Insurance

CPI : Consumer Price Index

DAF : Development Assistance Fund

DATC: Debt and Asset Trading Company

FDI: Foreign Direct Investment

GCs: General Corporations

GDC: General Department of Customs

GSO: General Statistic Office

HCFP: Health Care Fund for the Poor

IAS: International Accounting Standards

JRS: Judicial Reform Strategy

LSDS: Legal System Development Strategy

NPL: Non Performing Loan

MPI: Ministry of Planning and Investment

MOH: Ministry of Health

MOET: Ministry of Education and Training

MONRE: Ministry of Natural Resources and Environment

MOF: Ministry of Finance

MOLISA: Ministry of Labor, Invalid and Social Affairs

MTEF: Medium-Term Expenditure Framework

NSCERD: National Steering Committee for Enterprise Reform and Development

SBV: State Bank of Vietnam

SEDP: Socio-Economic Development Plan

SCIC: State Capital Investment Corporation

SOCB: State Owned Commercial Bank

SPS: Sanitary and Phytosanitary Standards

TRIPS: Trade Related Intellectual Property Rights

TRIMS: Trade Related Investment Measures

VBARD: Vietnam Bank for Agriculture and Rural Development

VDGs: Vietnam Development Goals

VHLSS: Vietnam Household Living Standard Survey

VSS: Vietnam Social Security

WTO: World Trade Organization

1. Introduction: Shark Hunting

Those of you familiar with the movie *Jaws*, or *Jurrasic Park*, will know that just as everything seems safe - with a leak fixed or a door closed - and the actors relax a little and take a deep breath – you know that is exactly the time NOT to relax. And of course you are right, and a dinosaur comes in the back way, or the shark bites the legs off a minor character. It seems to me that is one of the main things we are doing in this Regional Outlook – looking for the shark in the water – looking out for the next financial crisis; the next political upheaval; the next period of boom or bust.

In the case of Vietnam, I and others have been looking out for the shark for quite a while. I was first invited to Singapore by ISEAS in 1992, when I gave a paper on *Development and the Conditions for Success in Vietnam* for an "Indochina Roundtable Conference". In that paper I qualified a generally rosy picture for Vietnam with concerns about an increasing number of landless poor, state monopolies in some sectors, and an apparent hesitation to liberalise trade and banking by the Vietnamese leadership. Some of those concerns persist today, 13 years later, but in general Vietnam has just "grown through" the obstacles thrown in its path, and in general policy reform has been fast enough to keep the sharks away.

In my presentation today I will run through a familiar set of outlook topics: political developments and corruption; international relations; macroeconomic trends; domestic reform and business regulation; foreign investment; and official development assistance[1] – but first I want to talk a little more about that shark.

I don't see any sharks in the water approaching Vietnam for the next few years. That, however, is just an educated guess. I am sure some knowledgeable individuals said that about Thailand in 1996. The problem is that when we are looking for sharks we have to throw away our trend data, because what we are looking for is a break in a trend. It is that methodological problem that is causing the headaches for those people nowadays trying to construct "early warning systems" for financial or other crises. Crises are hard to predict. All the preconditions for one can be there but nothing happens; or it happens because of some small "trigger". Something seems to "tip the scales", and the consequences cascade in a process some have described as "contagion".

From this understanding of crises, we could maybe look for "triggers", but they have probably come and gone before we have measured them, and anyway only hindsight can tell us what events really were "triggers". Another approach is to understand the political and economic imbalances which give crises their energy. Identifying imbalances identifies the potential for a crisis, without forecasting when it will happen (and crises are not essential for reducing imbalances). In political terms an imbalance is the difference between nominal and actual regime legitimacy, and in economic terms it is typically macroeconomic adjustment being avoided by band-aid policies.

Vietnam has no particularly striking political or economic imbalances. Legitimacy of the one-party state remains robust, linked as it is to delivery of sustained high rates of economic growth with targeted efforts to address growing inequalities (grass roots democracy; anti-corruption; ethnic minorities; decentralisation). Economic imbalances also do not appear of too much concern, but that is given the weak economic data about the banking sector and foreign exchange reserves. But even allowing for some uncertainties, we can safely bet on a crisis-free Vietnam for the next few years.

[1] The review of sectors and developments in 2005 draws heavily upon the Joint Donor Report to the Vietnam Consultative Group Meeting *Vietnam Development Report 2006: Business* Hanoi, December 6-7, 2005. This was an exceptionally comprehensive and impressive document this year.

External variables are more uncertain for forecasting the outlook for Vietnam. Delayed membership to the WTO, an increasing trend for trade dispute problems, and, like most ASEAN economies, a high dependence on global demand trends, create an environment that can add or subtract a couple of percentage points from economic growth forecasts.

Thus the safe bet is for another five years of 7 percent GDP growth, plus-or-minus two points due mainly to the movements of external variables. This growth-as-usual conclusion was the essence of a recent article in *The Economist* about Vietnam, after years of gloomier forecasting. Even the donor community in Hanoi, who are in the business of explaining the need for faster reforms (irrespective of the actual pace of reforms), seem to grope for policy problems. The World Bank posit a model of Vietnam requiring a "second generation" of "harder" institutional reforms [2] – public administration reform, banking reform, decentralization, public finance restructuring, and property rights and corporate business development – despite evident consistent progress in all these areas. (Actually, it is donors who are doing the second generation thinking as they move from broad growth assistance ["trickle down"?] to more direct poverty targeting).

There are no sharks in sight, so maybe we can relax and take that deep breath?

2. Recent Developments and Trends

2.1. Macroeconomic Data and Policy Developments

Vietnam's economic growth rate has increased in each of the past three years, and is expected to be about 8.4 percent in 2005. This strong performance has been accompanied by a continuation of Vietnam's remarkable success in reducing poverty, which has declined from 57 percent in 1992 to under 20 percent in 2004, and only a marginal increase in measured income inequality (the Gini index (measuring inequality) has increased only slightly, reaching 0.37 in 2004). Further, the ratio of investment to GDP is expected to reach a healthy 38 percent in 2005.

The trade deficit began to narrow in the second half of 2005 after having increased in the first half. Under current trends, the trade deficit (f.o.b basis), is likely to narrow to between about 3 percent of GDP in 2005 compared with 5.2 percent in 2004, due in part to overseas remittances (likely to reach about 3.8 billion dollars, an increase of 20 per cent over last year). The deficit is mainly financed through ODA and non-debt-creating FDI inflows.

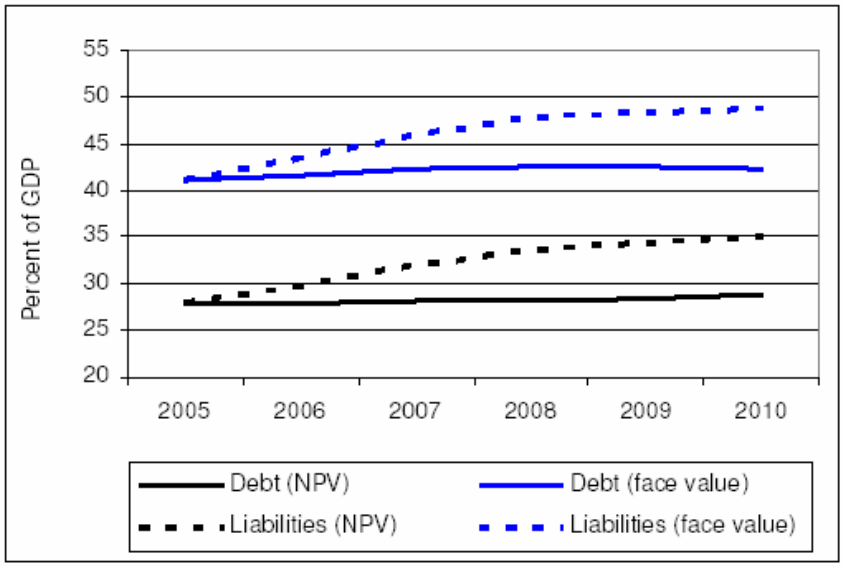
In 2004 the government issued bonds for about 0.7 percent of GDP. In October 2005 it successfully issued Vietnam's first sovereign bond of US$750 million, roughly 1.5 percent of GDP. Bonds are kept off-budget, to comply with the State Budget Law, which limits the budget deficit at 5 percent of GDP. Public debt (NPV) is planned to be stay at under 30 percent of GDP to 2010 (Figure 1).

The supply side-shocks that sparked inflation in 2004 have not fully abated or have recurred. These shocks are the outbreak of avian influenza, poor weather conditions, and hardened international prices of key imports such as oil, fertilizer, cement and steel.

Inflation had trended downwards from 10.3 percent y-o-y in October 2004, to around 7.3 percent y-o-y in August 2005, but may end up slightly higher. Increased food prices lead the inflationary result.

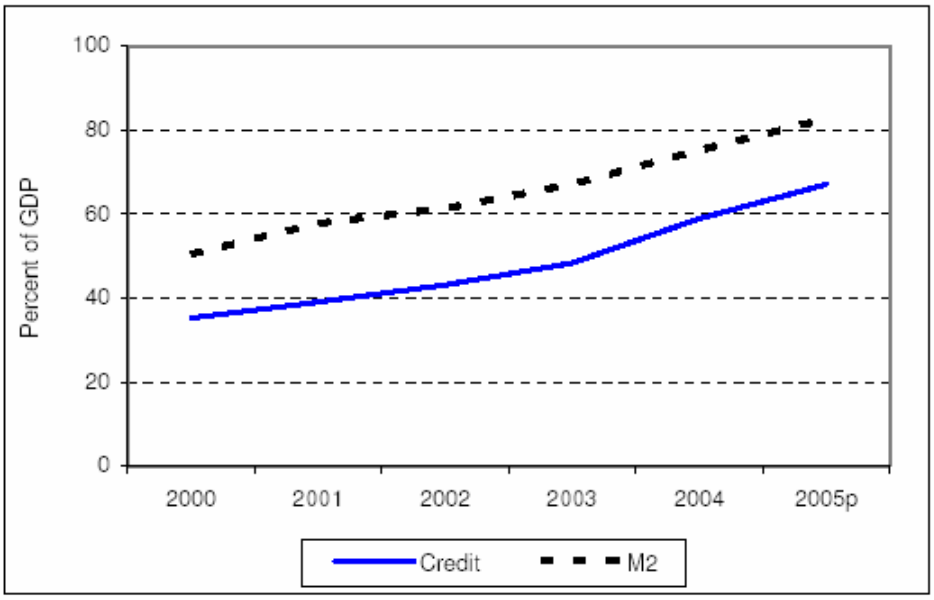
[2] Introducing competition and proper regulation in infrastructure services, modernizing tax administration, reforming the legal and judiciary systems, reducing corruption, improving governance at local levels, are all part of a second generation of reforms that need to be put on track for Vietnam to move up to the next phase. (WB 2005:14).

Figure 1: Public debt over time



Source: From IMF (2005). Figures based on selected scenarios from a joint Debt Sustainability Assessment by the IMF and the World Bank.

Figure 2: Rapid financial deepening

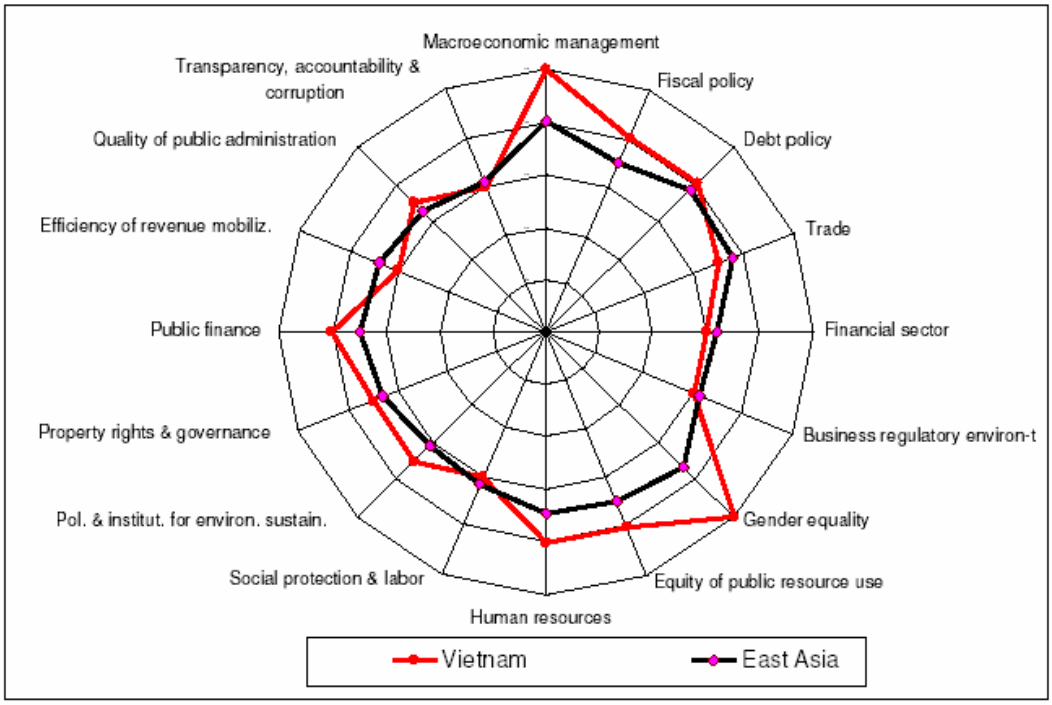


Source: Own estimates, based on data from GSO and SBV.

After having climbed to 42 percent y-o-y in December 2004, the pace of credit growth slowed to 37 percent in July 2005. The slowdown is mainly attributable to a decline in credit growth to SOEs from around 36 percent in December 2004, to 28 percent in June 2005. Sustained growth in credit and money supply (M2) during 2000-2005 has seen financial deepening (Figure 2) against a background of strong growth and low inflation.

Macroeconomic stability remains an outstanding characteristic of the Vietnamese economy. The World Bank Country Policy and Institutional Assessment (CPIA) confirms this conclusion (Figure 3), and Vietnam also scores highly in terms of fiscal policy and public finance. Less impressive are the sectoral policies to ensure a competitive microeconomy (finance sector, trade policies, business regulation).

Figure 3: WB evaluation of Vietnam's strengths and weaknesses



Source: Based on data from the World Bank.

2.2. Political Developments and Corruption

Political and formal legal activity in 2005, including a crack-down on corruption, has largely been focused on two pending future events: Vietnam's accession to the WTO, and the forthcoming 10th Communist Party Congress in 2006.

The seventh session of the National Assembly, held in May and June 2005, passed 15 laws important for WTO accession. The October-November session, included discussing and adopting 14 more Laws, including the Law on Intellectual Property, the Enterprise Law, the Investment Law, the amended Law on Value Added Tax, the amended Law on Special Consumption Tax.

The past year has also seen the preparation of draft plans by ministries and provinces and the drafting of the Socio-Economic Development Plan (SEDP) 2006-2010 at the central level. The planning activities that have taken place have been shaped by the introduction of

Prime Minister's Directive 33 which encourages a more open and strategic approach to planning at the national and sub-national levels, compared with the "command-and-control" approach of the past.

In 2005, the Corruption Perceptions Index of Transparency International gave a rating of 2.6 to Vietnam, on a scale of one to 10 where 10 corresponds to the highest integrity standards. Most other countries in the region got higher grades, including Malaysia (5.1), Korea (5.0), Thailand (3.8), Laos (3.3) and China (3.2). Only the Philippines (2.5) and Indonesia (2.2) appeared to be more corrupt. Yet, according to a recent Investment Climate Survey (ICS), corruption is less severe in Vietnam than in any other developing country in the region, save Malaysia (Table 1a)[3].

Table 1a: Corruption in the East Asian region

	Is corruption a constraint to business? (percent of responses)		
	No	Minor	Severe or major
Cambodia	4.7	39.4	55.9
China	24.1	48.5	27.3
Indonesia	29.3	29.2	41.5
Malaysia	53.8	31.7	14.5
Philippines	40.6	24.3	35.2
Thailand	49.7	32.1	18.3
Vietnam	52.3	17.8	14.2

Source: ICS database of the World Bank, using un-weighted averages.

It is likely that the ICS is more reliable than the Corruption Perceptions Index, but either way corruption remains a problem for Vietnam and East Asia in general. A law on corruption was approved in late 2005. One of its implications is to hold the heads of agencies and organizations responsible for the prevention and control of corruption. The law also includes the monitoring the assets of civil servants and their immediate families. The Law and other main initiatives for fighting and controlling corruption include increased public disclosure and transparency in areas such: as public procurement; construction activity; management and equitization of SOEs; auditing of the state budget; management and use of land; and personnel management.

The campaign against corruption also netted more than token results in 2005, reaching up to Vice-Minister level. More than 400 officials working in Vietnam's legal system were charged with criminal offences in 2005, according to state media. Most of the cases against police officers, state inspectors and even judges were corruption-related offences such as bribe-taking. Rather embarrassingly, Luong Cao Khai, head of Vietnam's anti-corruption inspection taskforce and deputy director of the government's inspection department, was arrested in October over allegations he took bribes and abused his position.

[3] The ICS for Vietnam, conducted in the summer of 2005, comprised 1,150 firms in 25 provinces across five of the eight regions of the country. Among 58 surveys of this type completed so far, only those for China (3,948 enterprises), India (2,722), Brazil (1,642) and Thailand (1,385) had bigger samples.

Table 1b: Which are the most corrupt government agencies in Vietnam?

Investment Climate Survey	Diagnostic Study on Corruption
Traffic police	Land administration agency
Customs department	Customs department
Tax department	Traffic police
Land administration agency	Tax department
Market controller	Regulators in construction
Construction permit authorities	Construction permit authorities
Import/ export license authorities	Health care
	Planning and investment agencies
	Regulators in transportation
	Economic police

Source: Based on data from ICS by the World Bank and on Communist Party of Vietnam (2005). In the case of the ICS, rankings are based on the share of respondents declaring that corruption is widespread or gifts are required to get a favorable decision. Only agencies with a share in excess of 5 percent are reported.

2.3. International Relations

A steady strengthening of ties with China and the failure to join the WTO were the international relations highlights of 2005. In October, Chinese Defense Minister Cao Gangchuan was quoted in Xinhua as saying China will join hands with Vietnam to promote comprehensive development of the relations between the two nations and the two military forces, and the following month Chinese President Hu Jintao visited Vietnam. After a relatively flat period, trade with China is increasing (Figure 4).

In 2003, the completion of China's own WTO accession negotiations, the prospect of remaining subject to textile quotas at the expiration of the Multi-Fiber Agreement, the successful experience with export growth under the USBTA, and the difficulty to oppose protectionist measures abroad, prompted the Vietnamese leaders to target 2005 for Vietnam's accession to the WTO. Now, however, this may not be possible until 2007.

The main reason is that Vietnam has been unable to successfully conclude bilateral negotiations with the US. For unconditional accession, Vietnam would need to be provided Permanent Normal Trade Relations (PNTR) status, but the schedule for its consideration and potential approval by the US congress may entail delays of more than one year.

2.4. International Trade

In the first ten months of 2005, exports grew by 22 percent. As in 2004, crude oil was the leading export - increasing by 33.5 percent in value terms, despite a fall in volume of 7.2 percent. Exports of other main commodities such as rice, coffee, rubber and coal have also benefited from increased prices in 2005. Over the first ten months of 2005 imports grew 18.3 percent.

Vietnam's exports are once again facing an uncertain environment due to antidumping actions. The items currently under threat are footwear, bicycles, and wood products. Bicycles have already been hit with antidumping tariffs of 34 percent in the EU. In July, the EU also started an anti-dumping probe against footwear imports from Vietnam. Seafood exports also continue to suffer from punitive tariffs and various non-tariff barriers.

Figure 4: Exports to China

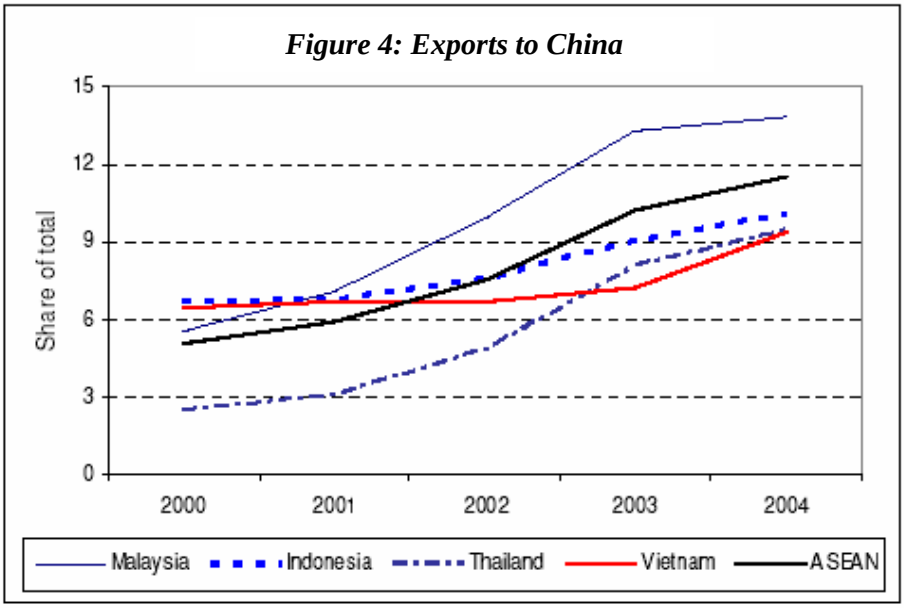
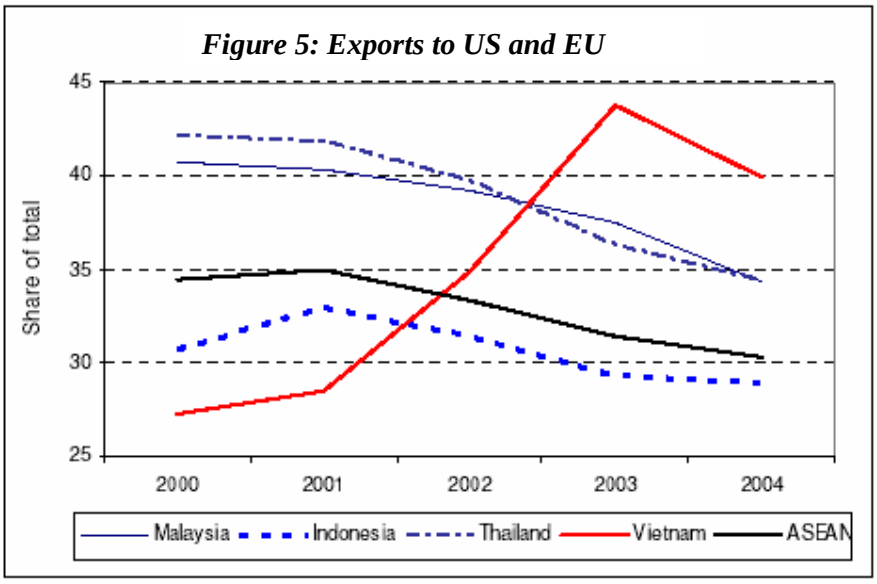


Figure 5: Exports to US and EU



The structure of Vietnamese exports has changed markedly in recent years. The US and EU (and China) have increased their share of Vietnamese exports by about 50% since 2001, with smaller shares of intra-ASEAN trade and exports to East Asia. Reduced levels of effective protection, particularly in manufacturing, explain some of the trade growth and structural change (Table 2), although protection in particular industries remains high.

Table 2: Trade barriers and effective protection

	1997		2001		2003	
Weighted average	Nominal	Effective	Nominal	Effective	Nominal	Effective
Agriculture	8.1	7.7	6.3	7.4	11.1	12.5
Mining	9.4	6.1	8.9	16.4	3.6	-0.0
Manufacturing	30.6	121.5	25.3	96.0	29.2	43.9
Total	21.0	72.2	17.9	58.5	18.2	24.9
Simple average	23.3	59.5	20.1	54.1	20.0	26.2
Rate dispersion	133.8	156.0	149.9	172.3	106.5	134.9

Source: Based on Premachandra Athukorala (forthcoming). The nominal rate of protection is estimated based on most-favored nation tariffs. The effective rate of protection measures the gap in value added computed at domestic prices and at border prices. It is estimated using the input-output table for the year 2000. Rate dispersion is measured as the ratio of standard deviation over mean, in percent.

2.5. Financial Sector Reform

Vietnam's banking reform roadmap, prepared by State Bank of Vietnam (SBV), was recently endorsed by the Politburo. The reform of the banking system entails four main tasks:

1. Revision of the laws on SBV and credit institutions: These laws will be drafted in 2006 and issued in 2007. They should transform the SBV into an independent central bank, and be consistent with WTO commitments and other international best-practice principles.
2. Separation of SBV from State-Owned Commercial Banks (SOCBs).
3. Speeding up the SOCB equitization process: VCB and Mekong Housing Bank should be equitized in 2006. The Bank for Investment and Development of Vietnam (BIDV) should follow in 2007, and the Industrial and Commercial Bank (Incombank) in 2008-2009.
4. Upgrading human resources and IT technology.

Work continues on the non-performing loans (NPLs) in the banking system. The issuance of Decision 493, in April of 2005, was an important step towards bringing Vietnam's loan classification and provisioning practices closer to international standards of credit quality. The first reports are expected to be available at the end of 2005.

Vietnam's stock market remains small. It comprises two organized trading centers, in HCMC and Hanoi, both operating as non-business units attached to the State Securities Commission (SSC). The HCMC trading center had 30 companies, 281 bond issues, and one closed-end fund listed on it by late 2005. The total market capitalization stood at 5.9 trillion dong for listed stocks, 33.7 trillion for bond issuances, and 0.3 trillion for the investment fund respectively. Established in March 2005, the Hanoi trading center is intended to serve SMEs.

2.6. State Enterprise Reform

As a result of ongoing transformations, the number of SOEs had been reduced to below 3,200 at the end of September 2005 compared with more than 5,600 in 2001.

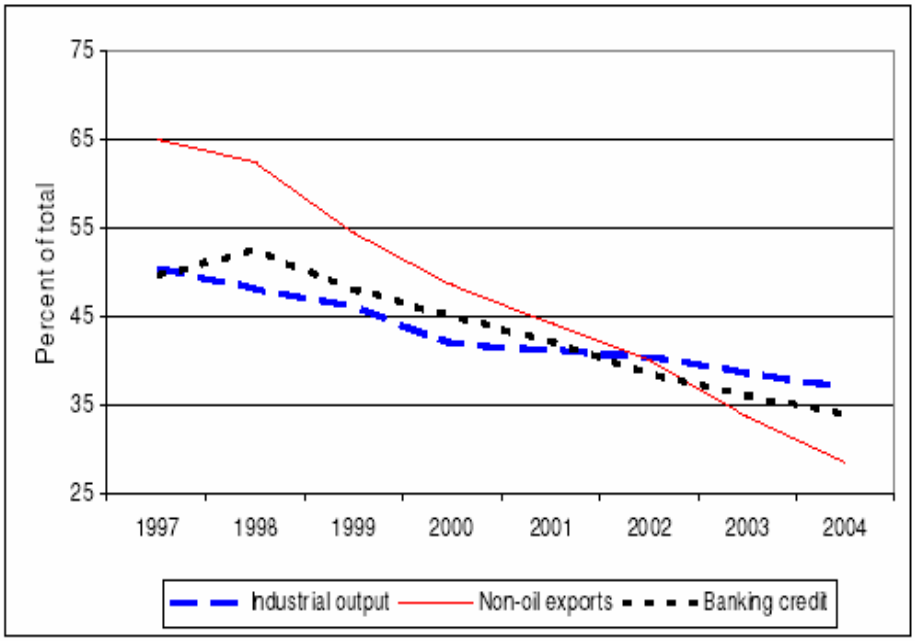
The Government will retain ownership of the larger state enterprises for some time, although it has announced that only nine out of 78 of the smaller "1990" Corporations met the criteria to remain state-owned. Four of the largest Corporations are being restructured into

holding companies that will be encouraged to compete across a broad product range, rather like the South Korean conglomerates.

The pace of equitising small and medium state enterprises is gaining momentum. Equitisation is not, fundamentally, a process of changing the actual ownership of enterprises. It is more about clarifying the ownership of those stakeholders already in control, and then moving towards some more meaningful solution to the universal principal-agent problem: making managers work for owners, and stopping owners from managing. Another aspect of the equitisation process is the removal of such enterprises from access to state subsidies or "bails outs". Thus formal ownership is exchanged in return for cutting the ties to the state. This deal has become increasingly attractive to the informal owners of state enterprises in recent years. As the cost-benefit analysis swings in favour of equitising there have been many more applications, as shareholding firms emerge from their state enterprise shells.

Recent equitisations are part of the overall trend towards less state ownership of production in Vietnam (Figure 5b). A rapidly growing foreign invested sector and private companies are also contributing to this relative decline. Still, however, over one-third of industrial output, and about one-quarter of exports, are produced by state-owned enterprises.

Figure 5b: A declining state share of the economy



Source: Own calculations, using data from GSO and SBV.

During 1993-2002, state enterprises increased their share of the Vietnamese labor force, and only during 2002-2004 has that share begun to decline (Table 3). The data seems to reflect structural change in the Vietnamese economy. During 1998-2002, farmers were moving into non-farm self-employment, private enterprises, and even state enterprises. During 2002-2004, however, the move has been from non-farm self-employment into FDI and ongoing strong private enterprise growth. The share of government employment has increased consistently over the period. Note the relatively low shares of government and state enterprise

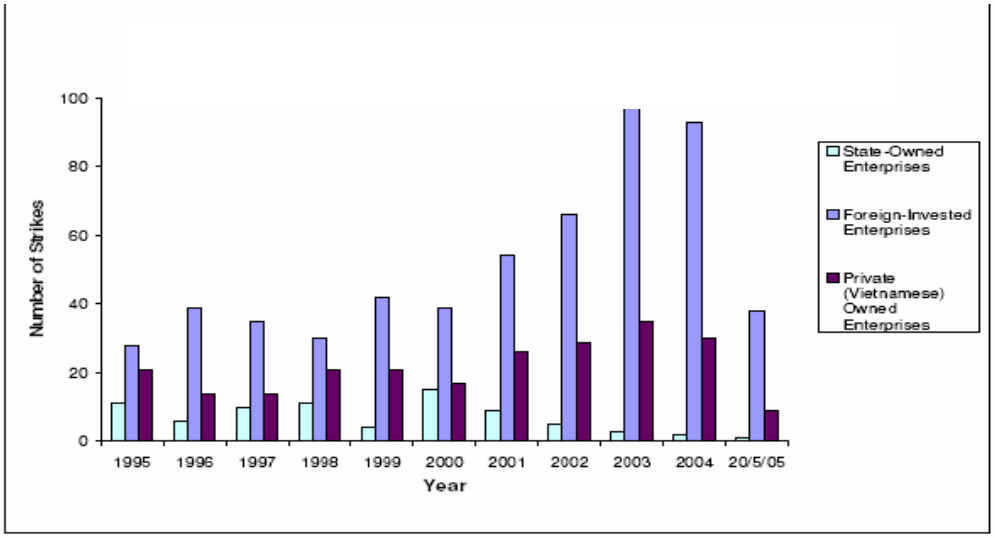
employment in Vietnam (compared to other transitional economies). This explains why the privatization process has been less problematic than in China.

Table 3: The Structure of the labor force

	1993	1998	2002	2004
Inactive	19.42	15.32	16.69	17.17
Active	80.58	84.68	83.31	82.83
Employed				
Government	3.08	3.55	4.44	5.25
SOEs	2.50	2.57	3.30	3.14
Private enterprises	10.78	10.14	15.71	16.99
FDI companies	0.10	1.12	0.80	1.33
Non-farm self-employment	14.67	16.52	19.05	16.52
Farmers	49.46	50.15	38.20	38.77
Unemployed		0.63	1.80	0.83
Total unemployment rate		0.74	2.16	1.00
Urban unemployment rate		1.44	3.31	1.96
Urban unemployment rate (MOLISA)		6.85	6.01	5.60

Source: Own calculations based on data from GSO and MOLISA. All figures are in percent of the population aged 15 to 64, except for unemployment rates, which are in percent of the active population. The last row is based on MOLISA's labor force survey. All other figures are from VLSS and VHLSS. Household businesses are treated as private enterprises for their hiring of wage workers, and as a source of non-farm self-employment for the jobs they provide to household members on an unpaid basis.

Figure 6: Number of strikes in Vietnam by enterprise ownership, 1995-2005 (May)



Source: Based on Jan Jung-Min Sunoo (2005) and Simon Clarke (2004).

The "playing field" between forms of enterprise ownership remains uneven in many respects, although differences are becoming less marked (as discussed above concerning the "equitisation choice"). One area of notable difference, however, is labor strikes. Labor strikes peaked in 2003, with 100 strikes in FDI enterprises and 37 in private enterprises. Both totals have decreased in 2004 and 2005, but the lack of strikes in state enterprises is remarkable.

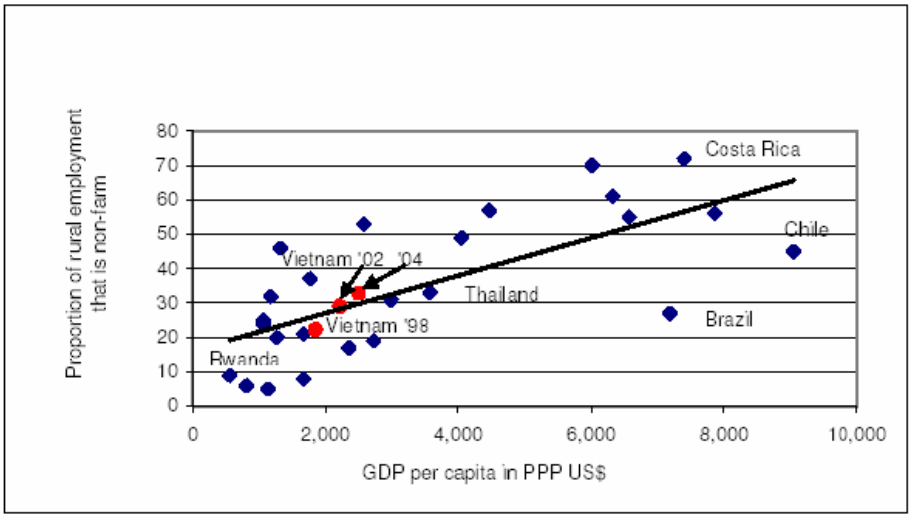
2.7. Other Domestic Reform and Business Regulation

New business registrations in 2005 are estimated to reach 38,000, an increase of about 3.3 percent over the previous year. The average capital of these new enterprises is around 170 thousand dollars. While this is still quite small, it has shown an appreciable increase of about 33 percent in 2005 compared with 2004.

The Common Investment Law (CIL) passed in late 2005 represents a significant step towards leveling the playing field, as it applies to all forms of businesses, regardless of ownership or corporate structure.

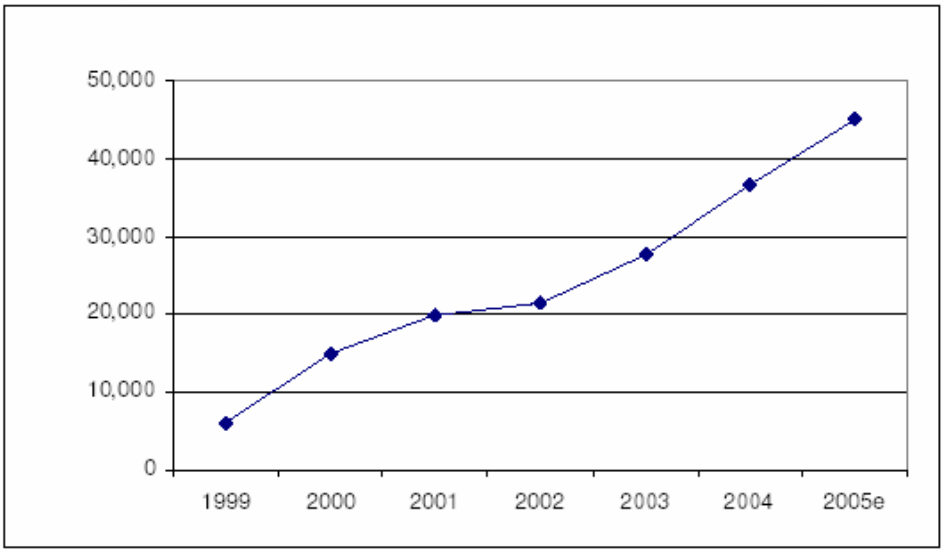
There is clear evidence that the real estate bubble is over by now. A major reduction in sales started at the beginning of 2005. Over the first six months of the year, transactions registered in HCMC fell by 68 percent compared with the previous year. According to press reports, by end 2005 Hanoi still topped the country with a median sales price of around 150,000 dollars for street-front homes. But this was 10 percent less than the previous year, and many listings were staying on the market for long periods of time.

Figure 7: Growing entrepreneurs



Source: Own estimates, based on data from GSO and Jean O. Lanjouw and Peter Lanjouw (2001). Employment figures are based on main occupation.

Figure 7: Increasing enterprise registration



Source: Own calculations using data from NBIC. Figures reflect new registrations per year.

Table 4: Closing the Competitive Edge

	Hanoi	HCMC	Bangkok	Jakarta	Manila	K.Lumpur
Industrial electricity (cents/kWh)	5.5	5.5	4.2	5.0	10.0	5.0
40-feet container to Yokohama (dollars)	1630	1150	1300	990	950	725
Call to Japan (dollars/three minutes)	1.95	1.95	1.49	3.78	1.20	1.42
ADSL connection (dollars/month)	76.3	76.3	14.6	782.1	25.4	162.6

Source: JETRO (2005). Figures refer to 2004.

The Electricity Law, which came into effect in July 2005, is an important step towards efficient regulation. The Law basically calls for the unbundling of the electricity sector and the creation of a competitive power supply market. Table 4 shows that electricity and other industrial costs in Vietnam are now on a par with regional competitors, with the notable exception of the cost of shipping a container to Japan.

2.8. Foreign Investment and Remittances

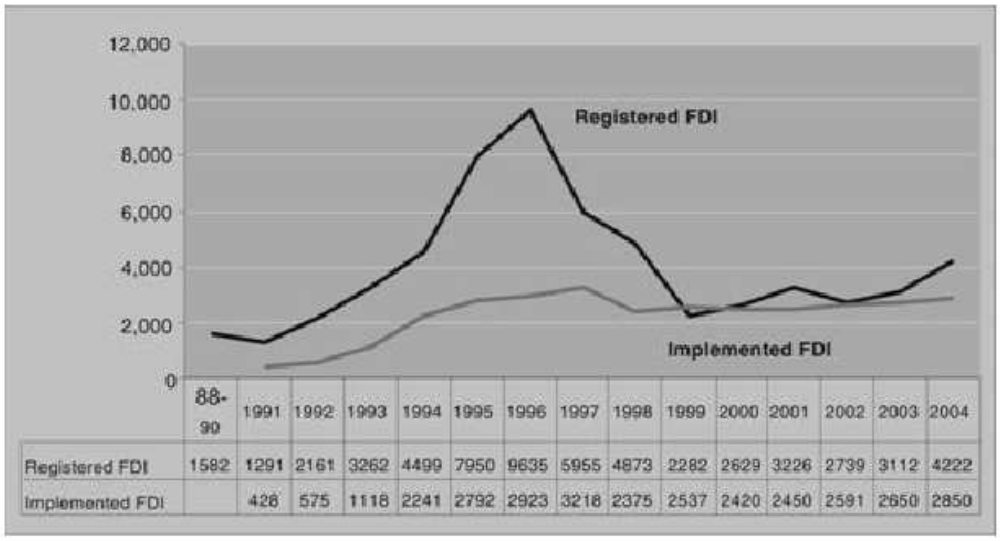
After achieving a seven-year high of 4.2 billion dollars in 2004 (Figure 8), FDI commitments improved further to 4.6 billion dollars by end-October. These include 2.98 billion dollars of new commitments and 1.6 billion dollars for capital expansion by existing firms.

Since 2005, foreign investors are no longer required to pay for the reimbursement of existing tenants of the land they are allocated. Under the revised policy, investors pay the

lease and the provincial government takes charge of all resettlement and ground clearing expenses. If the investor incurs such expenses, it can deduct them from the cost of the lease.

Electronics giant Canon completed construction of a 60,000-square-metre factory in northern Vietnam of what will be the world's largest laser printer factory, churning out a projected 4 million printers per year by 2007.

Figure 8: Registered and implemented FDI from all countries (US$millions)



	88-90	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Registered FDI	1582	1291	2161	3262	4499	7950	9635	5955	4873	2282	2629	3226	2739	3112	4222
Implemented FDI		426	575	1118	2241	2792	2923	3218	2375	2537	2420	2450	2591	2650	2850

Source: MPI. The FDI data in this figure are not adjusted for dissolved and expired projects.

Figure 9: Implemented FDI from the Six Biggest Investors in Vietnam (US$millions)

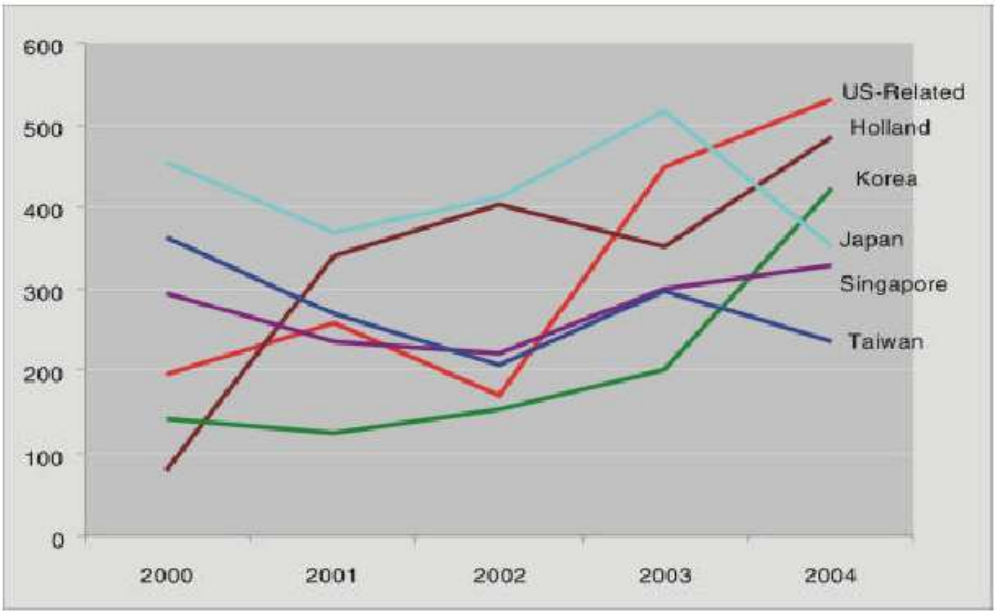
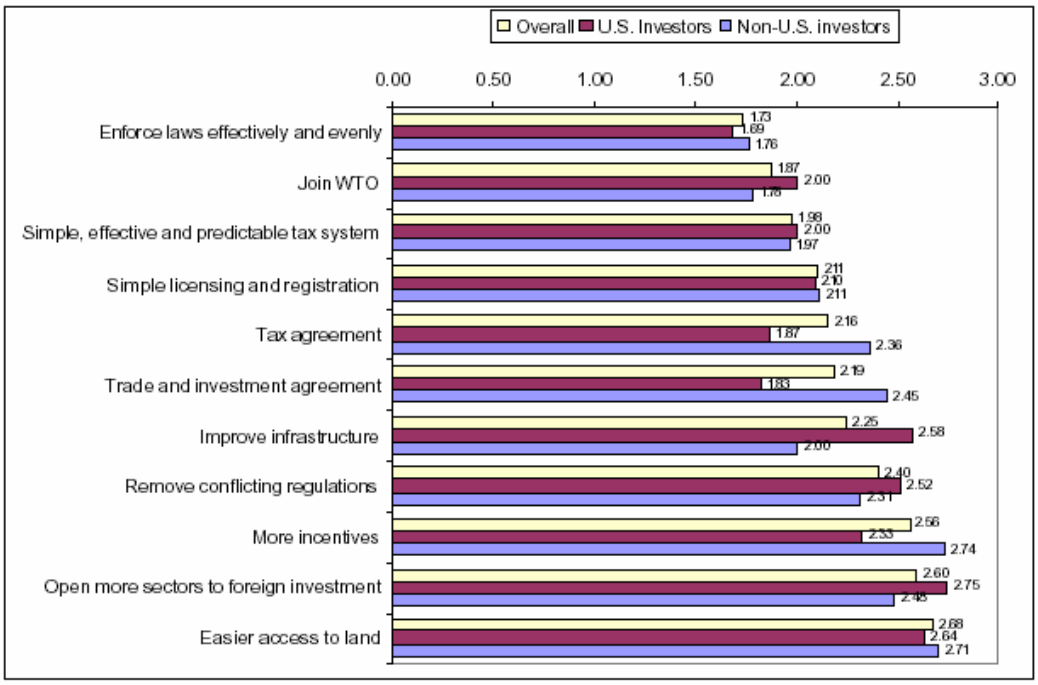


Figure 10: Measures to improve the investment environment in Vietnam (ratings are 1–5, with 1 being the most important)



Source: *The Impact of the U.S-Vietnam Bilateral Trade Agreement on Overall and U.S Foreign Direct Investment in Vietnam (2005)*

The US has emerged as a major investor in Vietnam since 2003 (Figure 9). A 2005 survey of US and other foreign investors in Vietnam identified enforcement of laws and joining the WTO as the most important measures to improve the business environment in Vietnam (Figure 10). Tax issues were also ranked high, but less so was access to land and sectoral barriers to FDI.

It is estimated that about 3 million people of Vietnamese origin, or close to 4 percent of the country's population, live abroad on a permanent basis. Their transfer of resources to Vietnam has grown steadily in recent years, from a mere US$35 million in 1991 to over four billion by 2005.

2.9. Official Development Assistance

In the last five years, ODA accounted for 11 per cent of total investment capital in Vietnam. Between 2001-04, over $11 billion was pledged to support Vietnam, of which $7.84 billion was disbursed. Vietnam plans to nearly double its GDP to 1,000 dollars per capita by 2010 with the help of another 11 billion dollars in foreign aid. In 2005, donors committed a record amount of US$3.75 billion in support of Vietnam's poverty reduction and development agenda - US$ 300 million more than last year.

2.10. Avian Flu

Vietnam has reported two-thirds of the 64 deaths due to the H5N1 strain of bird flu, which re-emerged in Asia starting in December 2003. Since October 2005, poultry in 25 of Vietnam's 64 provinces have been affected by the virus. But 15 of the provinces are considered temporarily free of the virus after registering no new outbreaks for more than 21

days. More than 3.4 million poultry have been culled in Vietnam or have succumbed to the virus in the last two months.

Leading a multinational team of medical experts to mobilize Southeast Asian nations against bird flu, Health and Human Services Secretary Michael Leavitt said in December that the likelihood of a flu pandemic in the future is "very high." Leavitt, accompanied by the director of the World Health Organization and other top health professionals, is visiting Thailand, Laos, Cambodia and Vietnam to seek their collaboration in preparing for the anticipated public health emergency. The H5N1 strain of bird flu has swept through poultry populations in Southeast Asia, and while the virus does not pass from person to person easily, this could change if the virus mutates.

Government transparency and response to the problem has been impressive, especially relative to China. The Prime Minister has personally led the effort to control outbreaks and has announced that Provincial Chairmen are to be held personally responsible for outbreaks in their provinces. In November, Vietnam sent eight Cabinet members, including all three deputy prime ministers, to the provinces to inspect how local officials have implemented measures to control bird flu. Dr. David Nabarro, the U.N. coordinator for bird and human influenza, said he was impressed with Hanoi's leadership and transparency in dealing with avian influenza in poultry and in preparing for a human pandemic.

So far, however, a human flu pandemic has not emerged and most costs are simply economic. In Vietnam, the economic costs of chicken flu have so far have been fairly limited, but could rise significantly, and have already been high for specific sectors and communities. Direct economic costs have included losses of poultry due to the disease and to control measures such as culling birds, with impacts extending not only to farmers but also to upstream and downstream sectors such as poultry traders, feed mills, breeding farms etc. Vietnam has lost over 20% of its stock of poultry.

The size of the poultry sector in the national economies was about 0.6 percent of GDP in Vietnam, so when poultry output was down by around 20 percent, this part of economic loss was worth about 0.2 percent of GDP. Additional losses have occurred because of lower egg production and reduced activity in distribution channels. The costs of prevention and control also need to be taken into account, including costs to the government of purchase of poultry vaccines, medications and other inputs, hiring workers for culling, cleanup, surveillance and diagnosis. According to the World Bank, these direct costs are likely cost 1.2 percent of Vietnamese GDP.

One presumes an indirect cost on tourism, but none seems apparent and tourists come in ever-increasing numbers to Vietnam, which has benefited from tourist concerns about terrorism and the tsunami. Vietnam's booming tourism industry expects a total 3.5 million arrivals by the end of 2005, up more than 20 per cent on 2004. Tourism earnings are expected to surpass US$3 billion in 2005 compared with about US$2.6 billion in 2004.

3. Outlook for 2006

For Vietnam, ongoing strong domestic demand, driven by the reform process and expansionary policies, should be complimented by a stable external environment in 2006. Vietnam’s GDP growth could exceed 8% in 2006. Klaus Rohland, the World Bank's representative in Vietnam, argues that Vietnam's already booming economy could top 10 per cent annual growth if the country can manage to reduce persistent structural problems like corruption and lax regulation. He highlights the quality of credit, and managing the risk of continued inflation, as immediate policy challenges.

Whatever happens, Vietnamese trade with and investment from with the US will probably continue to grow due to the impetus ("supply response") to the US bilateral trade agreement. This is a good example of a reform variable generating real short-term growth gains. It is unlikely that the dong will fall much in trade-weighted terms, and it may gain relative to the US dollar. Exports will probably exceed 20% growth again in 2006, depending mostly on international price fluctuations.

4. Competitiveness and Long-Term Growth Prospects

Competitiveness is relative, and nothing concerns Viet Nam more than the competitiveness of China. China's entry to the WTO and its lead in many areas of reform is pushing Vietnam's own reform process. That reform process has sped up in recent years, after a slump in 1990s, even in the more difficult areas of state enterprise and banking reform.

Long-term growth prospects remain good for Vietnam, irrespective of external environment fluctuations. This is because central planning placed Vietnam's economy well away from its Production Possibilities Frontier (growth potential), and ongoing reform is a steady process of moving towards that Frontier. Thus while Vietnam's factor and product markets remain weak by international standards, they are much stronger than they were only five years ago and are improving every year. This process unleashes potential and increases productivity, and generates "once-off" supply responses to institutional reforms.

Thus the nature and pace of reform in Vietnam is itself an important "macroeconomic" variable in explaining short-run growth performance, much more so than in more developed economies with efficient markets where the growth returns to reforms are less significant. From this perspective, there are still large "growth gains" to come from trade liberalization, financial sector and state enterprise reform, and from further business deregulation.

Vietnam's long-term development may therefore be pictured as the progressive blossoming of an economy that had been shackled by the deadening grip of central planning regulations. As those regulations are removed, economic activity and growth respond. That process was led initially by a booming household sector. In the 1990s, foreign investment and rapid export growth added more speed. Then, after a relatively slower period, a new phase of growth led by an emerging private corporate sector is beginning. Combined with ongoing reforms and macroeconomic stability, a decade or more of high growth rates may be expected.

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Annex 1: A Comprehensive Rating

The list of potential determinants of a country's ability to prosper in the global market place is bound to be long. Trying to nail it down to a few key features, such as the regulatory framework firms operate in, is bound to give a partial picture of a country's relative position in the global market place. Productive efficiency and international competitiveness depend on a range of factors, from macroeconomic stability to sound policies for business to high-quality human resources to limited corruption. While it is perfectly legitimate for different cross-country ratings to focus on specific determinants of business performance, a comprehensive assessment of the strengths and weaknesses of a country needs to take them all into account.

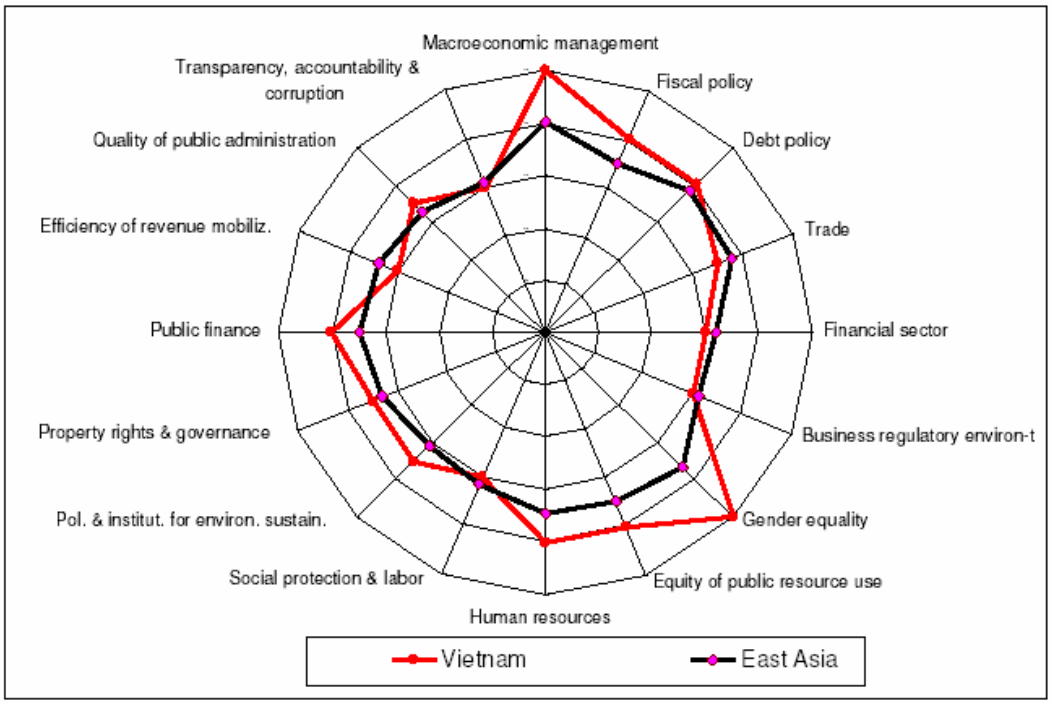
Such is the idea behind the so-called **Country Policy and Institutional Assessment (CPIA)** of the World Bank, and also of similar indices increasingly used by other multilateral and bilateral organizations. The CPIA is a tool to decide how much support a country should be given. CPIA ratings are reviewed on an annual basis. A high CPIA is in principle associated with potentially better economic performance, which in turn could make foreign aid more effective. Regardless of its aid implications, a comprehensive indicator of this sort could arguably be used to produce an overall rating of developing countries.

The CPIA covers four main areas. These are: macroeconomic management, structural reform, social inclusion and equity, and public sector management and institutions. Each of these four areas is disaggregated into a series of more specific indicators. Thus, macroeconomic management includes macroeconomic stability, fiscal policy and debt policy. Structural reform refers to trade integration, financial sector policies and the business regulatory environment. Policies for social inclusion and equity consider gender equality, equity in the use of public resources, human resource development, social protection and labor and environmental sustainability. Finally, public sector management and institutions covers property rights and governance, budgetary and financial management, the efficiency of revenue mobilization, the quality of public administration, and transparency, accountability and corruption. Therefore, the CPIA includes 16 indicators in total, each of them further disaggregated into a series of specific questions, with examples given for possible answers.

A rating from one to five is generated for each of the 16 indicators in the four policy areas, with five meaning highly satisfactory and one meaning unsatisfactory. The specific questions behind each of the 16 indicators are answered by the World Bank teams working on each (and often in each) of the countries, but subject to a vetting process aimed at strengthening international comparability. As a first step, the process involves benchmarking with respect to two countries in each region. While not being perfect, the CPIA is by now one of the most reliable cross-country rating systems available. When considered on an indicator-by-indicator basis, the resulting ratings help identify a country's strengths and weakness. When taken together, under the form of an aggregate rating, the provide information on the country's relative position in the world.

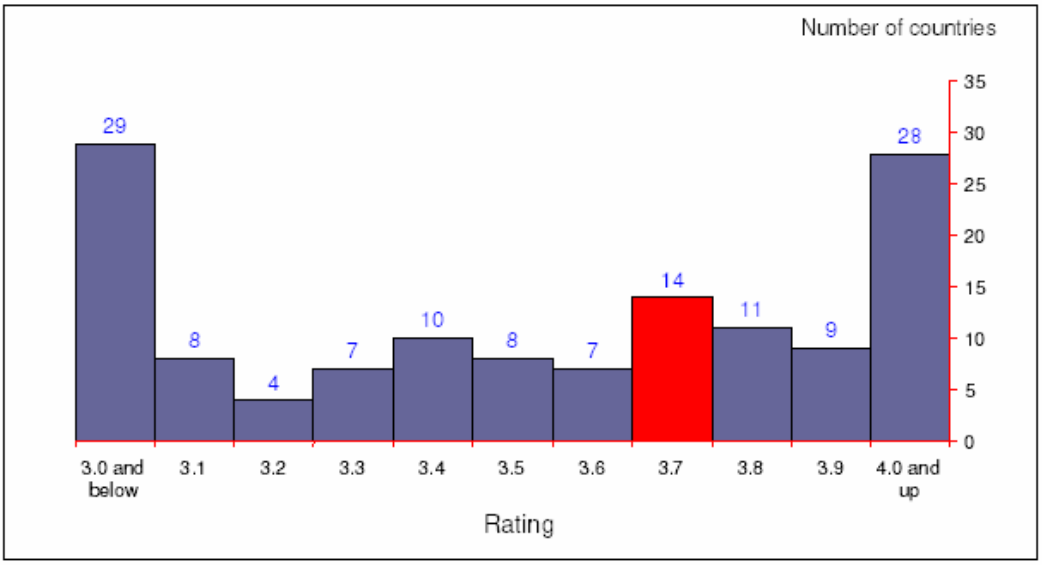
Disaggregated CPIA ratings suggest Vietnam's main strengths are in macroeconomic management and in fiscal policies. Public financial management gets relatively high ratings too. Vietnam also does well in the social area, including gender equality, the equity in the use of public resources and the quality of its human resources. But it still has important weaknesses. One of them is related to structural reform: ratings are still low for trade policies, the financial sector and the regulatory environment for businesses. Vietnam's other weakness concerns the institutional area, with the ratings on the efficiency of revenue mobilization, on transparency, accountability and corruption, and on social protection, being below the average for other East Asian countries (Figure 3.6).

Figure 3.6: Vietnam's Strengths and Weaknesses



Source: Based on data from the World Bank.

Figure 3.7: Vietnam Ratings in International Perspective



Source: Based on data from the World Bank. The figure refers to CPIA ratings for 135 countries as of 2004.

As for the overall rating, in 2004 Vietnam scored 3.7. Among the 135 developing countries and transition economies for which the CPIA was computed, there were another 13 with the same rating as Vietnam, and 48 with higher ratings. In relative terms, this means that

Vietnam is somewhere between the 36th and the 46th percentiles of the worldwide distribution (Figure 3.7). But its position improves substantially when only the 81 low-income countries in the group are considered, as only 13 of them score higher than 3.7. Within this group of countries, Vietnam falls between the 10th and the 22nd percentile, or roughly in the second decile of the distribution.

Annex 2: Key Economic Indicators

Vietnam: Key Economic Indicators

	2000	2001	2002	2003	2004 e/	2005 p/	2006 p/
	Year	Year	Year	Year	Year	Year	Year
Output, Employment and Prices							
GDP (% change previous year)	6.8	6.9	7.1	7.3	7.7	7.5	7.5
Industrial production index (% change, previous year)	15.7	14.6	14.5	15.5	16.0	16.0	16.0
Unemployment rate (%, urban areas)	6.4	6.3	6.0	5.8	5.6	5.5	5.5
Consumer price index (% change, period-end)	-0.6	0.8	4.0	3.0	9.5	8.5	6.5
Public Sector							
Government balance (% GDP)	-2.8	-2.9	-1.9	-2.0	-1.4	-1.4	-1.6
Domestic public sector debt (accumulated, % GDP)	4.5	5.5	6.3	6.8	7.5	8.3	9.2
Foreign Trade, BOP and External Debt							
Trade balance ($US million)	-1,187	-1,135	-3,027	-5,107	-5,451	-7,340	-8,282
Exports of goods, ($US million)	14,448	15,027	16,706	20,149	26,503	31,804	36,733
Exports of goods (% change, previous year)	25.2	4.0	11.2	20.6	31.5	20.0	15.5
Key exports, (value, % change) - crude oil	67.5	-10.8	4.6	16.8	48.3	35.0	25.0
Imports of goods, ($US million, cif)	15,655	16,162	19,733	25,256	31,954	39,144	45,015
Imports of goods (% change, previous year)	34.7	3.2	22.1	28.3	26.5	22.5	15.0
Current account balance ($US million)	641	672	-418	-1,946	-1,702	-2,325	-2,486
Current account balance (percent GDP)	2.1	2.1	-1.2	-4.9	-3.8	-4.6	-4.5
Foreign direct investment ($US million)	1,100	1,250	2,045	1,900	1,900	2,350	2,620
Total external debt -DOD- ($US billion)	11.6	11.4	12.2	14.2	15.8	17.2	18.2
Total external debt (% GDP)	37.2	35.1	34.8	36.4	35.0	35.5	34.9
Debt service ratio (% exports of g&s)	7.6	6.8	6.0	5.5	5.0	5.0	4.5
Reserves, including gold ($US million)	3,030	3,390	3,695	5,620	6,300	7,575	9,015
Reserves (in weeks of imports of g&s)	10.9	9.7	8.7	9.7	10.0	10.0	10.5
Financial Markets							
Credit to the economy (% change, period-end)	38.1	21.4	22.2	28.4	41.7	35.0	25.0
Short-term interest rate (3-M deposits, period-end)	4.3	5.9	7.0	6.3	6.7	7.7	7.5
Memo item: Nominal GDP in US$ billionGDP	31.2	32.5	35.1	39.5	45.3	50.9	54.7

Source: GSO, SBV, IMF and WB

AFTERNOON SESSION

<Paper Presentations>

Growth and Efficiency Performance of the Vietnamese Economy since *Doi moi*[*]

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Abstract

The purpose of this paper is to estimate technical, allocative and economic efficiencies as well as productivity change, technical efficiency change, and technological change in across the economic sectors during the period 1986-2006. We seek the turning points for productivity growth to see whether it was accompanied by technological change and/or technical efficiency. For estimating economic growth, we use aggregate production function. We find that, during the study period, technical progress contributed 19.65% to the country's economic growth. In addition, using the data envelopment analysis (DEA) technique to estimate technical, allocative and economic efficiencies, we find that the mean technical, allocative and economic efficiency indices were 72.7%; 75.7%; and 57.5%, respectively under constant return to scale (CRS) technology, while they were respectively 89.5%; 73.1%; and 67.9% under variable return to scale (VRS) technology. We also estimate total factor productivity (TFP) index for the whole economy and individual economic sectors. By using rank statistics to analyze intertemporal efficiency and TFP trends, we find that allocative efficiency of the industrial sector was consistently higher than those of the agricultural sector and the services sector during the study period. This is also supported by our estimates from the Malmquist index approach that the economy's productivity growth was largely driven by the industrial sector.

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I. Introduction

Over the last two decades, the Vietnamese economy has had a remarkable record of economic growth, and unequal growth rates in different economic sectors have led to a rapid transformation in the production structure. Since the overall high growth rate came mainly from the industrial sector and the services sector, we saw a decreasing share of the agricultural sector from 35 percent of Gross Domestic Product (GDP) in 1985 to 20 percent in 2005 (GSO, 2006). It would be interesting to find out how factor inputs and technical changes played their parts in generating such a remarkable growth, and how economic sectors contributed to the country's economic growth. Though, there are still many problems that can affect negatively the productive efficiency, such as poor infrastructure, lack of information, and abundant unskilled labor. Due to these hurdles, total factor productivity (TFP) and the technical efficiency level, particularly in terms of labor, were still low (Nguyen *et al.*, 2007, forthcoming).

There are many factors that determine the size of economic growth or output at different levels (i.e. the country, industry, or firm), and changes of these factors cause the output to change. We may classify these factors into demand-side and supply-side ones. On the demand side, the analysis is based on the model, in which changes in total output can be decomposed into two parts: firstly, changing a sector's share of labor can change its output share causing economy-wide productivity growth to the labor-absorbing sector's productivity growth rate; and secondly, effect of labor reallocation depends upon the existence of differences in the sectoral productivity levels. On the supply side, the analysis is relied on the concept of production function, which explains the relationship between factor inputs and outputs. Studies on the supply side are known as the productivity studies, and they are carried out under some approaches.

Total factor productivity (TFP) is widely regarded as one of the most crucial factors that have potential impacts on the supply side. The contribution of TFP is always estimated as residual. Contribution of TFP is usually interpreted as contributions of technical progress and efficiency change. Indeed, TFP growth (technological change) can be analyzed and estimated by using production function. This can be seen in the works of Nadiri (1970), Jorgenson *et al.* (1987), and Jorgenson (1988). Such type of technical change is a shift in the production function over time, reflecting greater level of efficiency in combining factor inputs.

There is another approach whereby the growth of output can be explained without any assumption of production function form. This approach is known as the growth-accounting analysis with profit maximization assumption. The growth-accounting approach replaces the output elasticity with respect to each input, which is unobservable, and it must be estimated from production function by the share of observable factor income. It is possible to explain the output growth in a given period by the growth of each input weighted by its income share. The remaining residual is known as TFP or technical change. Although this approach is quite appealing, and it has been done in many countries at different levels such as industry or firm, it has been done only for Vietnam at the national level with aggregate data, which could not consider changes in technical inefficiency. For instance, Nguyen (2005) estimated the aggregate production functions and showed that the economy's productivity growth during the study period was largely driven by the industrial sector, and the technological progress was one of the critical factors contributing to the economic growth. During 1985-2004, the TFP of the country increased by about 1.5%. The contribution of the technological progress was about 0.7 (or 11 percent) and that of the efficiency change was 0.89 (or about 12 percent) to the average GDP growth rate of 6.68 (or 100 percent). The contributions of the factor inputs, i.e. capital and labor, to 6.68% annual GDP growth during the study period were about 50.41% and 29.16%, respectively.

Recent developments have showed that, accompanied with the technical progress, changes in technical efficiency—the gap between frontier technology and its actual production—could also contribute to productivity growth. To decompose TFP growth into technical progress and changes in technical efficiency, the stochastic frontier production function (SFPF) could be applied. Stochastic frontier models assume that firms or industries do not utilize the existing technology fully because of various factors, and this causes inevitable technical inefficiencies in the production process. Under these circumstances, TFP growth might arise from improvements in technical efficiency without technical progress. Coelli (1995) presented the most recent review of various techniques used in efficiency measurement, including their limitations, strengths, and applications. The main strengths of the stochastic frontier approach are that it can deal with stochastic noise, and permit statistical tests of hypotheses pertaining to production structure and degree of efficiency. The main weakness of this approach is the requirement of imposing an explicit parametric form for the underlying technology, and an explicit distributional assumption for the inefficiency term.

Recently, non-parametric approaches, commonly known as data envelopment analysis (DEA) technique, do not require specification of the underlying technology, and they have advantages in dealing with disaggregate inputs and multiple output technologies. However, this model is not able to separate deviations from the frontier technology into their systematic and random components, and thus it attributes all the deviations from the frontier technology to inefficiency. Because this methodology does not require a prior functional form for the production frontier, it imposes no prior parametric restrictions on the underlying technology that may create the distortion in the efficiency measures. Since the DEA method is deterministic and attributable to all the deviations from the frontier to inefficiencies, a frontier estimated by DEA seems to be sensitive to measurement errors and/or other noises in the available data.

In this paper, we apply the non-parameter approach with macroeconomic data of the Vietnamese economy in order to answer for the above-mentioned research questions. Based on the estimates, the paper will propose some policy suggestions for improving growth and efficiency performances of the industries in particular, and the economy in general.

The paper is organized as follows. The following Section II will make an overview of growth performance and structural changes of the Vietnamese economy and its economic sectors since *Doi moi* with some initial estimates of economic and productivity growth. Section III describe theoretical framework to estimate TFP growth and evaluate the sources of such growth by using Malmquist index. The estimated results and analyses will be provided in Section IV. Finally, some major findings, policy implications, and concluding remarks are presented in Section V.

II. An Overview of Growth Performance and Structural Changes in Vietnam since *Doi moi*

In this paper, we will use both parametric and non-parametric approaches, macroeconomic models, and statistic methods to analyze growth performance and structural changes of the whole economy and individual sectors. We will use the data from the General Statistics Office of Vietnam (GSO) for three sectors, i.e. the agricultural sector, the industrial sector, and the services sector, over the period 1985-2006 (see Appendix A). The procedures used to create proxy variables for real wages and capital prices are discussed more detail in Nguyen (2005).

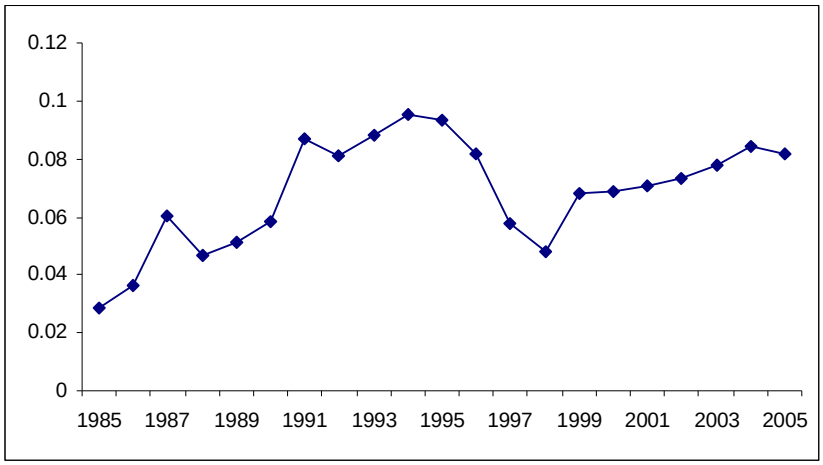
1. Growth Performance of the Economy

In this part, we review the growth performance of the economy in different periods during 1986-2006. In addition, we will discuss some major indicators of factor productivity, including labor productivity and investment efficiency.

1.1. Growth Performance in the Period 1986-2006

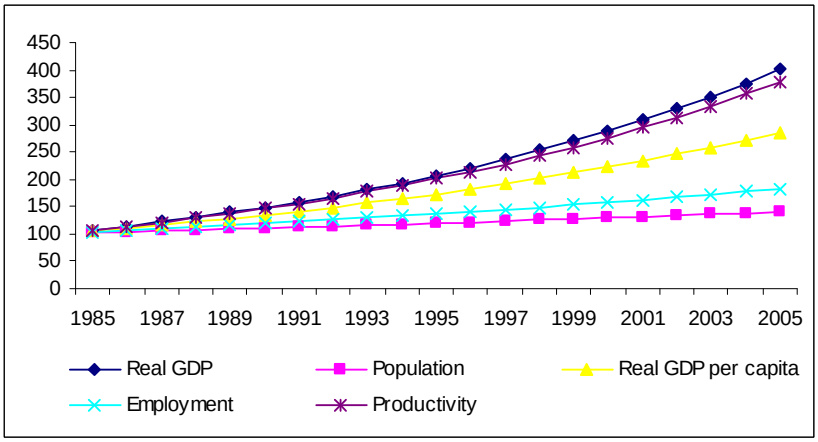
In the early 1980s, the economy faced many hardships resulting from changes in the international conditions and rising weaknesses inside the economy. Particularly, Vietnam no longer received aids from the former socialist countries. The hybrid economic model—a combination of centrally-planned economy and market economy—and the failures with hyperinflation from price-wage-money reforms forced the government to launch *Doi moi* policy programs in 1986 in order to change the economy towards a market economy. Since then, the economy has made impressive growth performance (Figure 1).

Figure 1: Vietnam's GDP growth



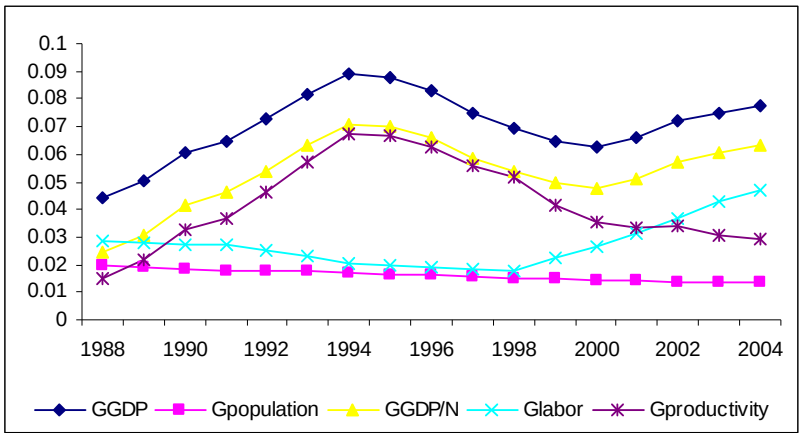
Source: Author compiled from GSO's *Statistical Yearbook* (various years)

Figure 2 (a): Long-term trends of five series over the period



Source: Author compiled from GSO's *Statistical Yearbook* (various years)

Figure 2 (b): Five-year moving average of the five series over the period



Source: Author compiled from GSO's *Statistical Yearbook* (various years)

Figure 2a and Figure 2b show the estimates of the growth trends for real GDP, real GDP per capita, population, employment, and productivity. Note that, these long-term trends are represented by horizontal straight lines and the five-year moving averages are plotted as percentages of the trend values. In 1995, the growth rates of real GDP, real GDP per capita, and productivity accelerated. The straight lines in Figure 2(a) show the long-term trends of the five series over the period. The annual average growth rates presented by five lines are as follows: real GDP (6.84%); population (1.63%); employment (2.9%); real GDP per capita (3.84%); and productivity (2.5%). Therefore, real GDP per capita grew more rapidly than labor productivity (real GDP per worker), and this reflects an employment growth during the last two decades.

While these long-term growth rates are important to our understanding of economic growth after *Doi moi*, we also need to evaluate these rates of change within the study period. Based on the policy changes and external impacts during the period, we have four sub-periods to review the important factors, which track the growth pattern in Figure 1. The four sub-periods include 1986-1988; 1989-1996; 1997-1999; and 2000-2006.

1.2. Period 1986-1988: Initials Adjustments towards a Market Economy

In this period, the initial adjustments created new economic incentives for the economy in general and household economy in particular. Some of the major reforms include abolishment of internal check points for free movements of goods; adjustment of prices towards unofficial levels and reduction of rationings, in which the Vietnamese Dong (VND) was evaluated in line with the parallel market rates; the approval of the Land Law and recognition of long-term land use rights; the establishment of a two-tier banking system. The launch of economic renovation helped boost the growth performance of the economy. The economy started with the growth rate of 2.8% in 1986 and it then had increasing growth rates in the following two years. In 1988, the growth rate of the economy reached 6%. Implementation of the renovation policy clearly blew a fresh wind into the economy after a persistent economic crisis. In particular, the positive trend of GDP growth also strengthened the willingness of the government for further reforms.

1.3. Period 1989-1996: Early Transformation to the Market Mechanism

This sub-period started with liberalization and stabilization packages, including elimination of most of price controls, unification of the exchange rate system, imposition of

positive real interest rate, the issuance of the Ordinance on Economic Contracts, and especially the removal of subsidies to state-owned enterprises (SOEs). The radical changes in 1989 made the turning point for the economy to move towards a market economy. Behind the initial drop in 1989's growth rate was contraction of the state sector due to the restructuring of SOEs. However, this drop was compensated by strong growth of the non-state sector, which resulted from liberalization policies. Specially, the share and growth rates of the state sector in 1989 were 41 % and -1.8%, respectively, while those of the non-state sector were 69% and 9.8% (GSO, 2003).

After 1989, the economy was on a high growth track with a peak in 1995. Fast growth in this phase could be attributed to the effects of the past and on-going reforms. Some of the major reform included the issuance and amendments of laws relating to government budget; state and non-state enterprises, credit and banking, encouragements of domestic and foreign investments; and expansion of trade and financial relations with the international community via negotiations and further liberalizations. In particular, Vietnam joined the Association of Southeast Asian Nations (ASEAN) and ASEAN Free Trade Area (AFTA) in 1995. In addition, since the Donor Conference within the Paris Club framework in 1993, the official development assistance (ODA) resources associated with conditionality has helped promote structural adjustments.

In summary, this early phase of transformation laid out of fundamental framework for a market economy, in which allocation of resources and prices interact for the better final outcomes.

1.4. Period 1997-1999: Transformation under the Asian Crisis Impacts

The third sub-period was the first major challenge to Vietnam's young market economy. The Asian financial crisis, which was originated from Thailand and expanded to other East Asian countries, led to trade and investment disruptions. The Vietnamese economy was not directly hit by this crisis due to strong capital controls. However, FDI reduction and intensified competition in export markets brought about "real blows" to the economy. The growth rate declined sharply in this phase, from 8.15% in 1997 to 5.8 % and 4.8% in 1998 and 1999, respectively.

FDI decreased dramatically in both number of projects and total value. Under negative impacts of the crisis, the crisis–hit and major investors in Vietnam had to solve the problems in their own countries. As a result, there was abrupt FDI in Vietnam. Many projects became dissolved and the new ones were seriously affected by foreign trade. The major importers of Vietnam in East Asia had to reduce the volume of imports. Devaluation of currencies in the region made the competitiveness of Vietnam worse. Consequently, there was a significant fall in the export growth rate, from 28.8 % in 1996 to 11.4 % in 1997, and only 7.8% in 1998.

Facing such unfavorable context, the Vietnamese government devalued the currency four times and carried out other structural reforms during the period 1997-1999. However, the external contexts affected the economy significantly through both direct and indirect channels, and thus the downward trend in GDP was observed.

1.5. Period 2000-2006: Resumed and Further Growth

As the financial crisis was dying down, the economy resumed growth momentum in 2000. After laying out the fundamental framework in the previous sub-period, the reform agenda has been tuning to structural reforms, including promotion of non-state sector and SOEs' equitization.

The new Enterprise Law enacted in 2000 with facilitation of business activities and creation of a more playing field level for private enterprises helped promote the private sector.

There was rapid growth in the number of newly established enterprises, which were mostly private ones.

Although the SOEs' equitization was ignited in the first sub-period, the process was extremely slow. The major frictions are unwillingness of equitization within the management boards, difficulties in firm evaluation, and unequal treatments in the market place. The high equitization profile in the period 2000-2006 was a positive signal of a radical change in the production structure.

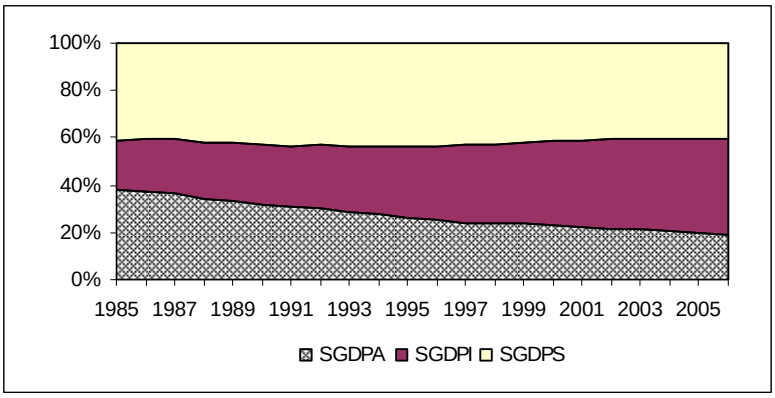
In short, in the period 1986-2006, Vietnam presented an impressive average growth path with several spurts of high growth in line with radical economic reforms. Strong growth in GDP brought about important conditions to raise the living standard of the Vietnamese people. However, the high growth path can only be maintained in the long run if growth is based on productivity rather than accumulation of resources. The quality of economic growth, including the structural evolution and input productivity, is a key for further successes.

2. Structural Changes

2.1. Change in GDP Shares by Economic Sectors

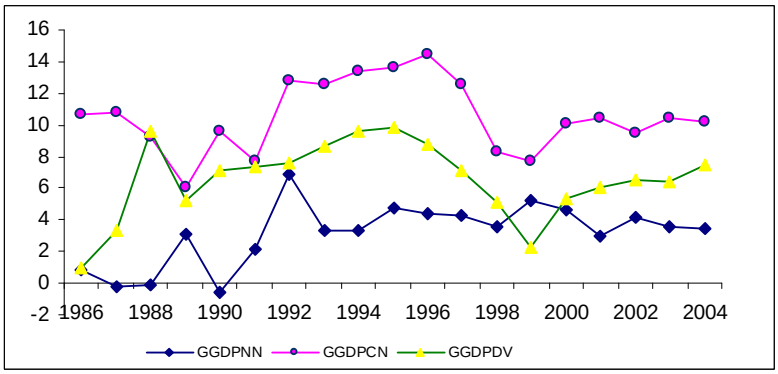
A historical perspective suggests that development has always been associated changes in productive structure. Particularly, if the economy is divided into three sectors, i.e. agriculture, industry, and services, we expect to see the increasingly important role of the latter two sectors.

Figure 3a: GDP shares of agriculture, industry and services



Source: Author compiled from GSO's *Statistical Yearbook* (various years)

Figure 3b: Growth performance of agriculture, industry and services



Source: Author compiled from GSO's *Statistical Yearbook* (various years)

Figure 3a and Figure 3b present the contributions of these three sectors to Vietnam's GDP during the period 1986-2006. It can be observed that the share of the agricultural sector declined, while the industrial sector has played an increasing role in the economy over the period. At the same time, the services sector also had increasing contribution to the GDP, both in terms of growth rate and value.

2.2. Contributions of the Economic Sectors to the Country's Economic Growth

This part presents the estimated results for economic growth, which resulted from the model for analyzing growth and structural change (see Appendix B). Detailed estimates for each sub-period are presented in Table 1.

Table 1: The estimated results for sectoral growth

Year	*GGDP*	*GGDPA*	*GGDPI*	*GGDPS*	*GR*	*LA*	L_I	L_S
1986-1988	0.0312	0.0013	0.0769	0.0347	0.0121	0.5566	0.0915	0.1018
1989-1996	0.0751	0.0342	0.1126	0.0802	0.0505	0.7298	0.1266	0.1436
1997-1999	0.0623	0.0436	0.0955	0.0482	0.0400	0.6954	0.1180	0.1866
2000-2006	0.0750	0.0388	0.1024	0.0692	0.0334	0.6245	0.1437	0.2318

Note: *GGDP*=GDP growth; *GGDPA*=growth of the agricultural output; *GGDPI*=growth of the industrial output; *GGDPS*=output growth in the services sector; *GR*=average rate of growth of labor productivity for the economy; L_A=share of labor force employed in the agricultural sector; L_I=share of labor force employed in the industrial sector; and L_S=share of labor force employed in the services sector.

Source: Author compiled from GSO's *Statistical Yearbook* (various years)

In the first sub-period (1986-1989), the economy had slow productivity growth, and the agriculture sector accounted for the largest shares of both input and employment. In the second sub-period (1989-1996), the output and employment shares of the industrial sector and the services sector started to rise.

Going further, the effects of labor reallocation on average productivity growth can be decomposed into two parts. First, changing a sector's share of labor could change its output share in GDP (99.8%; 99.5%; 99.3%; and 99.2% in during 1986-1988; 1989-1996; 1997-1999; and 2000-2004, respectively), and this caused economy-wide productivity growth to depend on the labor-absorbing sector's productivity growth rate. The second effect of labor reallocation depended upon the existence of differences in the sectoral productivity levels. As labors shifted to a sector with a higher productivity level, the average productivity growth rate increased, *ceteris paribus* (0.19%; 0.43%; 0.64%; and 1.78% in 1986-1988; 1989-1996; 1997-1999; and 2000-2006, respectively). It is generally true that the industrial sector has a higher productivity level than the other sectors, and thus economy-wide productivity growth is accelerated as labors shift to the industrial sector.

In summary, this part gives an overview of Vietnam's economic performance in the period 1986-2006. The economic growth rate had been recorded high since the launch of *Doi moi*. The productive structure was changed with increasing roles of the industrial sector and the services sector. In addition, we also found that labor productivity showed increasing trend, while investment efficiency presented a decreasing trend.

III. Measuring Efficiency and Productivity: Theoretical Framework

1. Growth and Factor Decomposition of Growth

In this paper, we will examine the process of growth with the aggregate production function. The aggregate production function can be used to determine the contributions of labor, capital, and technical change to economic growth. One such type of technical change is a shift in the production function over time, which reflects greater efficiency in combining inputs. It is called disembodied technical change (or simply, technical change), and it can be represented by the following production function: *Y=f(K,L,t)* or *y(t)= f(K(t),L(t),t)*, where *t* indicates time.

The change in output over time is given as follows:

$$\frac{dy}{dt} = \frac{\partial f}{\partial K}\frac{dK}{dt} + \frac{\partial f}{\partial L}\frac{dL}{dt} + \frac{\partial f}{\partial t}. \tag{1}$$

The first two terms on the right-hand side indicate that output change is due to increases in capital and labor, respectively; in other words, it shows a movement along the production function. The last term on the right-hand side indicates that output change is due to disembodied technical change; in other words, it shows a shift in the production function. This type of technical change is called "disembodied" because it is not embodied in the factor inputs; rather, it involves in a reorganization of inputs. It can occur with or without increases in inputs. Dividing the both sides of equation (1) by output *y*, we can convert to proportionate rates of change and yield:

$$\frac{1}{y}\frac{dy}{dt} = (\frac{K}{y}\frac{\partial f}{\partial K})\frac{1}{K}\frac{dK}{dt} + (\frac{L}{y}\frac{\partial f}{\partial L})\frac{1}{L}\frac{dL}{dt} + \frac{1}{y}\frac{\partial f}{\partial t}, \tag{2}$$

where all terms have been expressed as proportionate rates of change. The first two terms on the right-hand side are the proportionate rates of change of two inputs, and each weighted by the elasticity of output with respect to input. The third term shows the proportionate rate of technical change.

If we assume that the proportionate rate of change of technical change is constant at the rate *m*. The equation (2) implies that

$$\frac{1}{y}\frac{dy}{dt} = (\frac{K}{y}\frac{\partial f}{\partial K})\frac{1}{K}\frac{dK}{dt} + (\frac{L}{y}\frac{\partial f}{\partial L})\frac{1}{L}\frac{dL}{dt} + m, \tag{3}$$

where *m* is the rate of neutral technical change.

The assumption of constant elasticities shows a Cobb-Douglas-type production function, and thus equation (3) can be derived from such a production function with the scale parameter *A* that increases exponentially over time, i.e. $y = \left(Ae^{mt}\right)L^{\alpha}K^{\beta}$.

Taking logarithms and rearranging the equations, we yield:

$$m = \frac{1}{y}\frac{dy}{dt} - \beta\frac{1}{K}\frac{dK}{dt} - \alpha\frac{1}{L}\frac{dL}{dt}. \tag{4}$$

In the case of constant elasticity of substitution (CES) production function, we have:

$$y = \left(Ae^{mt}\right)\left[\delta L^{-\rho} + (1-\delta)K^{-\rho}\right]^{-h/\rho}. \tag{5}$$

Expanding *Lny* in Taylor's series approximation of the CES around ρ=0, we have:

$$Lny = a + h\delta LnL + h(1-\delta)LnK + \frac{\rho h\rho(1-\delta)}{2}\left(LnL - LnK\right)^2 + mt. \tag{6}$$

The elasticities of output with respect to labor and capital (β_L and β_K) are:

$$\beta_L = \frac{\partial f(.)}{\partial L}\frac{L}{f(.)} = \frac{h}{\left[1+\frac{\delta}{1-\delta}\left(\frac{K}{L}\right)^{-\rho}\right]}. \quad (7)$$

and

$$\beta_K = \frac{\partial f(.)}{\partial K}\frac{K}{f(.)} = \frac{h}{\left[1+\frac{\delta}{1-\delta}\left(\frac{K}{L}\right)^{\rho}\right]}. \quad (8)$$

2. The Malmquist TFP Index and Efficiency

2.1. Productivity and Efficiency Measurements: An Overview of Literature

The aggregate production function is based on the assumptions that the economy lies on the frontier and requires that the economy's production function has to be specified prior to estimation. It should be noted that this method yields estimates of "average" production function. This is in contrast to the application of non-parametric method and also other econometric methods for estimating frontier production function.

Färe *et al*. (1994) proposed the Malmquist TFP index, which was based on the work of Caves *et al*. (1982), on the Farrell (1957)'s measurement of technical efficiency, and on Shephard (1970)'s distance function. One of the major advantages of the Malmquist index is that it requires only data on quantity, and it is not constrained by a specific functional form for the production, cost function, or profit function. The Malmquist index allows us to decompose productivity growth into two mutually exclusive components, i.e., changes in technical efficiency and shifts in production technology over time. These components lend themselves in a natural way to the identification of catching up and innovation, respectively. Our measurement of productivity growth is a geometric mean of these two Malmquist productivity indexes.

There are some studies based on the DEA approach to analyze TFP, technology, and efficiency changes. For example, the work of Mao and Won (1997) focused on the Chinese agricultural production in the period 1984-1993. They classified 29 provinces in China by advanced-technology and low-technology categories, and also decomposed the Malmquist productivity measurements into two components: technical change index, and efficiency index. The estimated results showed that TFP of the Chinese agricultural sector rose in most provinces for both categories during the period. They also proved that technical progress was mostly attributed to the Chinese agricultural productivity growth after the rural economic reforms in China. McMillan *et al*. (1989) divided productivity increase into price and incentive components, and found that 78 percent of growth in the Chinese agricultural productivity in 1978-1984 was attributed to the inception of the household-responsibility system, and the remaining 22 percent arisen from price increases. Wang *et al*. (1996) developed a shadow-price profit frontier model to investigate the production efficiency of farm households. Their study indicated that farmer's resource endowment and education had great influence on the Chinese farmers' locative efficiency. Both technical and allocative efficiencies could be improved by gradually eliminating the market distortions.

Measuring productivity by the Malmquist index, Sathye (2002) analyzed changes in the productivity of Australian banks during the period 1995–1999, and found that technical efficiency of banks as well as TFP index declined.

Chieko *et al*. (2003) examined the TFP, efficiency, and technological change in the Philippines' rice sector for the post-Green Revolution era. They concluded that the average annual Malmquist productivity growth was positively small. It was negative during the early 1970s, then positive in the next period. More specifically, the positive growth was coincided with the introduction of new varieties of rice.

Färe *et al*. (1994) considered the productivity growth in 17 OECD countries in the period 1979-1988. They also used DEA to compute the Malmquist productivity indexes, and then decomposed them into two components, namely technological change and efficiency change. Their analysis provided more information on the status of the production technology applied by firms. The US productivity growth was shown to be slightly higher than the average level, which was due to the technological change. Japan ranked the first in the productivity growth in the sample, in which half of growth relied on efficiency change.

2.2. The Malmquist Productivity Indexes

In this study, we estimate productivity change as the geometric mean of two Malmquist productivity indexes. Our Malmquist index is consequently a "primal" index of productivity change. To define the output-based Malmquist index of productivity change, we assume that for each time period t=1,…, T, the production technology H is presented as H=[(x,y): x can produce y]. We also assume that H satisfies certain axioms, which are to define meaningful output distance functions. Following Shephard (1970) or Färe (1988), the output distance function is defined at the period t as:

$$inf\{\gamma(x, y/\gamma) \in H\} = (sup\{\gamma: (x, \gamma y) \in H\})^{-1} \quad (9)$$

This function is defined as the reciprocal of the "maximum" proportional expansion of the output vector y, given inputs x. It characterizes the technology fully, if and only if $(x, y) \in H$. In Farell's terminology, this is known as technical efficiency.

Also note that, under the assumption of constant returns to scale (CRS), the feasible maximum level of output is achieved when the productivity average value, y/x, is maximized. For simplicity, under the case of one output and one input, this level is also the maximum observed total factor average product (productivity). In empirical studies, the maximum values mean the "best practice" or the highest observable productivity in the sample of countries, and it is determined by using programming techniques, which will be explained further in the next section.

By definition, the distance function is homogeneous at degree 1 in output. Additionally, it is the reciprocal of Farrell (1957)'s measurement of output technical efficiency, which calculated "how far" an observation was from the frontier. To define the Malmquist index, we need to describe the distance functions with respect to two different time periods as follows.

$$inf\{\gamma: (x^{t+1}, y^{t+1}/\gamma) \in H\}. \quad (10)$$

This distance function measures the maximal proportional change in outputs required to make (x^{t+1}, y^{t+1}) feasible in relation to the technology at the period t. Note that, production (x^{t+1}, y^{t+1}) occurs outside the set of feasible production in period t. The value of distance function evaluates (x^{t+1}, y^{t+1}) relatively to technology in period t is greater than 1. Similarly, one may define a distance function as the one that measures the maximal proportional change in output required to make (x^t, y^t) feasible in relation to the technology at the period $(t+1)$.

The Malmquist productivity index can be defined as follows:

$$M_0^t = \frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)}. \quad (11)$$

In this formula, technology in the period *t* is the reference technology. Alternatively, one could define a period, i.e. (*t* + 1), based on the Malmquist index as follows.

$$M_1^t = \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_1^{t+1}(x^t, y^t)}. \tag{12}$$

In order to avoid choosing an arbitrary benchmark, we specify the output-based Malmquist productivity change index as the geometric mean of two-type Malmquist productivity indexes as follows:

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)}\right)\left(\frac{D_1^{t+1}(x^{t+1}, y^{t+1})}{D_1^{t+1}(x^t, y^t)}\right)\right]^{1/2}. \tag{13}$$

The output-based Malmquist productivity change index is considered as the geometric mean of (11) and (12), and it is decomposed as follows.

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \left(\frac{D_1^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)}\right)\left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_1^{t+1}(x^{t+1}, y^{t+1})}\right)\left(\frac{D_0^t(x^t, y^t)}{D_1^{t+1}(x^t, y^t)}\right)\right]^{1/2}, \tag{14}$$

where the ratio outside the square bracket measures the change in relative efficiency between years *t* and (*t*+1). The geometric mean of two ratios inside the square bracket captures the shift in technology between the two periods evaluated at x^t and x^{t+1}, that is:

$$\textit{Efficiency change} = \frac{D_1^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)}. \tag{15}$$

$$\textit{Technical change} = \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_1^{t+1}(x^{t+1}, y^{t+1})}\right)\left(\frac{D_0^t(x^t, y^t)}{D_1^{t+1}(x^t, y^t)}\right)\right]^{1/2}. \tag{16}$$

Note that if $x = x^{t+1}$ and $y = y^{t+1}$, the sign of the productivity index in (14) does not change, i.e. M_0 (.)=1. In this case, the components measuring efficiency change and technical change are reciprocals, but not necessarily equal to 1.

Improvement in productivity yields the Malmquist indexes greater than unity. Deterioration in performance over time is associated with a Malmquist index less than unity. In addition, increase in any of the components of the Malmquist index leads to those components' values greater than unity. While the product of efficiency change and technical change components, by definition, must be equal to the Malmquist index, those components may be moving in opposite directions.

To sum up, we define productivity growth as the product of efficiency change and technical change. We interpret our components of productivity growth as follows: improvements in the efficiency change component are considered as evidence of catching up (to the frontier), while improvements in the technical change component are considered as evidence of innovation.

We believe that these approaches complement each other for productivity measurement. It also provides a natural way to measure the phenomenon of catching up. Technological progress component of TFP growth captures the shifts in the frontier of technology, or innovation. Decomposition of TFP growth into catching-up and technical change is therefore useful in distinguishing diffusion of technology and innovation, respectively.

2.3. Data Envelopment Analysis (DEA) Approach

Despite the prevalence of parametric techniques, non-parametric methodologies would be picked in case of unknown production technology. The first one essentially relies on the ideas of Afriat (1972) and others, which dealt with four issues in the neoclassical theory of production, namely consistency, form restriction, recoverability, and extrapolation without maintaining any hypothesis of functional forms. This methodology is applied to time-series data, and has been used in several studies to evaluate technical efficiency. Alternatively, Farell (1957) decomposed efficiency into technical and allocative efficiency. Färe *et al.* (1985) introduced a non-parametric method of calculating efficiency across firms, which extended Farell's approach by relaxing the restrictive assumptions of CRS, and of strong disposability of inputs, which were the primary criticism of Farell's method. Moreover, Färe *et al*. (1994) noted that the input efficiency of a firm did not necessarily imply that the firm's output efficiency. Technical efficiency, allocative efficiency, and others in terms of output could not be derived from corresponding efficiency measures in input and vice versa, since output and input efficiencies focused on different aspects of production. Hence, it was crucial to determine the type of efficiency to be evaluated.

In order to obtain separate estimates of technical efficiency and scale efficiency, we apply the output-oriented technical efficiency measurement to the data of three sectors, i.e. agriculture, industry, and services. This measurement must satisfy three different types of scale behaviors, including the CRS, non-increasing returns to scale (NRS), and variable returns to scale (VRS).

Let Y be an $(M\times N)$ matrix of outputs of the Vietnamese sectors, in which the element y_{ij} represents the i^{th} output of the j^{th} industry. Let X be a $(P\times N)$ matrix of inputs, in which the elements x_{kj} represents the k^{th} input of the j^{th} industry. Let z *be* an N-vector of weights with its elements are denoted by $z_1,\ldots, z_N$. Let y_j be $(M\times 1)$ vector of outputs and x_j be the $(P\times 1)$ vector of inputs of the j^{th} industry.

The CRS output-oriented measurement of technical efficiency for the j^{th} sector in Vietnam is calculated as the solution to the following linear programming problem:

$$[D_0^t(x^t,y^t)]^{-1} = \max_{\lambda,z} \gamma, \tag{17}$$

subject to

$$\begin{aligned} \gamma y^t_{1i} &\le \sum_{k=1}^{N} y^t_{1k} z^t_k \qquad 1=1,2,\ldots M \\ x^t_{1i} &\ge \sum_{k=1}^{N} x^t_{1k} z^t_k \qquad i=1,2,\ldots P \\ z^t_j &\ge 0 \text{ for all } j. \end{aligned} \tag{18}$$

In equation (18), the left-hand sides of the input and output inequalities show the analysis set, and the observations to be evaluated, and the right-hand sides show the reference sets. This linear program evaluates observations at period t relatively to the reference technology at period t. In order to estimate the Malmquist productivity index from period t to $(t+1)$, we have to solve the remaining three linear programming problems. The computation of $D_0(x^{t+1},y^{t+1})$, we have to solve the problem as follows:

$$[D_0^t(x^{t+1},y^{t+1})]^{-1} = \max_{\lambda,z} \gamma, \tag{19}$$

subject to

$$\gamma y_{1i}^{t+1} \le \sum_{k=1}^{N} y_{1k}^{t} z_k^{t} \qquad i=1,2,...M$$

$$x_{1i}^{t} \ge \sum_{k=1}^{N} x_{1k}^{t+1} z_k^{t} \qquad i=1,2,...P. \tag{20}$$

$$z_k^t \ge 0 \text{ for all } j.$$

The computation of $D_1^{t+1}(x^{t+1},y^{t+1})$ is similar to the equations (19) and (20), in which t is substituted by (t+1). It means that we have to solve the following problems:

$$[D_1^{t+1}(x^{t+1},y^{t+1})]^{-1} = \max_{\lambda,z} \gamma, \tag{21}$$

subject to

$$\gamma\, y_{1i}^{t+1} \le \sum_{k=1}^{N} y_{1k}^{t+1} z_k^{t} \qquad i=1,2,\ldots,M$$

$$x_{1i}^{t+1} \ge \sum_{k=1}^{N} x_{1k}^{t+1} z_k^{t} \qquad i=1,2,\ldots P \tag{22}$$

$$z_k^t \ge 0 \text{ for all } j.$$

The computation of $[D_0^{t+1}(x^t,y^t)]$ is similar to the equations (17) and (18), in which t is substituted by (t+1) for inputs and outputs in the right-hand sides. It means that, we have to solve the following problems:

$$[D_0^{t+1}(x^t,y^t)]^{-1} = \max_{\lambda,z} \gamma, \tag{23}$$

subject to

$$\gamma y_{1i}^{t} \le \sum_{k=1}^{N} y_{1k}^{t+1} z_k^{t} \qquad k=1,2,...,M$$

$$x_{1i}^{t} \ge \sum_{k=1}^{P} x_{1k}^{t+1} z_k^{t} \qquad k=1,2,...,P \tag{24}$$

$$z_k^t \ge 0 \text{ for all } j.$$

Note that, production points are compared to technologies from different periods in the linear programming problems.

2.4. Stochastic Production Frontier

A stochastic production frontier can be written as follows:

$$y_{it} = f(X_{it};\beta_i)+\varepsilon_t, \tag{25}$$

where t indicates time; y_{it} is output for the i^{th} economic sector at time t, X_{it} is a vector of inputs at time t; β_i is a vector of respective parameters for inputs; and ε_{it} is the composite error term.

Aigner *et al*., (1977) and Meeusen and van de Broeck (1977) defined ε_{it} as follow:

$$\varepsilon_{it} = v_{it} - u_{it}, \tag{26}$$

where v_{it}s are assumed to be independently and identically distributed $N(0, \sigma_v^2)$ random errors, independent of the u_{it}s; and u_{it}s are non-negative random variables and associated with technical inefficiency in production, which assumed to be independently and identically distributed and truncation (at zero) of the normal distribution with mean μ and variance $\sigma_u^2(\left|N(\mu, \sigma_u^2\right|)$.

Note that the technical inefficiency (u_{it}) is the product of an exponential function of time as $u_{it} = \eta_t u_i e^{[-\mu(t-T)]}, t \in \tau(i)$, where the unknown parameter η represents the rate of change in technical inefficiency over time. The parameter η shows inefficiencies are time-varying or time-invariant, e.g. the value of η, which is significantly different from zero, indicates time-varying inefficiencies. The parameter μ determines the distribution of the inefficiency effects to be either a half-normal distribution or a truncated normal distribution, e.g. if μ=0 then the inefficiency effects follow half-normal distribution.

The maximum likelihood estimation of equation (25) provides estimators for β and variance parameters $\sigma^2 = \sigma_v^2 + \sigma_u^2$ and $\gamma = \frac{\sigma_u^2}{\sigma^2}$.

From equation (25) and (26), we get:

$$\hat{y}_{it} = y_{it} - v_{ti} = f(X_{it}; \beta_i) - u_{it}, \tag{27}$$

where $\hat{y}_{it}$ is the observed output of the i^{th} sector at time *t*, and it is adjusted for the stochastic noise captured by v_{it}.

Equation (27) is the basic for deriving the technically efficient input vector. In empirical work, we use both production functions as follows.

Cobb-Douglas form

$$LnGDP_t = \alpha_0 + \alpha_1 LnL_t + \alpha_2 LnK_t + v_t - u_t. \tag{28}$$

CES production function

$$LnGDP_t = \alpha_0 + \alpha_1 LnL_t + \alpha_2 LnK_t + \beta(LnK_t - LnL_t)^2 + v_t - u_t. \tag{29}$$

The growth rates of GDP are used as growth rates of national output, which can be explained by factor inputs at the national level. Since value-added is measured as the national output or GDP, the factor inputs are the primary inputs, including labor (*L*), and capital (*K*). We also use the above framework to study of each sector of the economy, and just add subscript *i* to indicate the studied sector.

IV. Empirical Results and Analysis

In this section, we present the estimated results of economic growth, efficiency of the economy by sectors and change in TFP, technical efficiency, and technical progress of the economy.

1. Economic Growth and Growth-factor Decomposition

According to the likelihood values for Cobb-Douglas and CES production functions, the statistics of the likelihood ratio test for the two equations are 4.91176. It is larger than the critical value (3.84), so that we reject the hypothesis that CES is the same as the Cobb-Douglas production function.

The estimated results for the case of CES production function are shown in Table 2. It is shown that output elasticity of labor for the economy (0.906) is higher than the output elasticity of capital (0.240). In other words, during the past two decades, the Vietnamese economy was relied on labor more heavily than capital in the production processes.

Table 2: Estimated production function: CES

Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob.***
LnK	0.239850	0.058083	4.129462	0.0007
LnL	0.906384	0.053437	16.96184	0.0000
$(LnK - LnL)^2$	0.067497	0.034753	1.942195	0.0689
t	0.013448	0.006486	2.073563	0.0536
R-squared	0.998559	Durbin-Watson stat.		1.577212
Adjusted R-squared	0.998220			

Notes: The dependent variable is the natural logarithm of real GDP. All coefficients are significant at 5 percent significance level, except coefficient of $(\text{Ln}K - \text{Ln}L)^2$.

Source: Author's estimates.

Table 3: Estimated coefficients for CES production function $GDP = A\left[\delta L^{-\rho} + (1-)K^{-\rho}\right]^{-h/\rho}$

Coefficient for		***Value***
Efficiency	*A*	1.0000
Distribution	δ	0.79075
Substitution	ρ	0.711764
Elasticity of substitution	η	0.584193
Degree of homogeneity	*H*	1.146234

Source: Author's estimates.

CES production function does provide more information than Cobb-Douglas does. In Tables 3, a few important coefficients are computed by using estimated coefficients in Table 2. It shows that coefficients of efficiency, distribution, substitution, elasticity of substitution, and degree of homogeneity of the economy are 1.00; 0.79; 0.71; 0.58; and 1.15, respectively.

Table 4: Estimates of technical change in Vietnam and the sources of industrial growth, 1986-2006

Year	$\dot{GDP}$	***K/L***	β_k	β_L	***Return to Scale***
1986-1988	0.0416	0.6273	0.1828	0.8370	1.0198
1989-1996	0.0751	1.0475	0.2407	0.8997	1.1404
1997-1999	0.0623	1.9280	0.3402	0.9830	1.3232
2000-2006	0.0750	2.6082	0.3929	1.0101	1.403
1986-2006	0.0684	1.5527	0.2974	0.9394	1.2368

Note: $\dot{GDP}$ is GDP growth rate; *K/L* is capital-labor ratio; β_L and β_k are elasticities of output with respect to labor and capital, respectively.

Source: Author's estimates.

Table 4 provides all information about GDP growth rate, output elasticity of labor and capital and return to scale of the economy under CES production function. It is shown that in each sub-period, the output elasticity of labor (β_L) was higher than the output elasticity of capital (β_k), meaning that the Vietnamese economy was heavily relied on labor in production. Average return of economic scale for the economy was 1.236, and it had increasing trend during the study period (from 1.0198 in 1986-1988 to 1.403 in 2000-2006).

Table 5: Sources of economic growth, 1986-2006 (%)

GDP growth	*Contributions of K,L, and TFP to GDP growth*		
	K	*L*	*TFP*
100	45.3	34.52	19.65

Source: Author's estimates.

Table 5 provides the results of the growth-factor decomposition analysis, in which all entries are expressed as a percentage of GDP growth. Factors leading to output changes in the Vietnamese economy are identified by using the estimated CES production function for the period 1986-2006. The aggregated production function method provides a quantitative explanation for the sources of output changes from the supply side in a certain period. The contributions of capital, labor, and technical change to economic growth in Vietnam during 1986-2006 were 45.83%; 34.52%; and 19.65%, respectively. Therefore, the increase in capital stock was the largest contributor to output growth, and the least contributor was TFP.

2. Estimates of Efficiency for the Economy

We use two approaches, i.e. parametric and non-parametric ones, to estimate efficiency levels for all economic sectors in Vietnam during the study period.

2.1. Estimated results from parametric frontier

For this approach, we must select the most appropriate production function (between the Cobb-Douglas production function and the CES production function) for the Vietnamese economy during the study period with available data. The maximum-likelihood estimates of the parameters for the production function can be obtained by using the computer program FRONTIER Version 4.1 (Coelli, 1996a). The estimated results from production function forms, which are prsented in (28) and (29) will be further discussed to explain the efficiency performance.

Table 6: Statistics for tests of hypotheses involving some coefficients of the stochastic frontier production function

Null Hypothesis	*Log-Likelihood Function*	*Test Statistic (λ)*	*Critical Value*	*Decision*
1. $H_0 : \beta = 0$	4.818	5.202	3.84	Reject H_o
2. $H_0 : \mu = 0$	7.416	1.532	3.84	Not reject H_o
3. $H_0 : \eta = 0$	7.416	134.628	3.84	Reject H_o
4. $H_0 : \mu = \eta = \gamma = 0$	-13.223	175.906	10.50	Reject H_o

Note: The critical value for this test involving $\gamma = 0$ is obtained from Table 1 in Kodde and Palm (1986).
Source: Author's estimates .

Table 6 presents the test results of various null hypotheses. The null hypotheses are tested using likelihood ratio tests. The likelihood- ratio statistic is $\lambda = -2[L(H_o) - L(H_1)]$, where L($H_0$) and L($H_1$) are the values of the log-likelihood function under the specifications of the null hypothesis (H_0) and the alternative hypothesis (H_1), respectively. If the null hypothesis is true, then λ is approximately a Chi-square (or a mixed Chi-square) distribution with degrees of freedom equal to the number of restrictions. If the null hypothesis includes $\gamma = 0$ then the asymptotic distribution is a mixed Chi-square distribution.

The first null hypothesis—the technology was a Cobb-Douglas technology (or H_0: β=0)—is rejected. Thus, the Cobb-Douglas production function was not an adequate specification for the dataset. The CES frontier production function model was appropriate to evaluate efficiency and productivity of Vietnam and its economic sectors in the study period.

The second null hypothesis—there were no technical inefficiency effects (or H_0: μ=0)—is not rejected. Thus, the CES production function with $\mu = 0$ could be used for analysis.

The third null hypothesis—technical inefficiency was time-invariant (or H_0: η=0)—is also rejected at the 1% significance level. This implies that technical inefficiency was not time-invariant.

The last null hypothesis—there were no technical inefficiencies (or H_0: γ=μ=η=0)—is rejected at the 1% significance level. It means there were technical inefficiencies during the study period.

Though, all the estimates of γ are statistically significant at 5% significance level, and the estimates of η are all positive and statistically significant. Therefore, a significant γ and a positive and significant η imply the existence of technical inefficiencies that declined over the years.

Table 7: The estimated CES frontier production function

$$LnGDP = \alpha_0 + \alpha_1 LnL + \alpha_2 LnK + \beta(LnK - LnL)^2 + V - U$$

Coefficient	***Value***	***Standard-error***	***t-stat***
α_0	7.2458	0.2732	26.5200
α_1	0.3122	0.0155	20.1874
α_2	0.1309	0.0246	5.3114
β	0.0504	0.0126	4.0017
σ^2	0.0552	0.0378	1.4590
γ	0.9156	0.0613	14.9466
μ	0		
η	0.0642	0.0060	10.7582
Log likelihood function		74.7389	

Notes: The dependent variable is the natural logarithm of real GDP. All coefficients for capital, labor, and square of (ln*K*-ln*L*) are statistically significant at the 1 percent significance level.

Source: Author's estimates.

Table 7 presents the estimated coefficients with CES frontier production function. Concerning productivity, there are two indices that indicate whether the economy had high production efficiency: (i) a random error term (σ_v^2) and (ii) a technical inefficiency term

(σ_u^2). Their total (σ^2) represents the total variance of output. In Table 7, we can see that σ^2 is not too large (0.0552).

Table 8: Technical efficiency of the country from parameter approach, 1985-2006

Efficiency Range	*Mean*	*Std. Dev.*	*Obs.*
[0.5, 0.6)	0.579997	0.011205	2
[0.6, 0.7)	0.649447	0.032517	7
[0.7, 0.8)	0.752608	0.030292	8
[0.8, 0.9)	0.824569	0.015131	5
All	0.720447	0.084805	22

Source: Author's estimates.

The estimated technical efficiency of the economy from stochastic frontier production function and their frequency distributions are summarized in Table 8. The mean technical efficiency for the whole country during the study period was 72.04%. There were two years that technical efficiency varied from 50% to 60% with mean of 57.99%. There were five years that technical efficiency lied in the interval of 80% to 90% with mean of 82.45%.

Table 9: Efficiency distribution of three sectors, 1985-2006

	Agriculture	*Industry*	*Service*
Mean	0.679201	0.503871	0.978268
Maximum	0.828956	0.711192	0.989692
Minimum	0.485821	0.269342	0.961059
Std. Dev.	0.106792	0.138978	0.008782
Observations	22	22	22

Source: Author's estimates.

The frequency distributions of technical efficiency are summarized in Table 9. The mean technical efficiency for the agricultural sector, the industrial sector, and the services sector during the study period were 67.9%; 50.38%; and 97.8%, respectively. The results in Table 9 are striking since the average technical efficiency for the services sector (97.8%) were much higher than those of the agricultural sector and the industrial sector (67.8% and 50.38%, respectively).

The efficiency distribution during the study period shows that the agricultural sector and the industrial sector had wider efficiency range than that of the services sector. Specifically, the minimum technical efficiency level for the agricultural sector and the industrial sector were 48.58% and 26.93%, while the maximum values were as high as 82.89% and 71.19%, respectively.

2.2. Estimated results from non-parametric frontier (DEA)

As indicated by Färe *et al*. (1994), the distance function is equivalent to the inverse of Farrell (1957)'s measure of output efficiency. We used this index—which is defined as the reciprocal of (9)—to measure the technical efficiency with respective definitions from (C1), (C3) and (C4) in Appendix C.

The technical, allocative, and economic efficiency measures are estimated by using the computer program DEA2.0 (Coelli, 1996b), and their means are presented in Table 10. Under

the specification of CRS, the estimated mean technical efficiency (*te*), allocative efficiency (*ae*) and economic efficiency (*ce*) indices are 72.7%; 75.7%; and 57.5%, respectively, while those for the variable return to scale (VRS) are 89.5%; 73.1%; and 67.9%, respectively.

Table 10: Mean technical, allocative and economic efficiencies of the economy from DEA approach, 1985-2006 (%)

Assumption	***te***	***ae***	***ce***
Constant Return to scale	72.7	75.7%	57.5
Variable Return to scale	89.5	73.1	67.9

Where: *te* denotes overall technical efficiency (or technical efficiency) under the assumption of constant return to scale (CRS); *ce* denotes the total economic efficiency; and *ae* denotes the allocative efficiency.

Source: Author's estimates.

2.3. Comparing the estimated results from parametric and non-parametric approaches

The two approaches used to measure sectoral technical efficiency levels are based on different function frontiers. The parametric approach is based on a stochastic production frontier, while non-parametric analysis with data envelopment analysis (DEA) is based on a non-stochastic or deterministic frontier. It is difficult to say that the estimated results from DEA frontier would be smaller (or greater) than those from stochastic frontier because DEA attributes any deviation from the frontier to inefficiency.

On average, the mean technical efficiency level under the assumption of variable return to scale (VRS) in DEA was higher than that in parametric approach (89.5% vs. 72.04%). The question is why the final results from two approaches are different? Since we used the same dataset, the major differences probably lie in the applied techniques.

Table 11: Comparison of mean technical efficiency measures by Spearman rank correlations of efficiency rankings

Efficiency	***Sample mean***		***Spearman rank correlations***	***Probability***
	Parametric	***DEA***		
Technical efficiency	72.04%	89.5%	0.878	0.000

Source: Author's estimates.

To further examine the agreements between the parametric and nonparametric approaches, we compute the Spearman correlation coefficient between the efficiency rankings from these two approaches. The result is presented in Table 11. Technical efficiency rank correlation is positive and highly significant, and thus there is strong correlation between the efficiency rankings from these two approaches.

2.4. Estimated results for changes in TFP and other productivity indices.

The Malmquist Index during the period 1985-2006

We decompose the Malmquist productivity index into technical change (TC) index and efficiency change (EC) or technical efficiency (TE) index. To identify changes in scale, we further divide TE into purely technical efficiency (PE), and scale efficiency (SE). To obtain the Malmquist productivity indexes and other indexes for each sector in each pair of years, we apply DEA approach to compute the output distance functions by solving a set of non-parametric linear programming problems.

Table 12: Summary of the mean Malmquist index for three sectors, 1985-2006

	Agricultural sector			*Industrial sector*			*Services sector*		
	effch	***techch***	***tfpch***	***effch***	***techch***	***tfpch***	***effch***	***techch***	***tfpch***
Mean	1.0380	0.9859	1.0157	1.0330	1.0306	1.0626	1.0000	0.9529	0.9529
Median	1.0000	0.9990	1.0120	1.0000	1.0350	1.0530	1.0000	0.9610	0.9610
Maximum	1.4470	1.1410	1.1850	1.3730	1.1030	1.3280	1.0000	1.0730	1.0730
Minimum	1.0000	0.7170	0.9200	0.7980	0.9010	0.8800	1.0000	0.8430	0.8430
Std. Dev.	0.1085	0.0966	0.0663	0.1050	0.0466	0.0937	0.0000	0.0570	0.0570
Observations	21	21	21	21	21	21	21	21	21

Note: *effch*=change in efficiency; *techch*=technological change; *pech*=change in purely technical efficiency; *sech*=change in scale efficiency; and *tfpch*=change in TFP. All is estimated from non-parametric approach. *eff*=level of technical efficiency, which estimated from parametric approach.

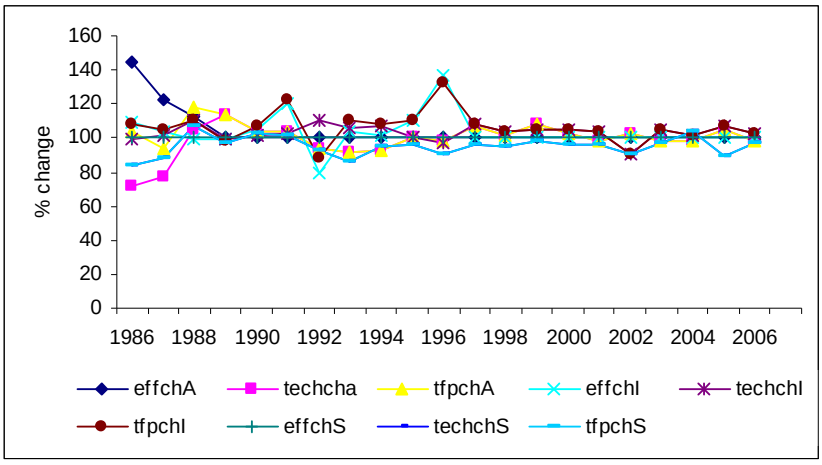
Source: Author's estimates.

Table 12 presents the average changes of the Malmquist productivity indexes and their components for the period 1985-2006. Technical efficiency component of the Malmquist index only tells us what happened to the frontier at all input mix. A Malmquist index of more (less) than 1 indicates the progress (regress), while the index equaling to one shows no changes.

It can be seen that the average indices for all industries (except *techch* for the agricultural sector and the services sector) were improved during 1985-2006, but this improvement was not steady. The average rate of technological change deteriorated over time in these sectors, meaning that there was lower and negative annual growth rate of TFP in these sectors. Only the industrial sector experienced growth in all of the five indices during 1985-2006. More particularly, the industrial sector's TFP grew at 6.26 percent, while the agricultural sector's TFP grew at 1.57 percent, and the service sector's TFP grew at -4.71 percent.

The Malmquist Productivity Index Trend

Figure 5: TFP Growth, technical and efficiency changes, 1985-2006



Note: *techch* denotes technical change; *effch* denotes efficiency change; *tfpch* denotes TFP change; A, I, and S denote the agricultural sector; the industrial sector, and the services sector, respectively.

Source: Author's estimates.

Since the Malmquist productivity index and its components are multiplicative, we can estimate the cumulated Malmquist productivity index and its components, i.e. the cumulated technical change index, and the cumulated efficiency change index.

Figure 5 illustrates TFP, technology, and efficiency changes in three sectors of the Vietnamese economy during 1985-2006. The pattern of TFP growth was mostly attributed to technological change and efficiency change. We can see some points indicating that lower technical change was associated with lower TFP growth.

2.5. Detecting Stable Efficiency Rankings between Three Sectors

As we know, the mean technical efficiency for the services sector (97.8%) was higher than those of the other sectors, and the average TFP index of the industrial sector (1.0626) was the highest in comparison with the other sectors. The question is whether technical efficiency and TFP growth comparison can be made between sectors and overtime?

Intertemporal analysis of the type performed here sheds light on issues related to the hypothesized TFP catching-up of a sector to the others. We use rank statistics to evaluate efficiency performance trends. Here, we will investigate whether it can be said that all these sectors maintained their same relative positions during the study period, given statistical confidence. To provide an analytical answer to such question, we apply Kuruskal-Wallis non-parametric ANOVA test. We will test the following hypotheses.

- ***H1:*** The hypothesis of equivalent distribution of efficiency ranking of technical (allocative, economic) efficiencies (which are estimated from non-parametric approach) for three sectors.
- ***H2:*** The hypothesis of equivalent distribution of efficiency ranking of technical (allocative, economic) efficiencies (which are estimated from non-parametric approach) for the agricultural sector and the industrial sector.
- ***H3:*** The hypothesis of equivalent distribution of efficiency ranking of technical (allocative, economic) efficiencies (which are estimated from non-parametric approach) for the agricultural sector and the services sector.
- ***H4:*** The hypothesis of equivalent distribution of efficiency ranking of technical (allocative, economic) efficiencies (which are estimated from non-parametric approach) for the industrial sector and the services sector.
- ***H5:*** The hypothesis of equivalent distribution of ranking of *tfpch* (which is estimated from non-parametric approach) for three sectors.
- ***H6:*** The hypothesis of equivalent distribution of ranking of *tfpch* (which is estimated from non-parametric approach) for the agricultural sector and the industrial sector.
- ***H7:*** The hypothesis of equivalent distribution of ranking of *tfpch* (which is estimated from non-parametric approach) for the agricultural sector and the services sector.
- ***H8:*** The hypothesis of equivalent distribution of ranking of *tfpch* (which is estimated from non-parametric approach) for the industrial sector and the services sector.

For these hypothesis tests, we use three “populations” (sectors) simultaneously, and the null hypothesis is that all three “populations” (i.e., *crste*, *ae*, or *ce* from three sectors) have the same distribution of ratings. We compute the Kruskal-Wallis test statistic *H* (Appendix D).

The test statistic is distributed according to a χ^2 distribution with (n-1) degree of freedom. The estimated results are presented in Table 13a.

Table 13a: Sum of ranks matrix for ae (from DEA) of three sectors and the estimated results of hypothesis tests

	R_A	R_I	R_S	H	*Critical value* $\chi^5_{n-1}(0.01)$	*Decision*
aeA, *aeI*, *aeS*	253	1182	776	53.5	9.21	reject
aeA, *aeI*	253	737		32.26	6.635	reject
aeA, *aeS*	253		737	32.26	6.635	reject
aeI, *aeS*		698	292	22.70	6.635	reject

Note: R_i denotes the sum of the rank corresponding to sector i; A, I, and S denote the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates.

As can be seen in Table 13a, all hypotheses are rejected. Rejection of the null hypothesis (***H1***) leads to the conclusion that, in general, different sectors maintained their relative allocative efficiency (or *tfpch*) position over time. In other words, there was at least one sector, which was consistently better than the others.

The rejection of the null hypothesis (***H2***) with rank of the agricultural sector (253) and rank of the industrial sector (737) indicates that allocative efficiency of the industrial sector was consistently better than the agricultural sector over time.

The rejection of the null hypothesis (***H3***) indicates that allocative efficiency of the services sector was consistently better than the agricultural sector over time.

The value of the Kruskal-Wallis statistic (H) that corresponds to the rank of the industrial sector (698) and the rank of the services sector (292) in the null hypothesis (***H4***) does allow the rejection of the null hypothesis.

Rejections of the null hypotheses could help to conclude that (i) allocative efficiency of the industrial sector was consistently better than the agricultural sector and the services sector over the study period, and (ii) allocative efficiency of the services sector was consistently better than the agricultural sector over the study period.

Table 13b: Sum of ranks matrix for crste (from DEA) of sectors and the estimated results of hypothesis tests

	R_A	R_I	R_S	H	*Critical value* $\chi^5_{n-1}(0.01)$	*Decision*
crsteA, *crsteI*, *crsteS*	454.5	667.8	1152.7	43.38	9.21	reject
crsteA, *crsteI*	451.5	538.5		1.042	6.635	not reject
crsteA, *crsteS*	256		734	31.47	6.635	reject
crsteI, *crsteS*		369.5	620.5	8.68	6.635	reject

Note: R_i denotes the sum of the rank corresponding to sector i; A, I, and S denote the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates.

The hypothesis of equivalent distribution of efficiency ranking of technical efficiency under the assumption of CRS (*crste*) (which is estimated from non-parametric approach) for the agricultural sector, the industrial sector, and the services sector is rejected at 1% significance level. The rejection of the null hypothesis indicates that there were stable differences between three sectors over time. Though, the question is which sector had the best performance of technical efficiency? To answer this question, we have the following hypotheses and the results are presented in Table 13b.

- (***H1***): The hypothesis of equivalent distribution of efficiency ranking of technical efficiency (which is estimated from non-parametric approach) for the agricultural and the industrial sectors. The value of the Kruskal-Wallis test statistic *H*=1.042. This value of *H* is smaller than $\chi_1^5(0.01)$=6.635, so we cannot reject of the null hypothesis.
- (***H2***): The hypothesis of equivalent distribution of efficiency ranking of technical efficiency (which is estimated from non-parametric approach) for the agricultural sector and the industrial sector. The value of the Kruskal-Wallis test statistic *H*=31.47. This value of *H* is greater than $\chi_1^5(0.01)$=6.635, so we can reject of the null hypothesis.
- (***H3***): The hypothesis of equivalent distribution of efficiency ranking of technical efficiency (which is estimated from non-parametric approach) for the industrial sector and the services sector. The value of the Kruskal-Wallis test statistic *H*=8.68. This value of *H* is greater than $\chi_1^5(0.01)$=6.635, so we can reject of the null hypothesis.

Rejections of the null hypotheses could help to conclude that, in general, technical efficiency of the services sector maintained relative efficiency position over the study period.

Table 13c: Sum of ranks matrix for ce (from DEA) of sectors and the estimated results of hypothesis tests

	R_A	R_I	R_S	*H*	*Critical value* $\chi_{n-1}^5(0.01)$	*Decision*
ceA, ce, ceS	253	896	1062	45.04	9.21	reject
ceA, ceI	253	693		14.93	6.635	reject
ceA, ceS	253		737	32.26	6.635	reject
ceI, ceS		412	578	3.79	6.635	not reject

Note: R_i denotes the sum of the rank corresponding to sector *i*; *A*, *I*, and *S* denote the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's calculation based on the estimated results

Similarly, Table 13c shows the results for economic efficiency (*ce*). Rejections and acceptance of the null hypotheses for these sectors lead to the conclusion that economic efficiency of the industrial sector and the services sector maintained relative efficiency position over time.

Table 13d shows two conclusions: (i) the *tfpch* of these sectors could be ordered from the highest to the lowest position by their overall sum-of ranks as follows: the industrial

sector, the agricultural sector, and the services sector; and (ii) the *tfpch* was not only dependent on efficiency change, but also on technical change.

Table 13d. Sum of ranks matrix for tfpch (from DEA) of sectors and the estimated results of hypothesis tests

	R_A	R_I	R_S	H	*Critical value* $\chi^5_{n-1}(0.01)$	*Decision*
tfpchA, tfpchI, tfpchS	701	931	384	21	9.21	reject
tfpchA, tfpchI	357	546		5.65	6.635	not reject
tfpchA, tfpchS	575		328	9.65	6.635	reject
tfpchI, tfpchS		616	287	17.12	6.635	reject

Note: R_i denotes the sum of the rank corresponding to sector *i*; *A*, *I*, and *S* denote the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates.

3. Decomposition of TFP Growth into Four Sub-periods

The economy's TFP growth can be decomposed into four sub-periods, i.e., 1986-1988; 1989-1996; 1997-1999; and 2000-2006. In Tables E1, E2, E3, and E4 (Appendix E), we present the average changes of the Malmquist productivity indexes, their components and level of technical efficiency (from parametric approach) for each sector over the study period.

Two TFP components, i.e., technical efficiency (denoted by TE) and technological progress (denoted by TC), are analytically distinct, and they may have quite different policy implications. Therefore, there is a necessity to investigate the relationship between technological progress and technical efficiency for the purpose of policy making. TFP growth should be divided into technical efficiency improvement (or catching-up process) and technological change in order to identify the sources of productivity variation.

According to the definition, technical efficiency may be defined as the ability of an industry to produce as much output as possible, given a certain level of inputs and certain technology. These industries show purely technical efficiency and scale efficiency. High rates of technological progress can coexist with low technical efficiency performance. Growth in technical change and decline in technical efficiency suggest that increased TFP in all economic sectors in Vietnam during the study period might be derived from technological innovation rather than technical efficiency improvements. Decline in technical efficiency was partially due to decline in purely technical efficiency. Furthermore, technological change in form of innovation (which raises productivity) obviously will lead to a shift of the production frontier. Therefore, high technological change component of TFP growth associated with low rate of technical efficiency in Vietnam might be due to the fact that new technology could not be utilized in the best way as a result of the inadaptability, low-skilled workers, or mismanagement.

In general, there are several ways to explain the deterioration in technical efficiency during the years 1985-1988; 1989-1996; and 2000-2006 in the agricultural sector. For instance, rapid growth of the industrial sector made them attractive to employees, particularly young, dynamic, and educated labors. A movement of labor force to more attractive industries caused a downward shift of labor supply in the labor market for the less or unattractive industries, which in turn make these industries difficult in improving performance efficiency within given factor inputs. It might also be resulted from different strategies of each firm or

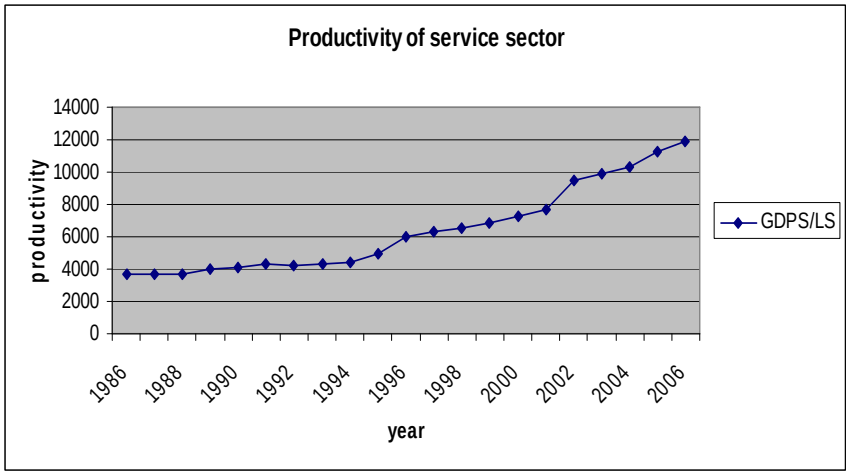
group of firms in each sector. Moreover, high technical change associated with low technical efficiency could be arisen from unfamiliarity of workers to new technology, mismanagement, or other reasons.

TFP growth was negative during 2000-2006 because of negative TFP growth in the agricultural sector and the services sector, which were caused by negative trend in these sectors' technical progress. Negative growth rates of TFP during 2000-2006 might also imply that the technological change was not enough to help the economy continue its positive TFP growth as in the previous periods.

4. Single-factor Productivity and Total Factor Productivity

Arnade (1994) found that a decline in the agricultural TFP was associated with an increase in single-factor productivity in many developing countries. Mao and Won (1997), studying on productivity growth and technological change in the Chinese agriculture, also found similar results. In this paper, we will also examine the relationship between TFP and their single-factor productivity indexes in Vietnam during the study period.

Figure 6: Trend of single-factor productivity in the service sector, 1986-2006



Source: Author's estimates.

TFP change in the service sector during the study period was lowest in comparison with other sectors. TFP growth of this sector in all sub-periods was negative, except in the third period. It was associated with an increase in single-factor productivity of this sector.

5. Vietnam's TFP Growth, and International Comparisons

Over the last two decades, economists have seen spark of interests in studies on TFP in developing countries, especially the four Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan), and the newly industrialized economies (NIEs) in Asia, including Indonesia, Malaysia, and Thailand. This interest in TFP is a product of their attempts to understand what lies behind the spectacular growth of these economies in their miracle era. The approaches used vary in both the methodology and dataset.

Table 14 presents a comparison of TFP growth for various East Asian and other countries from previous studies, and it also summarizes the differences in their methodologies, periods of study, functional forms as well as data set.

The most obvious reason for different TFPG estimates among these studies is the different time periods. However, the important differences are methodologies and dataset employed in these studies. Most of them used parametric approach by production function estimates. Some studies also employed non-parametric approach by growth accounting equations. Although they employed similar methodologies, there were differences in the price series, and different estimates of factor income shares.

Table 14: Studies on TFP growth (TFPG) around the world

Author(s)	*Country*	*Period of Estimation*	*TFPG*	*Contribution to Growth (%)*	*Methodology and Dataset*
Ikemoto (1986)	Thailand	1970-1980	1.4	19.7	Non-parametric; growth accounting; time series
Tinakorn and Sussangkarn (1996)	Thailand	1978-1990	2.69; 1.19	(35.6;15.8) (d)	Non-parametric; growth accounting; time series
Martin (1996)	Thailand	1970-1990	1.6	42.5	Parametric; panel data
Collins and Bosworth (1997)	Thailand	1960-1994	1.8	36.0	Parametric; panel data
Sarel (1997)	Thailand	1978-1996 1991-1996	2.03	39.0	Elasticity estimation; growth accounting; panel data
Sarel (1997)	Indonesia	1978-1996	1.16		
Sarel (1997)	Malaysia	1978-1996	2.00		
Sarel (1997)	Philippines	1978-1996	-0.78		
Sollow (1957)	U.S	1909-1949			Growth accounting
Arrow *et al*. (1961)	U.S	1909-1949	1.8		CES production function
Aukrust (1959)	Norway	1950-1955	1.8		Cobb-Douglas production function
Young (1995)	Hong Kong	1966-1990	2.3		Growth accounting
Young (1995)	Singapore	1966-1990	0.2		
Young (1995)	South Korea	1966-1990	1.7		
Young (1995)	Taiwan	1966-1990	2.6		
Nguyen, K.M	Vietnam	1985-2004	1.56	23.39	CES production function
Nguyen, K.M	Vietnam	1986-2002	2.38	34.99	CES production function
Nguyen, K M	Vietnam	1986-2002	0.2		Malmquist index
Nguyen, K.M	Vietnam	1985-2006	1.3448	19.65	CES production function
Nguyen, K.M	Vietnam	1985-2006	0.7		Malmquist index

Sources: Tinakorn *et al*. (1998), and author's own summary.

The lesson learned from the above international comparative findings is that different data set, methodologies, and sizes of elasticities of output to inputs may produce significantly different estimates of productivity growth. Chen (1997) correctly pointed out that technical change as a residual was quite sensitive to the ways that data were measured and the time period was chosen.

TFPG for Vietnam has been found to be positive (from parameter and the Malmquist index approaches during 1986-2006). This is a very encouraging result in comparison with the negative numbers found in some other countries. However, from the annual TFPG figures for each sub-period, we also could observe some declines in the TFPG during the period 2001-

2002 in comparison with the second half of the 1980s and 1990s. This occurred despite the high growth of GDP during the same period, and it suggests that we should explore more factors that could influence TFPG.

V. Concluding Remarks

This paper examines the sources of growth in Vietnam during the period 1985-2006 by using the parametric and non-parametric approaches. The parametric approach found that the economy's productivity growth was driven by capital (45.85 percent), labor (34.52 percent), and technological progress (19.65 percent). Furthermore, it was also possible to decompose TFP growth into technological progress and efficiency change using parametric approach. We estimated the Malmquist index at sectoral level, and found that the industrial sector's TFP grew at 6.26 percent, the agricultural sector's TFP grew at 1.57 percent, and that of the service sector grew at -4.71 percent. This rate of TFP growth might be explained by the improvements in the quality of labor (such as educational composition). The same framework applied to the sectoral data also showed that TFP growth in the service sectors was lower than those of the industrial sector and the agricultural sector. The results from both parametric and non-parametric approaches confirmed that the industrial sector had more significant contribution to the output growth and TFP growth than the other sectors during the study period.

Low technical efficiency might be originated from various sources of inefficiency, which resulted from inadaptability of workers to new technology or mismanagement. Based on these findings, it is suggested that Vietnam need to improve quality of education and training as it is always important in improving the quality of labor force.

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Appendix A: Data Sources

Table A1: Growth rate of GDP, K, and L

Period	$G\dot{D}P$	$\dot{K}$	$\dot{L}$	***K/L***
1986-1988	0.041613	0.1093	0.02503	0.62728
1989-1996	0.075091	0.1605	0.0236	1.04745
1997-1999	0.0623	0.0805	0.02141	1.92799
2000-2006	0.074988	0.1088	0.04036	2.60816
1986-2006	0.068447	0.1245	0.02908	1.55272

Where: $G\dot{D}P$, $\dot{K}$, and $\dot{L}$ is growth rate of GDP, capital, and labor, respectively. *K*/*L* is capital-labor ratio.

Source: Author's estimates

Table A2: Basic statistics for output

	GDP	***GDPA***	***GDPI***	***GDPS***
Mean	221716.0	55077.55	74200.73	92437.68
Median	204700.0	52448.00	62783.00	89469.00
Maximum	425088.0	79488.00	174210.0	171390.0
Minimum	106176.0	40792.00	21351.00	44033.00
Observations	22	22	22	22

Note: *GDP* is real GDP of the whole economy; *GDPA*, *GDPI*, and *GDPS* are real GDP of the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates

Table A3: Basic statistics for capital

	K	***KA***	***KI***	***KS***
Mean	59279.49	3459.909	35326.95	20492.64
Median	53196.50	3530.500	33600.50	15954.00
Maximum	146898.7	5009.000	79032.00	62858.00
Minimum	13247.00	2137.000	8644.000	1616.000
Std. Dev.	41227.83	869.6171	22194.66	18345.81
Observations	22	22	22	22

Note: *K* is net capital of the whole economy; *KA*, *KI*, and *KS* are net capital of the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates

Table A4: Basic statistics for labor

	L	***LA***	***LI***	***LS***
Mean	34421.64	23586.50	4531.182	6303.955
Median	33714.00	23925.50	4238.500	5448.000
Maximum	47438.00	28246.00	7284.000	11908.00
Minimum	26020.00	19267.00	3146.000	3607.000
Observations	22	22	22	22

Note: *L* is number of labors employed of the whole economy; *LA*, *LI*, and *LS* are number of labors employed in the agricultural sector, the industrial sector, and the services sector, respectively.

Source: Author's estimates

Appendix B: Growth Performance and Structural Change

In this appendix, we present a model that explains economy-wide productivity growth rates as the outcomes of both demand and supply. Because productivity growth is influenced by changing output and employment patterns, we present a modest level of disaggregation. The model emphasizes the role of changes in the distribution of output and inputs. It has three sectors: agriculture, industry, and services. These are sufficient to show how demand determines the sectoral shares of output, governs the allocation of labor, and determines the growth rate of economy-wide average productivity, given the sectoral productivity levels and growth rates.

Disaggregation into three sectors permits the model to capture the stylized facts of economic growth and transformation. The basic model includes the following variables.

- R is average rate of growth of labor productivity for the economy;
- λ_i is share of labor force employed in the *i*th sector. Thus, $\sum_{i=1}^{3} \lambda_i = 1$;
- q_i is average labor productivity of the *i*th sector;
- r_i is sectoral productivity growth;
- $Q = \sum \lambda_i q_i$ is average productivity of the economy;
- $k_i = \lambda_i q_i / Q$ is sectoral output share;
- $\varepsilon_i = (\lambda_i' q_i' - \lambda_i q_i) / \lambda_i q_i R$ is output elasticity of the sector *i*th; a prime indicates the end-of-period values;
- $\varepsilon = f_i(y)$ is income elasticity of demand for the *i*th good; and
- *y* is per capita income.

Both population and labor force are initially assumed to be constant, and so are the sectoral productivity growth rates. Using a three-sector model and the definitions of λ_i and k_i, we can write average rate of growth of labor productivity for the whole economy (*R*) as follows.

$$R = (Q' - Q)/Q = \sum (\lambda_i' q_i' - \lambda_i q_i)/Q,$$

which yields:

$$R = \sum k_i r_i + [(\lambda_m' - \lambda_m)(q_m' - q_a') + (\lambda_s' - \lambda_s)(q_s' - q_s)]/Q. \quad \text{(B1)}$$

Equation (B1) shows that the economy-wide productivity growth rate depends on sectoral productivity growth rates, and on labor shifting between sectors that have different productivity levels. The subscripts *a*, *m*, and *s* refer to the agriculture, manufacturing (industry), and services. A second relationship is found by using the definition of output elasticity as follows.

$$\lambda_i' - \lambda_i = \lambda_i (R\varepsilon_i - r_i)/(1 + r_i) \quad \text{(B2)}$$

The equation shows the changing labor share of the i^{th} sector as a function of both its income (or output) elasticity and its productivity growth rate.

Equations (B1) and (B2) can be solved to find expressions for each sector's labor reallocation in terms of the initial parameters only. Clearly, labors will shift to the sector *a* if $\varepsilon_a / r_a > \varepsilon_i / r_i$. The economy-wide productivity growth rate converges to the sector that is absorbing labor, i.e., the sector with the highest ε / r ratio.

Appendix C: Estimates of Technical, Allocative, and Economic Efficiencies

C.1. Methodology

Under the non-parametric approach (DEA), we can estimate technical, scale, allocative and economic efficiency levels. Consider the situation with three sectors or decision-making units (DMU_s), each producing a single output by using *m* different inputs. Here, Y_t is the output produced and X_i is the (*mx1*) vector of inputs used by the *i*th DMU. *Y* is the (*nx1)* vectors of outputs and *X* is the (*mxn*) matrix of inputs of all *n* DMU_s in the sample. *W* is the (*mx1)* vector of input prices for the *i*th DMU.

The technical efficiency (*te*) measure under the assumption of constant returns to scale (CRS) [also called the "overall" technical efficiency] is obtained by solving the following problem:

$$\min_{\theta_i^{CRS} \lambda} \theta_i^{CRS}$$

Subject to:

$$Y_i \leq Y_Z \qquad \text{(C1)}$$

$$\theta_i^{CRS} X_i \geq Xz$$

$$z \geq 0,$$

where θ_i^{CRS} is a *te* measure of the i^{th} DMU under CRS, and *z* is an (*n*x1) vector of weights linear to each of the efficient DMU_s.

A separate linear programming problem is solved to obtain the *te* score for each of the *n* DMU_s. If θ^{CRS} =1, the DMU is on the frontier and is technically efficient under CRS. If θ^{CRS} <1, then the DMU lies below the frontier and is technically inefficient. Under CRS DEA, the technically efficient cost of production of the *i*th DMU is given by $W_i^{'}(\theta_i^{CRS} X_i)$.

In order to derive a measure of the total economic efficiency (*ce*) index, we can solve the following cost-minimizing DEA model:

$$\min_{X_i^* \lambda} W_i^{'} X_i^*$$

Subject to:

$$Y_i \leq Y_Z \qquad \text{(C2)}$$

$$X_i^* \geq Xz$$

$$z \geq 0,$$

where X_i^* is the cost-minimizing or economically efficient input vector for the i^{th} sector (or the i^{th} DMU), given its input price vector (W_i) and the output level (Y_i).

The total or overall economic efficiency (*ce*) index for the i^{th} sector is then computed as follows.

$$ce_i = \frac{W_i^{'} X_i^{*}}{W_i^{'} X_i}, \qquad \text{(C3)}$$

which is the ratio of the minimum cost to the observed cost and comparable to the economic efficiency index .

The allocative efficiency (*ae*) index is given by :

$$ae_i = \frac{ce_i}{\theta_i^{CRS}} = \frac{W_i^{i} X_i^{*}}{W_i^{'}(\theta_i^{CRS} X_i)}. \qquad \text{(C4)}$$

The CRS or "overall" measure (te_{CRS}) can be decomposed into its "pure" TE and scale VRS DEA model, which is obtained by imposing the additional constant, $\sum_{j=1}^{n} z_j = 1$ (Banker *et al*., 1984). Let θ_i^{CRS} denotes the TE index of the *i*th DMU under variable returns to scale (te_{VRS}), then the technically efficient cost of production of the i^{th} DMU under VRS DEA is equal to $W_i^{'}(\theta_i^{CRS} X_i)$.

Because the VRS analysis is more flexible and envelops the data in a tighter way than the CRS analysis, the VRS *te* measure (θ_i^{VRS}) is equal to or greater than the CRS measure (θ_i^{CRS}). This relationship is used to obtain a measure of scale efficiency (*se*) of the i^{th} DMU as follows.

$$se_i = \frac{\theta_i^{CRS}}{\theta_i^{VRS}},$$

where *se*=1 indicates scale efficiency or CRS, and *se*<1 indicates scale inefficiency.

Scale inefficiency is due to the presence of either increasing or decreasing returns to scale, which can be determined by solving a non-increasing returns to scale (NIRS) DEA model, which is obtained by substituting the VRS constraint $\sum_{j=1}^{n} z_j$ with $\sum_{j=1}^{n} z_j \leq 1$. Let θ^{NIRS} represents the TE measure under non-increasing returns to scale. If $\theta^{CRS} < \theta^{NIRS}$, there are decreasing returns to scale. As in the parametric case, the total cost or economic inefficiency of the *i*th sector ($W_i^{'} X_i - W_i^{'} X_i^{*}$) can be decomposed into its "pure" technical $\left(W_i^{'} X_i - W_i^{'} \theta_i^{VRS} X_i\right)$, scale $\left(W_i^{'} \theta_i^{VRS} X_i - W_i^{'} \theta_i^{CRS} X_i\right)$, and allocative $\left(W_i^{'} \theta_i^{CRS} X_i - W_i^{'} X_i^{*}\right)$ components.

Appendix D: Efficiency Ranking Methodology

This appendix presents two applications of rank statistics to evaluate efficiency performance trends using productive efficiency measures derived through various data envelopment analysis (DEA) models.

D1. Detecting Trends Over Time

The method of statistical analysis through building a model structure was developed for non-parametric detection of trends in data. In order to access the known strengths and robustness of non-parametric rank statistics, a "rank matrix transformation" is used. To adapt this methodology to detecting trends over time for efficiency and TFP change (*tfpch*) between economic sectors of the Vietnamese economy, we will use Brockett (1999)'s method with the matrix of observed efficiencies as:

$$\left\lfloor h_{ij} \right\rfloor_{t=1,2,...,k;\ j=1,2,...,n} \tag{D1}$$

The efficiency ratings ($h_{ij,}$ $t= 1…, k; j=1…, n$) are generated by performing a single DEA run, in which *n, k* DMUs (or economic sectors) are evaluated.

According to this method, the efficiency ratings over time produce results from the comparisons of different facets of DMUs (or economic sectors) in different periods of time. For the purpose of identifying the trends, we prefer to observe the relative ranking of the ratings for each DMU over time.

Following this methodology, we replace the actual efficiency ratings in each *column* of the efficiency matrix within the corresponding rank statistic by ordering the scores within the *column* in an ascending order. In this manner, we obtain the rank-value matrix as $\left\lfloor C_{ij} \right\rfloor_{t=1,2,...,k;\ j=1,2,...,n}$.

The null hypothesis is that the vector of *k* rankings for each DMU, is not on time. It means that the observed rankings C_{1j}, C_{2j},…, and C_{kj} are exchangeable, so that any rearrangement of the elements of such a vector is equally likely to occur. A two-side alternative hypothesis is posed to incorporate both increasing and decreasing trends over time.

Under the null hypothesis, the rank vector for any DMU_j (i.e. C_{1j}, $C_{2j,}$….., and C_{Tj}) is uniformly distributed over the set of all *k*! possible arrangements of (1, 2,…, k); meaning that each possible arrangement has the same probability to occur (namely, 1/*k*!). Following Brockett and Kemperman (1980), we compute the test statistic $S = \sum_{j=1}^{n}\sum_{t=1}^{k} t.C_{tj}$.

Brockett and Kemperman (1980) have shown that, for sufficiently large values of *n.k* (for instance, $n.k \geq 11$), the distribution of *S* is approximately normal with the mean and variance parameters as follows:

$$\mu = E(S) = \frac{n.k}{4}(k+1)^2 \tag{D2}$$

$$\sigma^2 = Var(S) = \frac{n}{144}.k^2.(k^2-1).(k+1) - \frac{k.(k+1)}{144}.\sum_{j=l}^{n}\sum_{r}\left(d_{jr}^3 - d_{jr}\right) \tag{D3}$$

In this analysis, the term d_{jr} denotes number of values $h_{1j},\ldots, h_{kj}$ that are tied in the r^{th} group of ties.

It can be transformed the test statistic S to an approximately standard normal distribution by using $Z=(S-\mu)/\sigma$. The null hypothesis (that there is no trend in the observed efficiencies) can be rejected against a two-sided alternative hypothesis of trend at a level of significance α whenever $Z \le -Z_{\alpha/2}$ or $Z \ge Z_{\alpha/2}$, where $Z_{\alpha/2}$ denotes the upper (α/2) percentile of the normal distribution. Similarly, the null hypothesis (that there is no trend in the observed efficiencies) can also be rejected against a one-sided alternative hypothesis of an increasing (decreasing) trend at a level of significance α whenever $Z \ge Z_{\alpha}$ (or, respectively, $Z \ge -Z_{\alpha}$).

D2. Detecting Stable Efficiency Rankings

The same information gathered in (D1) can be used for another important aspect of the intertemporal analysis. Ranking the set of (n-k) efficiency ratings and observing the sum of ranks associated with each DMU, one can find about the relative position of the DMUs, each other across the study period.

To provide an analytical answer to the stability question, we apply Kruskal-Wallis non-parametric ANOVA test. For this test, there are n "populations" simultaneously under investigation and the null hypothesis is that all n "populations" (or DMUs or economic sectors) have the same distribution of ratings. To apply this statistical methodology, we first rank order the set of (n-k) scores in an ascending order and let R_j denote the sum of the ranks corresponding to DMU_j. Then, we compute Kruskal-Wallis test statistic as follows:

$$H = \frac{12}{n.k.(n.k+1)}.\left(\frac{R_1^2}{k}+\frac{R_2^2}{k}+....+\frac{R_n^2}{k}\right)-3.(n.k+1). \qquad \text{(D4)}$$

It is known that this test statistic is distributed according to a χ^2 distribution with (n–1) degree of freedom. Rejection of the null hypothesis leads to the conclusion that, in general, the different DMUs (or economic sectors) maintain their relative efficiency position over time, meaning that at least one DMU (or economic sector) is consistently better or worse than the others. When the null hypothesis is rejected, a multiple comparison test can be performed to gain further insights into stable structure of the rankings.

The rejection of the null hypothesis indicates that there are stable differences occurring between the DMUs (or economic sectors) over time. An investigation of why this is the case may have significant managerial impacts for several reasons. One possible explanation for the rejection is that the set of inputs and outputs, which were selected for the DEA model, lacked certain important factors that participate in the process under investigation (i.e., the model might be constructed incorrectly). For example, there might be some environmental factors (e.g., a certain demographic characteristic) that help particular DMUs to generate consistently more outputs than other DMUs, though they use the same amounts of discretionary inputs. When this is observed over a sufficiently long time with some changes in management practices, we may suspect that the phenomenon is inherent to the "production process" and it is not due to the quality of management. On the other hand, accepting the null hypothesis amounts to (at least partially) *validation* of the input-output formulation in DEA.

However, when we have enough confidence that the model has been correctly specified and no hidden factors have been left out, rejection of the null hypothesis can be used to justify the selection of consistent "winners" as sites for future marketing tests, pointing out consistent "losers" as candidates for closure, evaluating the success of training programs, etc.

Appendix E: Estimates of the Malmquist Index

Table E1: Summary of mean Malmquist index for three sectors, 1985-1988

	effch	*techch*	*pech*	*sech*	*tfpch*
Agriculture	1.259	0.834	1.026	1.227	1.049
Industry	1.040	1.035	1.000	1.040	1.077
Service	1.000	0.928	1.000	1.000	0.928
Mean	1.094	0.928	1.009	1.085	1.016

Table E2: Summary of mean Malmquist index for three sectors, 1989-1996

Sector	*effch*	*techch*	*pech*	*sech*	*tfpch*
Agriculture	1	0.978	1	1	0.978
Industry	1.07	1.034	1	1.07	1.106
Service	1	0.946	1	1	0.946
Mean	1.023	0.985	1	1.023	1.008

Table E3: Summary of mean Malmquist index for three sectors, 1997-1999

Sector	*effch*	*techch*	*pech*	*sech*	*tfpch*
Agriculture	1	1.045	1	1	1.045
Industry	1	1.041	1	1	1.041
Service	1	0.964	1	1	0.964
Mean	1	1.016	1	1	1.016

Table E4: Summary of mean Malmquist index for three sectors, 2000-2006

Sector	*effch*	*techch*	*pech*	*sech*	*tfpch*
Agriculture	1	0.998	1	1	0.998
Industry	1	1.012	1	1	1.012
Service	1	0.958	1	1	0.958
Mean	1	0.989	1	1	0.989

Table E5: Summary of mean Malmquist index for three sectors, 1985-2006

Sector	*effch*	*techch*	*pech*	*sech*	*tfpch*
Agriculture	1.033	0.981	1.004	1.030	1.014
Industry	1.028	1.030	1.000	1.028	1.059
Service	1.000	0.951	1.000	1.000	0.951
Country	1.020	0.987	1.001	1.019	1.007

Table E6: Summary of annual mean Malmquist index for the whole economy, 1986-2006

Year	*effch*	*techch*	*pech*	*sech*	*tfpch*
1986	1.163	0.843	1	1.164	0.981
1987	1.083	0.883	0.989	1.096	0.956
1988	1.039	1.076	1.038	1.001	1.118
1989	0.998	1.031	1	0.998	1.029
1990	1.015	1.027	1	1.015	1.043
1991	1.063	1.024	1	1.063	1.088
1992	0.928	0.988	1	0.928	0.917
1993	1.014	0.945	1	1.014	0.958

1994	1.006	0.978	1	1.006	0.984
1995	1.033	0.987	1	1.033	1.02
1996	1.111	0.952	1	1.111	1.058
1997	1	1.037	1	1	1.037
1998	1	0.999	1	1	0.999
1999	1	1.033	1	1	1.033
2000	1	1.014	1	1	1.014
2001	1	0.989	1	1	0.989
2002	1	0.943	1	1	0.943
2003	1	0.998	1	1	0.998
2004	1	1.011	1	1	1.011
2005	1	1.001	1	1	1.001
2006	1	0.993	1	1	0.993

Table E7: Summary of annual mean Malmquist index for three sectors, 1986-2006

	Agriculture			***Industry***			***Services***		
Year	***effch***	***techch***	***tfpch***	***effch***	***techch***	***tfpch***	***effch***	***techch***	***tfpch***
1986	1.447	0.717	1.038	1.088	0.991	1.079	1.000	0.843	0.843
1987	1.224	0.767	0.940	1.037	1.016	1.053	1.000	0.883	0.883
1988	1.126	1.053	1.185	0.997	1.101	1.098	1.000	1.073	1.073
1989	1.000	1.141	1.141	0.995	0.990	0.986	1.000	0.969	0.969
1990	1.000	1.042	1.042	1.045	1.019	1.065	1.000	1.021	1.021
1991	1.000	1.036	1.036	1.200	1.023	1.228	1.000	1.012	1.012
1992	1.000	0.943	0.943	0.798	1.103	0.880	1.000	0.927	0.927
1993	1.000	0.920	0.920	1.042	1.062	1.106	1.000	0.864	0.864
1994	1.000	0.929	0.929	1.017	1.068	1.086	1.000	0.944	0.944
1995	1.000	0.999	0.999	1.102	1.002	1.104	1.000	0.961	0.961
1996	1.000	0.984	0.984	1.373	0.967	1.328	1.000	0.906	0.906
1997	1.000	1.066	1.066	1.000	1.084	1.084	1.000	0.964	0.964
1998	1.000	1.012	1.012	1.000	1.038	1.038	1.000	0.949	0.949
1999	1.000	1.079	1.079	1.000	1.045	1.045	1.000	0.978	0.978
2000	1.000	1.027	1.027	1.000	1.052	1.052	1.000	0.964	0.964
2001	1.000	0.977	0.977	1.000	1.035	1.035	1.000	0.957	0.957
2002	1.000	1.022	1.022	1.000	0.901	0.901	1.000	0.910	0.910
2003	1.000	0.980	0.980	1.000	1.043	1.043	1.000	0.971	0.971
2004	1.000	0.984	0.984	1.000	1.010	1.010	1.000	1.040	1.040
2005	1.000	1.047	1.047	1.000	1.067	1.067	1.000	0.898	0.898
2006	1.000	0.978	0.978	1.000	1.026	1.026	1.000	0.976	0.976

Appendix F: Estimates of Technical Efficiency and Cost Efficiency

Table F1: Summary of mean technical efficiency and cost efficiency, 1985-2006

	Technical efficiency			*Cost efficiency*		
	crste	***vrste***	***scale***	***te***	***ae***	***ce***
Country	0.7270	0.8950	0.8150	0.7270	0.7570	0.5750
Agriculture	0.5908	0.7638	0.7958	0.5908	0.3846	0.2248
Industry	0.6961	0.9640	0.6754	0.8934	0.985	0.9061
Service	0.8934	0.9851	0.9061	0.8934	0.9222	0.8249

Table F2: Technical efficiency and cost efficiency of the agricultural sector from non-parametric approach

Period	*Technical Efficiency*			*Cost Efficiency*		
	crste	***vrste***	***scale***	***te***	***ae***	***ce***
1985-1988	0.523	0.561	0.931	0.523	0.384	0.199
1989-1996	0.627	0.695	0.900	0.627	0.332	0.205
1997-1999	0.583	0.803	0.727	0.583	0.394	0.230
2000-2006	0.591	0.942	0.629	0.591	0.441	0.260

Table F3: Technical efficiencies and cost efficiency of the industrial sector from non-parametric approach

Period	*Technical Efficiency*			*Cost Efficiency*		
	crste	***vrste***	***scale***	***te***	***ae***	***ce***
1985-1988	0.423	0.968	0.438	0.423	0.957	0.405
1989-1996	0.567	0.874	0.650	0.567	0.939	0.533
1997-1999	0.849	0.997	0.851	0.849	0.981	0.833
2000-2006	0.935	0.960	0.974	0.935	0.990	0.926

Table F4: Technical efficiencies and cost efficiency of the service sector from non-parametric approach

Period	*Technical Efficiency*			*Cost Efficiency*		
	crste	***vrste***	***scale***	***te***	***ae***	***ce***
1985-1988	0.958	0.989	0.968	0.958	0.918	0.878
1989-1996	0.976	0.994	0.982	0.976	0.940	0.918
1997-1999	0.875	0.992	0.882	0.875	0.916	0.801
2000-2006	0.770	0.970	0.794	0.770	0.908	0.698

Determinants of Remittances: Recent Evidence using Data on Internal Migrants in Vietnam*

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Abstract

This paper examines the determinants of remittances of internal migrants in Vietnam using data from the 2004 Vietnam Migration Survey. It considers how, among other things, the vulnerability of a migrant's life at the destination, their link to relatives left behind, and the time spent at the destination affect remittance decisions. The results show that altruism alone does not provide a sufficient explanation for the motivations to remit. The paper, instead, finds that migrants act as risk-averse economic agents and send remittances as part of an insurance exercise in the face of economic uncertainty. Remittances are also found to be driven by a migrant's labor market income level and a motivation to accumulate savings at home. The paper thus highlights the important role played by remittances as an effective means of risk-coping and mutual support within the family.

* We would like to thank the Population and Labour Statistic Department of the General Statistical Office (GSO) for allowing our access to the 2004 Migration Survey Data. The findings, interpretations and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the World Bank, its executive directors, or the countries they represent.

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1. Introduction

Migration flows used to be strictly controlled in Vietnam by government migration policies and the household registration system (*ho khau*). In order to redress an imbalance in population density across the country, urban to rural, and rural to rural migration were explicitly encouraged (Dang *et al*., 1997). Until the early 1990s, officially organized migration was therefore the most common form of internal migration observed in Vietnam (Guest, 1998; Dang *et al*., 2003). The government migration policies included organized resettlement programs from the most populous Red River Delta to the less densely settled regions, primarily to the New Economic Zones (NEZs) and settlement areas in the Central Highlands. The government, however, gradually began to recognize the limitation of the resettlement process due to the difficulty in integrating migration-related objectives with the development of the NEZs, the high cost of building new infrastructure, and the growing shortage of readily available cultivatable land (Dang *et al*., 2003). As a result, although such policies have continued, organized migration has been increasingly replaced by a more spontaneous migration since the middle of the 1990s (Hardy, 2000).

The introduction of the *doi moi* (renovation) program in 1986 was the main driving force behind the apparent shift from organized to spontaneous migration in Vietnam. Dang *et al*. (2003), for example, argue that the *doi moi* policy affected internal migration in two ways: (1) decollectivization in the agricultural sector made farmers less tied to the land (see Fforde and Huan, 2001) and the marketization of the economy meant that people, particularly those in the urban sector, no longer needed to depend on government subsidies and rationing for their daily necessities, which has made the household registration system less important; and (2) the increased flow of foreign direct investment (FDI) into Vietnam has attracted migrant workers to certain urban areas that are the main destinations of the FDI flows. In addition, there are also considerable regional disparities that might provide an incentive for internal migrants. Pham and Reilly (2007), for example, report that the average wage rate in the Southeast is about 50% higher than the national average.

According to the 1999 Population and Housing Census data, almost 4.5 million people, or 6.5% of the population over five years of age, changed their place of residence between 1994 and 1999.[1] While 55% of these migrants moved within a province, the rest moved across provinces, the majority of whom (67%) also moved between regions. The country's three largest cities, namely Hanoi, Da Nang and Ho Chi Minh City, were the main recipients of migrants (GSO, 2001).

One of the important implications of the increased internal migration is the significant amount of remittances sent by these migrants. Le and Nguyen (1999), for instance, point out that about 23% of households received remittances during the 12 months prior to the survey and remittances accounted for, on average, 38% of their expenditure based on data from the VLSS 1992-93. Moreover, a survey conducted by the Institute of Sociology (IOS) illustrates that remittances accounted for approximately two-thirds of total cash incomes for rural households (IOS, 1998 (cited in Dang *et al*. (2003)). Despite the great volume of remittance flows, there has been limited empirical work that examines remittance-related issues in Vietnam, presumably due to the limited availability of data. The data issue is particularly serious for the analysis of remittance behavior among migrants since data on migrants themselves are often missing in conventional household surveys (e.g., the Vietnam Living Standards Surveys (VLSS)).

Fortunately for our purposes, data from the 2004 Vietnam Migration Survey have recently become available. This survey collected detailed information on migrants within the

[1] Note that this does not include short-term, unregistered movement and movement in the six months preceding the census date.

country. The main research aim of this paper is to examine the key factors that influence the remittance behavior of internal migrants in Vietnam. Given the absence of data on recipients, our focus will naturally be on remitters. We specifically examine, among other things, how the life circumstances of migrants at the destination, their link to relatives left behind, and the time spent at the destination influence their remittance behavior. According to the 2004 Migration Survey data, about half of migrants sent money/goods home to their relatives during the last 12 months prior to the interview. The total value amounted to, on average, nearly one-fifth of migrants' earnings, highlighting the potential significance of remittances to the origin households. The empirical findings of this paper on remittance behavior may thus have some important policy implications.

The remainder of the paper is structured as follows. The next section provides a review of the existing theoretical literature on remittance motives. A description of the migration survey data used for the empirical analysis is provided in Section 3. Section 4 outlines and justifies the variables used in our empirical model, and Section 5 discusses some econometric issues related to estimation. Section 6 presents the empirical results, and Section 7 offers some concluding remarks.

2. Literature Review

There have been a variety of theoretical models proposed to explain motives underlying remittance behavior, including altruism, exchange or self-interest, and insurance. The altruistic behavior is modeled by allowing the utility of a remitter to be derived from the well-being, or often the consumption level, of those left behind (the recipients) (Becker, 1974). This basically implies a negative relationship between the income of the recipient and the amount of remittances. McGarry and Shoeni (1995), for instance, find a negative relationship using data from the United States. Agarwal and Horowitz (2002), on the other hand, examine the effect of multiple migrants (as opposed to a single migrant) on the level of remittances. They argue that under pure insurance (or self-interest) motives, the number of other migrants in the family would not affect the amount of per-migrant remittances. However, under altruism, the presence of other remitting migrants will reduce the average size of remittances. On the basis of data for Guyana, Agarwal and Horowitz (2002) find some support for the presence of altruism.

The exchange motive, in contrast, implies a more complex relationship between the recipient's income and the size of remittances. Cox (1987) formalizes a model where private transfers are payments for services rendered. Under this model, an increase in the remitter's income will be associated with a higher probability of transfers as well as a larger amount of transfers because the remitter is willing to pay more for the services provided by the recipient. On the other hand, if the recipient's income rises, the opportunity cost of providing the service will rise, and the recipient is thus likely to require a higher price for the service he/she provides. As a result, as in the altruism case, an increase in the recipient's income will reduce the probability of transfer. However, if the transfer does take place, then the amount of the transfer could rise, fall, or stay the same depending on the remitter's elasticity of demand for the services of the recipient.

The findings from Cox (1987), Cox and Rank (1992) and Cox *et al.* (1998) suggest a positive relationship between the size of transfers and the recipient's pre-transfer income, rejecting the altruism behavior of remitters. In addition, Secondi (1997) finds that altruism alone cannot explain the observed transfers and that exchange may be involved. In the context of China where much of the money flows appear to be transfers from adult children to elderly parents, child care is found to be one of the main services that parents render to their adult children in exchange for money (Secondi, 1997).

The above motives are certainly not mutually exclusive and an individual migrant is likely to have more than one motivation for remitting home at any given time. Lucas and Stark (1985), for instance, propose "tempered altruism" or "enlightened self-interest" to refer to transfers motivated by a combination of altruism and self-interest. This is based on the view that remittances are part of a self-enforcing contractual arrangement between a migrant and his or her family, which is of mutual benefit. The migrant adheres to the arrangement as long as it is in his or her interest to do so (Lucas and Stark, 1985). For example, based on data drawn from the National Migration Study of Botswana, their analysis suggests that transfers are made as a repayment for the cost of the migrant's education and transportation.

Poirine (1997) similarly suggests the implicit loan theory whereby an implicit and informal loan agreement between the migrant and his or her family explains remittances. Poirine (1997) finds that, in the case of Tongan and Western Samoan migrants, remittances mainly supplement consumption of recipients and do not necessary decay overtime. This is because a loan repayment will be replaced by a loan advancement to finance the education of the next cohort of potential migrants of the family. Poirine (1997) also finds that the level of remittance is sensitive to the lending interest rates in the migrant's original country.

In a similar context to the contractual arrangement, Stark (1991) suggests a model of risk-sharing motives. In this model, remittances allow risk-averse households to diversify their income sources and thus minimize the adverse effects of income shocks (Stark, 1991; Gubert, 2002). Amuedo-Dorantes and Pozo (2006) also argue that migrants are likely to behave as risk-averse economic agents and purchase insurance in the face of economic uncertainty. In this way, remittances can be considered as a payment to insure against risky income in the destination region or country. Based on data relating to Mexican migrants in the United States, Amuedo-Dorantes and Pozo (2006) find that income risk proxies (e.g., being an undocumented immigrant or not having social networks within the United States) are associated with a higher propensity to remit and with a higher level of remittances sent home.

Hoddinott (1994) also suggests that the migrant and his or her family enter into a contractual arrangement, but this is to secure a future bequest. The bequest motive suggests that migrants remit home to win favor from the head of household and ensure a larger share of any future inheritance. Hoddinott (1994) finds some evidence with data from Kenya that favors this argument. Quinn (2005), on the other hand, puts forward another model of remittance behavior whereby remittances are treated as both a consumption transfer to households and as an alternative saving mechanism for migrants. The model predicts that the migrant's remittance/saving behavior is affected by the relative rate of return on their savings and on the savings of the remittance-receiving household. Using data on Mexican workers in the United States, he finds that migrants remit more and save less when the remittance-receiving household's rate of return on savings increases (or the migrant's return falls). His findings imply that the improved access to savings and investment mechanisms for recipient households in the home country may increase remittance inflows from migrants.

3. Data

The empirical analysis in this paper is based on data from the 2004 Vietnam Migration Survey. The survey was conducted by the General Statistical Office (GSO) of Vietnam with an aim to provide, for the first time, a large-scaled survey on internal migration in the post *doi moi* era (GSO, 2005).

Prior to the availability of the 2004 Vietnam Migration Survey data, information on migrants had been limited. Most of the existing work on migration and remittance-related issues in Vietnam is therefore based on the 1999 Population and Housing Census data or the

data drawn from the Vietnam Living Standards Surveys (VLSS) (e.g. Dang *et al*., 2003; de Brauw and Hariyaga, 2004; Le and Nguyen, 1999). Although the Census data provide an overview of internal migration patterns across the country, temporary or unregistered migrants are excluded. The data also lack detailed information about migrants such as their earnings, access to public services, and whether they remit any money back home.[2] On the other hand, the household survey only collects information on whether the household receives any remittances, and it hardly contains information on the migrants themselves.[3] Hence the availability of the 2004 Vietnam Migration Survey data has overcome some of the data issues.

The survey was conducted in the areas identified with high immigration rates, based on the 1999 Population and Housing Census, and the sample was identified using the sampling frame of the Census (see GSO, 2005). They included some enumeration areas of Hanoi, the Northeast Economic Zone (Hai Phong, Hai Duong and Quang Ning), the Central Highlands (Gia Lai, Dak Lak, Dak Nong and Lam Dong), Ho Chi Minh City, and the Southeast Industrial Zone (Bing Duong and Dong Nai). Since the survey was conducted only in certain areas, some caution is thus required in generalizing our findings.

The survey interviewed both migrants (4,998) and non-migrants (5,009) in the destination areas, who were in the 15-59 age category. In this survey migrants are defined as those who had moved from one district to another in the five years prior to the survey but not more recently than a month before the survey. The survey covered a wide range of topics including information on the migration process, socio-economic characteristics of migrants and non-migrants, demographic composition of their household members (at the destination), housing conditions, access to public services, and personal history (e.g. migration and employment) of migrants.

The data are, however, not without limitation. For example, the survey does not contain any data on the household from which the migrant originated. This implies that we have no information on the recipients of remittances. It is also unfortunate that non-migrants are those found in the destination areas only and this essentially prevents us from undertaking any analysis of the process governing the migrant decision. Nevertheless, it contains detailed information on migrants themselves, and this allows us to investigate the effects of various factors on migrant remittance behavior.

4. The Empirical Model

The empirical model specified in this paper is eclectic in nature and guided by some of the theoretical considerations outlined in the last section, but also reflects the Vietnamese context within which the analysis is situated. Table 1 lists the dependent variable and the explanatory variables used in our analysis. The table also contains summary statistics.

Table 1: Dependent and Explanatory Variables

	Description	**Mean**
Remittances (million dong)	Total value of money/goods migrant sent to relatives in the last 12 months prior to the survey.	1.248
Age	Age	28.697
Age squared	Age x Age	899.15
Household head	Dummy variable for being household head	0.543
Kinh	Dummy variable for being Kinh	0.901
Female	Dummy variable for being female	0.556

[2] See GSO (2001) for more details about the Census.
[3] See World Bank (2001) for more details about the VLSSs.

	Description	Mean
Married	Dummy variable for being married	0.575
Presence of spouse	Dummy variable for spouse living with migrant	0.413
Presence of school age children	Dummy variable for school age (5-18) children living with migrant	0.243
Presence of parents	Dummy variable for parent(s) living with migrant	0.136
Household size	Total number of household members living with migrant (at the destination)	3.540
Education		
(Illiterate)	Dummy variable for being illiterate	0.029
Primary	Dummy variable for having primary education	0.104
Lower secondary	Dummy variable for having lower secondary education	0.486
Upper secondary	Dummy variable for having upper secondary education	0.310
College+	Dummy variable for having a college degree or higher	0.072
Earnings (million dong)	Monthly earnings	0.958
Receive bonus	Dummy variable for receiving any bonus at work	0.350
Receive housing benefits	Dummy variable for receiving any housing benefits at work	0.011
Sector of Organization		
Government	Dummy variable for working for government organization	0.130
(Private)	Dummy variable for working for private organization	0.653
Foreign invested	Dummy variable for working for foreign invested organization	0.208
Others	Dummy variable for working for other type of organization	0.008
Living in large city	Dummy variable for living in a large city	0.386
Coming from countryside	Dummy variable for having come from a rural area	0.785
Live in own house	Dummy variable for living in a house that migrant owns	0.317
Live in permanent dwelling	Dummy variable for living in a dwelling of a permanent type	0.161
Registration status		
Not registered	Dummy variable for not being registered at the destination	0.041
(K1 (permanent))	Dummy variable for having K1 registration status	0.116
K2 (permanent)	Dummy variable for having K2 registration status	0.062
K3 (temporary)	Dummy variable for having K3 registration status	0.315
K4 (temporary)	Dummy variable for having K4 registration status	0.465
Duration of stay		
12 months or less	Spline for 1-12 months	10.783
13-24 months	Spline for 13-24 months	7.392
25-48 months	Spline for 25-48 months	8.323
Had relatives at arrival	Dummy variable for having had some relatives at the destination at arrival	0.772
Faced difficulty at arrival	Dummy variable for having faced some difficulty at arrival	0.461
Have an insurance card	Dummy variable for having an insurance card	0.368
Having savings with relatives	Dummy variable for having savings with relatives	0.084
Having loans from relatives	Dummy variable for having loan from relatives	0.106
No. of visits to relatives	Number of visits paid to relatives during the last 12 months prior to the interview	2.556
Province (current place)		
(Hanoi)	Dummy variable for living in Hanoi	0.192
Hai Phong (Thanh pho)	Dummy variable for living in Hai Phong (Thanh pho)	0.044
Hai Phong (Tinh)	Dummy variable for living in Hai Phong	0.052
Quang Ninh	Dummy variable for living in Quang Ninh	0.095
Gia Lai	Dummy variable for living in Gia Lai	0.053
Dac Lac	Dummy variable for living in Dac Lac	0.054
Dak Nong	Dummy variable for living in Dak Nong	0.054
Lam Dong	Dummy variable for living in Lam Dong	0.051
Ho Chi Minh	Dummy variable for living in Ho Chi Minh	0.200
Bing Duong	Dummy variable for living in Bing Duong	0.098
Dong Nai	Dummy variable for living in Dong Nai	0.108
Month of interview		
(Jan, Feb, March, April)	Dummy variable for being interviewed between January and	0.009

	Description	Mean
	April 2004	
September	Dummy variable for being interviewed in September 2004	0.164
October	Dummy variable for being interviewed in October 2004	0.498
November	Dummy variable for being interviewed in November 2004	0.229
December	Dummy variable for being interviewed in December 2004	0.101

Source: The 2004 Vietnam Migration Survey data.

Remittance variable

The key dependent variable is defined as the total value of money/goods a migrant sent to relatives in the last 12 months prior to the survey data expressed in millions of dong.[4] Among those remit, the average amount of remittances is about 2.3 million dong. However, for a large number of individuals in the sample the variable is censored at zero and this requires use of a particular econometric approach, which is discussed in the next section.

Individual-level characteristics

The explanatory variables (or regressors) include a set of individual characteristics comprising the migrant's age and gender, whether the migrant is the head of the household, and whether the migrant belongs to the *Kinh* (the main ethnic group in Vietnam). Variables capturing the education level of migrants are also included to inform the theory of contractual arrangement (Lucas and Stark, 1985) and/or the implicit loan theory (Poirine, 1997), where a positive relationship between the amount of remittances and the education level is anticipated. This is because the level of the migrant's education can be considered as an indication of household investment requiring a future pay back in terms of higher remittances.

Household-level characteristics

The composition of the migrant's current household is also important. Note that "household" here denotes the migrant's household at the destination given, as we noted in the previous section, the survey data do not contain information on a migrant's household in the place of origin. The household variables include measures that indicate whether the migrant is married, whether his/her spouse, school-age children (5-18) or parents are present at the destination, as well as information on the total number of household members. The presence of the immediate family members at the destination would imply a weaker tie of the migrant to the original place and thus we would expect negative coefficients on these variables (see Markova and Reilly, 2007). In addition, variables representing the housing tenure status of a migrant (e.g., whether the migrant owns the accommodation and/or whether it is of permanent type) are also included. The expected sign for the effects of these variables is ambiguous. On the one hand, if the migrant owns the housing and/or lives in a permanent-built dwelling, it can imply the migrant's intention to stay in the destination place is permanent and/or the migrant's living condition is relatively secure. In either case, the migrant is likely to remit less. On the other hand, these variables could also indicate the welfare level of the migrant and thus we may observe a positive relationship between these housing variables and the level of remittances.

Migrant's labor market characteristics

We also include a set of variables that capture the earnings of the migrant, including the monthly earnings as well as whether the migrant receives any bonus or housing benefits on

[4] It should be noted that in this paper we define a remitter as a migrant who sent any money/goods to the relatives and/or gave any money/goods to the relatives during their visits due to the way the data were collected in the survey. Hence the value of remittances is the total value of the money/goods that the migrant sent/gave to his or her relatives during the last 12 months before the interview.

the job. We would expect a positive coefficient on both the level of earnings and the dummy variable for receiving a bonus. However, receiving some housing benefits is likely to reduce the insecurity of the migrant at the destination and thus he/she may be less required to send remittances for the insurance motive. A mutually exclusive set of variables designed to capture the type of enterprise in which the migrant works (e.g., government, private, foreign invested and others) are also included. These variables are likely to reflect the security of the migrant's job. For instance, if the migrant works for the government, his/her occupation is likely to be relatively stable and permanent. As a result, the migrant is likely to remit less money and goods home.

Migrant's registration status

The paper also investigates the influence of the Vietnamese migrant registration status on remittance behavior. Vietnam has a complex household registration system as follows:

KT1: Registered in the district where the person resides.

KT2: Not registered in the district where the person resides, but registered at another district or the same province.

KT3: Has temporary registration for a period of six months or more.

KT4: Has temporary registration for a period of less than six months.

These four categories can be broadly grouped into two – permanent registration (KT1 and KT2) and temporary status (KT3 and KT4) at the destination. Given that the migrant's registration status captures whether his/her move is temporary or permanent, we would expect a positive relationship between the migrant's temporary status and the level of remittances compared to a more permanent registration status. However, if the motive for remittances is altruistic, whether the migrant's move is permanent or temporary should not affect the size of money remitted. On the other hand, not having a permanent registration status can also imply the vulnerability of the migrant's life at the destination. According to Deshingkar *et al.* (2006), for instance, migrants with KT3 or KT4 status have to secure the most basic services at prices well above average, and some services may even be inaccessible to them. Hence, if we observe a positive coefficient on the variables for KT3 or KT4 (when KT1 is the base category), this could be interpreted as evidence of an insurance motive for remittances.

Migrant's duration of stay

In order to examine the relevance of the remittance decay hypothesis (RDH) to the Vietnam case (see Liu and Reilly, 2004; Poirine, 1997), we also include the time spent at the destination. Unfortunately, in the survey migrants are defined as those who had moved from one district to another in the five year period prior to the interview date. We are thus unable to fully explore the issue of RDH in the case of Vietnam. Nonetheless, the duration variables should proxy some general tendencies in this regard. Our duration variables are expressed in splines based on the number of months spent at the destination (see Table 1 for the nodes used).

Migrant's process of migration

In order to examine how the security/stability of the migrant's life at the destination affects remittance behavior, a number of potentially informative variables are also included. One of them is a dummy variable for whether the migrant faced any difficulty at arrival in the new destination. If the insurance theory of remittances is valid, a positive sign for the coefficient corresponding to this variable is likely to be observed as it captures the

vulnerability of the migrant. We also include a variable designed to capture whether the migrant had any relatives in the destination place on arrival to determine whether network effects are important or not. Finally, a dummy variable representing whether the migrant has any health insurance at the destination is also included. The coefficients on the network and insurance variables are anticipated to be negative because if the migrant has a social network and/or any insurance at the destination, he/she needs to rely less on the relatives left behind for any assistance and thus send less money or goods home.

Miscellaneous variables

There are also a number of other variables included in our empirical specification. These include the number of visits to the relatives that migrants had paid in the last 12 months prior to the interview. The expected sign of this coefficient would be positive as the greater number of visits illustrates a closer relationship with the relatives left behind. Given that there is no data on the rate of return on savings or any interest rate for loans, it is not possible to undertake the type of an analysis reported in Quinn (2005). However, the survey collected some information on migrants' savings and loans, and we thus include two dummy variables for whether the migrant keeps savings with the relatives and whether the migrant had borrowed any money from the relatives. These variables are designed to capture whether there is any financial mechanism or capital market operating within the family, and their coefficients will reflect how these affect the migrant's remittance decision. We also include a set of variables that indicate the geographical characteristics of the original and destination places. It includes a dummy variable for whether the destination is a large city and for whether the migrant comes from a rural area. We are likely to observe a positive relationship between these variables and the level of remittances as these locations are more likely to facilitate the transfer of goods and money. In addition, provincial dummies (based on the destination place) and seasonal dummies based on the month of the interview are also included. The former are designed to capture spatial differences in household welfare that may be important to remittance behavior, and the latter are designed to capture potential seasonal effects in this type of behavior.

5. Econometric Methodology

One of the issues that we need to consider when estimating the determinants of remittances is the censored nature of the dependent variable, as alluded to in the last section. This occurs because not all migrants remit money in a given year. The application of Ordinary Least Squares (OLS) will generate biased estimates in such a context, with the magnitude of the bias linked to the proportion of non-censored observations in the sample. Conventional regression methods are therefore inappropriate for the censored sample as they fail to account for the qualitative difference between *censored* (zero) observations and *uncensored* (continuous) observations. When data are censored, we instead require an approach that incorporates a mixture model comprising a discrete part (to generate the zero observations) and a continuous part (to generate the positive observations) (Greene, 2003). The most commonly used censored regression model is the Tobit model (Tobin, 1958).

However, a truncated regression model can also be used for this purpose (see Heckman, 1979). The well-known Heckman two-step procedure has been widely employed to model remittances, for example, by Agarwal and Horowitz (2002), Cox (1987), Cox *et al*. (1998), Hoddinott (1994), and Liu and Reilly (2004). The advantage of this procedure is that it treats the transfer of remittances as a sequential "two-step" decision and allows the effect of a given variable on the decision to remit to be different from its effect on the level of remittances. However, one of the main problems with this approach is that estimates can be sensitive to both the choice of identifying variables and underlying distributional assumptions. The

identifying variables are only valid if they are correlated with the probability of remitting, but not with the level of remittances. This is certainly a difficult task in any empirical application, particularly in the absence of adequate information.

An alternative approach is to assume that there is only one decision making process whereby whether or not to remit and how much to remit are both decided simultaneously. This process can be modeled as a single equation and estimated using a censored Tobit model. This method has also been used in various studies in this literature including those by Ahlburg and Brown (1998), Amuedo-Dorantes and Pozo (2006), Brown (1997), Liu and Reilly (2004), and Markova and Reilly (2007). Although we would not face the difficulty of having to find appropriate identifying instruments with the Tobit model, one major problem is that it is subject to a restrictive parametric restriction (i.e., a given variable is restricted to having an effect of the same sign on both the decision to remit and the amount of remittances). Despite its limitations, the Tobit model offers a simple way of estimating the determinants of remittances and, given its frequent use in remittance studies, this econometric model is employed for the empirical analysis reported in this paper.

The underlying structure of the remittance equation is defined as follows:

$$R_i = R_i^* \text{ if } R_i^* > 0 \tag{1}$$

$$R_i = 0 \quad \text{otherwise,}$$

where R_i is the amount of money that the i^{th} individual remits, which is observed if R^*_i is positive. The latter is an unobservable latent dependent variable that captures the i^{th} individual's propensity to remit. It is defined as follows:

$$R_i^* = X_i\beta + u_i \quad \text{where } u_i \sim N(0, \sigma^2), \tag{2}$$

where X_i is a 1 x k vector of independent variables, β is a k x 1 vector of unknown parameters, and u_i is an independently and normally distributed error term with mean zero and constant variance σ^2. This model is regarded as a censored regression model because observations of R^*_i at or below zero are censored. In other words, R_i is either positive ($R_i > 0$) or zero ($R_i = 0$). Based on this information, the likelihood function may be expressed as:

$$L = \prod_{R_i | R_i = 0} \left[1 - \Phi\left(\frac{X_i\beta}{\sigma} \right) \right] \cdot \prod_{R_i | R_i > 0} \left[\frac{\phi\left((R_i - X_i\beta)/\sigma \right)}{\sigma} \right], \tag{3}$$

where $\Phi(\cdot)$ and $\phi(\cdot)$ denote the cumulative distribution function and probability density function of the standard normal respectively. The first part resembles the likelihood function in a probit model for the zero event, while the second part is similar to the likelihood function for the conventional OLS model on the sample observations that are continuous (i.e., not censored).

6. Empirical Results

We estimate our general model of remittances using the Tobit model. We restrict our sample to migrants and only include those migrants who earn wages, which generates a total sample size of 4,445 migrants, as the numbers who were non-working was negligible.[5] More than half of migrants (52%) are reported to have sent some money/goods to their relatives during the last 12 months before the interview. Among those who remit, the average share of

[5] We have also excluded from our analysis a number of observations with implausibly large remittance levels.

remittances in migrant's earnings is about 20%. This is a comparable figure to urban migrants in China who are also found to remit about a fifth of their earnings (Knight *et al*., 1999).

Table 2 reports the Tobit estimates for the remittance model. In addition to the estimated coefficients, we have also calculated the marginal effects of the variables based on the unconditional expected values of remittances (see Table A1 in the appendix), which provides a more intuitive interpretation of the estimates.

There is a well determined inverted-U relationship between a migrant's age and the level of remittances with the level of remittances maximized at about 38 years of age. Being a member of the *Kinh* ethnic group relative to all other groups increases the amount of remittances sent home by 325,000 dong per year, on average and *ceteris paribus.* The education level of migrants has a well defined positive effect on remittances. For instance, if the migrant has a primary education, the amount of remittances he/she sends home increases by 1.4 million dong compared to someone who is illiterate, on average and *ceteris paribus.* Given that we are controlling for labor market earnings, the positive coefficients on the education variables appear to support the theory suggested by Lucas and Stark (1985) and Poirine (1997) who argue that remittances can be considered as a repayment for the resources that the migrant's family originally invested in the migrant's education.

Table 2: Maximum Likelihood Estimates for Tobit Model

	Coefficients	**S.E.**
Age	0.153**	[0.072]
Age squared	-0.002**	[0.001]
Household head	0.229	[0.184]
Female	0.081	[0.181]
Kinh	0.841**	[0.408]
Married	0.535**	[0.256]
Presence of spouse	-0.263	[0.246]
Presence of school age children	-0.676**	[0.264]
Presence of parents	-1.948***	[0.296]
Household size	0.013	[0.048]
Education		
(Illiterate)		
Primary	2.779***	[0.905]
Lower secondary	3.535***	[0.883]
Upper secondary	3.293***	[0.894]
College+	4.024***	[0.956]
Earnings	0.586***	[0.090]
Received bonus	0.404*	[0.216]
Received housing benefits	-0.244	[0.739]
Sector of Organization		
Government	-0.805***	[0.303]
(Private)		
Foreign invested	0.729***	[0.270]
Others	0.080	[0.859]
Live in a large city	0.667	[0.453]
Coming from rural area	0.149	[0.205]
Live in self-owned housing	-0.144	[0.283]
Live in a dwelling of permanent type	0.054	[0.250]
Registration		
Not registered	0.193	[0.519]
(K1 (permanent))		
K2 (permanent)	-0.309	[0.500]
K3 (temporary)	0.462	[0.324]
K4 (temporary)	1.463***	[0.384]
Splines for duration of stay		

	Coefficients	S.E.
12 months or less	0.175***	[0.037]
13-24 months	0.024	[0.020]
25-48 months	-0.002	[0.010]
Had relatives at arrival	0.834***	[0.196]
Faced difficulty at arrival	-0.304*	[0.179]
Have an insurance card	0.062	[0.236]
Having savings with relatives	1.264***	[0.275]
Having loan from relatives	-0.628**	[0.281]
No. of visits to relatives	0.287***	[0.025]
Province (current place)		
(Hanoi)		
Hai Phong (Thanh pho)	-0.640	[0.461]
Hai Phong (Tinh)	0.758	[0.596]
Quang Ninh	2.990***	[0.505]
Gia Lai	-1.371**	[0.694]
Dac Lac	-0.619	[0.685]
Dak Nong	0.480	[0.636]
Lam Dong	0.733	[0.609]
Ho Chi Minh	1.032***	[0.387]
Bing Duong	0.387	[0.520]
Dong Nai	0.024	[0.510]
Month of interview		
(Jan, Feb, March, April)		
September	0.531	[0.865]
October	0.263	[0.836]
November	0.030	[0.833]
December	-0.693	[0.841]
Constant	-13.510***	[1.798]
No. of observations	4,445	
No. of censored observations	1,996	
LR $\chi 2$ (51)	992.72	
Prob > $\chi 2$	0.000	
Log likelihood	-8209.08	

Note: *** Denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level.
Source: Calculations based on the 2004 Vietnam Migration Survey data.

As for the composition of the migrant's household, being married increases the amount of remittances that the migrant sends home, but the presence of his or her immediate family members at the destination is estimated to decrease it, as expected (see Markova and Reilly (2007) for comparable evidence for Bulgarian migrants). This is particularly the case for the migrant's with school-age children and parents present, with remittances lower compared to those without these dependents by 0.7 and 1.9 million dong respectively, on average and *ceteris paribus.* The closer the ties that the migrant has with those left behind, which is captured by the number of his or her visits, the more remittances he/she is likely to send home.

The earnings of migrants have an expected positive effect on remittances. According to the marginal effects, if the monthly earning increases by 1 million dong, this raises annual remittances by 0.24 million dong. The remittance-earning elasticity, computed at the overall sample means, is estimated to be 0.19, which is on the low side compared to the existing literature (see Liu and Reilly (2004) for a survey of estimates). However, a straight-forward comparison is always difficult given differing specifications and contexts.

The receipt of any labor market bonus also has a statistically significant effect on remittances. As for the sector of the enterprise where migrants work, compared with working in a private enterprise, part of which could be in the informal sector, a migrant who works for government is likely to send less money home. The opposite is the case for those working in a

foreign-invested sector. These seem to reflect the stability of jobs in a particular sector which possibly affects the degree of a migrant's reliance on their family left behind. For instance, jobs in the government sector are likely to be stable and more permanent, and the migrants working in this sector thus rely less on their family at home. Moreover, the positive coefficient on the foreign-sector dummy seems to indicate that the benefits of FDI may not be restricted to urban workers, with trickle-down effects to rural areas through the process of remittances evident in these estimates.

Whether the migrant lives in a large city or comes from the rural sector does not seem to affect his or her remittance level, nor do the housing conditions of the migrant. In regard to registration, a migrant possessing the most temporary status (K4), on average and *ceteris paribus*, sends a greater volume of remittances home than a counterpart migrant with permanent residential status (K1). Hence the fragile nature of the migrant's residential status appears to matter in Vietnam and is resonant of the finding reported by Liu and Reilly (2004) for rural migrants in Jinan (China). The temporary and uncertain nature of the status encourages migrants to retain strong links with the origin household to insure against the risk of expulsion.

We find a positive relationship between the number of months stayed at the destination and the level of remittances particularly for the initial year. However, after the third year the relationship is flat providing only partial support for the remittance decay hypothesis. This seems to suggest that over time migrants acquire a greater level of location specific human capital in the destination thus reducing the risk of failure and requiring less support from home. This manifests itself in a tendency to reduce the amount of money they remit home.

As far as the network effects are concerned, having relatives at the destination at arrival has a positive effect on the level of remittances suggesting that it helps migrants to settle in the new destination area and thus enable them to remit more given that settlement costs are less. In contrast, if the migrant faced any difficulty at arrival, he or she is likely to send less money. Whether the migrant possesses a health insurance card does not seem to have any significant impact on his/her remittance behavior.

The significant coefficient on the dummy variable for having savings with relatives suggests that there is an internal financial mechanism operating within the family. Hence remittances may perhaps be sent to save at home because it is interpreted as safer than placing savings in formal institutions in their destination location. On the other hand, having a loan from relatives negatively impacts on the level of remittances, which appears somewhat counter-intuitive. However, we could interpret the negative sign as reflecting the financially constrained nature of the migrant.

Finally, relative to those migrants in Hanoi, migrants in Quang Ninh (in the Northeast Economic Zone) and Ho Chi Minh City send a larger amount of remittances, while those in Gia Lai (in the Central Highlands) remit less.

7. Concluding Remarks

This paper has examined empirically the key determinants of remittances based on a recent survey conducted on internal migration in Vietnam. Our empirical model has incorporated variables capturing some of the underlying motives for remitting as suggested by existing theories. It has also tried to uncover some factors unique to Vietnam that determine remittances in that country.

There are a number of key findings. The education level of migrants has a well-defined positive effect on the level of remittances. This seems to provide some support for the theory of the contractual arrangement (Lucas and Stark, 1985) or the implicit loan theory (Poirine,

1997), whereby remittances are seen as a repayment for the money that the migrant's family invested on the migrant's education. The negative coefficient on the variable for the presence of the migrant's parents at the destination gives some support for this argument. However, this negative coefficient can also be seen as evidence for other theories including altruism (Becker, 1974) or the bequest motive (Hoddinot, 1974). Unfortunately, given the absence of any information on the recipient household such as the origin household's income or assets, we were unable to take this issue any further. On the other hand, the observed negative coefficient relating to the presence of school age children at the destination suggests that remittances can also be seen as investment in the education of the migrant's family as suggested by Poirine (1997).

The earnings of migrants are also found to exert a significant effect on remittances. Although the estimated remittance/earning elasticity is at the lower end of the range traditionally obtained in the existing literature, the migrant's monthly earnings are found to positively affect the level of remittances. The positive coefficient on the variable for the receipt of bonus at work suggests that the extra inflow of income also enables migrants to send more money home.

There are also some empirical estimates that are supportive of the co-insurance theory (Amuedo-Dorantes and Pozo, 2006; Stark, 1997). For instance, we have found that having a kinship network at the destination increases the level of remittances. Moreover, the estimated coefficients relating to the sector of the enterprise where the migrant works also appear to reflect the security of the migrant's job and its effect on his or her remittance behavior. Given that these capture the vulnerability of the migrant's life at the destination or the ease of the process of settling into the new location, our findings seem to be consistent with the insurance motive where the migrant send remittances as a payment to insure against uncertainty at the destination.

Another key finding of this paper is that temporary migrants tend to remit more money home as suggested by the significant positive effect on the variable for having the most temporary registration status (K4) at the destination. This can, however, be also interpreted as the evidence for the insurance motive as this registration status indicates the relatively insecure life of migrants in the destination area. On the other hand, the coefficients on our duration variables for the time spent at the destination only provide partial support for the remittance decay hypothesis. While there is a significant positive relationship between the number of months and the level of remittances in the initial year, the relationship seems to become flat after the third year.

Finally, the significant positive coefficient on the dummy variable for having savings with relatives suggests that remittances are transferred for the purpose of savings and potentially investment in their original home area. In addition, there is evidence of an internal financial mechanism or capital market operating within the family. This is more in line with Amuedo-Dorantes and Pozo (2006), Brown (1997) or Quinn (2005) whereby remittances serve as an avenue for the accumulation of savings.

In sum, the negative coefficients on the variables for the presence of the migrant's immediate family members at the destination provide some support for the altruistic behavior of migrants. However, given data constraints, we could not examine the validity of the altruism hypothesis in a rigorous manner. On the other hand, our findings clearly show that altruism alone does not provide a sufficient explanation for the motivations to remit. This paper has, instead, found that migrants act as risk-averse economic agents and send remittances as part of an insurance exercise in the face of economic uncertainty. Moreover, remittances are also driven by the migrant's income level and motivations to accumulate savings at home.

Our analysis sheds some light on the important role played by remittances as an effective means of risk-coping and mutual support within the family. Hence policymakers need to be aware that migrants remain economically related to those left behind and the importance of remittances when formulating migration-related policies in the country. However, a more thorough investigation of how migrant remittances are used in the origin household is required before definitive conclusions can be offered on the effect of remittances on household vulnerability and poverty.

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Appendix

Table A1: Maximum Likelihood Estimates for Tobit Model (marginal effects)

	dF/dx	S.E.
Age	0.064**	[0.030]
Age squared	-0.001**	[4.40E-4]
Household head	0.095	[0.076]
Female	0.034	[0.075]
Kinh	0.325*	[0.169]
Married	0.220**	[0.106]
Presence of spouse	-0.109	[0.102]
Presence of school age children	-0.270**	[0.109]
Presence of parents	-0.695***	[0.123]
Household size	0.005	[0.020]
Education		
(Illiterate)		
Primary	1.414***	[0.375]
Lower secondary	1.487***	[0.366]
Upper secondary	1.543***	[0.371]
College+	2.255***	[0.396]
Earnings	0.243***	[0.037]
Received bonus	0.170*	[0.089]
Received housing benefits	-0.099	[0.306]
Sector of Organization		
Government	-0.314**	[0.126]
(Private)		
Foreign invested	0.315***	[0.112]
Others	0.033	[0.356]
Live in a large city	0.281	[0.188]
Coming from rural area	0.061	[0.085]
Live in self-owned housing	-0.060	[0.117]
Live in a dwelling of permanent type	0.022	[0.104]
Registration		
Not registered	0.082	[0.215]
(K1 (permanent))		
K2 (permanent)	-0.124	[0.207]
K3 (temporary)	0.195	[0.134]
K4 (temporary)	0.613***	[0.159]
Splines for duration of stay		
12 months or less	0.073***	[0.015]
13-24 months	0.010	[0.008]
25-48 months	-0.001	[0.004]
Had relatives at arrival	0.330***	[0.081]
Faced difficulty at arrival	-0.126*	[0.074]
Have an insurance card	0.026	[0.098]
Having savings with relatives	0.581***	[0.114]
Having loan from relatives	-0.247**	[0.117]
No. of visits to relatives	0.119***	[0.010]
Province (current place)		
(Hanoi)		
Hai Phong (Thanh pho)	-0.250	[0.191]
Hai Phong (Tinh)	0.336	[0.247]
Quang Ninh	1.549***	[0.209]
Gia Lai	-0.499*	[0.288]
Dac Lac	-0.242	[0.284]
Dak Nong	0.208	[0.264]
Lam Dong	0.325	[0.252]
Ho Chi Minh	0.455***	[0.161]
Binh Duong	0.165	[0.216]

	dF/dx	S.E.
Dong Nai	0.010	[0.212]
Month of interview		
(Jan, Feb, March, April)		
September	0.228	[0.358]
October	0.109	[0.347]
November	0.012	[0.345]
December	-0.271	[0.348]
Constant	-5.600***	[0.745]
No. of observations	4,445	
No. of censored observations	1,996	
LR $\chi 2$ (51)	992.72	
Prob > $\chi 2$	0.000	
Log likelihood	-8209.08	

Note: *** Denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level.
Source: Calculations based on the 2004 Vietnam Migration Survey data.

Remittances in Vietnam during Economic Integration: Characteristics and Impacts on Household Welfare*

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Abstract

Since the 1990s, Vietnam has experienced a dramatic growth in remittance flows, including transfers within the country and transfers from abroad. This paper uses the Vietnam Living Standard Surveys [VLSS] in 1992/93 and 1997/98 and the Vietnam Household Living Standard Surveys [VHLSS] in 2002 and 2004 to study the impact of international remittances on Vietnamese households. The objectives of this study are to characterize international remittance receipts and their evolution over time, and to determine where they come from, what percentage of households receive them, and what portion of household expenditures they represent. Moreover, we also analyze the socioeconomic and demographic characteristics of those households receiving international remittances, as well as how the remittance sender is related to the receiver, and how the funds are spent by households. Finally, we consider the relation between remittances and inequality in Vietnam.

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1. Introduction

In detailing the situation of international remittances to Vietnam in the 1990s and 2000s, this paper investigates an important aspect of globalization process that Vietnam is now actively participating. Indeed, international remittances are playing an increasingly important role in the Vietnamese economy. Hernándes-Cross (2005) reports that international remittances totalled $1.2 billion (USD) in 1999. By 2003, they grew to $2.6 billion. In terms of Gross Domestic Product (GDP), this represents a growth from 4.4 percent of GDP in 1999 to 7.4 percent of GDP in 2003. Since 2000, international remittances have been larger than Overseas Development Assistance (ODA) and at a comparable level to Foreign Direct Investment (FDI). Foreign remittances are undoubtedly influencing the Vietnamese economy in numerous ways and deserve a strong research focus.

In an attempt to fill some of these research needs, this paper seeks to quantify the impact and the evolution of foreign remittances on the people of Vietnam by using the Vietnam Living Standards Surveys [VLSS] in 1992/93 and 1997/98, and the Vietnam Household Living Standards Surveys [VHLSS] in 2002 and 2004. The objectives of this study are to characterize international remittance receipts and their evolution over time, and to determine where they come from, what percentage of households receive them, and what portion of household expenditures they represent. Moreover, we also analyze the socioeconomic and demographic characteristics of those households receiving international remittances, as well as how the remittance sender is related to the receiver, and how the funds are spent by households. Finally, we consider the relation between remittances and inequality in Vietnam. To accomplish these goals, we firstly review the existing studies on international remittances. Then, we present our data and methodology, as well as advantages and limitations of the data. This is followed by our analyses of the above-mentioned topics. The last part will present concluding remarks and directions for further studies.

Our findings include that international remittances come from throughout the world, but are dominated by the United States as a main source. Also, over time, the destinations of international remittances are becoming more diverse as they move away from Ho Chi Minh City and other urban areas, in particular, to other regions and to rural areas. Nonetheless, the percentage of households receiving international remittances as held steady at around 5 to 7 percent of the population. Also, foreign remittances are received disproportionately by widows, the elderly, female headed households, and households where the head does not work. This helps to ensure that international remittances actually improve equality in Vietnam with regard to per-capita household expenditures, though the improvements are quite small. Nonetheless, the improvements to income equality caused by international remittances are becoming more substantial over time. We also find that international remittances are used primarily for consumption, and they are mainly provided by close family members, including children, spouses, and siblings.

2. Previous Studies About International Remittances

A few studies about remittances in Vietnam are available to researchers. For instance, Le and Nguyen (1999) use the 1992/93 VLSS to study domestic and international remittance flows in Vietnam. Their main interest is to determine the impact of remittances on the income distribution, and they find that while internal remittances tend to reduce inequality, the flow of international remittances tend to go more toward high-income households and thus exacerbate inequality. They also build regression models to delineate who receives remittances and how big these remittances will be.

Another study by Cox (2004) uses the 1992/93 VLSS and the 1997/98 VLSS. Cox considers the issue of private interhousehold transfers in Vietnam, which include both remittances and loans. He examines the characteristics associated with transfer receipt, the impact of transfers on inequality, and the flow of transfers between generations. His particular interest is the elderly and whether private transfers are able to help the elderly sufficiently, in spite of the weak public insurance system. By using the panel data links between the surveys, he presents evidence that private transfers, primarily remittances, do act as a type of insurance responding to events, such as retirement or widowhood. He also compares the role of remittances that flow within regions, between regions, and from overseas sources, and he finds remittances to be a main source of income redistribution as they are more than twice the size of public transfers.

Another more recent study that includes coverage of remittances is Barbieri (2006). This study uses the 1997/8 VLSS and the 3 percent public use sample of the 1999 Census to analyze rates of coresidence and flows of remittances between the elderly and their children. The paper develops a regression model to explain what characteristics determine whether an elderly person can expect to receive remittances from their children. Though the paper is not specifically about international remittances, it seeks to test whether the intensification of migration accompanying economic reform in Vietnam is leading to the breakdown of intergenerational family support in the country. Barbieri concludes that children continue to support their parents and that "geographic distance between adult children and their elderly parents should not be interpreted as a sign of indifference." (2006: 27)

More broadly, we can also find a large literature on the theoretical and empirical impacts of remittances. Much of the theoretical literature seeks to explain a two-step process: first people must migrant and then they must send remittances home. In particular, the theory cannot be clear about whether international remittances will lead to greater income equality or to a more unequal distribution of income. Ravallina and Robleza (2003) summarize the theoretical literature very well. On the one hand, perhaps only the wealthiest people will be able to afford the education and training and the costs of migration for family members in order to make the receipt of international remittances possible. In this scenario, remittance receipts would lessen income equality. On the other hand, perhaps the wealthiest members of the society are content, and it is only those in weaker positions who will make the sacrifices needed to send family members overseas. Then, the receipt of remittances would tend to promote income equality in the home society.

Beyond the issues of migration, the relationship between remittances and inequality remains unclear. One could expect remittances to flow from the well-off to the less well-off as a type of insurance mechanism that could play an important role in countries with weak social insurance systems. Remittances could also promote economic growth by providing funds for human capital and infrastructure development. These factors would tend to promote equality, or to at least improve the situations of most people in the country. At the same time, remittances could produce greater inequality by having a narrow impact of creating a well-off group of recipients who enjoy increased consumption from year to year without feeling a need for work.

Empirical work about the impact of remittance receipts on the income distribution has now been completed for a number of countries. For example, Adams (1991) finds that while international remittances did reduce poverty in Egypt by a small amount, their overall impact on the income distribution was negative. Adams repeated this analysis for Pakistan in 1992, Guatemala in 2004, and Ghana in 2006, and he generally finds that international remittances had a negligible or slightly negative impact on the income distribution.

3. Data and Methodology

In this paper, we use the Vietnam Living Standards Surveys [VLSS] in 1992/93 and 1997/98, and the Vietnam Household Living Standards Surveys [VHLSS] in 2002 and 2004. These surveys were conducted by the General Statistics Office of Vietnam (GSO), along with other international agencies, as a part of the World Bank's Living Standard Measurement Surveys. Detailed descriptions of these surveys can be found in numerous research reports, such as Grosh and Glewwe (1998), GSO (2004 a, b), and World Bank (2000, 2001, and 2005).

Table 1: Number of Households and Individuals in the V(H)LSS

Year	Number of Households	Number of Individuals
1992/93	4,800	24,068
1997/98	6,002	28,633
2002	29,530	132,384
2004	9,189	39,696

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

The surveys are organized by household, but they also include some characteristics for each individual in the household, such as age, gender, relationship to household head, marriage status, working status, salary, health, and education. Table 1 shows the number of households and individuals interviewed for each survey. At the household level, the surveys provide extensive data on sources of income, business and agricultural enterprises, detailed household expenditures, ownership of consumer durables, poverty incidence, poverty alleviation programs, and housing conditions. The households are representative of the entire Vietnamese population, both urban and rural, and across the regions.

In the surveys, remittances are defined as *the amount of money and monetary value of in-kind benefits received by a household from people not living in the household, which do not require repayment*. With respect to information about remittances, we can think of the two surveys from the 1990s as similar to one another, but different from the two surveys in the 2000s. And generally speaking, the information about remittances in the 1990s surveys is much more thorough than in the 2000s surveys. For the 1990s, we know specific details about each remittance a family receives. This information includes which family member received it, the relationship of the remittance sender to the receiver, the gender of the sender, and where the sender lives, including which country if the remittance came from overseas. The 1990s surveys also include details about both remittances received and sent by each household, which allows a researcher to determine whether the household is a net receiver or sender, though this detail is not important for the analysis of international remittances since very little is sent out of Vietnam. For 1997/98, we even know how the household spent the remittances it received. Not all of these details are included in the 2002 and 2004 surveys, though. For the later surveys, we only know the total amount of remittances received by each household, divided into domestic and international remittances. Thus, in the later surveys we cannot discuss the relationship between the sender and receiver, whether the household is a net sender or receiver, and from which country the remittance came.

Other general limitations of the data which bear some relevance to the topic of this paper include that we generally only have information about relatives who live in the same household (particularly in the later surveys), and therefore it is difficult to identify other relatives who may be living nearby or migrating to other areas. Therefore, we cannot identify which households have family members living overseas and which do not, in order to identify the potential for international remittances. For instance, while we know about receipt of

remittances from children, we cannot say what percentage of non-coresident children provide them. Furthermore, besides wages, most income sources are only identified at the household level, so it is not clear which member is the source of the income. Wealth data are also only available at the household level. This limits the analysis of intra-household sharing.

In this paper, we will analyze our research objectives by using data tabulations for each survey to observe trends over time. We use the individual and household weights so that the tabulations are representative for the entire Vietnamese population. Thus, we can observe changes in international remittance flows during a time period, in which the Vietnamese population experienced profound social and economic changes.

4. Results and Analysis

In this section, international remittances to Vietnam will be analyzed along different aspects, in order to gain a better understanding of their impacts on Vietnamese households.

4.1. Characteristics of Remittance Flows in Vietnam

Table 2: Flow of Remittances in Vietnam by Origin
(Percent of Total Value of Remittances)

Source of Remittances	**1992 / 93**	**1997 / 98**
Within Same Province	18.9%	27.8%
Between Provinces	9.4%	17.0%
International	71.7%	57.3%
Source of International Remittances		
By country		
Laos	0.0%	0.0%
Cambodia	0.2%	0.0%
Thailand	0.3%	0.4%
China	0.2%	0.2%
Hong Kong	0.0%	1.1%
Taiwan	n/a	0.8%
Australia	7.3%	8.6%
France	2.8%	4.0%
Western Europe	9.9%	7.7%
Former Soviet Union	3.4%	3.2%
Eastern Europe	9.3%	3.9%
United States	41.1%	57.7%
Canada	6.2%	6.1%
Other	19.2%	6.5%
By region		
North America	47.3%	63.8%
Europe	22.0%	15.6%
Australia	7.3%	8.6%
Asia	4.2%	5.6%
Other	19.2%	6.5%
Source of Remittances	**2002**	**2004**
Domestic	61.3%	63.2%
International	38.7%	36.8%

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

The role of remittances in the Vietnamese economy is growing, both in terms of the percentage of households receiving them, and in the overall size of remittances. Though this paper is primarily concerned with international remittances, we will first provide some evidence of the overall situation of remittances in Vietnam. Remittances can flow either within the same province, between different provinces, or from overseas.

Data for the origin of remittances are much more extensive for the 1990s surveys than for the 2002 and 2004 surveys. This information is in Table 2. Before going into a greater detail about the 1990s, we can see the overall time trend of rapid growth in the proportion of domestic remittances. In 1992/93, 71.7 percent of the total value of remittance flows came from overseas sources, and this amount gradually reduced to 36.8 percent in 2004. With this in mind, we can say much more about the 1990s. In 1992/93, 18.9 percent of the value of remittances moved between households within the same province, 9.4 percent between provinces, and 71.7 percent from overseas. Five years later, in 1997/98, international remittances represented only 57.3 percent of the total remittance value, while remittances flowing within a province represented 27.8 percent of remittance value, and those between provinces represented 17 percent of the total value. The most popular source for international remittances was the United States, which provided 41.1 percent of the overseas total in 1992/93, and 57.7 percent in 1997/98. By continents, in both surveys, North America leads with the most remittances, followed by Europe, Australia, and Asia. The "other" category was also particularly substantial in 1992/93, representing 19.2 percent of international remittances, but no additional details were provided to indicate which countries are represented.

Table 3: Percentage of Households Receiving Remittances (based on the Origin of Remittances)

	1992/93	**1997/98**	**2002**	**2004**
Receipt of Remittances From:				
No Remittances	79.28%	77.32%	20.01%	12.28%
Domestic Remittances	16.11%	17.83%	77.31%	86.65%
International Remittances	5.60%	5.60%	5.93%	7.25%
Receipt of Remittances From:				
No Remittances	79.28%	77.32%	20.01%	12.28%
Domestic Remittances Only	15.12%	17.06%	74.06%	80.47%
International Remittances Only	4.62%	4.85%	2.68%	1.67%
Both International and Domestic	0.99%	0.78%	3.25%	5.58%

Note: Columns in the top half of the table do not add to 100 because households receiving both domestic and international remittances are counted twice.

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

As noted, this time period was characterized by a growing fraction of the remittance totals coming from domestic sources. One may wonder whether this indicates an increase in the absolute value of domestic remittances, or a decrease in value of international remittances. To help answer this, Table 3 demonstrates that the percentage of households (weighted by household size) receiving remittances from domestic sources and foreign sources. The percentage of households receiving international remittances does not increase much during the time period, moving from 5.6 percent of households in 1992/93 to 7.25 percent of households in 2004. Meanwhile, the percentage of households receiving domestic remittances exploded, particularly between the 1997/98 and 2002 surveys. In 1992/93, only 16.11 percent of households received domestic remittances, but this grew to 77.31 percent of households in 2002, and 86.65 percent of households in 2004. Further down Table 3, we can see that even

for households receiving international remittances, it became more common during this time period to also receive domestic remittances.

4.2. Socioeconomic and Demographic Characteristics of Households with Remittances

Table 4 describes the socioeconomic characteristics of those receiving international remittances. We examine various characteristics of the household, including its regional location, urban/rural status, marital status, gender, and age of the household head, and whether the household head is employed. For each survey year, there are three columns. First, the percentage of Vietnam's population represented by each category is shown. Then, we see the percentage of international remittances received by the category group. The third column then shows the ratio of foreign remittances received to the portion of population represented by the group. If the ratio is above 1, then the group receives a disproportionate share of remittances from overseas, while those with a ratio less than 1 receive a relatively smaller share. This table demonstrates that recipients of remittances do not represent a random sample of Vietnam's population, and helps to elucidate those who are more likely to receive such remittances. For reader's reference, Appendix provides a map of Vietnam's economic regions.

First, by region, Table 4 shows that the South East region of the country consistently receives the most remittances from overseas. Throughout the time period, the South East contained about 15 percent of Vietnam's population. Meanwhile, at the low point in 2002, the South East received 29.2 percent of the total international remittances, and in 1997/98, the South East received 49.1 percent of the total international remittances. The South East includes Ho Chi Minh City, which is particularly known as a home for families who have relatives overseas. After the South East, no region can consistently claim a relatively large proportion of international remittances, though there are regions that consistently receive less remittances relative to their populations. For the Central Highlands and North East, the ratio of international remittances to population is at its highest of 0.5 in 2002, and the North West also reaches its peak in 2002 with a ratio of 0.4.

Regarding urban/rural status, urban areas consistently claim a larger share of international remittances, though rural areas have been consistently gaining ground over time. In 1992/93, rural areas contained 80 percent of Vietnam's population, but only received 20.9 percent of the total international remittance amount. By 2004, the rural areas lost some population so that they represented 74.1 percent of the country's people, while the portion of international remittances grew to 49.9 percent. Thus, just as the share of remittances going to the South East region decreased over time, we are able to see evidence of growing geographic diversity in terms of where international remittances flow in Vietnam.

The next categories in Table 4 are the marital status and gender of the household head. Across the years, households with a married head tend to receive relatively smaller remittances. Instead, these remittances tend to flow more to widows and those otherwise not married. Similarly, while males tend to head about 78 percent of Vietnamese households (weighted by household size), such households only receive about 55 percent of the foreign remittances over time. By 2004, females headed 21.7 percent of households, and their households accounted for 47.9 percent of foreign remittances. Actually, increasing remittances to female headed households can be observed over time, as in 1992/93 females headed 22.7 percent of households and received 42.5 percent of the value of international remittances. Contrary to the earlier hypothesis that international remittances would reinforce the wealth of otherwise well-off households, the tendency for international remittances to flow to unmarried and female-headed households provides some initial evidence that remittances may be helping to equalize incomes. This is an issue we will turn to again in later sections.

Table 4: Flow of International Remittances in Vietnam
(based on Household Characteristics)

	1992/93			1997/98			2002			2004		
	Percent of Population	Percent of International Remittances Received	Ratio of International Remittances Received to Population	Percent of Population	Percent of International Remittances Received	Ratio of International Remittances Received to Population	Percent of Population	Percent of International Remittances Received	Ratio of International Remittances Received to Population	Percent of Population	Percent of International Remittances Received	Ratio of International Remittances Received to Population
Region												
Red River Delta	20.2%	30.9%	1.5	19.6%	15.8%	0.8	21.9%	9.5%	0.4	22.1%	19.5%	0.9
North East	14.2%	3.0%	0.2	15.1%	2.8%	0.2	11.9%	5.7%	0.5	11.6%	3.9%	0.3
North West	2.6%	0.2%	0.1	2.9%	0.0%	0.0	2.7%	1.0%	0.4	3.0%	0.7%	0.2
North Central Coast	12.8%	1.2%	0.1	13.8%	6.9%	0.5	13.4%	9.5%	0.7	13.1%	10.9%	0.8
South Central Coast	9.5%	8.0%	0.8	8.5%	9.9%	1.2	8.5%	9.8%	1.2	8.7%	9.9%	1.1
Central Highlands	2.3%	0.7%	0.3	2.8%	0.3%	0.1	5.8%	2.8%	0.5	5.0%	1.8%	0.3
South East	15.9%	42.6%	2.7	15.9%	49.1%	3.1	14.6%	29.2%	2.0	16.2%	31.6%	2.0
Mekong River Delta	22.5%	13.3%	0.6	21.5%	15.3%	0.7	21.3%	32.5%	1.5	20.4%	21.8%	1.1
Urban / Rural Status												
Rural	80.0%	20.9%	0.3	77.6%	25.2%	0.3	76.8%	49.0%	0.6	74.1%	49.9%	0.7
Urban	20.0%	79.1%	4.0	22.4%	74.8%	3.3	23.2%	51.0%	2.2	25.9%	50.1%	1.9
Marital Status of Household Head												
Married	85.4%	76.7%	0.9	86.4%	78.7%	0.9	85.6%	74.5%	0.9	84.8%	68.2%	0.8
Widowed	10.9%	15.1%	1.4	10.4%	11.8%	1.1	11.5%	17.5%	1.5	12.3%	23.6%	1.9

Otherwise Not Married	3.7%	8.2%	2.2	3.2%	9.6%	3.0	2.9%	8.0%	2.8	2.9%	8.3%	2.8
Gender of Household Head												
Male	77.3%	57.5%	0.7	78.4%	55.0%	0.7	79.5%	57.0%	0.7	78.3%	52.1%	0.7
Female	22.7%	42.5%	1.9	21.6%	45.0%	2.1	20.5%	43.0%	2.1	21.7%	47.9%	2.2
Age of Household Head												
20 - 29	10.7%	2.0%	0.2	5.4%	2.5%	0.5	5.0%	4.9%	1.0	3.2%	3.3%	1.0
30 - 39	29.6%	29.4%	1.0	28.3%	17.1%	0.6	26.2%	20.5%	0.8	23.1%	12.5%	0.5
40 - 49	22.5%	12.5%	0.6	29.4%	29.5%	1.0	31.5%	26.7%	0.8	32.4%	28.5%	0.9
50 - 59	18.3%	27.3%	1.5	17.8%	19.3%	1.1	17.0%	15.8%	0.9	20.0%	22.6%	1.1
60 - 69	13.1%	13.5%	1.0	13.4%	14.7%	1.1	11.5%	13.7%	1.2	11.5%	16.4%	1.4
70 - 79	4.9%	12.5%	2.6	4.9%	11.2%	2.3	7.0%	14.9%	2.1	7.4%	12.9%	1.7
80 - 89	0.7%	2.9%	3.9	0.8%	5.6%	7.4	1.7%	3.1%	1.8	2.1%	3.7%	1.7
90 and older	0.1%	0.0%	0.0	0.1%	0.2%	4.0	0.2%	0.2%	0.9	0.3%	0.0%	0.0
Work Status of Household Head												
Not Working	10.7%	32.3%	3.0	15.2%	39.5%	2.6	14.0%	35.6%	2.5	15.3%	35.8%	2.3
Working	89.3%	67.7%	0.8	84.8%	60.5%	0.7	86.0%	64.4%	0.7	84.7%	64.2%	0.8

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

The next grouping in Table 4 is by the age of the household head. Here we can see evidence of international remittances being used to support elderly family members, though unlike before, this is a trend that weakens rather strengthens over time. Nonetheless, these numbers do not provide the full story because we do not know about who else is living with the household head for the purposes of this table. For instance, if a child moves from overseas back to Vietnam to take care of elderly parents directly instead of providing remittances, then the table would show declining remittance flows to the elderly without properly characterizing the shift in type of support. Giang and Pfau (2007) provide some evidence regarding this matter by characterizing elderly households as those who are dependent on younger family members and those who are not. They find that the number of elderly living as dependents is declining in favor of elderly living alone. This would imply that a breakdown is occurring as elderly also receive less international remittances, and so further research is needed in this area using the panel aspects of the dataset.

Finally, Table 4 shows that regarding work status, the tendency is for the head of households to not be working when they receive international remittances. In 1992/93, 10.7 percent of household heads were not working, and these households received 32.3 percent of the international remittance flows. By 2004, 15.3 percent of household heads were not working, and they received 35.8 percent of the remittance value. However, this correlation does not reveal the underlying causation. It could be that households who can receive international remittances become lazy and less likely to work, or it could be that such household heads are unable to work and thus their family members are more willing to sacrifice to provide them with remittance income. The aging of the population as well as the flows to widows and others indicates the second scenario is likely, but it could be that both possibilities are playing a role.

4.3. Relationship between the Senders and Receivers of International Remittances

Using the 1990s surveys, we can get an idea about the relationship between the senders and receivers of international remittances.

Table 5: Relationship of Sender to Receiver of International Remittances (weighted by Remittance Amount)

Relationship of Sender to Receiver	Age of Household Head							
	Total	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89
1992/93								
Grandchild	1.9%	0.7%	0.7%	0.2%	3.1%	0.1%	5.9%	4.7%
Child / Child-in-law	40.2%	12.8%	6.6%	8.9%	62.2%	63.8%	82.2%	85.6%
Spouse	4.0%	34.2%	7.0%	8.2%	0.0%	0.0%	0.0%	0.0%
Sibling, Sibling-in-law, Niece or Nephew	38.7%	32.3%	64.6%	53.4%	22.9%	31.3%	6.6%	2.5%
Parent / Parent-in-law	10.0%	1.5%	19.5%	9.4%	8.6%	0.0%	3.3%	0.0%
Grandparent	0.1%	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	5.1%	16.3%	1.7%	19.8%	3.2%	4.8%	2.0%	7.2%
1997/98								
Grandchild	4.2%	0.0%	0.0%	3.5%	4.8%	5.1%	9.8%	4.6%
Child / Child-in-law	36.7%	2.0%	0.7%	11.8%	48.8%	69.7%	78.6%	84.7%
Spouse	5.6%	53.7%	11.6%	6.0%	0.0%	0.0%	0.2%	0.0%
Sibling, Sibling-in-law, Niece or Nephew	33.2%	22.1%	36.8%	55.1%	34.4%	19.4%	5.7%	1.5%
Parent / Parent-in-law	5.6%	0.0%	23.6%	2.0%	3.8%	0.9%	4.3%	8.8%
Grandparent	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Other	14.7%	22.2%	27.3%	21.7%	8.2%	4.9%	1.5%	0.6%

Source: Authors' calculations from VLSS 1992/3 & 1997/8

As mentioned before, this analysis is not possible with the 2002 and 2004 surveys, because such details are missing from the survey questions. These details are provided in Table 5.

In both the 1992/93 and 1997/98 surveys, children were the largest source of international remittances, providing 40.2 and 36.7 percent of the total value for those years. Next, the category of siblings and nieces/nephews was also an important source, providing 38.7 percent of the remittances in 1992/93 and 33.2 percent in 1997/98. Parents and spouses also provided some remittances, as well as other categories. Table 5 also shows the distribution of remittances by relationship status, depending on the age of household head. For households with a head aged 20 to 29, spouses are the biggest source of international remittances, followed by the sibling category. But for households aged 30 and older, spouses are not a noticeable source. For those households with a head aged 30 to 49, the sibling category is most important, and for those aged 50 and above, children become the most important source. The "other" category is rather small, consisting of 5.1 percent of the total in 1992/93 and 14.7 percent in 1997/98. It is worth noting that in addition to other distant relatives, the "other" category includes all remittances from non-relatives, demonstrating that most international remittances are sent to family members in Vietnam.

4.4. Evidence on Spending Patterns for Remittances

How remittances are spent is an important question that can help to characterize the impact of international remittances on the Vietnamese economy. For instance, are they used to purchase food, shelter, or other consumption goods, or for education, or for business investment? It is an important question, though it is only addressed in the 1997/98 survey.

In this survey, there are 497 reports of international remittance receipt, going to 377 different households. For each of the 497 reports, the interviewee was asked to identify up to three different ways that the remittance was spent. In all 497 cases, a first use was reported, while a second use was reported in 56 cases, and a third use in only 7 cases. For the first use, 86.7 percent (431 cases) identified consumption, 0.4 percent (2 cases) identified education, 3 percent (15 cases) identified investment in non-farm production, 1.2 percent (6 cases) identified investment in farm production, 4.6 percent (23 cases) used the funds to build a house, and 4 percent (20 cases) identified the use as "other". Regarding the identification of a second use, 40 of the 56 who responded identified a second use beyond consumption. These include 12 cases for education, 11 cases for non-farm investment, 1 case for home building, and 18 cases for "other". This only leaves 14 other cases of second uses, and 9 of these 14 identified consumption as the second use.

While these numbers cannot be used to pinpoint the exact percent breakdown of spending, because they do not identify the proportions spent on each category, let us ignore second and third uses and assume all of the remittance was spent toward the first use. In this case, the remittances for consumption tended to be smaller, because once we weigh for the size of the remittance, spending on consumption represented about 73 percent of the value of international remittances. Meanwhile, house construction received 14.4 percent of the remittances, non-farm investment received 6 percent of the flows, and education and spending on farm investment were essentially nonfactors as most of the rest goes to the "other" category. Unfortunately, such information is only included in the 1997/98 survey, but we do find evidence in this case that remittances have a tendency to be consumed, especially if we add home construction to consumption expenditures, and perhaps surprisingly, very little of education expenses are funded with international remittances.

4.5. Impact of International Remittances on Income Inequality in Vietnam

Here we explore the relationship between remittances and income inequality in Vietnam. First, Table 6 provides details about the distribution of international remittances to different income groups. For each survey year, we show the share of the total international remittances received by a subgroup of the population, the mean amount of international remittances and mean amount of per-capita expenditures measured in thousands of Vietnamese Dong (VND), the mean amount of per-capita expenditures minus international remittances, and the amount of remittances as a percentage of expenditures. The population subgroups include households not receiving international remittances, households receiving international remittances, and then these recipients divided into five quintiles, sorted by the total per-capita expenditures of the household.

For recipients of international remittances, we observe that, with an implicit assumption that remittances are consumed and that households would not be able to adjust their expenditures in the counterfactual situation where they do not otherwise receive international remittances, such remittances account for between 40 and 60 percent of household expenditures. The percentage was the highest in 1992/93, where remittances accounted for 57.1 percent of expenditures. Actually, this year also holds the distinction as the only year that the mean amount of international remittances (1391.7 thousand Dong) for recipients actually exceeded the mean per-capita expenditures of non-recipients (1255.3 thousand Dong). Among households receiving international remittances, we can also observe than in all years the mean international remittance exceeded Vietnam's poverty-line for per-capita expenditures. Finally, with regard to the income distribution divided into five quintiles, we find that the most well-off quintile receives a disproportionate share of the international remittances, though their share lessens over time from 84.7 percent of the total in 1992/93 to 69.3 percent of the total in 2004. Also, while the absolute level of remittances tends to increase as one moves up the income distribution, there is not as clear of pattern regarding the percentage of expenditures represented by remittances.

Table 6 seems to imply that international remittances lead to greater inequality, especially as recipients on average tend to enjoy about double the per-capita expenditures of non-recipients. However, Table 7 disputes this conclusion with the use of Gini coefficients. These numbers measure the impact of remittances on the income distribution, where the income distribution is defined separately as both per-capita expenditures and per-capita income (household income is only available in the 2002 and 2004 surveys). A Gini coefficient shows the degree of equality in which income or expenditures are divided in a society, with a measure of 0 showing perfect equality and a measure of 1 showing that all resources in society are held by one household.

The conclusion of Table 7 is that both domestic and international remittances are contributing to greater equality in Vietnam. This is done by first removing all remittances receipts from the income measure of the household, and then calculating the Gini coefficient. Then, domestic remittances are added to the income measure to find another Gini coefficient. Similarly, domestic remittances are then removed and international remittances are added to the income measure to find the Gini coefficient in the third column. The fourth column includes the Gini coefficient with all remittances included.

Table 6: Relationship between Remittances and the Income Distribution
(Expenditure Quintiles are Defined in terms of Household Per-capita Expenditures)

	Share of Total International Remittances	Mean International Remittances	Mean Per Capita Expenditures	Mean Per Capita Expenditures net International Remittances	Remittance as % of Expenditure
1992 / 93 (Poverty line for per-capita real expenditure: 1,160)					
Households Not Receiving International Remittances	0%	0.0	1255.3	1255.3	0.0%
Only Households Receiving International Remittances	100.0%	1391.7	2437.7	1046.0	57.1%
Only Households Receiving International Remittances					
Expenditure Quintile 1	0.9%	199.2	643.4	444.2	31.0%
Expenditure Quintile 2	2.5%	736.5	819.0	82.5	89.9%
Expenditure Quintile 2	3.8%	357.1	1072.0	714.9	33.3%
Expenditure Quintile 2	8.2%	468.2	1524.6	1056.5	30.7%
Expenditure Quintile 5	84.7%	2354.4	3656.4	1302.0	64.4%
1997 / 98 (Poverty line for per-capita real expenditure: 1,790)					
Households Not Receiving International Remittances	0%	0.0	2614.1	2614.1	0.0%
Only Households Receiving International Remittances	100.0%	2209.2	5273.3	3064.1	41.9%
Only Households Receiving International Remittances					
Expenditure Quintile 1	0.2%	104.3	1160.4	1056.1	9.0%
Expenditure Quintile 2	2.8%	720.9	1723.5	1002.6	41.8%
Expenditure Quintile 2	3.9%	831.8	2290.2	1458.4	36.3%
Expenditure Quintile 2	11.3%	1132.1	3382.3	2250.2	33.5%
Expenditure Quintile 5	81.8%	3370.6	7635.6	4265.0	44.1%

2002 (Poverty line for per-capita real expenditure: 1,917)					
Households Not Receiving International Remittances	0%	0.0	3337.4	3337.4	0.0%
Only Households Receiving International Remittances	100.0%	2895.5	5674.7	2779.2	51.0%
Only Households Receiving International Remittances					
Expenditure Quintile 1	0.8%	290.7	1312.9	1022.2	22.1%
Expenditure Quintile 2	2.1%	502.1	1889.8	1387.7	26.6%
Expenditure Quintile 2	4.8%	961.4	2473.6	1512.2	38.9%
Expenditure Quintile 2	16.1%	2227.7	3550.3	1322.7	62.7%
Expenditure Quintile 5	76.3%	4481.9	8659.2	4177.3	51.8%
2004 (Poverty line for per-capita real expenditure: 2,077)					
Households Not Receiving International Remittances	0%	0.0	4189.2	4189.2	0.0%
Only Households Receiving International Remittances	100.0%	3674.1	8013.7	4339.7	45.8%
Only Households Receiving International Remittances					
Expenditure Quintile 1	0.7%	694.2	1645.6	951.5	42.2%
Expenditure Quintile 2	5.2%	1718.3	2390.9	672.5	71.9%
Expenditure Quintile 2	7.8%	1692.3	3279.0	1586.7	51.6%
Expenditure Quintile 2	17.1%	2718.2	4745.5	2027.3	57.3%
Expenditure Quintile 5	69.3%	5023.1	11709.0	6685.9	42.9%

Note: Monetary amounts are measured in thousands of Vietnamese Dong (VND) per year.

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

Table 7: Impact of Remittances on Inequality in Vietnam: Gini Coefficients

	Excluding Remittances	Including Domestic Remittances Only	Including International Remittances Only	Including All Remittances
1992 / 93				
Income per capita	n/a	n/a	n/a	n/a
Expenditure per capita	0.3580	0.3534	0.3344	0.3305
1997 / 98				
Income per capita	n/a	n/a	n/a	n/a
Expenditure per capita	0.3645	0.3551	0.3583	0.3501
2002				
Income per capita	0.5036	0.4964	0.5059	0.4988
Expenditure per capita	0.4113	0.3899	0.3870	0.3703
2004				
Income per capita	0.5042	0.4943	0.5040	0.4947
Expenditure per capita	0.4176	0.3868	0.3948	0.3694

Source: Authors' calculations from VLSS 1992/3 & 1997/8, and VHLSS 2002 & 2004

We observe that the Gini coefficients are smaller after including the remittances which shows greater equality. For instance, in 1992/93, international remittances help to reduce the Gini coefficient from 0.3580 to 0.3344. In 1997/98, Vietnam is tending toward greater overall inequality, but international remittances nonetheless help to reduce the Gini coefficient from 0.3645 to 0.3583. In 2002 and 2004, we have Gini coefficients for both income and expenditures. The Gini coefficients for income tend to be larger than for expenditures, because wealthier families tend to save more so that overall expenditures are closer. For income, 2002 shows the only instance of increased inequality, as international remittances increase the Gini coefficient from 0.5036 to 0.5049. However, with expenditures, we see the same trend as before. Inequality is increasing in Vietnam, but international remittances reduce the Gini coefficient from 0.4113 to 0.3870. Finally, in 2004, international remittances again reduce the Gini coefficients: for income, the Gini coefficient moves from 0.5042 to 0.5040 (a negligible difference), while for expenditures it moves from 0.4176 to 0.3948. At least in terms of expenditures, we are seeing clear evidence that international remittances are improving income equality in Vietnam.

5. Concluding Remarks

International remittances are clearly playing an important part in the Vietnamese economy. This paper seeks to determine how international remittances have influenced Vietnamese households by using the VLSSs in 1992/93 and 1997/98, and the VHLSSs in 2002 and 2004. Our findings include that international remittances came from throughout the world, but were dominated by the United States as a main source. Also, over time, the destinations of international remittances have become more diverse as they moved away from Ho Chi Minh City and other urban areas, in particular, to other regions and to rural areas. Nonetheless, the percentage of households receiving international remittances as held steady at around 5 to 7 percent of the population. Also, international remittances were received disproportionately by widows, the elderly, female headed households, and households where the head did not work. This helps to ensure that international remittances actually improved equality in Vietnam with regard to per-capita household expenditures, though the

improvements were quite small. Nonetheless, the improvements to income equality caused by international remittances have become more substantial over time. We also found that international remittances were used primarily for consumption, and they were mainly provided by close family members including children, spouses, and siblings.

There is still much more to be said about the role of international remittances, and this paper hopes to serve as a starting point for further analysis. In particular, this paper did not account for the macroeconomic impacts of remittances in a general equilibrium framework. If remittances lead to greater investment, they then can be an important source of economic growth. Moreover, this paper also did not provide a lot of detail about an issue of particular interest to the authors, which is how remittances impact the living standards of Vietnam's elderly. The social insurance infrastructure is still weak, and as economic reform is producing many changes in Vietnamese society, we wish to study more about the overall impacts on the elderly.

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Appendix: Map and Economic Regions of Vietnam

North East region includes Ha Giang , Tuyen Quang, Cao Bang , Lang Son, Lao Cai, Yen Bai, Thai Nguyen, Bac Kan, Phu Tho, Bac Giang, and Quang Ninh

North West region includes Hoa Binh, Son La, and Lai Chau

Red River Delta region includes Ha Noi, Hai Phong, Vinh Phuc, Bac Ninh, Hai Duong, Hung Yen, Ha Tay, Ha Nam, Nam Dinh, Ninh Binh, and Thai Binh

North Central Coast region includes Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, and Thua Thien Hue

South Central Coast region includes Da Nang City, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan, and Binh Thuan

Central Highlands region includes Dak Lak, Gia Lai, Kon Tum, and Lam Dong

South East region includes Ho Chi Minh City, Dong Nai, Binh Duong, Binh Phuoc, Tay Ninh, and Ba Ria-Vung Tau

Mekong River Delta region includes Long An, Tien Giang, Ben Tre, Tra Vinh, Vinh Long, Can Tho, Soc Trang, An Giang, Dong Thap, Kien Giang, Bac Lieu, and Ca Mau

Source: Ministry of Planning and Investment of Vietnam (MPI), 2006

What is the Place of a Consumer Movement in a Transitional Economy? The Case of VINASTAS in Vietnam

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Abstract

The purpose of this paper is to identify the place open for occupation by the consumer movement in a Vietnam undergoing transition. Civic organisations in Vietnam have been strongly influenced by Party policy throughout the 20th century. Although Vietnam is now opening up to liberalism, many structures remain ideologically close to the communist state. This is true of VINASTAS, the only consumer advocacy association in Vietnam that emerged from the state sphere in the 1980s. With a limited budget and human resources, VINASTAS is now struggling to fulfil the mission it has taken on. Placed in a system of tension between the state, private enterprises and individual consumers, the structure is strongly dependent upon its action context. Its very existence suggests that VINASTAS is working to identify the civic rights of the individual, but exactly what it stands for in the nascent civil society movement is open to challenge.

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1. Introduction

The purpose of this contribution is to show the extent to which the development of a consumers' association in Vietnam illustrates the economic, political and social challenges that have confronted the country over the last 20 or so years. In other words, we will look at the way in which the emergence of a consumer protection agency provides a reading of the changes experienced in a society undergoing a substantial transformation. Indeed, the advent of a consumers' advocacy association in a Communist country is not a mere matter of course.

Pummelled by wars and with an eventful political history, Vietnam saw the Vietnam Standard and Consumers Association (VINASTAS) come on the seen in the late 1980s. The initial goal of the structure was to promote standardisation and quality control for mainstream consumer products. VINASTAS gradually inserted itself into the public sphere consumer debate and began to focus its activities on consumer advocacy.

VINASTAS, as a volunteer association in a country with a communist government that recently opened its doors to economic liberalism, purports to serve the public interest—protection of the individual consumer. There was previously no such thing as legal protection for Vietnamese consumers. Consumer advocacy was provided by the government through its exercise of control over state-owned enterprises. However, over the last twenty years, we have been seeing on one hand the development of freedom of enterprise in a context with as yet limited quality control mechanisms and on the other a boom in household consumption driven by strong economic growth. This has thrust consumer protection into the forefront of challenges facing the authorities in Vietnam.

Vietnam's official entry into the WTO in November 2006 has laid bare the macroeconomic strategy of the country. The interests of the country are becoming vested in the export of quality products. However, the need to meet the quality demands of external markets cannot be undertaken without a look at how consumer needs are being met on the home front. This paper looks at matters from that perspective in an attempt to show how the existence of a consumers' association illustrates the characteristics of a society in transition.

To achieve this, a survey was taken of various executive level staff and members of VINASTAS. This entity was selected as a study case due to the fact that it is the only organisation in Vietnam with a consumer protection mandate. Although it has a relatively small number of individual members, VINASTAS has successfully become an umbrella for some 30 consumer organisations at the regional level. We conducted semi-structured interviews with a number of members and key officers of VINASTAS and consulted documents relating to the association in order to collect the data used hereinafter.

Outline of the paper

The emergence and activity of VINASTAS are a concrete manifestation of the new direction taken by Vietnam since the late 1980s, highlighted by the economic renewal or *Doi moi* period. This paper will therefore develop the history of organisations in Vietnam in order to show the unique situation in which civil society organisations find themselves today and the place they occupy in the country's socioeconomic development.

We will then go on to analyse the organisational structure of VINASTAS wherein we will note power plays between the member organisations, as well as its low budget and the challenges facing it in the area of member recruitment. We will note for example that young people in Vietnam have a hard time identifying with this type of structure with its very particular background.

Next, we will take a look at the relationship between VINASTAS, the state authorities and major commercial enterprises of the country that are often controlled by the state. We will show how VINASTAS is confronted with pressure situations that highlight its aspiration to

defend consumer rights on the one hand and its commitment to adapt to the realities of a fledgling liberal market on the other, while being mindful of the need to comply with the direction given by a still powerful state authority. From this standpoint, VINASTAS' volunteer workers are subject to three constraints. We will then analyse the leeway that the association has regarding public policies and the market. We will discuss the commitment to self-empowerment that it is trying fulfil through its activities and show the consequences that this is having on the consumer movement as it exists in Vietnam today.

2. Background of Civil Society Organisations in a "Developing" Vietnam

2.1. From the 1930s to the 1970s—State Communism has the Upper Hand

The background of civil society organisations in Vietnam has been shaped by the political regime in the country. Thus, one cannot speak of associations or social involvement in Vietnam without referring to state communism. A look at the background of social involvement groups provides insight on the current situation of such organisations.

"Particularly after the 1954 Geneva Agreements and the internationally recognised independence, socialist reform got underway in North Vietnam, including the introduction of a centrally planned economy and the establishment of agricultural cooperatives in rural areas and state-owned companies in the manufacturing and commercial sectors. Civil society was integrated into the Party-State" (CIVICUS, 2006b: 6). Grassroots movements were actually channelled into mass organisations under the guidance of the Communist Party: Women's League, Farmers' Association, Communist Youth League, War Veterans' Association and various labour unions. These mass or socio-political organisations dominated the social space up to the mid-1980s, given that they were established in coordination with the Party and put under the aegis of the Fatherland Front.[1] For several decades, the political discourse of the Party was not in favour of organising any expression of collective identity or interests outside of the state framework. In pith and substance, this need for initiative outside of the state's realm was not felt by the local communities, either urban or rural. Indeed, until the 1970s, an overwhelming majority of high-ranking government officials originated from rural areas and Vietnamese mandarins ended their careers by returning to their home villages where they taught classic culture to the young generations. Thus, *"thanks to the constitution of a genuine village matrix, the Vietnamese countryside in a way came under state control from the inside. Rather than result in the building up of an autonomous class of intellectuals or of what could be called a 'civil society' independent from central authority, quite conversely the unifying virtues of the doctrine were strongly tied to service to the state"* (Papin, 2002).

During the 1950s and 60s, the socio-economic situation of the country was particularly uncertain. The wars that pitted Vietnam against France and the United States had ravaged the country and caused the pauperisation of cities and rural areas alike. In 1975, the country was reunified politically, but the socio-economic situation was dramatic with the health system failing and the economy bled white. The country had to be rebuilt under the auspices of a strong political regime. The government had to move to impose its will on the villagers through an extensive bureaucracy and a doctrine distinct from it (the Party policy). Conditions

[1] The Fatherland Front is a mass organisation linking the Party and the people. It is under the control of the Communist Party of Vietnam and provides an umbrella for religious, cultural and non-political groups such as the Women's League or unions. The Fatherland Front plays a major role in National Assembly elections as it puts forward and approves the appointment of the candidates.

that would be conducive to individual social awareness apart from the state, in other words the conditions for the emergence of civil society, began to come together.

2.2. A Turning Point in the 1980s—Opening up to External Markets

The socio-economic situation was starting to improve in the late 1970s, notably with economic inflows from the Soviet blocs (China and the USSR) in the mid-1980s, but Vietnam was still confronted with serious economic and political challenges. Farmers were struggling to provide for themselves. The so-called "renewal" or *đổi mới* policy with its openness to the market economy would enable the country to implement reforms and innovations in all areas of political, social and economic life. *Đổi mới* was officially approved by the Community Party of Vietnam at it Sixth Congress in December 1986. This policy had been thought out as a transition step from a "socialist planned economy" to a "market economy with socialist orientation". In this, Vietnam's transition is similar to that of China where national communist parties hold a dominant political position in an economy open to competition and thereby differs from the transitions experienced in Western countries.

The reforms picked up momentum as the 1980s ended. The fall of the communist regimes in Eastern Europe pushed Vietnam to look for new allies on the international scene. The wind of liberalisation was blowing. Reforms were brewing in the cooperative sector.

2.3. The 1990s—Diversification of Volunteer Collectives

Subsequent to the *Doi moi* policy of opening up, new types of organisations began to emerge in the 1990s referred to as "charitable technology and science organisations".[2] These "civic organisations" focussed on the areas of tradition, religion or development more broadly and were no longer working directly inside and on behalf of the Party. They were nevertheless given recognition by the Vietnamese government. This legitimacy is very significant in terms of the evolution of Vietnamese society because for a long while "civil" or non-state activities were quickly assumed to be anti-state, anarchistic or subversive. In the early 2000s, some 300 civic organisations could be counted.

In addition to these associations, the 1990s saw an increase in the number of informal groups caring for matters of public interest in rural areas such as credit or community water management for purposes of manufacturing or consumption. Up to the mid-1990s, such groups were tolerated by the local authorities if they were sponsored by international organisations or "official" organisations belonging to the Fatherland Front. Various regulations, decrees and ordinances have been enacted in the last ten years to provide a legal framework for such informal groups.

In 1996, a new Law on Cooperatives was enacted. Several thousand cooperatives were formed, while rural cooperation groups multiplied into the hundreds of thousands nationwide (CIVICUS, 2006b: 13).

2.4. The 2000s—A Timid Consolidation of the Organisation Movement

In 2003, Decree 88 on associations was promulgated, a major step forward for recognition of the organisation environment. The decree makes a distinction between mass organisations sponsored by the Fatherland Front and civic organisations or NGOs. As the CIVICUS project (Civil Society Index) pointed out, *"one reason is that mass organisations are considered political, whereas other organisations are seen as social organisations operating in the humanitarian sphere, with the aim of improving social welfare"* (CIVICUS, 2006b: 17) Decree 88 defines associations as *"voluntary organisations of citizens,*

[2] For NGOs and civil society associations, the only possible option to get legal recognition is to register under the Law on Science and Technology by showing in what way science and technology relate to their activities.

organisations of Vietnamese of the same professions, the same hobbies, the same gender for the common purposes of gathering and uniting members, regular activities, non-self-seeking, aiming to protect members' legitimate rights and interests, to support one another for efficient activities, contribute to the country's socio-economic development, which are organised and operate according to this Decree and other relevant legal documents" (Decree 88/2003, Official Gazette No. 10, 2003, in: CIVICUS, 2006a: 32).

Today, given the quantified data available, social life looks like it is *"rich, broad and diversified in Vietnam"*. A "civil society" is emerging and the Vietnamese people no longer necessarily feel intimately linked to the state. Civil society can be defined as *"the arena between the family, state and the market, where people associate to advance common interests"*, where "*the boundaries between civil society, the market and family are 'fuzzy' "* (CIVICUS, 2006b: 19). In 2005, 80 to 85 percent of Vietnamese declared that they were involved in association activities. There are 140,000 community-based organisations (CBOs), 3,000 legally recognized cooperatives and 1,000 local NGOs. On the average, a Vietnamese citizen belongs to 2.3 organisations, which is high compared to other Asian countries (World Values Survey Vietnam 2001, in: CIVICUS, 2006a: 32). Moreover, voluntary organisations cover a much broader activity spectrum than before. These include mass organisations (within or under the umbrella of the Fatherland Front), "independent" organisations (under the umbrella of the Fatherland Front), professional organisations, Vietnamese NGOs, community organisations, faith-based organisations, informal groups and international NGOs. A distinction can therefore be seen: "*On the one hand, the 'old' mass organisations and professional associations, which are broadly accepted as an integrated part of society, and on the other, a 'new type' of organisation that developed in the 1990s, but is not fully recognised by society, such as NGOs, CBOs, and other types of informal organisations*" (CIVICUS, 2006b: 10).

Indeed, not all organisations have the same political clout at the Vietnam government's decision-making levels. Some have a major say, others none. Furthermore, there is very little horizontal networking among the organisations for various reasons: history of the country, diverse nature of the organisations, their activities and scope. There is therefore limited cooperation and coordination among organisations. In terms of power, the Party and state continue to be the force in decision-making in the socio-economic sphere.[3] For organisations to be influential, they have to be mindful of this subordination. Although providing material assistance to the destitute is a crucial activity for such associations, they refrain from discussion at the political level. And the non-transparency or total lack of procedures, rules and regulations for the establishment and operation of voluntary organisations also puts a restraint on their effectiveness.

The CIVICUS project mentions the fact that democratic practices are fairly weak in civil society organisations and that their financial affairs are often not transparent. We will examine this situation in the realm of consumer advocacy organisations.

Be that what it may, the government's policy for economic opening and liberalisation of a small-scale private sector has rapidly born fruit: *"Poverty has been reduced from a level of 70% in the 1980s prior to the* đổi mới *reforms, to 58% in 1992, 35% in 1998, 29% in 2002, to 23% in 2004. This is based on a converted level of parity prices to 1 USD per day"* (Vietnam

[3] While the State, through the government, the People's Supreme Court, the People's Public Prosecutor and more importantly the National Assembly, is in charge of administering the country, the Party, through its Central Committee and Politburo, with the strong support of its members recruited throughout the social fabric of Vietnam, has the job of defining the long-term strategy, the ideological doctrine of the country, but giving the government the task of achieving the set objectives. In practice, civil servants and elected representatives in senior government circles are also Party members.

Development Report 2003, UNDP 2005, in: CIVICUS, 2006b: 70). Nevertheless, Vietnam is still a poor country, with a GDP per capita of around 3,100 USD (Statistical Yearbook 2007).

2.5. The Birth of VINASTAS—Dealing with the Issue of Quality-assured Goods and Services Dovetailed with Consumer Protection

Vietnam's opening up to outside markets is not without its problems. Although the free market gives consumers a number of advantages such as a broader choice of goods, it also encourages abusive practices towards consumers—at both the international and national levels. This raises the issue of guaranteeing the quality of goods and products.

Unlike the centralised planning system in which trade and prices are subject to rigid state control, economic liberalisation involves fluctuating prices and significantly reduces government control over external trade. Since the 1990s, Vietnam has gradually worked through all the steps involved in this liberalisation. In 1995, Vietnam joined the AFTA (ASEAN Free Trade Area which focuses on free trade within the Association of Southeast Asian Nations). The country has been a member of APEC since 1998 and in November 2006 became a full-fledged member of the WTO. Vietnamese businesses and private persons alike are now legally free to trade on both the domestic and international market. This context is forcing the issue of consumer protection. As regards consumption, a transition is therefore taking place along the lines of need, driven by meeting essential needs and along the lines of a more individual demand. This raises the moral issues of symbolism and consumerism: To what extent do individuals actually need the goods they consume?

With regard to civil society organisations, on the proposal of the Department of Standardisation, the Vietnam General Department of Standardization, Metrology and Quality Control was established in 1988. Its mission was to contribute to standardising the quality of mainstream consumer products. The association's documents infer that it is "independent", although it is under the umbrella of the Fatherland Front and belongs to the Vietnam Union of Science and Technology Associations (VUSTA). This association was made up of former Party leaders and senior cadres, so at least in its early stages it was directly linked to government circles.

Vietnam was then plunged into a context of shifting toward the free market wherein quality control and labelling were still limited. Conditions quickly entailed a broadening of its activities to include consumer advocacy and the facility was renamed the *Vietnam Standard and Consumers Association* (VINASTAS). Consumer protection was an entirely new field and VINASTAS had to break new ground. This was a crucial institutional change, something that did not happen as a matter of course. Production or manufacturing now had to be thought out distinctly from consumption. Contrary to established tradition, consumers were no longer producing food for their own use, making utilitarian products or providing the services they needed. Producers and consumers became distinct from each other. But consumers—like producers—were very poorly informed regarding their rights and duties. In Vietnam, the legal framework in this area is virtually nonexistent or inappropriate to the current situation of the people. There is no clear procedure for complaints to be lodged against merchant improprieties.

Moreover, one might think that opening up to international trade would prompt the Vietnamese government to try to protect consumers in the country. But as pointed out by a member of the VINASTAS standing committee, formerly vice-chairman of the structure: *"Previously, when Vietnam followed a centralised economy, we didn't pay any attention to consumer advocacy."* This is explained by Đo Gia Phan in his article "The Consumer Movement in Vietnam":

> "By historical conditions, during its 30 years of war for national salvation, Vietnam applied the centralized planning system for its economy. All major businesses were in

the hands of the state. Goods and necessities were distributed through a system of coupons. Major services like electricity, water, transport, telecommunication, banking, health and education were state monopolies. At that time, there was no mention of the concept of consumers or of activities to protect consumers" (Đo Gia, 2002).

Today, the government of Vietnam is gradually coming to realise the importance of the consumer as an individual with fundamental rights. A profound "ideological transition" has occurred with the *đổi mới* policy making it open up to the free market. A legal framework for consumer protection is starting to take shape (see Figure 1).

Figure 1: Legal Framework for Consumer Protection in Vietnam

Consumer protection in Vietnam has only recently been enshrined by law.

1. Article 28 of the 1992 Constitution of Vietnam states: "*All illegal production and trading activities, all acts wrecking the national economy and damaging the interests of the State, the rights and lawful interests of collectives and individual citizens shall be dealt with severely and equitably by the law. The State shall enact policies protecting the rights and interests of the producers and the consumers*." Chapter V, which provides for the rights and obligations of citizens, also implies consumer's rights.
2. In May 1997, Vietnam enacted its first Law on Trade, which contains 264 articles. Various points are dealt with: The underlying principles of trade and trade policies at the national and international level, procurement and sale of goods and services, trade brokerage, selling under competitive bidding, commercial advertising, trade fairs and exhibitions, trade sanctions, settling disputes, etc. This law allows foreign businesses to set up branches in Vietnam and repatriate profits from their commercial activities. The law also recognizes "*the protection of the legitimate interests of the producer and consumer"* (Section 1, Article 9) which makes it mandatory for merchants to provide full necessary and accurate information about the goods and services they provide. This marks a first step in the process of legislating the rights of consumers in Vietnam. The merchant is under obligation to provide necessary and accurate information on the services and goods he/she supplies. It prohibits counterfeiting and misleading advertising. It also acknowledges the existence of consumer advocacy associations and complaints submission or filing for legal action against merchants in the event of abuse.
3. The Ordinance on the Protection of Consumers' Interests was adopted by the Vietnamese National Assembly in 1999 to protect the legitimate rights and interests of the consumer. The ordinance deals with the rights and responsibilities of the consumer, the responsibilities of organisations, individuals carrying out production or business activities and state administration over the protection of consumer interests. In this ordinance, State management has a direct duty to implement policies to ensure the protection of consumers' interests.
4. Other laws make reference to consumer protection such as the 2004 Law on Competition (Articles 4 and 117), the 1995 Civil Code (Chapter II, Chapter V, Chapter VI) and the 1997 Law on Trade, amended in 2005.

Sources: Thang Phan The, "Paper on philosophy and structure of consumer protection", Southeast Asian Conference on Consumer Protection, 28-29 November 2005, Hilton Hotel, Kuala Lumpur, Malaysia.
Tran Ba Thai, "Legal framework and E-commerce country report: Vietnam", APEC 2001, Vietnam Country Report.

3. VINASTAS—An Association for Vietnamese Consumer Advocacy

3.1. One Association, Two Operational Goals and One Moralising Component

As we have suggested, VINASTAS has a dual objective. The main thrust is quality standardisation, which accounts for approximately 20 percent of its activities, followed by consumer information and protection, which represents 80 percent of its activities.

VINASTAS' first objective allows association members to enjoy a close relationship with the business community dealing in consumable goods and services in either the public or private sector. This proximity to the decision-makers helps the association to fulfil its second mission, that of consumer advocacy. At this level, its role is to input legislation and policies for consumer protection by playing a pleading or supporting (advocacy) role, briefing consumers about their rights, fighting against sub-standard products and services, fake products, etc.

Although these two goals are unambiguous, a very definite moralizing tone comes through when VINASTAS members speak up. The leaders of VINASTAS openly condemn the perverse effects of the consumer society, the ostentatious wastefulness of some people living in Vietnam, as well as abuses committed by private enterprises. This moralising aspect, as we mentioned earlier, springs from Vietnam's shift from a need mentality to a demand mentality. To illustrate, the report summarising the facility's activities that was written in 1998 by the then chairman of VINASTAS, speaks of *"the lavish, luxurious trend of consumption which is not suitable to the country's socio-economic conditions. . . . In Vietnam, there are people who, though with little money, are keen to live luxuriously, spend money lavishly and wastefully, and who consider this way of life as 'trendy'. . . . A life style which consists only of playing, eating, indulgence, sensual delights, gambling, and drug abuse . . . requires a lot of money But in order to earn money quickly and easily, there must be a dishonest, illegal way, which usually leads people to commit offences"* (Tuan, 1998: 60). Then he takes at bash at the Western consumer: *"Then came the Western consumers having the taste for a new 'fashion' each year. They have a new taste each year and discard what they have after just a brief period. The cautious, durability-seeking generation of consumers had been replaced by a generation of society full of lavish spenders"* (Tuan, 1998: 61). This moral condemnation of consumption indicates that the government and corporate representatives making up VINASTAS are having a hard time coming to grips with the growth of consumption in a communist ideology, in other words overcoming the gap between consumption practices and the moral representations of the country. This was picked up by Beverley Hooper in her thesis on the consumer-citizen in China, who notes that *"in the area of consumerism, people are asserting rights not vis-à-vis the state, which is the focus of much the debate about the nascent growth of civil society in China, but vis-à-vis the market, with the endorsement and encouragement of the state."* (Hooper, 2005) The citizen has become a consumer whose rights must be protected by the government.

3.2. An Association of Civil Society Organisations and Individual Members with Little Appeal to Youth

VINASTAS is made up of private individuals and organisations such as clubs (Women's Consumer Club) or institutions (consumer research and consultancy centres). Private and public businesses have not yet joined the association, although VINASTAS is attempting to develop partnerships in the near future with businesses endorsing the criteria of "social responsibility" toward producers and consumers.

VINASTAS is made up of volunteers. It is led by a small team of 10 persons who work part-time on a voluntary basis. The association has only two salaried workers (a secretary and an accountant). VINASTAS is headquartered in Hanoi but has spawned 27 local consumer advocacy associations throughout the country. It also has a representative office in Ho Chi Minh City.

VINASTAS has the classic association structure: a standing committee made up of a chairman and five vice-chairmen, a secretary general and permanent members (9 members in all), along with an executive committee made up of the regional representatives of the organisation and representatives of the public authorities, including ministry officials (40 members). The executive committee is the operational arm of VINASTAS, whereas the standing committee is the association's political arm.

There is still quite a bit of leeway in selecting individual and corporate members of VINASTAS. Any individual who agrees with the provisions contained in the association's statutes can become a member. Although VINASTAS' membership requirements have not yet been standardised for organisations, a number of organisations have belonged to it for over 15 years. At the present time, the only requirement that VINASTAS insists on is that the activities of the applicant association are consistent with its own activities, and that in itself is open to a very broad interpretation.

VINASTAS' founding members were former Communist Party executives or officials. Routinely, chairmen and vice-chairmen of the association previously held positions in the Ministry of Science and Technology, Ministry of Agriculture, Ministry of Industry, Ministry of Commerce, Ministry of Health, in the Senate or state-owned enterprises under these institutions. VINASTAS has remained ideologically very close to the government in its values, way of operating and relationship with the stakeholders in its milieu. Given its avowed objectives, VINASTAS should be directly involved in public life. However, where the members of VINASTAS are involved, the initiative has nothing to do with advocacy for the people but rather with something the government wants to accomplish.

In terms of power, VINASTAS is tightly controlled by one of its vice-chairmen who has been on the job since the association was established. A former government official, this figurehead embodies the history of VINASTAS. In his position as unchallenged leader, he handles queries from journalists or researchers, represents VINASTAS at official meetings in Vietnam or abroad, publishes a newsletter and manages the budget of the association. Very much at the helm of the association, this protagonist now over 80 is starting to worry about the low involvement of youths in his association.

The individual members of VINASTAS are mostly retirees. The association is struggling to attract new members. This is due to the fact that there is no particular contact person in the organisations that are members of VINASTAS. The volunteers are retired senior civil servants who don't have much pizzazz as far as Vietnamese youth are concerned. The historical background of VINASTAS makes it a rallying point for former senior civil servants but it does not attract young people who do not feel ideologically close to government officials. When surveyed about this, several young Vietnamese persons said they were too busy for this type of volunteer work or they did not necessarily have confidence in VINASTAS' effectiveness to fulfil its terms of reference given the strong government presence in the organisation. They do not find the arguments put forward by VINASTAS' members very convincing and do not see anything in it for them personally if they join it. By the same token, they acknowledge that they do not know much about the structure or have any idea about what to do to become members. No particular training is provided for the association's young recruits. VINASTAS is challenged by the change in the form of commitment required, so there is no guarantee that it will find new blood. The most active group in the association is the Women's Consumer Club (WCC). The members of this group

are not on the same wavelength as the moralizing discourse of VINASTAS. At their meetings, they often feature new product presentations by a sales representative or go out to visit business establishments and come back loaded with samples. This club provides everyday consumer education by means of new product testing. But the types of goods tested generally do not capture the interest of young people. To illustrate, we attended a meeting that introduced, albeit with complementary tasting, a type of drink vaunted for its attributes to fight decalcification in the elderly.

3.3. Limited Economic Clout

VINASTAS has relatively limited material resources. The association owns a building in downtown Hanoi and some items of computer equipment in it. Its yearly operating and activities budget for project development has been VND 300 million (or approximately US$ 19,000) for the last two years.

Funds for projects carried out by the facility (training sessions, book sales, involvement in corporate activities) account for 80 percent of the budget and 20 percent is from voluntary individual and organisation membership fees. It is managed by the central office in Hanoi. Accounting reports are then given to the financial backers. We were unable to obtain details on project funding despite the fact that we submitted several requests for them. This reveals the lack of transparency of the organisation and the lack of individual freedom, which is something characteristic of corporate and political life in Vietnam. Indeed, the independent NGO Freedom House gives the level of civil liberty in Vietnam a low ranking of 2.8 points on a scale from 0 to 7, with 7 being the highest (CIVICUS, 2006: 68).

VINASTAS receives government funds to carry out its activities from the Vietnamese Ministry of Science and Technology, the Vietnam Union of Scientific and Technical Associations as well as from national NGOs. Some of the local associations belonging to VINASTAS get funding from the Science Committee of their province in order to pursue training activities, print documents, etc. Grants from international cooperation are also allocated at the national level through partnership activities with the World Health Organisation, American Cancer Society, National Research Council of Canada, the NGO PATH Canada (now HealthBridge Foundation of Canada), with which VINASTAS is cooperating on various projects. Some funding is also ear-marked for specific projects by international NGOs such as Consumers International and the Association of Canadian Community Colleges.

VINASTAS is therefore partly tied to the government because of its operating budget. The financial independency of the facility with regard to the government therefore cannot be taken for granted, but VINASTAS' members don't see any problem with that: *"It doesn't matter if we have our own point of view even though we are funded by the government. We have our own point of view regarding consumer advocacy, but the job of government institutions has always been to protect consumers, the people; it's not incompatible"* (Interview). This allows for the complete blending of objectives between VINASTAS and the government.

All the same, the budget seems to fall short of what VINASTAS needs to fulfil its mission. Based on what its chairman and vice-chairmen say, VINASTAS does not have the staff and material resources it needs to inform consumers and stimulate a genuine awareness of consumers' rights at the national level.

3.4. Very "Top-Down" Achievements

In terms of actions, VINASTAS sponsors public awareness-raising campaigns on consumer rights (seminars, study days, exhibitions and the like), takes in complaints from dissatisfied consumers, plays the role of mediator between private consumers and the

government in the event of a conflict with a business, attends national and international events on consumer advocacy, holds briefings and instructional meetings for consumers and corporate leaders, works on various portfolios with the public authorities, state-owned businesses and the media and publishes a monthly newsletter for the public at large (*The Consumer*). The association does not do any tests or comparisons of finished items as many Western consumer advocacy associations do. VINASTAS does not have the staff and funding required for such evaluations.

Projects conducted under the umbrella of NGOs or international agencies are carried out to the extent that they comply with the statutes of the association dedicated to consumer protection and quality standardisation. This has led VINASTAS to work on projects relating to assessments of the health safeness of common food commodities, tobacco control, energy conservation, product labelling, counterfeiting, etc. The association also provided support for Consumer's Day (March 15), No Smoking Day (May 30) and International Standardization Day (October 14).

As regards legislation, VINASTAS shared directly in drafting various directives to ensure the protection of Vietnamese consumers. Đo Gia Phan, permanent member of VINASTAS, puts it this way:

> "Back in 1990, only two years after its foundation, VINASTAS proposed the study and compilation of a legal paper concerning the protection of consumers in Vietnam. This initiative was approved by the government and VINASTAS was assigned to draft the paper. In early 1991, VINASTAS established a group in charge of drafting the Vietnam Ordinance on Consumer Protection with the assistance of IOCU and local and international organizations. The drafting group studied many consumer laws of various countries, especially those of countries in the region. After many sessions of study, correction and amendment, the draft Ordinance on Consumer Protection took shape and was ready to be submitted for approval. However, according to Vietnamese regulations, only a state organization can submit a legal paper; therefore, in 1995, the task was transferred to the Ministry of Science, Technology and Environment to make further amendments for submission. In the process of preparing the ordinance, VINASTAS continued to contribute ideas and suggestions for a strong and effective legal paper. After more than 20 revisions and amendments, the ordinance was finally approved by the Permanent Committee of the National Assembly (Parliament) on April 27th, 1999, after nearly 10 years of preparation. The ordinance was promulgated and took effect as of October 1st, 1999. This is the first legal paper of its kind, the fruit of nearly 10 years of the consumer movement in Vietnam. However the ordinance only mentions general principles, while more concrete problems must wait for the issuance of other legal papers at lower levels of which many have been lacking up until now. Anyway, the Ordinance on Consumer Protection has addressed the consumer issue in Vietnam, highlighted the responsibility of society as a whole in the protection of consumers and regulated the state body in charge of consumer affairs" (Gia Phan, 2002).

The project base on which VINASTAS has chosen to work is not neutral. Take counterfeiting for instance. As is true of the rest of the informal sector, counterfeiting was historically something useful when Vietnam was very poor. It responded to a strong internal demand for products that were prohibitively expensive. The authorities felt that it had the advantage of making the people happy. The government naturally lost the tax revenue that it would have been entitled to from the manufacture and distribution of such products, but it enjoyed increased social stability because the citizens' needs were met. With the opening of Vietnam to competitive international markets, the fight against counterfeiting has become something mandatory as the country seeks to demonstrate its legitimacy on the international scene. But before making anti-counterfeiting measures available for the benefit of individual consumers as a means of ensuring that their rights are respected, such measures must first of

all be seen as a battle against an informal economy that is frowned upon by the international community.

It might also be insightful to look at what themes VINASTAS does not work with. A few food scandals have erupted in recent years in Vietnam and in Hanoi, without VINASTAS expressing any great concern.[4] Corruption in the country and the lack of freedom of expression are obstacles to the promotion of consumers' rights. VINASTAS is having a hard time coming to grips with this inescapable fact.

When it comes to handling claims, the VINASTAS headquarters receives an average of 500 complaints a year dealing with all manner of subjects: telephone costs, price of electricity, poor quality goods or services, counterfeit items, forced or dishonest selling practices, etc. The claims are handled by calling all the concerned parties to account. A consensus is sought through negotiation and conciliation. If that is unsuccessful, a complaint is submitted at the government level. A VINASTAS member proffers the following explanation:

> "Each local association has a complaint office. When a complaint is received, the manufacturers can be met and a request made for the consumer to be compensated. Generally, 80 percent of manufacturers agree to compensate. The remaining 20 percent refuse. If compensation is refused, it may be the fault of the consumer. Let's say the person bought without an invoice or the fault is due to how the item was used. If the consumer still feels that the company is at fault, the complaint is forwarded to the concerned ministry. For example, if someone complains about a fan and the company says it is not at fault, and if VINASTAS feels that there is a technical problem, the complaint is forwarded to the concerned ministry. But that's rare. . . . If an affair goes to court, VINASTAS participates as a consultant. But that hardly ever happens. Generally the ministry intervenes and the ministry tows the line. There are thousands of complaints every year, but a court case is very rare, so few you can count them on the fingers of one hand. Companies want to avoid the problems of a court hearing" (Interview).

The members of VINASTAS (Phan, 1998) feel that few complaints come in at this point because consumers are not aware of their rights, one of which is to file a complaint. There is a cultural dislike of open conflicts in a society based on apparent consensus, not to mention the material challenge some consumers would face to go to the place where they can file their complaint and see that they get action on it. Vietnamese culture is strongly imbued with the thinking of Buddhism, Confucianism and Taoism and is therefore not keen on redress procedures and filing complaints. Although a consumer may be dissatisfied with his or her purchase, the person will just stop buying the product or buy somewhere else rather that filing an official complaint and causing the seller to lose face (Thi Muoi and Jolibert, 2001). But the claim for remedy is something crucial to the country's development. It is suggested that Vietnamese society work to improve on this point.

> "[Complaint handling] not only can bring concrete and material interests to consumers suffering loss, but also change the behaviour, the mode of thinking, the relationship between people in society, contribute to the building of an equal, civilized society in which people are respected" (Phan, 1998).

Although the achievements are many given the staff available and budget allotted, what VINASTAS has done remains too "top down", something that is particularly frequent in Vietnam. The general approach is condescending, paternalistic—government directives are enforced for the "benefit" of consumers. But consumers are only very rarely consulted upstream or downstream of the decisions. The association does not make sure that its messages have been clearly understood, that they are relevant and respond to a genuine social

[4] Examples: the ice cream scandal (2004), the water morning glory scandal (2005).

demand on the part of consumers. In this regard, VINASTAS is not a pressure group but rather an association in consultation with the government, designed to keep the free market from getting out of control. In real life, VINASTAS' pattern of action remains very close to that of education of the masses. Some members are aware of this. As pointed out by the former chairman of VINASTAS when reviewing the background of the facility, the Vietnamese decision-making model is very influenced by communism and based on government centralism:

> "My attention was drawn to consumer advocacy when I travelled in France with Mr Lê Phuong, director of the Science Committee of Vietnam. We visited the National Consumers Institute. At that point we grasped what an institute of this type is supposed to do. It looked like an interesting model for consumer advocacy. . . . The National Consumers Institute looks at things from the viewpoint of the consumers, the people. It's there to defend the people's interests, on their behalf. It therefore reflects what all the people are thinking and is not influenced by government institutions.[5] In Vietnam, everything originates with the government officials. We don't have an organisation like it. So [prior to this visit] we thought that things had to originate with the government, not from the people" (Interview).

From this it is seen that the consumer is viewed as a passive being that needs to be *"helped"* or *"educated"*. He is perceived as a naïve, helpless character, very weak when confronted with the market processes. He has to *"learn his rights"*, that is *"learn how to make smart purchases"*. *"Vietnamese consumers are ill-informed about their privileges and rights. We have to put out information for the consumers"*, said one member during an interview. The approach is not to push for anything, but mainly to inform, raise awareness and include consumer's rights in national legislation. In *Le Courrier du Vietnam*, Đo Gia Phan, permanent member of VINASTAS, clearly explains this point:

> "In reality, Vietnamese consumers are not aware of their rights, including the right to file a claim in order to receive compensation for loss or damage caused by falsified items or poor-quality products. . . . Yet, this problem has only recently come to the fore and we will only get results if a legal environment is created" (Lê Bich, 1997).

The following appears in the VINASTAS report 10 years after it went into activity:

> "Since the nation began building a community-based multi-sector economy with a socialist orientation and under the leadership of the State, Vietnamese consumers have not yet been equipped with the knowledge, psychology and habits which are suitable to the current market economy and for the near future. Consumers are not yet aware of their rights and responsibilities, nor how to protect their rights" (Tuan, 1998: 23).

Thus, individuals are developing and asserting their consumer rights consciousness within government-created structures (Hooper, 2005). It is true that in Vietnam as in China, many people think that their rights are granted by the State and government rather than being given at birth.

4. Do the Constraints to which VINASTAS is Subject Send a Message about the Challenges Facing a Country in Transition?

Before posing any questions on what is illustrated by VINASTAS as to the economic, political and social changes in contemporary Vietnam, it is important to home in on the constraints that shape what the facility does and explain some of the positions it takes. This

[5] In reality, the National Consumers Institute in France is not completely detached from the government sphere. It is neither a government department nor an association of consumers but an autonomous public institution. Its board of directors is made up in majority of consumers' associations. Its role is to train and inform consumers and to make comparative tests of products available to consumers.

section attempts to pin down the internal and external constraints experienced by a formalised group of volunteers. This will enable us to grasp to what extent the development of VINASTAS is related to the development of the country.

4.1. Major Internal and External Constraints

Several internal constraints curb VINASTAS' effectiveness. The first, as we saw, is the centralisation of power in the hands of one leader and the fact that there is no delegation of activities to keep the facility alive. This means that few new members are inclined to join it, and this does nothing to increase VINASTAS capacity to attract young militants.

And the association is struggling to get its messages out to poor regions so as to reach marginalised consumers in rural or remote areas. These people are cut off from the nascent consumer society but are not a priority focus of VINASTAS.

Although its members mean well, VINASTAS is finding it a challenge to fulfil the mission it has taken on. With its lack of volunteer staff and limited budget, plus its centralised operation and one-man-show leadership, it really does not have much impact on consumers.

Relevant here too is the way in which VINASTAS has been evolving over the last few years. Several organisations that once belonged to VINASTAS broke away from the mother structure either to function independently or simply dissolve. At one point, the Quality Club with a membership that included as many as 40 Vietnamese companies was assigned to work on quality management and provide maximum consumer protection. This club was made up of directors, deputy directors and department heads of public and private companies. It met monthly for training programs and to reach agreements on a complete range of consumer products from food to the electricity supply and from automobiles to cosmetics. In 2005, the Club folded up due to the fact that its members had retired one by one and were replaced by cadres who had no political authority in their organisations. One of VINASTAS' standing committee members explains:

> "The Quality Club was around up to 2005. It was made up of directors, deputy directors and executives from private and state-owned businesses. The directors received information through the club that they could apply to their company's manufacturing processes. But these people retired. The ones who replaced them had little inkling of the role and value of this club. They sent cadres to attend the Quality Club's training sessions. The club felt that it was not worthwhile if just regular people attended the training programs but could not apply what they learned in their companies. There was no use in holding the meetings. . . . Each meeting was a briefing session and documents were printed. People learned about TQM, Total Quality Management. These TQM approaches originated in the United States, Europe, Japan and elsewhere. Information was also given about ISO 9000 or approaches to quality management adapted to the conditions companies faced in Vietnam. In other countries, companies have a very sound basis for development and handling product quality, the activity process. They have been on solid ground for decades. In Vietnam now companies have to compete with foreign companies and they are not ready for this. They cannot catch up with other companies and will lose out. We have to play 'catch-up'; otherwise it's going to be very difficult" (Interview).

Having representatives of private and state-owned enterprises in the consumer advocacy association is something that outside observers find hard to understand:

> "Foreign associations can't understand our type of association and people have criticised it. I once attended a conference in the Netherlands and someone asked my why I invited business executives. They said that it wasn't objective: 'People who run businesses are out to take advantage of consumers.' If you curry the favour of the entrepreneurs, you can't defend the consumer. Vietnam is not the only place where there are Quality Clubs. We had to tell them that Vietnamese consumers are just beginning to experience the market economy. Businesses and manufacturers, with

> their low level of knowledge and conscience, market counterfeit or fake products to make money to the detriment of consumer interests. Our association is in between the two, the businesses and consumer interests. We are out to control the negative effects of manufacturing—counterfeits, low-quality goods, etc. But if businesses sell good quality products, we will be on their side" (Interview).

This VINASTAS representative overlooks the fact that from a Western perspective, consumer advocacy is not just demanding good quality products, but includes making available the broadest and most impartial information possible on the choice of products, on the fairness of prices, on the long-term effects of the manufacturing process, etc. It seems proper to wonder about the conflicting objectives of businesses linked to sales and profits, and those of the consumers linked to meeting a need and the requirement for purchase guarantees. And given that joining VINASTAS is voluntary, it is easy to imagine that businesses that aren't interested in consumer protection would never join the Quality Club.

Other organisations in VINASTAS have also left the association during the last few years, including the now defunct *Laboratory on Food Colour Additives.* This laboratory worked in cooperation with the *Dutch Consumers' Association,* the oldest and largest Dutch organisation involved in consumer advocacy, and was active in food product quality control in Vietnam. It ran out of money, so could not stay in operation. The same is true of the *Mineral Water Quality Association* and the *Association of Testing Laboratories* that used to belong to VINASTAS.

4.2. Strategies to Deal with the External Constraints

Although VINASTAS claims to be very independent of government circles with freedom to act and the authority to regulate standardisation, the government's control over what is done or not done for consumer rights is nevertheless very real. The government of Vietnam, through the Party Committee, the Office of the National Assembly, the Office of Government Ministries and/or institutions and local authorities, is unwilling to delegate its prerogatives to associations even if they are made up of former officials. So when women members of the VINASTAS Women's Consumer Club do nutrition awareness-raising campaigns, they adhere to the government's directives to the letter. Thus, VINASTAS comes across as a civil society structure that is merely a forerunner of a civil society that is truly autonomous and emanating from the will of the people. In this area, Vietnam is very much behind other continents such as Latin America.

Also, VINASTAS is attempting to make the government aware of *individual* consumer rights, to get consumer rights onto the agendas and programmes of the government to provide consumers with a legal framework protecting their interests. VINASTAS feels that the government does not do enough to inform consumers of their rights, although progress has been made with regard to information about hygiene and consumer goods safety. With *the* consumer coming on the scene, there is the problem of individuality in a traditionally community-based society. Thus far, Vietnamese organisations have been mass organisations. With the arrival of liberal capitalism and the consumerist world, the emphasis is turning to the individual—singular. For the Vietnamese government, this new feature must be fitted into the traditional structures of managing the people, which is not easy. But with VINASTAS being made up of former government officials, their familiarity with the various ministries and proximity to the political decision-makers makes things easier for them.

Nonetheless, this puts VINASTAS in an ambiguous position. Is the tie between VINASTAS and the government and to state-owned enterprises on a partnership level or is it adversarial? Standards for consumer law are dictated by the Party, but they are subject to a variety of interpretations. In reality, VINASTAS never opposes government *directives* but it

can occasionally challenge the practices of government *enterprises*[6] or enterprises that supply public services to the nation (water, electricity, gas, transportation, mail, etc.). VINASTAS will not criticize a law enacted or a measure taken by a ministry. Rather, it will discuss the economic policy of a state-owned enterprise. Thus, where VINASTAS occasionally takes up an issue, it is in the economic sphere, not the political sphere. The only political claim of this consumer advocacy association is to make sure that provision is made for the individual consumer in legislation.

In early 2006, for instance, VINASTAS opposed the intention of the Electricity General Directorate to up the price of electricity for individual consumption as a means of improving electrical service nationwide. VINASTAS argued that the price increase was not justified for consumers. A policy for energy conservation, diversification of the supply source (such as solar cells for private homes) and staggered consumption (promoting consumption at non-peak times) could be implemented to avoid raising the price of electricity. Public utility providers were also criticised for the lack of information and transparency in electricity management in Vietnam. The position taken by VINASTAS was given broad media coverage, but the consumer advocacy association did nothing to mobilise its social base, the consumers themselves. No petition, no demonstration was organised by the structure; it simply published its positions in its monthly *Consumer* magazine.

Another example is VINASTAS's involvement in the "fresh milk" scandal that erupted in 2006. In 2005 and 2006, certain private businesses with the majority of shares held by the Vietnamese government reportedly sold as "fresh milk" milk that had actually been made from powder. The case grew as a result of complaints that consumers filed directly with government officials. The press got wind of the story. VINASTAS then submitted a recommendation to the Prime Minister and the ministers of Health, Commerce, Agriculture, Rural Development and Science and Technology. The organisation joined in consultative meetings attended by various government officials and representatives of dairy manufacturing businesses. The affair is still under advisement.

VINASTAS does not have a great many connections or alliances with other corporate structures. Where such do exist, the relationship is somewhat strained and is only revived when something special happens. The Women's League, the Youth League and a number of unions do enjoy closer ties with VINASTAS.

VINASTAS is more interested in overseas structures. It is a member of *Consumers International* and gives clout to what it does by referring to what is done abroad. For example, VINASTAS gets a lot of its inspiration to develop corporate social accountability at home from work done in Canada and the United States. Vietnam is attempting to make up for its lack of experience in consumer advocacy by having VINASTAS members attend international forums on the subject.

4.3. Do the Constraints to which VINASTAS is Subject Illustrate the Challenges Faced by a Developing Country?

In the light of this background information on civil society organisations in Vietnam and the ties that link VINASTAS to the government sphere, it is important to assess in what way the constraints facing VINASTAS illustrate the challenges facing a country in transition.

We have seen that VINASTAS' position vacillates between being in a partnership with the government and engaging in social activism. Far from being independent from the government and state-owned enterprises, VINASTAS is seeking a certain balance between

[6] In Vietnam, most large companies are state-owned enterprises or corporations of which the majority of the capital is held by the state.

the various orders given by the stakeholders in its environment. So what VINASTAS does cannot be understood without reference to the state apparatus.

As pointed out by CIVICUS with regard to civil society, "*objective data is limited, especially because, with respect to many activities, the impacts of CSOs* [*civil society organisations*] *and of the various levels of government cannot be clearly separated"* (CIVICUS, 2006: 12).

Although the rather bureaucratic way in which VINASTAS is run, its top-down structure and its link to the government are subject to criticism, the facility has played an important role in promoting the idea of consumer protection. It would be overly simplistic to see VINASTAS is only as window dressing put up to legitimatise state action.

When the association does achieve its objectives regarding standardisation of quality and protection of consumers, it obviously increases corporate competitiveness at both the national and international levels. Thus, the country's economic opening to foreign competition allows VINASTAS to have substantial economic impact in promoting the country's development. The demise of VINASTAS' Quality Club is no doubt evidence of the difficulty in getting Vietnamese corporate executives mobilised on the theme of quality goods and services, even though this is pivotal to giving these structures a future on international markets. As a member of the VINASTAS standing committee stated:

> "The Vietnamese corporate milieu does not clearly understand the issue of product quality. We asked foreign experts to give us training for ISO. Companies unfurl the banner to show that they have complied with the ISO 9000 standard. And they think that they can compete with foreign companies. But they cannot sustain the competition. . . . Foreign companies that have had time to improve their product quality are now moving in the activity process. Productivity improves, the price falls and performance increases. These companies are in a position to compete successfully. We are very worried for Vietnamese companies. Vietnamese companies do not grasp this point and are only interested in what [the products] look like" (Interview).

In addition to the importance of the finished product—the intrinsic quality of goods put on the market—Vietnamese companies need to give attention to the "activity process", that is, take into account the social, environmental and economic effects of their manufacturing process. They are seen to be lagging far behind foreign companies on this count. The interviewee went on to add:

> "A number of companies give emphasis to product appearance rather than quality. Consumers are fooled by something that looks good on the outside but that isn't so good on the inside. I'm not talking about just a few isolated manufactures, but hundreds, thousands of them. The problem is that many manufacturers do not know how to improve their products. Their knowledge base is weak. They would like training to address this. You can't apply the model of large Western companies and the ISO 9000 standard to all companies here, only 10 percent of them, the biggest ones. Ninety percent of companies here do not know how to improve product quality. The ISO 9000 standard is of no use to them" (Interview).

From the social standpoint, we may wonder if VINASTAS is doing anything to train Vietnam's fledgling civil society. True, the consumers' association is not totally independent from the state's authority (the government and Party), but it guarantees a certain freedom of movement in relation to many sources of economic influence (private companies). Somewhat paradoxically, VINASTAS has been cast into civil society at the behest of the government and Party. However, its influence on public opinion needs to be nuanced. Its magazine *The Consumer* has an average printing of 5,000 copies. Its readers are mainly senior citizens who live in the city and are relatively well to do. To the dismay of its publishers, *The Consumer* is not yet a really popular magazine, given that Vietnam has over 84 million consumers.

Nevertheless, if we can put faith in the situation described back in 1998 by the former chairman of VINASTAS, its activities cannot but have positive social effects for the people of Vietnam:

> "Vietnamese consumers are constant victims of the market's negative impacts such as counterfeit products, low quality goods, goods not hygienically safe, fraudulent commercial practices, dishonest measurements, lying, overcharging, cheating and numerous other tricks of dishonest people, causing great harm to consumers in terms of finance, assets, spiritual life, health, and even their lives" (Tuan, 1998: 23).

Thus, VINASTAS is seen as an organisation that plays a very wholesome role as far as the welfare or even survival of Vietnamese consumers is concerned. The reality is no doubt somewhat different, given the limitations under which VINASTAS labours. And the concerns of VINASTAS are closely tied in with the level of Vietnam's socio-economic development. Hoang Manh Tuan again notes that the experience of Western consumer associations cannot be applied directly to the Vietnamese context:

> "Reading a magazine published by the consumer protection association of many countries, one can find that little emphasis is put on the problem of counterfeit goods. Various instructions on goods and services are given: how to choose and use cars, child safety seats for cars, how to buy a home and other information on finance, banking, depositing, etc. Obviously there is a great difference in consumer interests between countries of different levels of socio-economic development, especially between countries who recently accepted the market economy and those having undergone decades of market economy development" (Tuan, 1998: 32).

Thus, Vietnam's economic transition is ideologically somewhat off in the corner: The act of consumption is no longer viewed as something just for the middle class. VINASTAS claims to advocate protection of consumer rights and interests, but the matter of responsible consumption has not yet become an issue in Vietnam. Consumers do not rally to defend social causes, boycott products and companies or give vent to their frustration.

In the final analysis, it can be argued that by claiming to protect consumer interests, VINASTAS is making a direct contribution to the recognition of individual rights and is working through political avenues and, in spite of its limitations, to the economic and social welfare of the people. Thus, VINASTAS is working with the broader movement fostering the emergence of civil society despite its closeness to the government. Another way of looking at it is that VINASTAS can be said to be only a reflection of the ideological changes taking place in contemporary Vietnam—growing individualism, the emergence of consumerism, the deepening of social inequalities, etc. In this regard, VINASTAS is not giving evidence of the emergence of a civil society independent from the sphere of the Party and State, but is more of an attempt to reconcile recent social developments with the historical communist project of moralising consumption and education of the masses. In any event, it is obvious that VINASTAS is a good example of the inconsistencies rampant in Vietnamese society today.

5. Conclusion

Despite its definite economic progress, Vietnam is still considered to be a developing country. In 2003, its Human Development Index was 0.7, ranking it country 108 in the world or putting it in the "countries of average human development" category (UNDP, 2005: 233). Inequalities between cities and rural areas are increasing, although Vietnam has thus far successfully managed its opening to the market economy and the increased purchasing power of the middle and upper classes. The economic structure is still backward, relying primarily on agriculture and the development of natural resources. Industry is weak. The technological facilities used in the production sector are outdated. Both productivity and quality are low.

Thus, the action of civil society, seen as an *"arena between the family, state and the market"*, is necessary.

This paper has pointed out that the presence of a consumers' association in a communist country is not something that could be taken for granted. VINASTAS claims to be an independent association but in actuality it remains closely tied to the government structure. In reality, VINASTAS is an association for consumer protection, not an association *of* consumers. It is born of government volition, not that of a civil society setting out demands; it is not a pressure group but a group that works in cooperation with companies and the public authorities.

This means two things. First, VINASTAS exerts a relatively strong influence over social and legal policies regarding the advocacy of consumer interests because it is directly a brainchild of the government sphere.

Second—and this is what makes the structure so ambiguous—VINASTAS claims to be independent from the government and market, and indeed it enjoys autonomy in some aspects of its operations. That is a point to be made: by the things it does, VINASTAS is sharing in the definition of the civic rights of the individual and hence is in a position to share in the emergence of a civil society.

Owing to the absence of a policy on the consumer and consumption, VINASTAS is therefore seen to be an organisation looking for its place among different contradictory poles: the consumers, the government, the market. These difficulties simply illustrate the transition in which Vietnam finds itself today. Although VINASTAS is sharing in Vietnam's social and economic development, it is not so much through demands coming from the people as it is through political negotiation and advocacy within government structures. This political dimension is essential in a country's development and deserves to be emphasised. It seems that Vietnam's development is being accompanied by the emergence of associations of consumers, a testimony to freedom of expression in the country. Vietnam's development now rests on opening up to international markets and will be achieved thanks to a relatively strong social and political fabric, a civil society that will be a both link to and a safeguard against private companies, the government and citizens.

> "Vietnam has experienced periods of development in which it was insulated from the outside world, sometimes even isolated and sanctioned. The open door process has gradually taken back the balance. . . . This is a favourable opportunity for the Vietnamese people to learn and receive positive and modern elements coming from outside in order to join the orbit of development of the global community. But in order to properly seize this opportunity, Vietnam must have an internal force which should be strong enough to hold a firm foot in the development trend" (Tuan, 1998: 50).

Ultimately, Beverley Hooper's conclusion on the Chinese consumer-citizen seems to apply to Vietnam: "*The development of consumer rights consciousness in post-Mao China has paralleled the growth of both a consumer society and general rights consciousness among the population.*" (Hooper, 2002: 16) However, in the area of consumption and consumer advocacy, three major challenges need to be met for the transition in Vietnam to go full circle. First, make consumption part of ethics, in other words overcome the gap between the communist ideology of communitarianism and sharing on the one hand, and the actual practice of individual consumption for needs and leisure on the other. The second challenge is to move from a very centralised decision-making and action mode at the government level to a more flexible mode of operation, promoting the development of civil society associations and private enterprises divorced from the government sphere. And the third challenge is to close the curtains on the omnipresent mass associations under the aegis of the Fatherland

Front and accept the arrival of autonomous, multiform associations that reflect the emergence of an informed individualism in a resolutely modern Vietnam.

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Vulnerability and Poverty Dynamics in Vietnam

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Abstract

Drawing upon the Vietnam Household Living Standards Survey (VHLSS) data that cover the whole of Vietnam in 2002 and 2004, ex ante measures of vulnerability are constructed. These are then compared with static indicators of poverty (i.e. the headcount ratio in a particular year). Detailed analyses of the panel data show that (i) in general, vulnerability in 2002 translates into poverty in 2004; (ii) vulnerability of the poor tends to perpetuate their poverty; and (iii) sections of the non-poor slip into poverty. Durable reduction in poverty is conditional on (i) accurate identification of the vulnerable, (iii) their sources of vulnerability, and (iii) design of social safety nets that would enable the vulnerable to reduce risks and cope better with rapid integration of markets with the larger global economy.

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1. Introduction

Vietnam recorded an impressive growth during the 1990s, and agriculture played a key role in it. As a result, poverty reduced sharply. There is, however, concern that agricultural growth is slowing down, inequality is rising and poverty reduction is slackening. New challenges are emerging that call for a review of policy priorities and a sharper poverty focus in public investment to enhance livelihood options for ethnic minorities concentrated in remote mountainous and other regions that have lagged behind others in the transition to a rapidly growing market economy. Specifically, a case is made here for a shift of emphasis from static indicators of poverty to resilience or vulnerability of various groups to policy regime changes, market and weather risks, and idiosyncratic shocks (e.g. illness, injury, death of an earning household member). This shift of emphasis is appropriate as credit and insurance markets are incomplete, and social protection measures are far from adequate.

The present study is motivated by this concern. It constructs measures of vulnerability of households in Vietnam and assesses how it affects their poverty status over time. Vulnerability is distinguishable from poverty, as there are households or individuals who are currently non-poor but vulnerable to a variety of shocks (e.g. changes in macro policy regime, weather shocks, illness or death of a household head). Vulnerability is a *dynamic* concept associated with the change of welfare or poverty status over time, taking account of not just fluctuating levels of living but also the resilience of subsets of households (e.g. landless, smallholders) against aggregate and idiosyncratic shocks. Identification of the vulnerable is, however, far from straightforward. One difficulty is that there are different measures of vulnerability (e.g. *ex ante* versus *ex post* vulnerability). A second, and more serious difficulty is that tracking the well-being of a particular household over time –especially before and after a major aggregate shock- requires reliable panel data that are seldom available.

There has been a surge of interest in measuring vulnerability in developing countries (e.g. Chaudhuri, Jalan and Suryahadi, 2002; Dercon, 2005; Gaiha and Imai, 2004; Gaiha and Imai, 2006, Hoddinott and Quisumbing, 2003a b; Ligon, 2005; Ligon and Schechter, 2003, Jalan and Ravallion, 2005, Kurosaki, 2007). These studies point to the need for designing anti-poverty policies specifically to address vulnerability -especially in rural areas where agricultural yields and revenues fluctuate a great deal due to changes in weather, floods, pest infestation, and market forces. Many of these risks are compounded by lack of financial intermediation and formal insurance, credit market imperfections, and weak infrastructure (e.g. physical isolation because of limited transportation facilities). Low income households and/or those living in remote areas are also subject to idiosyncratic risks arising from morbidity, dependence on a single adult male for much of household income and exclusion from community networks of support.

As identification of the poor requires assessment of income during a previous year and a specific poverty threshold, many may already have ceased to be poor while others may have slipped into poverty given the volatility of incomes. One approach would be to focus on poverty dynamics (e.g. Gaiha and Deolalikar, 1993; Baulch and Hoddinott, 2000, Gaiha and Thapa, 2006) or chronic poverty (e.g. Hulme, Moore and Shepherd, 2001), taking into account poverty transition or long-term poverty status *ex-post*. Another, and perhaps a more challenging, approach would be to draw insights from a combination of both *ex ante* and *ex post* measures of vulnerability. This, however, presupposes that (many of the) risks and resilience of subsets of households against such shocks can be assessed. This is of course easier said than done. It is nevertheless argued and demonstrated here that, to the extent that *ex post* measures could be combined with *ex ante* measures of vulnerability, more effective policies designed to ensure durable reduction in poverty are feasible.

As a case study, we will construct *ex ante* measures of vulnerability for households in Vietnam, drawing upon the Vietnam Household Living Standards Survey (VHLSS) data for 2002 and 2004. The objective is to examine whether *ex ante* vulnerability translates into *ex post* poverty or how it affects poverty transitions. Large cross-sectional data sets covering households in all of Vietnam in 2002 and 2004 and the panel data constructed by the overlap of these will enable us to throw light on these issues.

The rest of the paper is organized as follows. The next section provides an overview of the transition of the Vietnamese economy from a centrally planned to a market-oriented regime. After conceptualising vulnerability, Section 3 focuses on the link between vulnerability and poverty or poverty traps. The data sets used are briefly described in Section 4. Section 5 discusses the econometric methodology and the specifications estimated with household panel data. The results are discussed in Section 6. The final section offers concluding observations.

2. Economic Growth and Poverty Reduction in Vietnam

Vietnam recorded an impressive growth during the 1990s, and agriculture played a key role in it. A reform programme in Vietnam, which first started in 1979 and continued as *Doi Moi* from 1986, marked the beginning of the transition from a planned to a market economy.[1] Decollectivisation of land, dismantling of barriers to production and freeing up of the agricultural terms of trade benefited a vast majority of the population –especially the rural poor whose livelihoods were closely linked to subsistence agriculture. [2] In fact, Vietnam emerged as an early achiever in a majority of MDG targets-including halving of extreme poverty (ESCAP, 2006).

High economic growth in the last decade was accompanied by poverty reduction at the national level. Vietnam reduced the poverty headcount ratio by 4% a year- on average much higher than the average of 2% a year in other developing countries in Asia during the period 1993-1998 (Balisacan, Pernia, and Estrada, 2003). This was partly due to the relatively equitable redistribution of agricultural land among rural households[3] as well as high levels of education and standards of literacy and numeracy which enabled them to respond to any change taking place during the shift to a market economy, such as the increased relative price of rice and other agricultural products (Ravallion and van de Walle, 2006, and Do and Iyer, 2006). Table 1 shows that the national poverty rate fell from 58.1% in 1993 to 37.4% in 1998 and to 28.9% in 2002.[4, 5] It also shows that by 1998 Vietnam had already achieved the Millennium Development Goal of halving income poverty.

[1] On the periodisation of policy reforms in Vietnam, see Pritchett (2003).

[2] However, it should be noted that there was a great degree of regional diversity in collectivisation. For example, the South was never collectivised in any form (see for example, Kees van Donge, 2003). We are grateful to the editor for bringing this to our attention.

[3] Liberalisation of the land market influenced the land distribution. Using VLSS for 1993 and 1998, and an innovative methodology, Ravallion and van de Walle (2006) show that after a market in land-use emerged, land was reallocated, attenuating the inefficiency of administrative assignment of land use. Households constrained by low land use increased their holdings and efficient land use over this period.

[4] Poverty rates used here are based on the international poverty line which was devised by the Vietnamese General Statistics Office (GSO) to reflect food expenditure for an intake of 2100 calories a day and corresponding non-food expenditure. The basket of food and non-food items is determined by the consumption patterns of the third quintile of households in terms of per capita expenditure. The poverty lines were VND 1.16 million per person per year in 1993, VND 1.79 million in 1998 and VND 1.92 million in 2002. In the present study, we use the same international poverty line and adjust it for 2004, based on the annual CPI. We have not used the poverty lines developed by the Ministry of Labour, Invalids and Social Affairs (MOLISA), which reflect the regional disparity in rice consumption.

(Table 1 to be inserted)

Further, poverty rates remained much higher in rural areas than in urban areas. Among rural areas, poverty rates were high in high mountain areas, with the headcount ratio being as high as 55% in 2002 (see Appendix 2). More importantly, poverty was concentrated among ethnic minorities. 69% of ethnic minorities were poor, as against 23% of the Kinh and Chinese. This is consistent with Baulch et al.'s (2002) findings, based on VLSS in 1998, that (i) the Kinh and Hoa had substantially higher per capita expenditure than ethnic minorities; (ii) the Central Highland Minorities were left behind during the growth process in the 1990s; and (iii) the expenditure gap between majority and minority groups was reflected in lower school enrolment rates, higher fertility and poorer access to health services among the latter.

Recent anthropological and other related studies shed further light on the dynamics of disparities among different ethnic groups or different regions. For example, McElwee (2006), focusing on the relationship between minority groups and Kinh in the *Annamite* uplands, reports that social and economic inequality worsened due to the unequal access to markets, government services and political representation. Scott and Chuyen (2004), on the other hand, demonstrate that regional disparities stemmed from some regions' limited access to resources, information, and social infrastructure for entrepreneurial and other development activities. In an important variation, Fforde (1998) draws attention to differences in capacities to work in a process of adjustment of structure of household earnings to changing circumstances. From a broader methodological perspective, he questions the homogeneity assumption that underlies some recent contributions (Fforde, 2005). If, for example, attitudes towards risks and insurance vary in different groups-as illustrated by Fforde (1998)- it is necessary to go beyond physical and human capital endowments and market failures to reduce vulnerability. Specifically, more careful attention must be given to correcting "community failures" (e.g. in protecting the old, and orphans). While our analysis addresses this concern by highlighting the roles of ethnicity, commune-level characteristics, and other locational characteristics, after controlling for measures of human and physical capital and composition of households, some interpretational ambiguity remains.

The above overview of growth and poverty reduction in Vietnam raises two questions. First, what precisely is the relationship between poverty and vulnerability? For example, if a household's income increases, is it less vulnerable to downside shocks? Or, are vulnerable households more likely to remain poor or more likely to slip into poverty if non-poor? Second, why did some sections of the population experience more dramatic poverty reductions than others? Does the difference in vulnerability offer any clues? These questions, while in part addressed by anthropological literature to analyse poverty in Vietnam, have not been fully addressed in the economics literature**.** The present study seeks to fill this gap.

3. Links between Vulnerability and Poverty

Vulnerability is a forward looking concept. Following Chaudhuri, Jalan and Suryahadi (2002), vulnerability is defined as the probability that a household or an individual will be in poverty in the future. An *ex ante* measure of vulnerability (or 'Vulnerability as Expected Poverty' (VEP)) can be constructed from a cross-section of household data on living

[5] The national poverty rate further declined in 2004, but the extent of reduction varies according to different assumptions or samples in VHLSS data. United Nation (2005), for example, reported 24.1 % while ADB's (2006) estimate is 19.5%. Our estimate is 19.8% which is closer to ADB's (see 2).

standards. There are a few other measures that are different from but associated with the above. For example, Kamanou and Morduch (2002) define vulnerability as the difference between the current level of poverty and expected poverty in the future using Foster, Greer and Thorbecke's (1984) class of poverty measures. Ligon and Schecter (2003), on the other hand, define vulnerability as the difference between the utility corresponding to consumption at the poverty line and the expected (or time-series mean) utility. This is an *ex-post* concept. We, however, rely on the ex-ante concept of vulnerability primarily because of data constraints. But all measures of vulnerability are dynamic in so far as they incorporate directly or indirectly the effects of shocks on household welfare.

Three observations may be helpful. First, the implication of vulnerability on poverty may be different according to how poverty is defined -whether it is measured in terms of income or consumption or a non-monetary metric (e.g. weight-for-age z scores for children <5 years). The present analysis is confined to a consumption (used synonymously with income) threshold of poverty. A household is considered to be more vulnerable if its income or consumption is more likely to be below the poverty threshold in a future year. So a major *causal* factor is seasonal or non-seasonal volatility of income/consumption flows.

Second, while there is overlap between vulnerability and poverty, these are distinct concepts. Vulnerability differs from poverty due to any foreseeable or unforeseeable consumption changes that occur over time. For example, a household may be non-poor but vulnerable because of a high risk of consumption shortfall.[6] One of the objectives of the present study is to assess the extent of overlap and the underlying factors.

Third, our definition of vulnerability in terms of the probability of a household's consumption going below the poverty threshold in the future is subject to (a) the choice of a threshold, and (b) the specification of 'future', *i.e.,* when is the next period for which the prediction is applicable. As these difficulties cannot be easily overcome, we will address them (i) through a sensitivity analysis involving three different poverty thresholds, and (ii) by examining the links between vulnerability and poverty in 2004. In fact, the present study is the first of its kind as it examines empirically the links between vulnerability and poverty traps-or, whether vulnerability makes it harder for the poor to escape poverty.[7]

While income/consumption volatility underlies vulnerability, the resilience in mitigating welfare losses depends on assets defined broadly-including human, physical and social capital. A household with inadequate physical or financial asset or savings, for example, may find it hard to overcome loss of income. This may translate into lower nutritional intake and rationing out of its members from the labour market (Dasgupta, 1997; Foster, 1995). Lack of physical assets may also impede accumulation of profitable portfolios under risk and generate poverty traps (Fred and Carter, 2003). Our analysis illuminates these linkages.[8]

4. Data

Most of the poverty assessments in Vietnam are based on Vietnam Living Standards Surveys (VLSS) in 1992/3 and 1997/8, which covered 4,800 and 6,000 households, respectively. Of these, about 4,300 households constitute a panel data set. The surveys were designed to collect detailed data on households, communities, and market prices. While VLSS were widely recognised as high quality, they required additional surveys, called Multi-

[6] Without long panel data, it is not easy to decompose the source of vulnerability into predictable and non-predictable components. See Jacoby and Skoufias (1998) for the methodology of decomposition using panel data.

[7] See Barrientos's (2006) comprehensive review of this issue.

[8] For an exposition of options in a dynamic context incorporating uncertainty, see Scandizzo et al. 2005.

Purpose Household Surveys (MPHS), to provide estimates at provincial level due to the relatively small sample size of VLSS. In 2002, VLSS and MPHS were merged into Vietnam Household Living Standards Survey (VHLSS) to cover the larger sample of households with some simplification of the questionnaires to minimize measurement errors. VHLSS is planned to be carried out every two years until 2010.

VHLSS is supposed to have two modules: the core module includes topics which are important and change rapidly over time, while the rotated module focuses on those that change less often. However, VHLSS in 2002 contains only the core module. It covers a wide range of data, including household composition and characteristics (e.g. education and health), expenditures on food, non-food items, health and education, income by source (e.g. wage and salary, farm or non-farm production), employment and labor force participation, housing, ownership of assets and durable goods, local infrastructure and commune characteristics. The sample size of VHLSS 2002 is 75,000 households, of which 30,000 households were interviewed with all topics, and 45,000 with all topics except expenditure. Only the former is used for the present study, as our focus is on income/expenditure poverty. Because of missing observations for some variables, the final sample size is 28,806.

VHLSS in 2004 consists of the core module virtually identical to the 2002 survey, and the rotated module on agricultural activities and non-agricultural household business, and borrowing and lending activities. The total number of households is 45,000, of which 9,000 households were interviewed with all topics, and 36,000 households with all topics except expenditure. We use only 9000 households interviewed on all topics. Due to missing observations, the final size is 6,473. Out of 4,300 households in 2002 that were re-interviewed in 2004, a panel has been constructed comprising 2,967 households (or 2,870 households in case the full set of explanatory variables are used) to analyse poverty dynamics.

5. Analytical Framework and Methodology

As our data sets are cross-sectional for a relatively large sample of households but for only two different years, rather than long panel data, we use the measure of 'Vulnerability as Expected Poverty' (VEP), an ex ante measure proposed by Chaudhuri, Jalan and Suryahadi (2002), who applied it to a large cross-section of households in Indonesia.[9]

Vulnerability is simply defined as the probability that a household will fall into poverty in the future.

$$VEP_{it} \equiv V_{it} = \Pr(c_{i,t+1} \leq z), \quad (1)$$

where vulnerability of household i at time t, V_{it}, is the probability that the *i-th* household's level of consumption at time t+1 , $c_{i,t+1}$, will be below the poverty line, z. One of the limitations of this definition of vulnerability is that it is sensitive to the choice of z. Accordingly, in the present study, we define the poverty line as (a) the international poverty line defined by GSO (General Statistics Office), (b) 120% of (a), or (c) 80% of (a), in order to check the sensitivity of results to the choice of a poverty threshold.

9 See an excellent summary by Hoddinott and Quisumbing (2003a, b) of methodological issues in measuring vulnerability. They contrast the ex ante measure (VEP) with ex post measures, such as vulnerability as expected low utility (VEU) proposed by Ligon and Schechter (2003), and vulnerability as uninsured exposure to risk (VER), used by Townsend (1994). We use only the VEP measure because VEU or VER can be only constructed only with long panel data set where household response to shocks can be identified.

In a variant that allows for the degree of vulnerability to rise with time, vulnerability of household h for n periods, denoted as $R(\cdot)$ for risk, is the probability of observing at least one spell of poverty for n periods, which, as shown below, is one minus the probability of no episodes of poverty:

$$R_i(n, z) = 1 - [(1 - (Pr(c_{i,t+1}) < z)), \ ..., \ (1 - (Pr(c_{i,t+n}) < z))]. \quad (2)$$

Following this definition and using $I(\cdot)$ as an indicator equalling 1 if the condition is true and zero otherwise, an alternative measure of vulnerability is that a household is vulnerable if the risk in n periods is greater than a threshold probability, p[10].

$$V_i(p, n, z) = I\{R_{it}(n, z) > p\}. \quad (3)$$

Neither (1) nor (3) takes into account other dimensions of poverty (e.g. depth of poverty). This limitation is easily overcome by rewriting equation (1) as:

$$VEP_{it} = V_{it} = \sum_s {}^S p_S \cdot P(c_{i,t+1}, z) = \sum_s {}^S p_s \cdot I[c_{i,t+1} \le z] \cdot [(z - c_{i,t+1}) / z]^{\alpha}, \quad (1)'$$

where $\sum_s {}^S p_S$ is the sum of the probability of all possible 'states of the world', s, in period t+1, and α is the welfare weight attached to the gap between the benchmark and the welfare measure (as in the Foster-Greer-Thorbecke class of poverty measures (1984)). In principle, this welfare weight could take values 0, 1, or 2.[11] Aggregating across N households,[12]

$$\overline{VEP}_t = (1/N) \sum_i {}^N \sum_s {}^S p_S . I[c_{i,t+1} \le z] . [(z - c_{i,t+1}) / z]^{\alpha}. \quad (4)$$

A vulnerability measure such as (4) has considerable appeal**.** In Indonesia, for example, the headcount index of poverty was low before the financial crisis but rose sharply in its wake. This implies that a large proportion of those above the poverty line were vulnerable to shocks. There are two risks in such a context. If the headcount index is low, governments/donors might become complacent. If negative shocks are frequent and severe, such complacency would be misplaced. Besides, if the characteristics of those above the poverty line but vulnerable to shocks differ from those of the poor, targeting the latter may miss a significant proportion of those whose living standards decline sharply when a shock occurs.

Empirically, a variant of VEP is obtained by anchoring it to the procedure used in Chaudhuri, Jalan and Suryahadi (2002). We will estimate the following five models to construct measures of VEP, and analyse the determinants of poverty and vulnerability, and poverty transition of households from 2002 to 2004.

Model (a): Consumption and Variance of the Disturbance Term

The consumption function is estimated as shown in equation (5).

$$\ln c_i = X_i \beta + e_i, \quad (5)$$

[10] See, for example, Pritchett et al. (2000).

[11] These three values of α represent the headcount, depth of poverty and distributionally sensitive measures of poverty in the Foster-Greer-Thorbecke class of poverty indices. In the present study, we will deal only with the case where α =0.

[12] In a related measure, Kamanou and Morduch (2002) define vulnerability as expected change in poverty, as opposed to expected poverty *per se*. Specifically, they define vulnerability in a population as the difference between the expected value of a poverty measure in the future and its current value.

where c_i is per capita expenditure (i.e. food and non-food consumption expenditure) for the *i-th* household, X_i represents a bundle of observable household characteristics and other determinants of consumption (e.g. age of household head, dependency burden, educational attainments of household members, ethnic group, regional dummies, access to market, infrastructure)[13], β is a vector of coefficients of household characteristics, and e_i is a mean-zero disturbance term that captures idiosyncratic shocks to per capita consumption. It is assumed that the structure of the economy is relatively stable over time and, hence**,** future consumption stems solely from the uncertainty about the idiosyncratic shocks, e_i. It is also assumed that the variance of the disturbance term depends on:

$$\sigma^2_{e,i} = X_i\theta. \tag{6}$$

The estimates of β and θ are obtained using a three-step feasible generalized least squares (FGLS).[14] Using the estimates $\hat{\beta}$ and $\hat{\theta}$, we can compute the expected log consumption and the variance of log consumption for each household as follows.

$$E[\ln C_i | X_i] = X_i\hat{\beta} \tag{7}$$

$$V[\ln C_i | X_i] = X_i\hat{\theta} \tag{8}$$

By assuming $\ln c_h$ as normally distributed, the estimated probability that a household will be poor in the future (say, at time t+1) is given by:

$$\hat{VEP}_i \equiv \hat{v}_i = \hat{Pr}(\ln c_i < \ln z | X_i) = \Phi\left(\frac{\ln z - X_i\hat{\beta}}{\sqrt{X_i\hat{\theta}}}\right) \tag{9}$$

In equation (9), other things being equal, higher expected log per capita consumption and higher expected variance of the disturbance term imply lower vulnerability. This is an *ex ante* vulnerability measure that can be estimated with cross-sectional data. Note that this expression also yields the probability of a household at time *t* becoming poor at *t+1* given the distribution of consumption at *t.*

A merit of this vulnerability measure is that it can be estimated with cross-sectional data. However, the measure correctly reflects a household's vulnerability only if the distribution of consumption across households, given the household characteristics at time t, represents time-series variation of household consumption. Hence this measure requires a large sample in which some households experience a good time and others suffer from negative shocks. Also, the measure is unlikely to reflect unexpected large negative shocks (e.g. Asian financial crisis), if we use the cross-section data for a normal year.

A number of extensions and related analyses are carried out to investigate the determinants of poverty and VEP in 2002 and 2004, and the relationship between VEP in 2002 and poverty transition during 2002 - 2004.

Model (b): Determinants of Poverty and VEP

As discussed in Section 3, vulnerability is closely related to but distinct from poverty. Model (b) is meant to distinguish between the determinants of poverty and vulnerability.

[13] See Appendix 1for definitions of the variables and descriptive statistics.

[14] See Chaudhuri, Jalan and Suryahadi (2002), and Hoddinott and Quisumbing (2003b) for technical details.

First, a probit model is used to estimate whether a household's consumption per capita is below the poverty line in 2002 or 2004, conditioned on a vector of determinants of per capita consumption, X_i.

$$\Pr(Y_i = 1) = \Phi(X_i \gamma'), \tag{10}$$

where $Y_i = 1$ if $\ln c_i < \ln z$ and $Y_i = 0$ otherwise.[15] When VHLSS 2004 is used, we analyse the association between vulnerability in 2002 and the probability of being poor in 2004 by simply adding $\hat{VEP}_i$ in 2002 as one of the arguments.

The value of VEP estimated by (5)-(9) is regressed on Xi to identify the determinants of vulnerability, as opposed to poverty.

$$\hat{VEP}_i = X_i \mu + \varepsilon_i. \tag{11}$$

Model (c): Determinants of Poverty Transition from 2002 to 2004

Model (b) can be further extended by a multinomial logit model to analayse the shift of poverty status during 2002 - 2004. The key hypotheses to be tested are:

(i) whether the vulnerable poor in 2002 were more likely to be poor in 2004 (i.e. whether vulnerability increased the probability that a household would be chronically poor or trapped into poverty[16]); and

(ii) whether the vulnerable non-poor in 2002 were more likely to slip into poverty in 2004.

Algebraically,

$$\Pr(Y_i = j) = \frac{e^{(X_{ij}\lambda + \tau \hat{VEP}_{ijt-1})}}{\sum_{k=0}^{3} e^{(X_{ij}\lambda + \tau \hat{VEP}_{ijt-1})}}, \quad j = 0,1,2,3, \tag{12}$$

where Y_i represents 4 unordered categories of poverty transition.

Y_1 = those who were poor in both 2002 and 2004 (i.e. chronically poor)

Y_2 = those who were poor in 2002, but non-poor in 2004 (i.e. transitory poor)

Y_3 = those who were non-poor in 2002, but poor in 2004 (i.e. transitory poor)

Y_0 =those who were non-poor in both 2002 and 2004 (i.e. always non-poor). This is the reference case where we assume that $\lambda_0 = \tau_0 = 0$. Hence the results for Y_0 do not appear in Table 4.

Following Greene (2000), we normalise equation (12) by setting $\lambda_0 = \tau_0 = 0$ as:

$$\Pr(Y_i = j) = \frac{e^{(X_i \lambda_j + \tau_k \hat{VEP}_i)}}{1 + \sum_{k=1}^{3} e^{(X_i \lambda_k + \tau_k \hat{VEP}_i)}}, \quad j = 1,2,3. \tag{13}$$

[15] While equation (10) looks similar to (9), the former does not capture *ex ante* vulnerability as it does not directly estimate consumption or the variance of the disturbance term by X_i.

[16] Following Barrientos (2006), we will use chronic poverty and poverty traps interchangeably.

$$\Pr(Y_i = 0) = \frac{1}{1 + \sum_{k=1}^{3} e^{(X_i\lambda_k + \tau_k \hat{VEP}_i)}}, \quad j = 0 \; . \tag{14}$$

Probabilities for four different outcomes can be obtained from equations (13) and (14).

Equations (13) and (14) allow us to compute the log-odds ratio for category 3:

$$\ln\left[\frac{\hat{\Pr}(Y_i = 3)}{\hat{\Pr}(Y_i = 0)}\right] = X_i\hat{\lambda}_3 + \hat{\tau}_3 \hat{VEP}_i \; . \tag{15}$$

Equation (15) suggests that the probability of the non-poor falling into poverty, relative to remaining non-poor, is lower if a component of $\hat{\lambda}_3$ (for a positive component of X_i), or $\hat{\tau}_3$, is negative and significant. A positive $\hat{\tau}_3$ implies that non-poor households are more likely to fall into poverty.

Insights into probabilities of escaping or remaining in poverty are obtained from equation (16).

$$\ln\left[\frac{\hat{\Pr}(Y_i = 2)}{\hat{\Pr}(Y_i = 1)}\right] = X_i[\hat{\lambda}_2 - \hat{\lambda}_1] + [\hat{\tau}_2 - \hat{\tau}_1]\hat{VEP}_i \tag{16}$$

So depending on the right side value it is straightforward to determine whether vulnerability prevents the poor from escaping poverty.

Model (d): Determinants of Poverty and Poverty Change at Commune Level

Finally, as an extension of Model (b), poverty and poverty change are analysed at the commune level, by aggregating the dependent and explanatory variables for all households within a commune.

Denoting a commune by v, we estimate the following models by OLS.

$$\bar{P}_v = \bar{X}_v\xi + \psi\overline{VEP}_{v\,t-1} + \omega_v \; , \tag{17}$$

where $\bar{P}_v = (1/N)\sum_i^N I[c_{i,t+1} \le z]$, the poverty head count ratio in commune v in 2004, $\bar{X}_v$ is a vector of average household characteristics or commune characteristics (e.g. infrastructure), $\overline{VEP}_v$ is vulnerability aggregated at the commune level in 2002, defined by equation (4), and ω_v is an error term. Equation (17) is estimated by OLS.

6. Results

The results are given in Tables 2, 3, 4 and 5, which correspond to Models (a), (b), (c) and (d), as described in the previous section.

Model (a): Consumption and Variance of the Disturbance Term

The results of the consumption function are given in Table 2. The first four columns show the regression results for equations (5) and (6) whereby log of per capita consumption in 2002 and variance of the disturbance term are estimated by household characteristics and other determinants. Two cases are shown, depending on the choice of household characteristics i.e. the cases with and without squares of household head's age and share of

female members, because of the (possible) non-linearity of the relationship between log consumption per capita and these variables. The results for 2004 are given in the last four columns for these two cases. We will discuss a selection of the results.

(Table 2 to be inserted)

The first set of results in Table 2 show that households with older heads had higher per capita consumption in 2002, as suggested by the positive and significant coefficient of age of household head. However, it ceased to be significant in 2004. The negative and statistically significant coefficient of share of female members in 2002 implies that larger share of female members tended to decrease household consumption in 2002. Somewhat surprisingly, it was positive in 2004, which may imply greater economic opportunities for female household members. Second, we include the squares of head's age and share of female members to check the non-linearity. In 2002 (the third and fourth columns), the coefficient of age of household head was negative and of its square was positive and highly significant, confirming the non-linearity. The coefficient of share of female members was negative and significant and of its square was positive and highly significant. The pattern of the results remains the same in 2004 (the sixth and the seventh columns). Given the nonlinearity for these variables, we will use the case with squares of head's age and share of female members to calculate vulnerability measures.

The coefficient of dependency burden was negative and highly significant in both 2002 and 2004, implying that a household with many old or young members tended to have lower log consumption per capita. Other factors being equal, a household with a married head had *lower* consumption in 2002 but higher consumption in 2004. It is not obvious why the effect is reversed over a short period. With illiterate households as the base case, all the dummy variables on educational attainment of household members had positive and statistically significant coefficients. The coefficient gets larger for higher levels of education, which implies that consumption tends to increase as the household head's educational attainment rises. There is a non-linear relationship between land and expenditure in both 2002 and 2004.

The results on ethnicity and regional dummies point to disparity in per capita consumption among different ethnic groups and geographical regions[17]. For example, the Kinh and Khmer have higher consumption, implied by the relatively large and significant coefficients of the dummies. Households in high mountains are likely to have lower per capita consumption. Easier access to power supply or markets is an important determinant of household consumption.

As implied by equation (9), the higher the estimated value of variance of the disturbance term, other things being equal, the lower is VEP. For example, the positive and statistically significant coefficient estimate of land area is consistent with the fact that households with larger land tended to have lower VEP in 2002.

Model (b): Determinants of Poverty and VEP

We first contrast the determinants of poverty and vulnerability in 2002, as shown in Table 3. Three different poverty lines, 100%, 120%, and 80% of the international poverty line

[17] Why exactly ethnicity/community matters is not self-evident. Whether in fact behavioural responses differ because of differences in attitudes towards risks and insurance-as emphasised by Fforde (1998, 2005) and others- can only be ascertained through a more detailed investigation that is beyond the scope of the present study.

defined by GSO, are used for measurement of poverty and vulnerability. The coefficients of the probit model are replaced by marginal effects. The signs of the coefficients and their significance are similar in both cases. For example, education, land, belonging to the Kinh or Khmer, *not* living in mountain areas, or having access to electricity or markets tend to reduce not only poverty but also vulnerability. A household with older head is more likely to be poor and vulnerable regardless of the poverty threshold chosen, but with highly significant non-linear effects. The coefficient of 'Married' is positive and significant for VEP (for 100% and 80%) but not for poverty, suggesting that having a spouse increases vulnerability but decreases poverty. This is an intriguing result.

(Table 3 to be inserted)

In the last three columns of Table 3, we test whether vulnerability in 2002 influenced poverty status in 2004, using the panel data. Regardless of the poverty threshold used, vulnerability translates into significantly higher poverty. The coefficients (or the marginal effects) of vulnerability are 0.074 in the case where 100% of the poverty line is applied, 0.108 in the case of 120% of the poverty line, and 0.034 in the case of 80% of the poverty line. These results imply that a 1 % increase of the *ex ante* probability of becoming poor tends to increase the *ex post* probability of becoming poor by 0.034% to 0.108%. However, it should be noted that these coefficients as well as the z values are sensitive to the choice of explanatory variables.

We have tried two 'minimalist' or parsimonious specifications: (i) one includes expected vulnerability measure in 2002, educational attainments, ethnic groups, geographical regions and rural areas as explanatory variables; and (ii) another in which educational attainment is omitted. In these cases, the coefficient estimates of vulnerability are much larger and more significant. In case (i), the coefficient estimates (z values in brackets) are 0.132 (5.04) for 100% of the poverty line, 0.172 (7.49) for 120%, and 0.054 (2.65) for 80%, while in case (ii), the corresponding values are 0.211 (8.22) for 100%, 0.257 (11.98) for 120%, and 0.092 (4.11) for 80% of the poverty line. These results reinforce the conclusion that vulnerability in 2002 significantly influenced poverty status in 2004.

Model (c): Determinants of Poverty Transition from 2002 to 2004

Table 4 reports the results of multinomial logit models for analyzing poverty transitions during 2002-04. Note that the base case is the category of households which are chronically non-poor, that is, always non-poor (in both 2002 and 2004). Hence, the coefficient estimates of category (3), the last columns of Cases (a), (b) and (c) –the non-poor households that slipped into poverty- are of interest. Three cases were tried: Case (a) where the expected VEP in 2002, used as one of the explanatory variables, is based on 100% of the poverty line; Case (b) where VEP for 120% of the poverty line is used; and Case (c) where VEP is based on 80% of the poverty line. The VEP measure has a positive and significant coefficient at the 10% level in Case (b) (using 120% VEP), implying that the more vulnerable non-poor are more likely to slip into poverty, consistent with the second hypothesis in the last section. In Case (c) (using 80% VEP), the coefficient of vulnerability is positive but not significant. In Case (a) (using 100% VEP), it is not significant. The other results for category (3) identify the factors that prevent the non-poor from slipping into poverty. These include lower dependency burden, higher education, larger land area, and belonging to the Kinh.

(Table 4 to be inserted)

The difference between coefficients of vulnerability for categories (2) and (1) reflects whether the poor stay poor or escape poverty. Since the coefficient for (2) is smaller than for (1), the vulnerable poor are more likely to stay poor, consistent with the first hypothesis in the last section. Other factors that help the poor overcome poverty in the next period include lower dependency burden, education (at the level of upper secondary school or higher levels of education), larger land, and belonging to the Kinh.

We have tried alternative cases (i.e. 'minimalist' specifications), as sketched above. Two specifications are considered: (i) one includes education, ethnic groups, geographical regions and rural areas, and (ii) another in which education is omitted, to focus better on the role of vulnerability. The results are shown at the bottom of Table 4. In the first case with education, we find positive and significant coefficient estimates of category (3) (non poor →poor) in Case (b) (120% VEP is used), and Case (c) (80% VEP is used), implying that the vulnerable non- poor in 2002 are more likely to fall into poverty in 2004 (than those neither vulnerable nor poor), consistent with the second hypothesis. We find a positive and significant coefficient for all the cases in the last row where variables on education are omitted. The previous finding that the vulnerable poor are more likely to stay poor (the first hypothesis) is corroborated by the larger difference between the coefficients of vulnerability for categories (1) and (2) and larger z values for both categories. The coefficients of other variables show a similar pattern.[18]

The Hausman tests for the independence of irrelevant alternatives support the hypothesis that omitting one of the categories will not change the coefficient estimates systematically in any of the three cases. This corroborates the use of multinomial logit models.

Model (d): Determinants of Poverty and Poverty Change at Commune Level

To supplement the household-level analyses, we carry out commune-level regressions. The results are given in Table 5. Regardless of the poverty threshold, higher vulnerability at the commune level in 2002 translates into higher poverty in 2004. Other factors influencing poverty in 2004 include land area, educational attainment, and dependency burden. These results are similar to those identified on the basis of household data.

(Table 5 to be inserted)

Decomposition of Poverty and Vulnerability by Ethnicity, Geographical Area and Education

In Appendix 2, we decompose poverty and vulnerability in 2002 and 2004, respectively, by ethnicity, geographical area, educational attainment of household members, age of household head, market access and infrastructure. Selected cross- tabulations are constructed for some of these groups. Key results in Appendix 2 are graphically shown in Figures 1-1, 1-2, 2-1, 2-2, 3-1, 3-2, 4-1, 4-2, 5-1 and 5.2, based on 100 % of the poverty line.

(Figures 1-1, 1-2, 2-1, 2-2, 3-1, 3-2, 4-1, 4-2, 5-1 and 5.2 to be inserted)

[18] Detailed results will be furnished on request.

Two comments on these figures are in order. First, both poverty and vulnerability vary a great deal across these groups. In general, a group with a relatively high poverty rate tends to have much higher VEP while low poverty rates are associated with considerably lower VEP, as illustrated by Figures 1-1 and 1-2 on the decomposition by ethnic group. In 2002, the Kinh had a relatively low poverty rate of 0.23 and much lower VEP of 0.06, while the Muong had a high poverty rate of 0.71 and higher VEP 0.85. The same pattern is observed in the decomposition by geographical region in Figures 2-1 and 2-2. However, there are also some groups whose VEPs were relatively low compared to their poverty rates. For example, the poverty rate (for 100% of the poverty threshold) of the Muong in 2004 was 0.52, but the average VEP was 0.48. By contrast, the poverty rate for other ethnic groups, mainly ethnic minority groups, was 0.53, almost the same as the Muong's, but its VEP of 0.58 was much higher (see Figure 1-2)[19].

Second, the national poverty rate masks the diversity across different ethnic groups and geographic regions. For example, while some ethnic groups experienced dramatic poverty reduction in 2002-2004, a few ethnic groups (e.g. the Hmomg, the Thai, and other groups) remained not only poor but also vulnerable (Figures 1-1 and 1-2). Figures 2-1 and 2-2 show that those living in high mountains also continued to be poor and vulnerable. Among them, the households with heads who are younger or possessed primary school education are more vulnerable (see Figures 1-2 and the cross-tabulations at the bottom of Appendix 2).

Households with some education reduced their poverty and vulnerability in 2002-2004, as shown in Figures 3-1 and 3-2, but the rate of poverty reduction varied across different categories. In 2002, households with primary school education had a poverty rate of 0.38 while those with upper secondary school recorded a rate of 0.16. In 2004, the former recorded a small reduction (i.e. from 0.38 to 0.30), as compared to the latter who nearly halved their poverty (i.e. from 0.16 to 0.08).

Figures 4-1 and 4-2 compare poverty and vulnerability by age of household head in 2002 and 2004. The poorest as well as the most vulnerable group is that with household heads younger than 30 years old. Households with heads older than 30 years but less than 60 years are less vulnerable and poor.

Both Figure 5-1 and Figure 5-2 show that market access dramatically reduces vulnerability, but not necessarily poverty. In 2002, the poverty rate was slightly higher for those with market access than for those without. This implies that households can mitigate consumption vulnerability through market transactions. If consumption volatility is caused by income volatility, this result also suggests that market access reduces income volatility but does not necessarily raise mean income or consumption. That is, those without access to markets are more vulnerable to shocks. Figures 4-1 and 4-2 and the results at the bottom of Appendix 2 show that vulnerability of households without market access further increases if household heads are young or the educational level of household members is low.

7. Concluding Observations

Some observations are made from a broad policy perspective.

While there is a close correspondence between poverty and vulnerability, these are distinct concepts. In fact, there is a case for a broader focus in anti-poverty interventions in Vietnam, as the vulnerable poor are more likely to stay poor and the vulnerable non-poor are more likely to slip into poverty. Although Vietnam witnessed a dramatic reduction in poverty

[19] Here again it may be more persuasive to view the differences from a broader perspective that allows for cultural diversity in responses to shocks.

with accelerated growth, the broad ethnic and spatial contours of poverty have remained largely unchanged. Some ethnic minorities and those living in mountainous regions continue to remain in abject poverty in striking contrast to the Kinh and the Khmer. While acuteness of deprivation is in part attributable to household characteristics, lack of assets and access to infrastructure, the temptation to simplify must be resisted. Indeed, some of the ethnic and regional disparity is arguably a manifestation of cultural diversity in attitudes towards risk and insurance, as noted in the anthropological literature on poverty and vulnerability in Vietnam.

Our analysis of poverty dynamics and the role that vulnerability plays in the evolution of poverty are of special interest. The main findings are that, (i) in general, higher vulnerability translates into poverty over time; (ii) vulnerability of the poor tends to perpetuate their poverty or to generate poverty traps; (iii) while some manage to overcome their poverty despite being vulnerable, their prospects of doing so are less likely than of remaining in poverty; and (iv) vulnerability of the non-poor propels them into poverty.

While there is overlap between the determinants of poverty and vulnerability, three observations are pertinent. (i) Landlessness, ethnicity, and lack of education are associated with greater proneness to both poverty and vulnerability, as also infrastructure. (ii) However, these associations vary a great deal. Some of the ethnic groups and locations (e.g. the Tay, Thai, among the ethnic groups, and Inland Delta, among the different locations), for example, are not prone to poverty but vulnerable. (iii) It is plausible that, in the context of rapid integration of Vietnam in the global economy, and better infrastructural support, both poverty and vulnerability are likely to decline. However, greater attention must be given to other sources of vulnerability and design of social safety nets (including insurance) to mitigate the effects of various aggregate and idiosyncratic shocks to the vulnerable, through diversification of income sources, expansion of human capital, and easier access to land.

In conclusion, for poverty reduction to be durable, accelerated growth must be combined with lower volatility of income, and greater resilience of segments of the population belonging to deprived ethnic groups and/or living in remote mountainous regions against a wide array of shocks.

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Table 1 Changes of Poverty Headcount Ratios in Vietnam (%)

	1993	1998	2002
Poverty rate [*1]	58.1	37.4	28.9
Urban	25.1	9.2	6.6
Rural	66.4	45.5	35.6
Kinh and Chinese	53.9	31.1	23.1
Ethnic minorities	86.4	75.2	69.3
US$1 per day (PPP)	39.9	16.4	13.6
US$2 per day (PPP)	80.5	65.4	58.2

Source: World Bank (2004) *1 Based on the international poverty line set by General Statistics Office.

Table 2 Estimates of VEP (Vulnerability as Expected Poverty)

	2002				2004			
	Without squares of Age & Share of female members		With squares of Age & Share of female members		Without squares of Age & Share of female members		With squares of Age & Share of female members	
	log(Consumption) Coef. Robust t stat	Variance Coef. Robust t stat	log(Consumption) Coef. Robust t stat	Variance Coef. Robust t stat	log(Consumption) Coef. Robust t stat	Variance Coef. Robust t stat	log(Consumption) Coef. Robust t stat	Variance Coef. Robust t stat
Age of Household Head	**0.00097**	**0.005**	**-0.014**	**-0.018**	0.0003	**0.007**	**-0.019**	-0.005
	(4.50)**	**(4.67)****	**(9.75)****	**(2.80)****	(0.72)	**(3.04)****	**(6.04)****	(0.32)
(Age of Household Head)2	**-**	**-**	**0.000**	**0.000**	-	**-**	**0.000**	0.000
			(10.74)**	**(3.71)****			**(6.34)****	(0.76)
Share of Female Members	**-0.037**	0.039	**-0.716**	**-1.591**	**0.054**	0.036	**-0.365**	-0.900
	(2.44)*	-0.57	**(11.77)****	**(6.21)****	**(1.67)†**	(0.22)	**(2.69)****	(1.32)
(Share of Female Members)2	**-**	-	**0.659**	**1.507**	-	-	**0.384**	0.856
			(11.74)**	**(6.38)****			**(3.15)****	(1.43)
Dependency Burden	**-0.411**	0.023	**-0.471**	-0.08	**-0.388**	**0.344**	**-0.465**	0.194
	(32.30)**	(0.41)	**(34.58)****	(1.30)	**(15.58)****	**(2.97)****	**(16.81)****	(1.44)
Married	**-0.059**	**-0.205**	-0.004	**-0.111**	**0.0342**	-0.0602	**0.061**	0.024
	(6.79)**	**(5.33)****	(0.42)	**(2.74)****	**(1.93)†**	(0.73)	**(3.38)****	(0.27)
Primary	**0.053**	**-0.089**	**0.08**	0.014	**0.067**	-0.039	**0.089**	-0.079
	(5.15)**	**(1.80)†**	**(7.87)****	(0.27)	**(3.08)****	(0.35)	**(4.06)****	(0.72)
Lower Secondary	**0.11**	**-0.081**	**0.143**	0.029	**0.118**	0.07	**0.146**	0.014
	(10.81)**	**(1.65)†**	**(14.15)****	(0.58)	**(5.38)****	(0.65)	**(6.65)****	(0.13)
Upper Secondary	**0.277**	0.033	**0.31**	**0.122**	**0.287**	0.163	**0.317**	0.143
	(24.10)**	(0.61)	**(27.12)****	**(2.15)***	**(12.07)****	(1.40)	**(13.25)****	(1.27)
Technical School	**0.448**	-0.069	**0.48**	0.057	-	-	-	-
	(33.05)**	(1.09)	**(35.61)****	(0.90)	-	-	-	-
Higher Education	**0.703**	0.073	**0.736**	**0.178**	**0.618**	0.258	**0.649**	0.184
	(45.98)**	(1.08)	**(48.26)****	**(2.55)***	**(17.24)****	(1.57)	**(18.01)****	(1.10)
Land	**4.988**	**3.943**	**5.465**	**3.83**	**5.609**	0.85	**5.88**	2.118
	(12.45)**	**(3.36)****	**(13.37)****	**(3.12)****	**(8.66)****	(0.28)	**(9.07)****	(0.73)
$Land^2$	**-12.491**	-0.603	**-14.482**	-0.002	**-16.456**	-0.735	**-17.071**	-2.403
	(4.08)**	(0.35)	**(4.55)****	(0.00)	**(7.32)****	(0.06)	**(7.38)****	(0.22)
Kinh	**0.209**	-0.131	**0.213**	**-0.162**	**0.294**	0.138	**0.283**	0.122
	(12.07)**	(1.55)	**(12.56)****	**(1.94)†**	**(8.72)****	(0.84)	**(8.41)****	(0.77)
Tay	0.012	**-0.229**	0.012	**-0.291**	**0.081**	-0.149	0.072	-0.285
	(0.62)	**(2.33)***	(0.63)	**(2.91)****	**(2.17)***	(0.77)	(1.92)	(1.45)
Thai	0.026	**-0.289**	0.029	**-0.311**	-0.022	0.001	-0.034	-0.002
	(1.12)	**(2.39)***	(1.31)	**(2.52)***	(0.51)	(0.00)	(0.80)	(0.01)

Khmer	**0.202**	-0.068	**0.214**	-0.093	**0.243**	**0.634**	**0.24**	0.494
	(5.99)**	(0.43)	**(6.51)****	(0.58)	**(3.58)****	**(2.34)***	**(3.50)****	(1.76)
Muong	**-0.09**	**-0.245**	**-0.084**	**-0.322**	-0.033	-0.083	-0.049	-0.188
	(3.88)**	**(2.02)***	**(3.66)****	**(2.49)***	(0.71)	(0.35)	(1.06)	(0.78)
Nung	**0.149**	**-0.539**	**0.152**	**-0.51**	0.073	-0.258	0.069	-0.318
	(5.36)**	**(3.08)****	**(5.57)****	**(3.08)****	(1.44)	(0.93)	(1.36)	(1.11)
Hmong	-0.017	**-0.409**	0	**-0.348**	**-0.089**	-0.198	**-0.104**	-0.412
	(0.62)	**(2.83)****	(0.02)	**(2.35)***	**(1.90)†**	(0.79)	**(2.21)***	(1.52)
Buddhism	0.007	-0.026	0.006	-0.022	**0.029**	-0.073	**0.028**	-0.056
	(1.07)	(0.89)	(1.01)	(0.75)	**(2.36)***	(1.20)	**(2.32)***	(0.93)
Inland Delta	-0.009	-0.079	-0.014	**-0.092**	0.031	-0.105	0.026	-0.13
	(0.83)	(1.61)	(1.35)	**(1.86)†**	(1.37)	(0.94)	(1.17)	(1.20)
Hills	**-0.057**	-0.101	**-0.061**	-0.101	**0.08**	0.133	**0.074**	0.109
	(3.95)**	(1.51)	**(4.26)****	(1.53)	**(2.59)****	(0.88)	**(2.43)***	(0.74)
Low Mountains	**-0.144**	**-0.218**	**-0.15**	**-0.21**	-0.009	0.055	-0.016	0.031
	(11.57)**	**(3.68)****	**(12.17)****	**(3.57)****	(0.35)	(0.43)	(0.62)	(0.25)
High Mountains	**-0.225**	**-0.116**	**-0.229**	**-0.114**	-0.046	0.158	**-0.051**	0.184
	(15.39)**	**(1.70)†**	**(15.70)****	**(1.65)**	(1.54)	(1.08)	**(1.70)†**	(1.31)
Rural	**-0.567**	**-0.442**	**-0.566**	**-0.433**	0.008	-0.005	0.008	-0.018
	(65.64)**	**(11.47)****	**(65.91)****	**(11.28)****	(0.77)	(0.09)	(0.75)	(0.32)
Electricity	**0.093**	-0.012	**0.093**	0.023	**0.144**	0.2	**0.14**	0.267
	(7.30)**	(0.18)	**(7.40)****	(0.35)	**(4.04)****	(1.05)	**(3.87)****	(1.30)
Access to the Market	**0.093**	**0.112**	**0.093**	**0.117**	**0.027**	-0.006	**0.025**	0.001
	(15.43)**	**(3.64)****	**(15.64)****	**(3.82)****	**(2.29)***	(0.11)	**(2.15)***	(0.01)
Constant	8.096	**-2.376**	8.536	-1.617	7.455	-3.699	8.011	-3.214
	(273.09)	(17.24)	(187.22)	(7.65)	(111.48)	(11.42)	(75.60)	(6.53)
Observations	28806	28806	28806	28806	6473	6473	6473	6473
R-squared	0.43	0.01	0.44	0.01	0.24	0.01	0.25	0.01
Joint Significance	F(26,28779)= 874.65**	F(26,28779)= 15.83**	F(28, 28777)= 836.38**	F(28, 28777)= 15.98**	F(25, 6447)= 85.49**	F(25, 6447)= 2.08**	F(27, 6445)= 85.49**	F(27, 6445)= 2.08**

Robust t statistics in parentheses

† significant at 10%; * significant at 5%; ** significant at 1%

Table 3 Determinants of Poverty and Vulnerability in 2002 and 2004

	2002						2004		
	Whether Poor : Poverty Line 100% **Probit** (dF/dx) (Robust t stat)	Whether Poor : Poverty Line 120% **Probit** (dF/dx) (Robust t stat)	Whether Poor : Poverty Line 80% **Probit** (dF/dx) (Robust t stat)	VEP 100% **OLS** Coef. (Robust t stat)	VEP 120% **OLS** Coef. (Robust t stat)	VEP 80% **OLS** Coef. (Robust t stat)	Whether Poor : Poverty Line 100% **Probit** (dF/dx) (Robust t stat)	Whether Poor : Poverty Line 120% **Probit** (dF/dx) (Robust t stat)	Whether Poor : Poverty Line 80% **Probit** (dF/dx) (Robust t stat)
Vulnerability in 2002	-	-	-	-	-	-	**0.074** **(2.65)****	**0.108** **(4.16)****	**0.034** **(1.69)†**
Age of Household Head	**0.006** **(4.81)****	**0.01** **(5.99)****	**0.002** **(1.79)†**	**0.009** **(17.43)****	**0.015** **(20.08)****	**0.003** **(8.51)****	**0.017** **(3.87)****	**0.017** **(3.20)****	**0.005** **(2.03)***
(Age of Household Head)2	**-0.00007** **(5.86)****	**-0.00010** **(7.03)****	**-0.00002** **(2.79)****	**-0.00008** **(17.54)****	**-0.00020** **(23.57)****	**-0.00003** **(9.92)****	**-0.00020** **(4.09)****	**-0.00020** **(3.23)****	**-0.00005** **(2.04)***
Share of female members	**0.402** **(7.50)****	**0.549** **(8.54)****	**0.198** **(5.61)****	**0.35** **(17.38)****	**0.721** **(25.62)****	**0.186** **(14.74)****	**0.432** **(2.26)***	**0.517** **(2.25)***	-0.071 (0.63)
(Share of female members)2	**-0.349** **(7.13)****	**-0.489** **(8.32)****	**-0.164** **(5.14)****	**-0.315** **(16.85)****	**-0.652** **(25.36)****	**-0.178** **(15.65)****	**-0.412** **(2.45)***	**-0.53** **(2.63)****	0.025 (0.25)
Dependency Burden	**0.323** **(26.19)****	**0.397** **(26.23)****	**0.165** **(20.61)****	**0.306** **(54.21)****	**0.636** **(93.41)****	**0.089** **(26.06)****	**0.308** **(8.26)****	**0.306** **(6.34)****	**0.131** **(5.96)****
Married	**-0.015** **(1.81)†**	-0.016 (1.58)	**-0.014** **(2.49)***	**0.012** **(3.94)****	0.003 (0.61)	**0.005** **(2.86)****	**-0.058** **(2.11)***	**-0.056** **(1.74)†**	-0.021 (1.20)
Primary	**-0.047** **(5.51)****	**-0.048** **(4.26)****	**-0.027** **(5.38)****	**-0.129** **(26.54)****	**-0.123** **(23.00)****	**-0.064** **(17.29)****	-0.039 (1.38)	-0.056 (1.54)	**-0.03** **(2.03)***
Lower Secondary School	**-0.08** **(9.40)****	**-0.085** **(7.67)****	**-0.054** **(10.71)****	**-0.196** **(41.30)****	**-0.254** **(48.07)****	**-0.093** **(26.13)****	**-0.076** **(2.70)****	**-0.101** **(2.82)****	**-0.051** **(3.30)****
Upper Secondary School	**-0.157** **(18.13)****	**-0.211** **(18.23)****	**-0.085** **(16.69)****	**-0.238** **(48.82)****	**-0.436** **(76.75)****	**-0.103** **(27.89)****	**-0.172** **(6.16)****	**-0.213** **(5.72)****	**-0.082** **(5.33)****
Technical School	**-0.213** **(22.91)****	**-0.316** **(25.07)****	**-0.101** **(17.54)****	**-0.281** **(46.49)****	**-0.475** **(68.96)****	**-0.118** **(27.73)****	- -	- -	- -
Higher Education	**-0.237** **(18.46)****	**-0.373** **(24.05)****	**-0.107** **(12.86)****	**-0.215** **(36.11)****	**-0.379** **(48.72)****	**-0.092** **(23.67)****	**-0.215** **(5.46)****	**-0.354** **(7.07)****	**-0.081** **(3.94)****
Land	**-3.028** **(10.49)****	**-3.912** **(11.49)****	**-1.464** **(7.73)****	**-2.98** **(23.54)****	**-4.903** **(21.59)****	**-1.96** **(19.11)****	**-6.684** **(5.23)****	**-8.248** **(5.05)****	**-2.601** **(3.06)****
$Land^2$	**4.124** **(5.21)****	**5.063** **(5.40)****	**2.172** **(4.68)****	**4.584** **(12.60)****	**7.444** **(5.96)****	**3.31** **(20.17)****	**46.604** **(3.45)****	**46.453** **(2.65)****	**15.916** **(1.53)**
Kinh	**-0.165** **(9.50)****	**-0.181** **(8.36)****	**-0.105** **(9.62)****	**-0.438** **(44.31)****	**-0.206** **(23.38)****	**-0.376** **(33.97)****	**-0.206** **(4.47)****	**-0.23** **(4.34)****	**-0.097** **(3.44)****
Tay	0.009 (0.51)	0.033 (1.31)	-0.003 (0.28)	**-0.096** **(7.90)****	**0.025** **(2.46)***	**-0.178** **(12.93)****	**-0.09** **(2.17)***	**-0.103** **(1.71)†**	-0.032 (1.48)
Thai	-0.028 (1.29)	0.011 (0.36)	-0.018 (1.56)	**-0.094** **(6.65)****	**-0.041** **(3.45)****	**-0.115** **(6.91)****	0.027 (0.46)	0.062 (0.75)	-0.015 (0.55)
Khmer	-0.126 **(5.42)****	-0.12 **(3.44)****	-0.065 **(5.09)****	**-0.385** **(30.88)****	**-0.19** **(16.70)****	**-0.365** **(31.10)****	**-0.126** **(2.02)***	-0.1 (0.95)	-0.007 (0.15)
Muong	**0.109** **(4.09)****	**0.121** **(3.55)****	**0.075** **(4.68)****	**0.073** **(5.41)****	**0.112** **(8.78)****	0.01 (0.59)	0.038 (0.62)	0.079 (0.92)	0.015 (0.44)
Nung	**-0.098** **(4.18)****	**-0.075** **(2.03)***	**-0.046** **(3.63)****	**-0.248** **(16.35)****	**-0.061** **(4.64)****	**-0.312** **(22.25)****	**-0.113** **(1.93)†**	-0.112 (1.29)	-0.051 (1.72)
Hmong	**0.063** **(1.81)†**	**0.132** **(2.64)****	**0.029** (1.64)	**-0.067** **(6.18)****	**-0.105** **(7.37)****	**0.074** **(4.28)****	**0.200** **(2.28)***	**0.254** **(2.12)***	0.03 (0.76)
Buddhism	**-0.01** **(1.74)†**	-0.011 (1.56)	-0.005 (1.39)	**-0.005** **(2.19)***	**-0.017** **(5.61)****	0.001 (0.77)	**-0.039** **(2.27)***	-0.028 (1.36)	**-0.036** **(3.25)****
Inland Delta	0.007 (0.64)	**0.021** **(1.72)†**	0.001 (0.09)	0.002 (0.57)	-0.007 (1.35)	**0.015** **(10.51)****	-0.029 (0.94)	-0.023 (0.61)	-0.008 (0.40)
Hills	**0.035** **(2.44)***	**0.038** **(2.23)***	**0.021** **(2.13)***	0.045 **(10.87)****	**0.083** **(12.40)****	**0.023** **(12.92)****	**-0.072** **(1.91)†**	-0.115 **(2.38)***	-0.021 (0.88)
Low Mountains	**0.083** **(6.48)****	**0.107** **(7.15)****	**0.055** **(6.10)****	**0.138** **(29.70)****	**0.218** **(35.39)****	**0.012** **(5.16)****	0.02 **(0.54)**	**0.004** **(0.09)**	0.029 (1.17)
High Mountains	**0.171**	**0.182**	**0.11**	**0.222**	**0.233**	**0.091**	0.013	0.053	0.047

	(11.16)**	**(10.52)****	**(9.99)****	**(32.29)****	**(30.87)****	**(21.84)****	(0.31)	(1.01)	(1.65)
Rural	**0.238**	**0.345**	**0.114**	**0.123**	**0.366**	**0.026**	-0.005	-0.035	0.002
	(33.10)**	**(40.02)****	**(22.65)****	**(41.40)****	**(83.72)****	**(16.78)****	(0.32)	(1.86)	(0.26)
Electricity	**-0.074**	**-0.076**	**-0.042**	**-0.172**	**-0.092**	**-0.184**	0.058	0.091	0.016
	(5.76)**	**(4.63)****	**(5.56)****	**(23.15)****	**(14.18)****	**(23.03)****	(1.12)	(1.26)	(0.56)
Market	**-0.065**	**-0.088**	**-0.029**	**-0.098**	**-0.181**	**-0.039**	-0.007	0.005	-0.008
	(11.94)**	**(12.98)****	**(8.38)****	**(39.13)****	**(55.25)****	**(24.20)****	(0.41)	(0.23)	(0.80)
Constant	-	-	-	0.352	-0.086	0.484	-	-	-
				(17.93)	(3.62)	(29.86)			
Observations	28806	28806	28806	28806	28806	28806	2870	2870	2870
Pseudo R Squared	0.22	0.23	0.22				0.15	0.13	0.15
R-squared	-	-	-	0.71	0.71	0.67	-	-	-
Joint Significance									
Wald Chi2 (28)	5350.54**	6103.25**	4030.21**	-	-	-	407.45**	428.97**	280.35**
F(28, 287797)	-	-	-	2612.82**	2938.41**	476.51**	-	-	-

Notes: 1. Robust z statistics in parentheses. 2.† significant at 10%; * significant at 5%; ** significant at 1%. 3. For probit models, marginal effects are shown. For dummy variables, they are calculated by discrete changes from 0 to 1.

Table 4 Multinomial Logit Models for Determinants of Change in Poverty Status (based on 100% poverty line) from 2002 to 2004

1. With all the explanatory variables

	Case (a)			Case (b)			Case (c)		
Shift in Poverty Status from 2002 to 2004	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**
4	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)
Vulnerability in 2002 (based on Poverty Line 100%)	**0.855**	**0.502**	-0.092	-	-	-	-	-	-
	(4.20)**	**(2.38)***	(0.30)						
Vulnerability in 2002 (based on Poverty Line 120%)	-	-	-	**0.904**	**0.829**	**0.337**	-	-	-
				(5.55)**	**(5.33)****	**(1.69)†**			
Vulnerability in 2002 (based on Poverty Line 80%)	-	-	-	-	-	-	**1.086**	0.314	0.759
							(3.29)**	(0.87)	(1.45)
Age of Household Head	**0.123**	0.049	**0.101**	**0.121**	0.05	**0.107**	**0.119**	0.044	**0.105**
	(3.43)**	(1.52)	**(2.48)***	**(3.43)****	(1.58)	**(2.62)****	**(3.31)****	(1.34)	**(2.62)****
(Age of Household Head)^2	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	-0.001	**-0.001**
	(3.75)**	**(1.98)***	**(2.69)****	**(3.68)****	**(1.97)***	**(2.83)****	**(3.60)****	(1.81)	**(2.84)****
Share of female members	**3.057**	**3.328**	**4.598**	**2.858**	**3.141**	**4.53**	**2.889**	**3.383**	**4.566**
	(2.08)*	**(2.39)***	**(2.38)***	**(1.95)†**	**(2.25)***	**(2.35)***	**(1.97)***	**(2.43)***	**(2.36)***
(Share of female members)^2	**-2.851**	**-2.708**	**-4.082**	**-2.661**	**-2.573**	**-4.057**	**-2.648**	**-2.727**	**-4.068**
	(2.18)*	**(2.24)***	**(2.50)***	**(2.04)***	**(2.13)***	**(2.49)***	**(2.04)***	**(2.26)***	**(2.48)***
Dependency Burden	**2.167**	**1.114**	**2.084**	**1.912**	**0.764**	**1.879**	**2.332**	**1.232**	**2.05**
	(7.42)**	**(4.06)****	**(6.24)****	**(6.46)****	**(2.64)****	**(5.51)****	**(8.15)****	**(4.54)****	**(6.13)****
Married	-0.199	-0.103	**-0.588**	-0.223	-0.136	**-0.609**	-0.188	-0.09	**-0.598**
	(0.96)	(0.54)	**(2.52)***	(1.09)	(0.71)	**(2.61)****	(0.92)	(0.47)	**(2.56)***
Primary School	**-0.486**	-0.176	0.128	**-0.521**	-0.194	0.156	**-0.537**	-0.232	0.14
	(2.27)*	(0.81)	(0.44)	**(2.46)***	(0.89)	(0.54)	**(2.47)***	(1.07)	(0.48)
Lower Secondary School	**-0.651**	-0.223	-0.293	**-0.67**	-0.204	-0.236	**-0.701**	-0.297	-0.259
	(3.01)**	(1.02)	(0.97)	**(3.14)****	(0.94)	(0.79)	**(3.22)****	(1.37)	(0.86)
Upper Secondary	**-1.968**	**-0.954**	-0.864	**-1.873**	**-0.779**	**-0.723**	**-2.075**	**-1.06**	**-0.817**

School									
	(7.12)**	**(3.97)****	**(2.54)***	**(6.68)****	**(3.20)****	**(2.16)***	**(7.51)****	**(4.50)****	**(2.44)***
Higher Education	**-4.15**	**-1.905**	**-3.068**	**-3.933**	**-1.626**	**-2.877**	**-4.313**	**-2.032**	**-3.009**
	(4.17)**	**(4.16)****	**(2.86)****	**(3.91)****	**(3.53)****	**(2.70)****	**(4.19)****	**(4.44)****	**(2.82)****
Land	**-51.344**	**-26.921**	**-43.152**	**-48.569**	**-24.395**	**-41.498**	**-51.15**	**-27.327**	**-42.329**
	(4.40)**	**(2.86)****	**(3.31)****	**(4.02)****	**(2.54)***	**(3.15)****	**(4.48)****	**(2.93)****	**(3.22)****
$Land^2$	**322.735**	**220.114**	**315.986**	**297.058**	**206.961**	**310.08**	**325.695**	**216.652**	**314.463**
	(1.92)†	**(2.48)***	**(2.91)****	**(1.65)**	**(2.28)***	**(2.85)****	**(2.04)***	**(2.47)***	**(2.91)****
Kinh	**-1.391**	**-0.671**	**-1.055**	**-1.548**	**-0.742**	**-0.969**	**-1.368**	**-0.765**	**-0.842**
	(4.76)**	**(2.20)***	**(2.26)***	**(5.39)****	**(2.48)***	**(2.17)***	**(4.62)****	**(2.55)***	**(1.75)†**
Tay	**-0.65**	-0.277	**-1.713**	**-0.683**	-0.312	**-1.721**	-0.584	-0.243	**-1.641**
	(1.84)†	(0.76)	**(2.09)***	**(1.97)***	(0.86)	**(2.09)***	(1.60)	(0.67)	**(1.98)***
Thai	0.494	0.419	-0.974	0.541	0.451	-1.001	0.49	0.47	-1.061
	(1.11)	(0.86)	(0.90)	(1.22)	(0.92)	(0.92)	(1.08)	(0.96)	(0.98)
Khmer	-0.706	-0.194	-1.807	-0.92	-0.354	-1.781	-0.616	-0.263	-1.615
	(1.29)	(0.32)	(1.57)	(1.63)	(0.59)	(1.55)	(1.10)	(0.44)	(1.39)
Muong	0.492	0.51	0.379	0.499	0.446	0.277	0.474	0.567	0.261
	(1.04)	(0.93)	(0.56)	(1.08)	(0.84)	(0.41)	(0.99)	(1.06)	(0.39)
Nung	**-1.189**	-0.481	-0.851	**-1.241**	-0.503	-0.787	**-0.982**	-0.494	-0.639
	(2.18)*	(0.97)	(1.02)	**(2.29)***	(1.02)	(0.92)	**(1.79)†**	(1.01)	(0.73)
Hmong	**1.458**	0.931	**1.715**	**1.348**	0.825	**1.655**	1.486	0.957	1.773
	(2.02)*	(1.10)	**(1.84)†**	**(1.89)†**	(1.00)	**(1.76)†**	(2.04)*	(1.15)	(1.88)
Buddhism	**-0.466**	-0.206	-0.046	**-0.486**	**-0.214**	-0.047	**-0.472**	**-0.215**	-0.039
	(3.45)**	(1.70)	(0.29)	**(3.59)****	**(1.76)†**	(0.29)	**(3.53)****	**(1.77)†**	(0.25)
Inland Delta	-0.198	0.019	-0.14	-0.191	0.015	-0.149	-0.192	0.024	-0.143
	(0.81)	(0.08)	(0.50)	(0.75)	(0.06)	(0.54)	(0.80)	(0.11)	(0.52)
Hills	-0.433	0.227	-0.463	-0.487	0.153	-0.505	-0.372	0.246	-0.464
	(1.31)	(0.80)	(1.16)	(1.41)	(0.53)	(1.26)	(1.13)	(0.87)	(1.16)
Low Mountains	-0.003	-0.059	0.249	-0.106	-0.28	0.083	0.212	0.036	0.206
	(0.01)	(0.21)	(0.76)	(0.37)	(0.99)	(0.25)	(0.78)	(0.13)	(0.63)
High Mountains	0.337	0.455	-0.236	0.322	0.265	-0.459	**0.588**	**0.637**	-0.355
	(1.05)	(1.51)	(0.55)	(1.02)	(0.89)	(1.08)	**(1.92)†**	**(2.22)***	(0.85)
Rural	0.119	0.121	-0.146	0.076	0.100	-0.136	0.098	0.105	-0.132
	(0.99)	(1.09)	(0.95)	(0.63)	(0.90)	(0.89)	(0.82)	(0.95)	(0.86)
Electricity	-0.05	**-0.883**	-0.786	-0.056	**-0.887**	-0.788	0.133	**-0.864**	-0.708
	(0.11)	**(1.96)***	(1.15)	(0.13)	**(2.00)***	(1.13)	(0.28)	**(1.95)†**	(1.00)
Market	-0.099	-0.105	-0.039	-0.047	-0.044	-0.005	-0.104	-0.122	-0.027
	(0.76)	(0.88)	(0.23)	(0.36)	(0.36)	(0.03)	(0.80)	(1.03)	(0.16)
Constant	**-2.942**	-1.416	**-3.257**	-2.944	-1.533	-3.565	**-3.023**	-1.173	**-3.663**
	(2.58)**	(1.30)	**(2.15)***	(2.61)	(1.43)	(2.36)	**(2.60)****	(1.08)	**(2.40)***
Observations		2870			2870			2870	
Pseudo R^2		0.13			0.14			0.13	
Joint Significance		Wald $Chi^2(84)$= 652.11**			Wald $Chi^2(84)$= 671.91**			Wald $Chi^2(84)$= 597.75**	
Hausman Tests for IIA assumption	Omitted	chi^2	df	Omitted	chi^2	df	Omitted	chi^2	df
	0	0.140	53	0	-2.123	53	0	-1.189	53
	1	0.180	52	1	0.714	51	1	2.175	50
	2	1.999	51	2	0.199	50	2	2.862	52
		P>chi2	evidence		P>chi2	evidence		P>chi2	evidence
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho

2. Only with vulnerability in 2002, education dummies, ethnicity, geographical dummies and 'rural' dummy

	Case (a)			**Case (b)**			**Case (c)**		
	VEP in 2002 is based on 100% of Poverty Line			**VEP in 2002 is based on 120% of Poverty Line**			**VEP in 2002 is based on 80% of Poverty Line**		
Shift in Poverty Status from 2002 to 2004	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**	**(1) Poverty →Poverty**	**(2) Poverty →Non Poverty**	**(3) Non Poverty →Poverty**
	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)	Coef. (Robust t stat)

Vulnerability in 2002 (based on Poverty Line 100%)	**1.209**	**0.699**	0.328	**-**	**-**	**-**	**-**	**-**	**-**
	(6.78)**	**(3.67)****	(1.13)						
Vulnerability in 2002 (based on Poverty Line 120%)	**-**	**-**	**-**	**1.329**	**1.050**	**0.648**	**-**	**-**	**-**
				(9.13)**	**(7.74)****	**(3.63)****			
Vulnerability in 2002 (based on Poverty Line 80%)	**-**	**-**	**-**	**-**	**-**	**-**	**1.445**	**0.701**	**1.204**
							(4.74)**	**(2.08)***	**(2.41)***
Observations	2967			2967			2967		
Pseudo R^2	0.13			0.12			0.10		
Joint Significance	Wald Chi^2 (51)=510.50**			Wald Chi^2 (51)=567.28**			Wald Chi^2(51)=455.31		
Hausman Tests for IIA assumption	Omitted	chi^2	df	Omitted	chi^2	df	Omitted	chi^2	df
	0	-0.114	36	0	-2.938	36	0	0.382	36
	1	-3.831	36	1	-6.203	35	1	-6.420	36
	2	-0.904	36	2	1.704	36	2	-0.113	36
		P>chi2	evidence		P>chi2	evidence		P>chi2	evidence
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho

3. Only with vulnerability in 2002, ethnicity, geographical dummies and 'rural' dummy

	Case (a)			**Case (b)**			**Case (c)**		
	VEP in 2002 is based on 100% of Poverty Line			**VEP in 2002 is based on 120% of Poverty Line**			**VEP in 2002 is based on 80% of Poverty Line**		
Vulnerability in 2002 (based on Poverty Line 100%)	**1.740**	**0.981**	**0.704**	**-**	**-**	**-**	**-**	**-**	**-**
	(10.49)**	**(5.55)****	**(2.57)****						
Vulnerability in 2002 (based on Poverty Line 120%)	**-**	**-**	**-**	**1.805**	**1.285**	**0.985**	**-**	**-**	**-**
				(13.42)**	**(10.46)****	**(5.80)****			
Vulnerability in 2002 (based on Poverty Line 80%)	**-**	**-**	**-**	**-**	**-**	**-**	**1.876**	**0.958**	**1.498**
							(6.44)**	**(2.96)****	**(3.09)****
Observations	2967			2967			2967		
Pseudo R^2	0.08			0.10			0.07		
Joint Significance	Wald Chi^2= 407.45**			Wald Chi^2= 511.71**			Wald Chi^2= 31.97**		
Hausman Tests for IIA assumption	Omitted	chi^2	Df	Omitted	chi^2	Df	Omitted	chi^2	df
	0	0.411	28	0	0.266	28	0	3.690	28
	1	-1.297	28	1	-6.374	28	1	-0.046	28
	2	-0.028	28	2	-0.250	28	2	0.144	28
		P>chi2	evidence		P>chi2	evidence		P>chi2	evidence
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho
		1.00	for Ho		1.00	for Ho		1.00	for Ho

1. Robust z statistics in parentheses
2.† significant at 10%; * significant at 5%; ** significant at 1%
3. Base line case is 'Non Poverty in 2002 → Non Poverty in 2004'.
   100 % of poverty line

Table 5 Commune-Level Determinants of Poverty in 2004

	Case (a) Poverty 100% Coef. (Robust t stat)	Case (c) Poverty 120% Coef. (Robust t stat)	Case (e) Poverty 80% Coef. (Robust t stat)
Vulnerability in 2002	**0.201**	**0.124**	**0.203**
	(3.54)**	**(2.61)****	**(2.70)****
Age of Household Head	0.013	0.01	0.008
	(1.42)	(0.95)	(1.07)
(Age of Household Head)^2	0.00	0.00	0.00
	(1.61)	(1.12)	(1.21)
Share of female members	0.015	0.78	-0.099
	(0.03)	(1.24)	(0.23)
(Share of female members)^2	-0.071	-0.845	-0.046
	(0.14)	(1.43)	(0.11)
Dependency Burden	**0.344**	**0.313**	**0.172**
	(5.74)**	**(4.43)****	**(3.77)****
Married	-0.013	0.015	-0.045
	(0.29)	(0.28)	(1.38)
Primary School	**-0.12**	**-0.108**	**-0.139**
	(2.05)*	**(1.84)†**	**(2.59)****
Lower Secondary School	-0.08	-0.09	**-0.11**
	(1.44)	(1.51)	**(2.16)***
Upper Secondary School	**-0.227**	**-0.23**	**-0.178**
	(3.86)**	**(3.54)****	**(3.44)****
Higher Education	**-0.38**	**-0.478**	**-0.206**
	(5.80)**	**(6.04)****	**(3.52)****
Land	**-4.967**	**-6.583**	-1.472
	(2.60)**	**(2.77)****	(1.06)
Land^2	43.486	51.344	-3.738
	(1.11)	(1.04)	(0.14)
Kinh	**-0.153**	**-0.188**	**-0.103**
	(2.52)*	**(3.39)****	**(1.87)†**
Tay	-0.081	-0.071	-0.053
	(1.15)	(1.02)	(0.80)
Thai	0.099	0.079	0.06
	(1.30)	(1.15)	(0.77)
Khmer	-0.135	-0.062	-0.045
	(1.47)	(0.60)	(0.51)
Muong	0.022	0.044	-0.005
	(0.29)	(0.54)	(0.06)
Nung	-0.101	-0.106	-0.107
	(0.85)	(0.88)	(1.39)
Hmong	**0.213**	**0.18**	0.068
	(2.30)*	**(1.88)†**	(0.77)
Buddhism	-0.022	-0.015	**-0.024**
	(1.33)	(0.72)	**(2.07)***
Inland Delta	-0.019	0.007	-0.004
	(0.59)	(0.18)	(0.17)
Hills	-0.061	-0.066	-0.014
	(1.55)	(1.35)	(0.52)
Low Mountains	-0.002	0.008	0.031
	(0.05)	(0.17)	(1.10)
High Mountains	-0.034	0.056	0.028
	(0.68)	(0.97)	(0.77)
Rural	0.004	-0.021	0.005

	(0.26)	(1.11)	(0.45)
Electricity	0.07	0.05	0.033
	(1.16)	(0.67)	(0.51)
Market	-0.006	-0.003	-0.006
	(0.37)	(0.13)	(0.49)
Constant	0.073	0.144	0.168
	(0.25)	(0.46)	(0.74)
Observations	1076	1076	1076
R-squared	0.27	0.23	0.24
Joint Significance	F(28,1047)= 15.07**	F(28,1047)= 15.06**	F(28,1047)= 6.20**

1. Robust z statistics in parentheses
2.* significant at 5%; ** significant at 1%

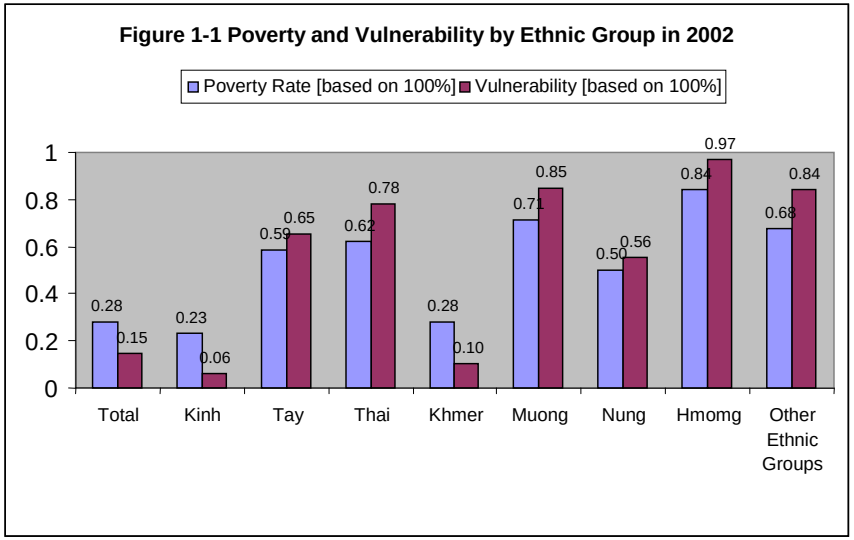
Figure 1-1 Poverty and Vulnerability by Ethnic Group in 2002
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.28
0.15
0.23
0.06
0.59
0.65
0.62
0.78
0.28
0.10
0.71
0.85
0.50
0.56
0.84
0.97
0.68
0.84
Total
Kinh
Tay
Thai
Khmer
Muong
Nung
Hmomg
Other Ethnic Groups

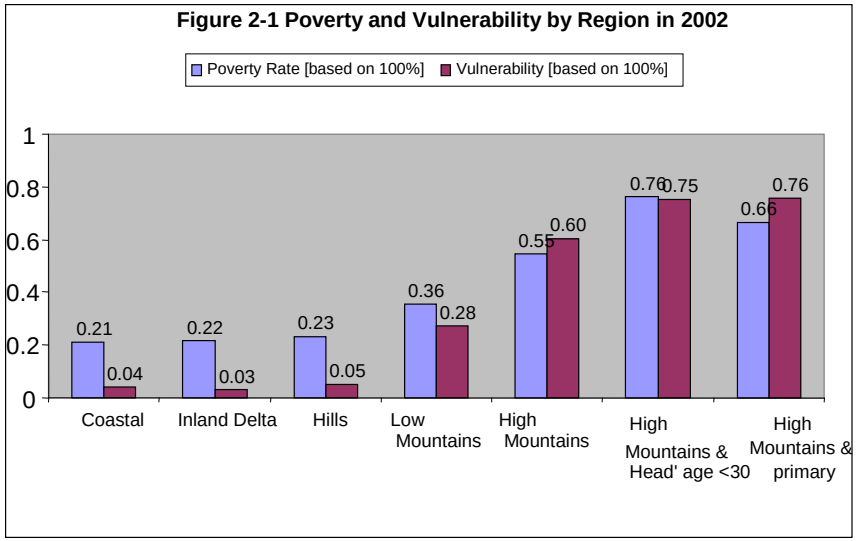
Figure 2-1 Poverty and Vulnerability by Region in 2002
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.21
0.04
0.22
0.03
0.23
0.05
0.36
0.28
0.55
0.60
0.76
0.75
0.66
0.76
Coastal
Inland Delta
Hills
Low Mountains
High Mountains
High Mountains & Head' age <30
High Mountains & primary

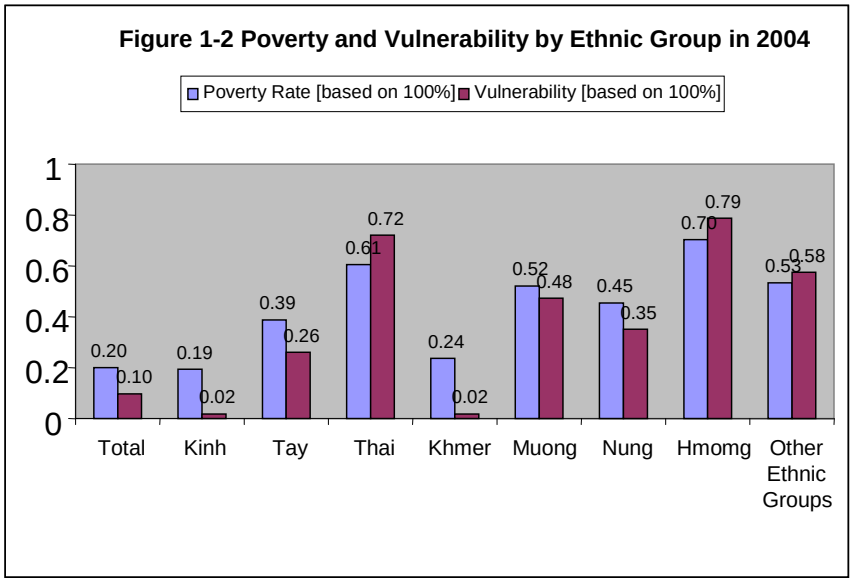
Figure 1-2 Poverty and Vulnerability by Ethnic Group in 2004
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.20
0.10
0.19
0.02
0.39
0.26
0.61
0.72
0.24
0.02
0.52
0.48
0.45
0.35
0.70
0.79
0.53
0.58
Total
Kinh
Tay
Thai
Khmer
Muong
Nung
Hmomg
Other Ethnic Groups

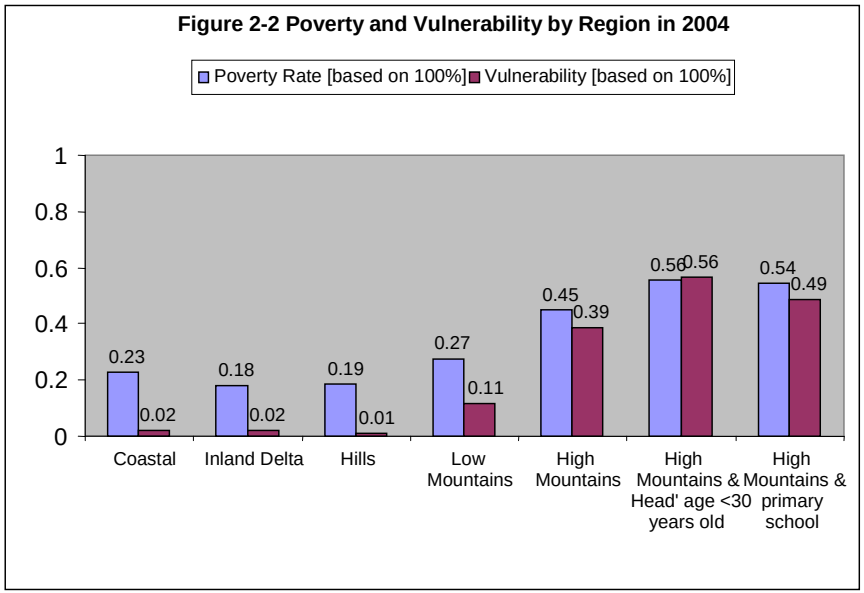
Figure 2-2 Poverty and Vulnerability by Region in 2004
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.23
0.02
0.18
0.02
0.19
0.01
0.27
0.11
0.45
0.39
0.56
0.56
0.54
0.49
Coastal
Inland Delta
Hills
Low Mountains
High Mountains
High Mountains & Head' age <30 years old
High Mountains & primary school

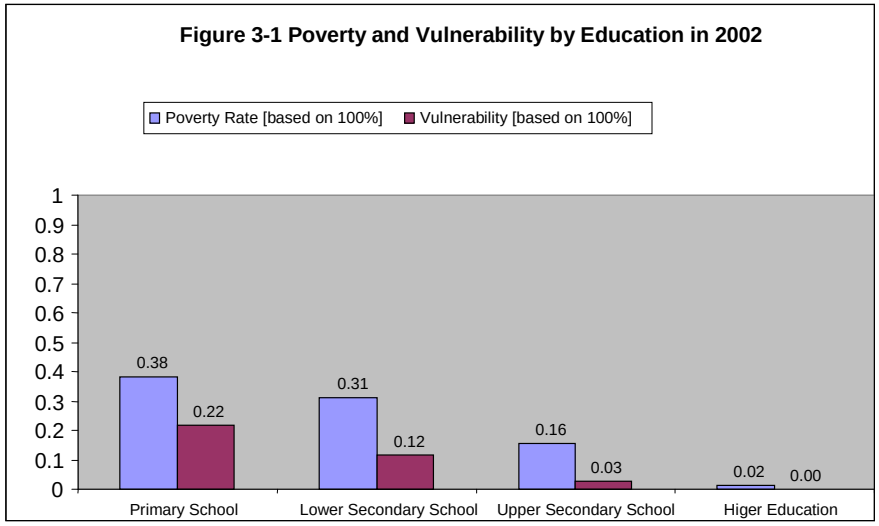
Figure 3-1 Poverty and Vulnerability by Education in 2002
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.38
0.22
0.31
0.12
0.16
0.03
0.02
0.00
Primary School
Lower Secondary School
Upper Secondary School
Higer Education

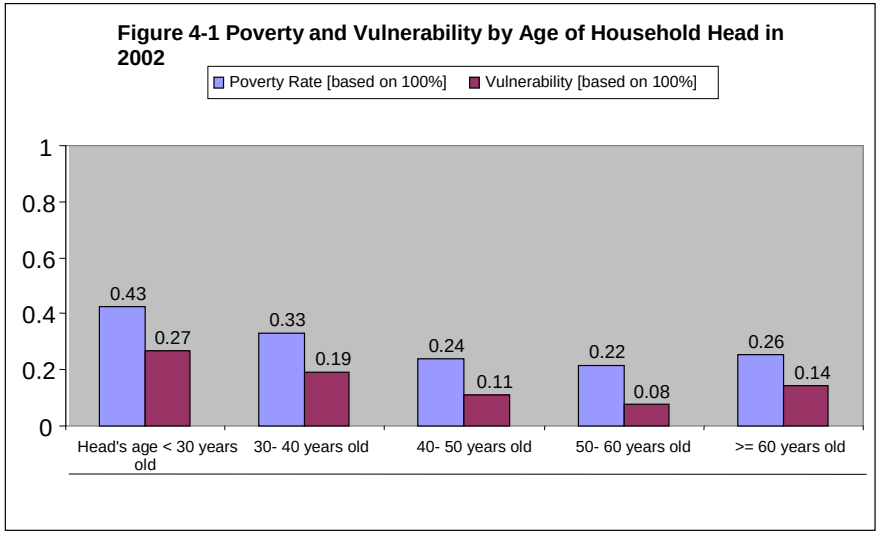
Figure 4-1 Poverty and Vulnerability by Age of Household Head in 2002
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.43
0.27
0.33
0.19
0.24
0.11
0.22
0.08
0.26
0.14
Head's age < 30 years old
30- 40 years old
40- 50 years old
50- 60 years old
>= 60 years old

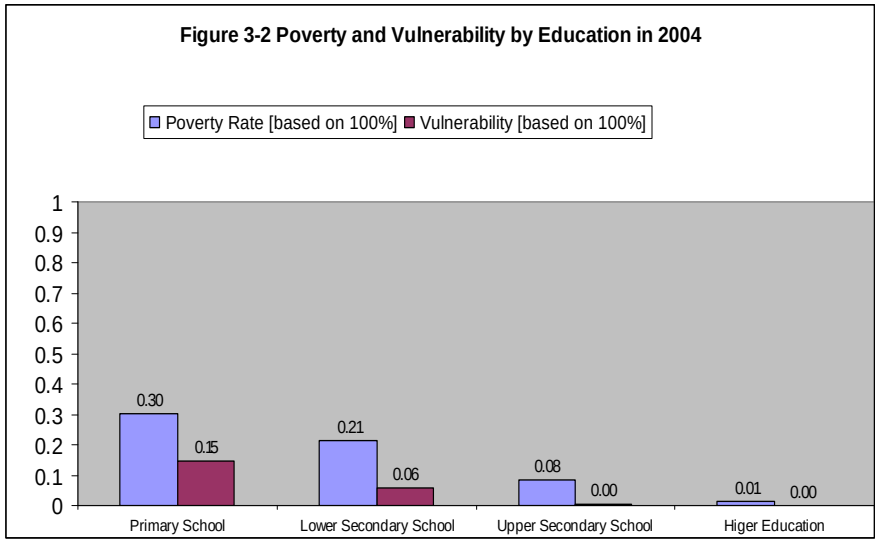
Figure 3-2 Poverty and Vulnerability by Education in 2004
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.30
0.15
0.21
0.06
0.08
0.00
0.01
0.00
Primary School
Lower Secondary School
Upper Secondary School
Higer Education

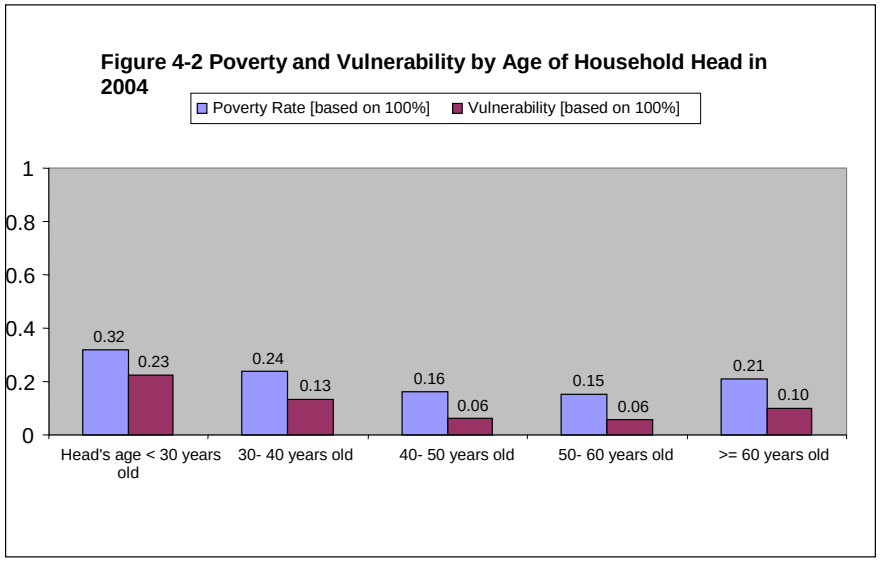
Figure 4-2 Poverty and Vulnerability by Age of Household Head in 2004
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.32
0.23
0.24
0.13
0.16
0.06
0.15
0.06
0.21
0.10
Head's age < 30 years old
30- 40 years old
40- 50 years old
50- 60 years old
>= 60 years old

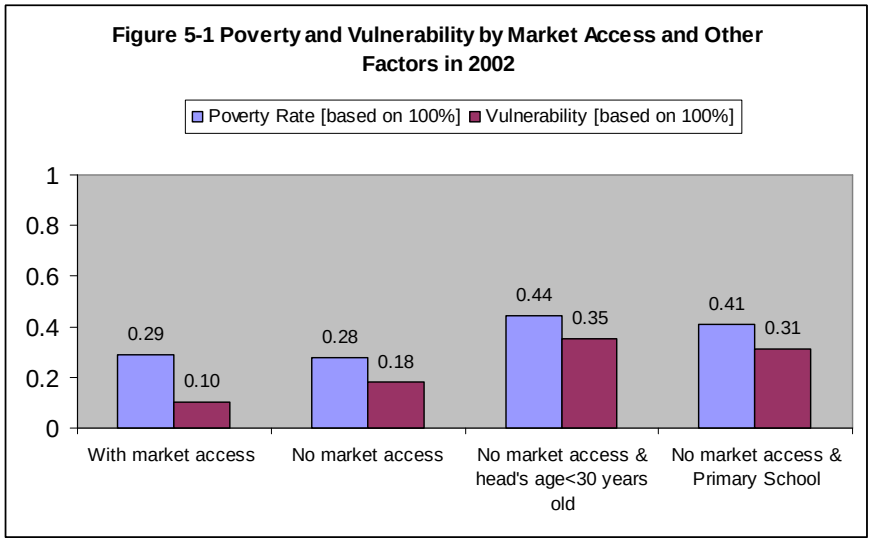
Figure 5-1 Poverty and Vulnerability by Market Access and Other Factors in 2002
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.29
0.10
0.28
0.18
0.44
0.35
0.41
0.31
With market access
No market access
No market access & head's age<30 years old
No market access & Primary School

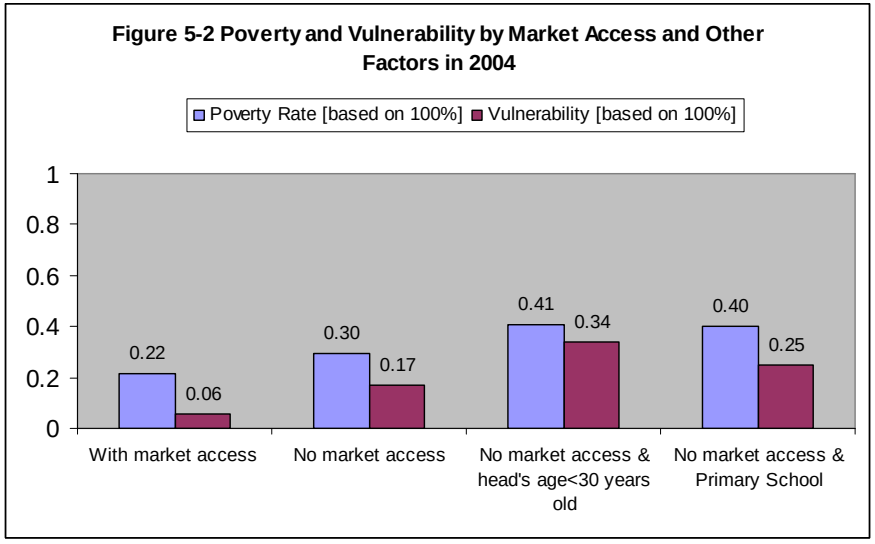
Figure 5-2 Poverty and Vulnerability by Market Access and Other Factors in 2004
Poverty Rate [based on 100%]
Vulnerability [based on 100%]
1
0.8
0.6
0.4
0.2
0
0.22
0.06
0.30
0.17
0.41
0.34
0.40
0.25
With market access
No market access
No market access & head's age<30 years old
No market access & Primary School

Appendix 1: Descriptive Statistics

Variable	Definition	2002 Obs	2002 Mean	2002 Std. Dev.	2002 Min	2002 Max	2004 Obs	2004 Mean	2004 Std. Dev.	2004 Min	2004 Max
Log (Consumption)	log of per capita household expenditure in food and non-food items.	29530	7.94741	0.6253	5.7497	10.927	9188	8.177	0.5964	5.97677	10.8464
Age of Household Head	Age of head of the household	29530	47.55093	14.281	16	107	9188	49.09	14.032	15	98
Share of female members	Share of number of female members in total number of household members.	29530	0.5125043	0.2012	0	1	9066	0.519	0.1895	0.11111	1
Dependency Burden	Share of household members under 15 years old or above 65 years old in total household members.	29530	0.3804642	0.2446	0	1	9188	0.338	0.2543	0	1
Married	Whether the household head is married or not.	29530	0.8191331	0.3849	0	1	9188	0.816	0.3877	0	1
Primary School	Whether the highest level of education of household members is primary school or not.	29530	0.241788	0.4282	0	1	9188	0.226	0.4184	0	1
Lower Secondary School	Whether the highest level of education of household members is lower secondary school or not.	29530	0.3193701	0.4662	0	1	9188	0.321	0.467	0	1
Upper Secondary School	Whether the highest level of education of household members is upper secondary school or not.	29530	0.1699966	0.3756	0	1	9188	0.274	0.4459	0	1
Technical School	Whether the highest level of education of household members is technical school or not.	29530	0.0844565	0.2781	0	1	N.A.				
Higher Education	Whether the highest level of education of household members is college or university.	29530	0.0707755	0.2565	0	1	9188	0.087	0.2818	0	1
Land (Owned) (million m2)	Total land area owned by household members.	29530	0.0060888	0.015	0	0.93	8750	0.007	0.0147	0	0.37871
Land^2	Square of land area.	29530	0.0002634	0.0059	0	0.8649	8750	3E-04	0.0032	0	0.14342
Kinh	Whether the household belongs to Kinh or not.	28806	0.871624	0.3345	0	1	6728	0.827	0.3787	0	1
Tay	Whether the household belongs to Tay or not.	28806	0.0362772	0.187	0	1	6728	0.043	0.2034	0	1
Thai	Whether the household belongs to Thai or not.	28806	0.0177046	0.1319	0	1	6728	0.028	0.164	0	1
Khmer	Whether the household belongs to Khmer or not.	28806	0.0090259	0.0946	0	1	6728	0.012	0.111	0	1
Muong	Whether the household belongs to Muong or not.	28806	0.0156217	0.124	0	1	6728	0.02	0.1387	0	1
Nung	Whether the household belongs to Nung or not.	28806	0.0079844	0.089	0	1	6728	0.012	0.111	0	1
Hmong	Whether the household belongs to Hmong or not.	28806	0.009373	0.0964	0	1	6728	0.016	0.1274	0	1
Buddhism	Whether the main religion is Buddhism or not.	28806	0.6464278	0.4781	0	1	6728	0.46	0.4984	0	1
Inland Delta	Whether the household is located in Inland Delta.	28806	0.5654378	0.4957	0	1	6728	0.532	0.499	0	1
Hills	Whether the household is located in Hills.	28806	0.0704714	0.2559	0	1	6728	0.07	0.2552	0	1
Low Mountains	Whether the household is located in Low Mountains.	28806	0.1516351	0.3587	0	1	6728	0.158	0.3646	0	1
High Mountains	Whether the household is located in High Mountains.	28806	0.1341734	0.3408	0	1	6728	0.172	0.3774	0	1
Rural	Whether the household is located in rural areas (=1) or urban areas (=0)	28806	0.76675	0.4229	0	1	9188	0.496	0.5	0	1
Electricity	Whether the household belongs to the commune with power supply.	28806	0.9359508	0.2448	0	1	6728	0.981	0.1371	0	1
Access to the Market	Whether the household belongs to the commune with the access to the market.	29530	0.3885879	0.4874	0	1	6728	0.622	0.4848	0	1

Appendix 2: Poverty and Vulnerability by Ethnicity, Region, Education, Age of Household Head, Market Access and Infrastructure

	2002						2004					
	Poverty 100%	Vulnerability 100%	Poverty 120%	Vulnerability 120%	Poverty 80%	Vulnerability 80%	Poverty 100%	Vulnerability 100%	Poverty 120%	Vulnerability 120%	Poverty 80%	Vulnerability 80%
Total	**0.281**	**0.147**	**0.406**	**0.335**	**0.155**	**0.054**	**0.198**	**0.1**	**0.315**	**0.219**	**0.096**	**0.019**
No. of Obs.			**29530**						**9188**			
Ethnic Groups												
Kinh	**0.232**	**0.063**	**0.358**	**0.26**	**0.113**	**0.003**	**0.193**	**0.019**	**0.331**	**0.101**	**0.08**	**0.000002**
No. of Obs.			25108						5561			
Tay	***0.586***	***0.654***	***0.71***	***0.804***	**0.389**	**0.3**	**0.388**	**0.26**	***0.591***	***0.61***	**0.216**	**0.019**
No. of Obs.			1045						291			
Thai	***0.622***	***0.778***	***0.751***	***0.856***	***0.437***	***0.456***	***0.608***	***0.724***	***0.737***	***0.94***	**0.414**	**0.212**
No. of Obs.			510						186			
Khmer	**0.281**	**0.102**	**0.496**	**0.344**	**0.135**	**0.00064**	**0.238**	**0.021**	**0.369**	**0.157**	**0.107**	**0.0000162**
No. of Obs.			260						84			
Muong	***0.711***	***0.846***	***0.807***	***0.943***	**0.542**	**0.504**	**0.523**	**0.475**	***0.659***	***0.818***	**0.318**	**0.035**
No. of Obs.			450						132			
Nung	***0.5***	***0.555***	***0.683***	***0.803***	**0.33**	**0.115**	**0.452**	**0.353**	***0.595***	***0.714***	**0.214**	**0.008**
No. of Obs.			230						84			
Hmomg	***0.844***	***0.97***	***0.919***	***0.992***	***0.689***	***0.799***	***0.702***	***0.79***	***0.793***	***0.94***	**0.495**	**0.381**
No. of Obs.			270						111			
Other ethnic Groups	***0.677***	***0.841***	***0.774***	***0.926***	***0.499***	***0.516***	***0.534***	***0.577***	***0.656***	***0.887***	**0.344**	**0.118**
No. of Obs.			933						279			
Areas												
Rural	**0.351**	**0.192**	**0.499**	**0.436**	**0.196**	**0.071**	**0.193**	**0.097**	**0.308**	**0.215**	**0.092**	**0.017**
No. of Obs.			22087						4559			
Urban	**0.054**	**0.00015**	**0.106**	**0.0006**	**0.022**	**0.00015**	**0.203**	**0.103**	**0.322**	**0.223**	**0.099**	**0.021**
No. of Obs.			6791						4626			
Geographical Regions												
Coastal	**0.213**	**0.041**	**0.323**	**0.232**	**0.104**	**0.0003**	**0.228**	**0.023**	**0.364**	**0.159**	**0.092**	**0.00000003**
No. of Obs.			2255						456			
Inland Delta	**0.215**	**0.032**	**0.346**	**0.263**	**0.099**	**0.000003**	**0.181**	**0.021**	**0.321**	**0.085**	**0.071**	**0.00007**
No. of Obs.			16288						3582			
Hills	**0.231**	**0.051**	**0.342**	**0.279**	**0.115**	**0.002**	**0.187**	**0.013**	**0.323**	**0.069**	**0.081**	**0.0000006**
No. of Obs.			2030						471			
Low Monntains	**0.355**	**0.275**	***0.489***	***0.548***	**0.21**	**0.065**	**0.273**	**0.114**	**0.413**	**0.282**	**0.137**	**0.0061**
No. of Obs.			4368						1062			
High Mountains	***0.548***	***0.601***	***0.655***	***0.736***	**0.348**	**0.33**	**0.451**	**0.388**	***0.59***	***0.642***	**0.282**	**0.103**
No. of Obs.			3865						1157			
Education												
Primary School	**0.383**	**0.219**	**0.53**	**0.53**	**0.227**	**0.091**	**0.303**	**0.148**	**0.453**	**0.33**	**0.159**	**0.023**
No. of Obs.			7140						2079			
Lower Secondary School	**0.311**	**0.117**	**0.467**	**0.35**	**0.153**	**0.029**	**0.213**	**0.057**	**0.354**	**0.167**	**0.089**	**0.003**
No. of Obs.			9431						2953			
Upper Secondary School	**0.156**	**0.027**	**0.265**	**0.073**	**0.067**	**0.0097**	**0.083**	**0.004**	**0.173**	**0.03**	**0.028**	**0.00002**
No. of Obs.			5020						2515			
Higer Education	**0.015**	**0**	**0.034**	**0.0002**	**0.007**	**0**	**0.014**	**0**	**0.023**	**0.000008**	**0.005**	**0**

No. of Obs.	2090						799					

Appendix 2: Poverty and Vulnerability by Ethnicity, Region, Education, Age of Household Head, Market Access and Infrastructure (cont.)

	2002						2004					
	Poverty 100%	Vulnerability 100%	Poverty 120%	Vulnerability 120%	Poverty 80%	Vulnerability 80%	Poverty 100%	Vulnerability 100%	Poverty 120%	Vulnerability 120%	Poverty 80%	Vulnerability 80%
Household head's Age												
< 30 yrs. old	**0.428**	**0.269**	**0.557**	**0.512**	**0.275**	**0.133**	**0.318**	**0.225**	**0.462**	**0.359**	**0.185**	**0.056**
No. of Obs.				2591						515		
30- 40 yrs. old	**0.328**	**0.192**	**0.465**	**0.46**	**0.185**	**0.078**	**0.236**	**0.132**	**0.366**	**0.282**	**0.124**	**0.032**
No. of Obs.				8341						2352		
40- 50 yrs. old	**0.241**	**0.112**	**0.359**	**0.268**	**0.124**	**0.042**	**0.161**	**0.063**	**0.27**	**0.153**	**0.069**	**0.012**
No. of Obs.				8122						2768		
50- 60 yrs. old	**0.215**	**0.076**	**0.33**	**0.178**	**0.112**	**0.028**	**0.152**	**0.056**	**0.252**	**0.128**	**0.07**	**0.009**
No. of Obs.				4454						1574		
>= 60 yrs. old	**0.255**	**0.142**	**0.381**	**0.311**	**0.135**	**0.034**	**0.21**	**0.099**	**0.332**	**0.298**	**0.097**	**0.014**
No. of Obs.				6022						1979		
Market Access												
With access	**0.289**	**0.099**	**0.434**	**0.318**	**0.15**	**0.024**	**0.215**	**0.056**	**0.356**	**0.166**	**0.094**	**0.007**
No. of Obs.				11475						4188		
Without access	**0.276**	**0.182**	**0.388**	**0.352**	**0.158**	**0.0078**	**0.296**	**0.167**	**0.433**	**0.326**	**0.162**	**0.042**
No. of Obs.				18055						2540		
Infrastructure												
With electricity	**0.255**	**0.107**	**0.382**	**0.301**	**0.132**	**0.026**	**0.237**	**0.083**	**0.377**	**0.213**	**0.112**	**0.011**
No. of Obs.				0.6961						6599		
Without	***0.68***	***0.766***	***0.782***	**0.889**	**0.503**	**0.498**	***0.69***	***0.85***	***0.806***	***0.951***	**0.512**	**0.454**
No. of Obs.				1845						129		
Selected Cross Tabulations												
No Mkt access	**0.441**	**0.354**	**0.564**	**0.584**	**0.292**	**0.188**	**0.406**	**0.341**	**0.568**	**0.474**	**0.254**	**0.087**
& age <30 yrs. old				1588						197		
No Mkt access	**0.24**	**0.151**	**0.361**	**0.288**	**0.13**	**0.046**	**0.307**	**0.138**	**0.443**	**0.353**	**0.16**	**0.035**
& age >=60 yrs. old				3561						476		
No Mkt access	**0.407**	**0.313**	**0.547**	**0.579**	**0.251**	**0.139**	**0.403**	**0.248**	**0.56**	**0.492**	**0.239**	**0.054**
& primary school				3969						677		
High Mountains	**0.762**	**0.751**	**0.811**	**0.877**	**0.518**	**0.458**	**0.556**	**0.564**	**0.676**	**0.786**	**0.366**	**0.164**
& age <30 yrs. old				598						142		
High Mountains	**0.664**	**0.76**	**0.794**	**0.891**	**0.492**	**0.418**	**0.544**	**0.489**	**0.714**	**0.775**	**0.343**	**0.102**
& primary school				1148						364		
High Mountains	**0.541**	**0.608**	**0.639**	**0.705**	**0.385**	**0.373**	**0.491**	**0.468**	**0.619**	**0.721**	**0.317**	**0.135**
& No Mkt access				2850						708		

ONE-PAGE PRESENTATIONS

Valuing Water Supply Services in Rural Areas of Mekong River Delta of Vietnam

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1. Introduction:

1.1.Background: Although water is a basic human need, most of rural people in Vietnam have very limited access to clean and safe water supply. As a result, serious water-related diseases are reported every year. Thus, government has called for all actors to take part in providing improved water to rural areas with affordable price.

1.2.Main Objective: To estimate the people's willingness to pay for piped water supply services in rural areas of Mekong River Delta (MRD) using contingent valuation method.

2. Research Methods (1):

2.1. Research Tools: Contingent valuation method (CVM) is used to estimate the economic value of goods or services by directly asking individuals (households) their willingness to pay or to accept for the goods or services in question. CVM is the only method available to estimate non-use value.

We applied double-bound dichotomous choice contingent valuation method to value the rural water supply services in MRD by asking them *'Are you willing to pay A (VND) for described program?'* If the answer is YES, then a higher bid (A+B) is offered; if the answer is NO, a lower bid (A-C) is asked.

2.2. Survey design: We carefully designed the survey questionnaire, guidelines for focus group discussion (FGDs) and In-depth interview (IDIs); proper pilot survey's used to improve the research tools.

2. Research Methods (2):

2.3. Sampling: We did multistage sampling precisely. First, all the 3 villages of one commune was chosen as a case study. Second, systematic random sampling was applied to select 20 groups out of 51 ones. Third, simple random sample was employed to select 217 sample.

2.4. Administrative methods: In-person interview

3. Results and Implications:

Variables' Names	Variables' description	Parameters Estimate (Standard Error)
CONS	Constant	2.35 (1.56)
Village	Dummy variable (1=Vinh Thanh, 0=Otherwise)	-0.71*** (0.22)
Gender	Dummy variable (1=Male, 0=Female)	-0.38** (0.19)
Water fee	Monthly water fee(1<=50,000VND, 2>50,000 VND)	0.69*** (0.19)
Household size	Number of members in the households	0.12* (0.07)
Quality	Water quality (0=Acceptable,1=polluted/salinity)	0.33* (0.20)
Elder	Number of elderly persons in household	-0.30** (0.15)
Income	Log-monthly income	1.16*** (0.21)
BID	Log-BID	-2.55*** (0.25)
Mean WTP	Mean WTP for water supply service (4.3% mean monthly income)	97,242 VND (6.08 US$)
Median WTP	Median WTP for water supply service (4.2% mean monthly income)	95,394 VND (5..96 US$)
Log-likelihood		-156.74
AIC		331.47
N	(Number of observations)	217

***, ** , * Parameters are significant at 1% , 5%, 10% levels respectively

Vietnam and Japan are Complementary Economies

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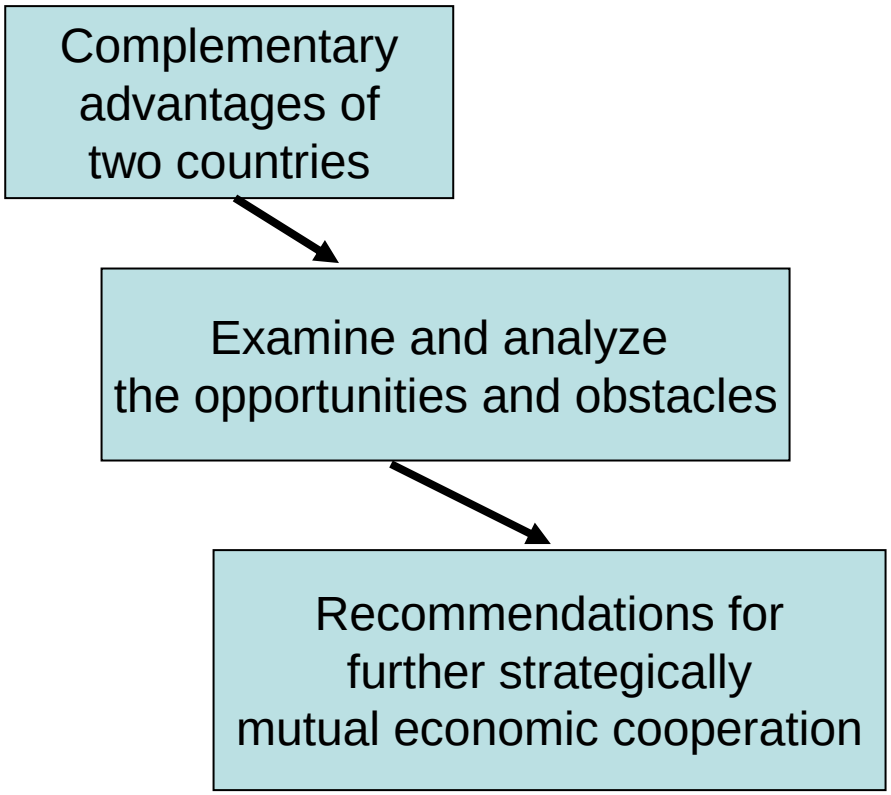
This paper, written for the Vietnam-Japan strategic economic development in the new stage of co-operation, analyses the opportunities and the obstacles of Vietnam-Japan relationships to be complementary in the context of globalization and becoming of WTO member of Vietnam. It gives some recommendations for enhancing strategically mutual economic cooperation between two countries.

- Evaluate the advantages of both countries in economic, legal and infrastructure aspects to be cooperative and complementary
- Examine and analyze the the reality of economic cooperation between countries and give the comments on it
- Suggest the recommendations for enhancing strategically mutual economic cooperation between two countries in globalization and becoming of WTO member of Vietnam



"Tailoring the *Ao Dai*? – An Examination of Japan ODA projects to Vietnam"

Quang Hop Dinh

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(IIS) University of Technology, Sydney

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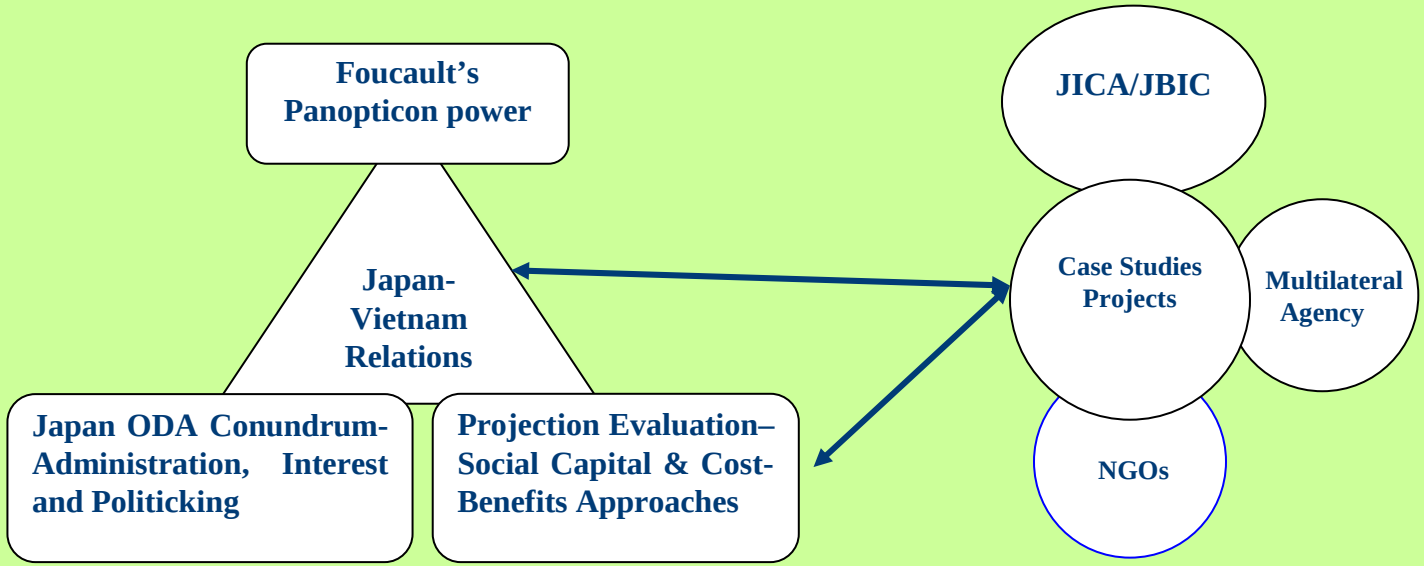
Objectives:

1 - From the recipient's perspective, analyse the effects of Japanese ODA on Vietnam's political, economic and social environments – this 'bottom-up' approach will introduce and also examine the effectiveness of an alternative method for exploring the power relationship between Japan-Vietnam.→ What does the Japan-Vietnam relationship reveals about Japan's foreign policy objectives in the region? How does Japan prioritise its ODA policy in relations to the pressure exerted by the international aid community for improvement of Japanese aid quality?

2 - Evaluate the effectiveness of Japan ODA projects in Vietnam - juxtaposed to questions such as, how does Japan's approach to strengthening policies and institutions of Vietnam manifested, particularly in the context of sectoral and bureaucratic interests in both Japan & Vietnam.



Social experiment for new traffic management method
Introduce bike lane on car lane for mixed traffic in VN
~Quantitative Evaluation of road services with spatial occuppancy~

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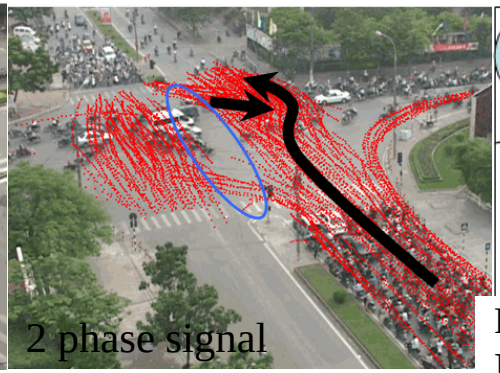
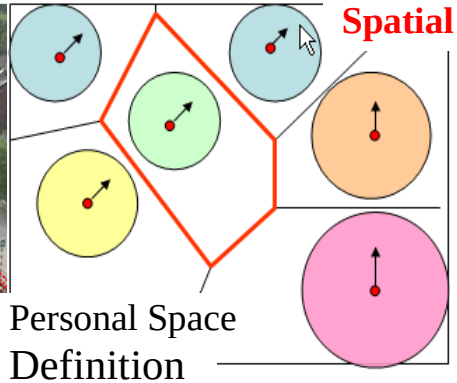
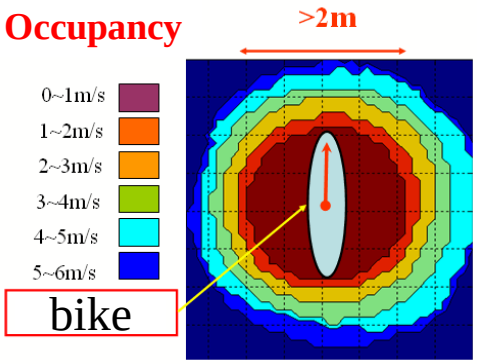
Background:


No signal intersection


2 phase signal

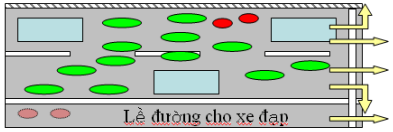

Personal Space Definition

Spatial Occupancy

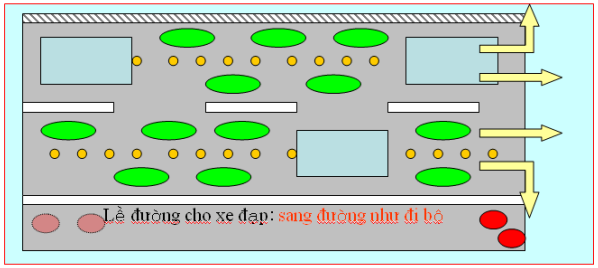


Proposal: **bike lane** on car lane

Current



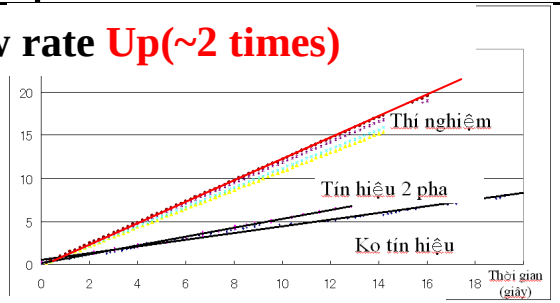
Future



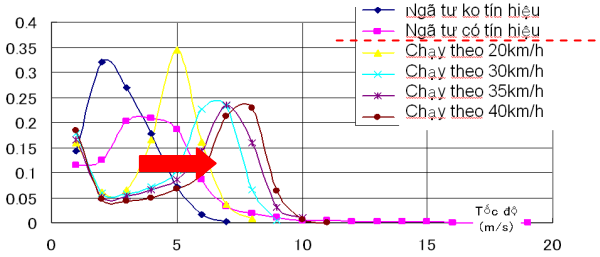
Experiment:

Comparison with currence

Flow rate Up(~2 times)



Speed Up(~1.5 times)



Manner ↑, Safety ↑, Comfort ↑, Exhaust gas ↓, …

Endogenous Development in the Era of Globalization

~Case Study of Thanh Hoa Province, Viet Nam~

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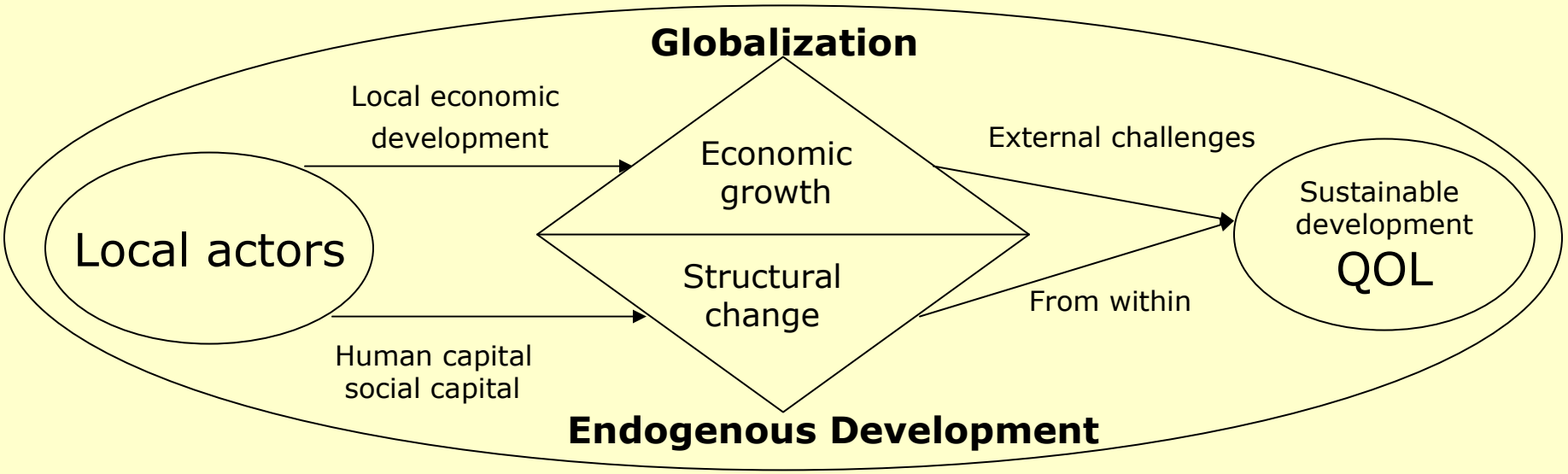
Endogenous Development (ED) does not mean “closed economy”. ED model bases on the use of local resources, the capacity of innovation, and the ability to develop the productive interdependences, both intra-sectoral and inter-sectoral. Also, the ability to react to external challenges is important. In the era of globalization, the local community has more chances to develop as well as achieve sustainable development from the theory of ED.




Efficiency Measures for the Agriculture Sector in Vietnam: A Comparison of Parametric and Non-parametric Approaches

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This paper uses parametric approach (based on stochastic frontier production function—SFPF) and non-parametric approach (based on data envelopment analysis—DEA) to estimate technical, allocative, and economic efficiency measures for the agricultural production in sixty provinces in Vietnam during 1995-2005. We use provincial data of agricultural inputs and outputs for these research purposes.

- Under the specification of variable returns to scale (VRS), the mean technical, allocative and economic efficiency indices of the sample provinces were 52.3%; 80.5%; and 42.1%, respectively, for the SFPF; and 82.1%; 81.5%; and 67.2%, respectively, for the DEA.
- Under the specification of constant returns to scale (CRS), they were 58.5%; 71.9%; and 42.1%, respectively, for the SFPF; and 79.3%; 80.9%; and 64.4% for the DEA.
- Although the estimated mean technical, allocative, and economic efficiency measures obtained from the DEA are higher than those from the SFPF in both VRS and CRS models, efficiency rankings of the sample provinces based on these two approaches are highly correlated, in which the highest correlation is achieved for the technical efficiency rankings under VRS and CRS.

Industrial Policies as Determinant of Localization:

The Case of Vietnamese Automobile Industry

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This is my on-going research for PhD dissertation deepening my master thesis. The research discovers the relationship between industrial policy and localization to figure out the various regulations that have possible effects on the localization. Both qualitative and quantitative research methods are utilized in the research.

- How to utilize domestic sources effectively to contribute more added value to products is an extremely important matter in many countries, especially developing countries. However, how to apply industrial policies to encourage localization is a difficult question.
- Vietnamese automobile industry has developed since 1990s. But what it has achieved, particularly in localization of auto products, is too modest in comparison with the favorable conditions supported by the Vietnamese government.
- This research will discover the main reasons which have made automakers hesitate in localizing Vietnamese auto products; assess present state of localization; and suggest policy directions.

Improving Industrial Human Resource in Vietnam

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This is my on-going study that aims to identify and measure a gap between demand (business needs) and supply (technical education & training) of industrial human resource, and to propose policy measures to narrow the gap. On the demand side, IHR patterns, business architectures, supporting industry scopes and JETRO surveys are discussed. On the supply side, legal framework, ministerial coordination, current situation of IHR and training institutions are examined.

- Vietnam industry is short of high-skilled workers, engineers, and managers. JETRO surveys show that more than a half of Japanese enterprises operating in Vietnam find difficulties in recruitment of local engineers and factory managers. Industrial *meisters* and *multi-skilled workers* are highly demanded.
- Diversification in authority of industrial human resource development and weak coordination among authorized organizations lead to a risk of their inaction or inconsistent actions. Insufficiencies of good instructors, curriculum, up-to-date teaching materials and equipments result to only about 19% of industrial labor forces received vocational educations. Industrial manners should also be acquired at training institutions.
- Policy directions target to create and strengthen linkage among trainers, employers, and policymakers; improve quality of instructors, curriculum, teaching materials and equipments; and open up opportunities for the poor to acquire technical and vocational training. Concrete measures will be work out in coming time.

VIETNAMESE HUMAN RESOURCE DEVELOPMENT

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Current thesis: "**Japanese manufacturing firms in Vietnam: Determinants of Formal Training**"

- **H**ypotheses: ***Firm Size***, ***Education & Skill Mix***, ***Firm's Technology, Automation & Quality Control*** *positively correlate* with **Incidence of Formal Training** while ***Female Rate*** *negatively* does.
- **M**ethodology: Questionnaire Survey (based on previous study by Tan & Batra (1995) in 5 developing countries, under World Bank sponsorship)
- **R**esponses: 141 complete ones (84 firms in North & 57 firms in South)
- **F**indings: - **From Survey**: Bigger firms with higher level of workers' education and skill mix, who upgrade technology more frequently, and with higher degree of automation & quality control standard, tend to train workers more. No significant correlation between female rate and incidence of formal training was found.

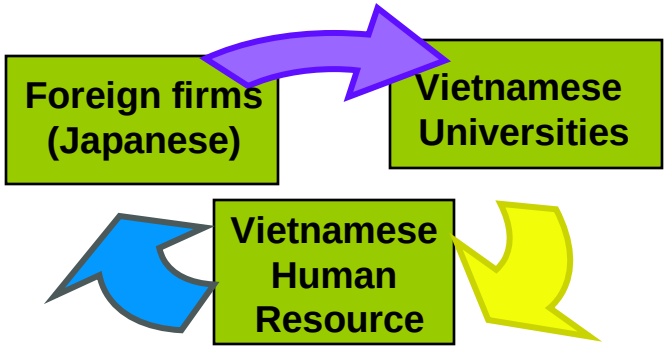
  - **From Literature**: The higher an employee's education background, the more he/she is likely to get Training (Formal & Informal) sponsored by his/her employer

  →Policy implication: More on Education & Less on Training
- **L**imitations: Firm type (Only Japanese manufacturing sector), Training type (Only Formal Training for workers), Respondents (Mostly those in major industrial parks)

Further topic of interest:

Foreign Firms & Vietnamese Universities

Cooperation for Vietnamese Human Resource Development




Patterns and Determinants of Living Arrangements of the Vietnamese Elderly under Economic Transition

Associate Prof. Wade Pfau (GRIPS) **wpfau@grips.ac.jp**
Giang Thanh Long (GRIPS & VDF) **gtlong_grips@yahoo.com**

This on-going research will seek to quantify the extent, the evolution, and the determinants of living arrangements of the Vietnamese elderly under economic transition. With the focus on various possible factors, the findings are hoped to provide useful information to social welfare policy makers.

- This paper uses the Vietnam Living Standard Surveys in 1992/93 and 1997/98; and the Vietnam Household Living Standard Surveys in 2002 and 2004.
- It is initially found that (i) a majority of the elderly lived in households where an elderly person was household head. Among them, households with multiple children were prevalent; (ii) the percentage of elderly living alone increased over time, and this situation was popular among female and rural residents; (iii) a potentially worrisome trend is that there was a shift over time from households with dependent elderly to only elderly households; and (iv) among dependent elderly, a vast majority were found to live with married sons, and this situation between rural and urban areas was significantly different.
- Bivariate and multivariate analyses will be conducted to see the impacts of possible factors, such as age, gender, education, marital status, and income, on different type of living arrangements of the elderly.

Contribution
PAPER

The Role of Vocational Training Centres in Human Resources Development and Poverty Reduction in Vietnam

Dr. Mac Van Tien

Professor, General Department of Vocational Training,
Ministry of Labor, War Invalids, and Social Affairs (MOLISA)
Email: mvtien@hn.vnn.vn

In recent years, under the guides of the Party and State as well as the concern of authorities of all levels, vocational training has gradually recovered and developed, meeting the growing demand for human resources for the country's industrialisation and modernisation. Vocational training has played an important part in increasing labour's quality, shifting labour structure, economic structure and alleviating poverty, which contribute a great deal to the rapid and sustainable development of the country.

In that connection, the network of vocational training centers, a common model with short training course, also plays an important role in providing labour meeting the rising and complicated demand of labour market.

1. Human Resources Development in Vietnam: An Overview

Human resources are known as the sum total of human potentials (labour) of a nation, a territory or a locality prepared to a certain level and could be mobilized into the process of economic and social development of a nation (or of a region or a specific locality). In this approach, human resources are considered as part of national resources such as material resources (except for human), financial resources, intelligence resources ("grey matter") etc. These kinds of resources (component vectors) can be mobilized in an optimal way (general vectors) for socio-economic developments.

Human resources are studied in terms of quality and quantity. The volume of human resources can be seen through scale targets and the human resources growth. These are closely linked with scale targets and population growth. Quality of human resources is studied in terms of health, education, skills and expertise, qualifications, etc.

In Vietnam, in a narrower sense, human resources are understood as the total number of labour forces in national economy (or called economically active population) including people in the working age (from 15 to 60 for men and to 55 for women), able to work, currently working or unemployed. That does not include people in the working age who have ability to work but are still in schools, doing housewifery or do not have the urge to work, etc.

Along with mankind's development, the definition of "human resources development" has also been accomplished. By approaching human as the target of development and not a factor of production, modern economists see human development as the expansion of choices and enhancement of human selection capability toward a happy and sustainable life. In that way, human development does not mean the increase of income and wealth (though very

important) but it is the widening of human's ability to have better access to education, medical services, more convenient housing, and meaningful jobs, etc. Human development also means the building of capacity, firstly in terms of working knowledge, skills and experiences. In other words, capacity is a vital condition to realize all existing opportunities while at the same time creating new opportunities for development. Human resources development includes activities (investment) aimed at creating human resources with a quality and quantity meeting the nation's requirements for socio-economic development and guarantee development of each and every individual. The ideas of human resources development in Vietnam include:

- Sustainable human development stands as the core;
- Each person is an independent individual mastering his/her own working process (with cooperation and teamwork skills);
- The interests of employees are considered as the basic principle of labour management (in harmony with the interests of community and society);
- Secure a favourable democratic environment for consensus interactions;
- Having policies to bring into full play employees' potentials and ensuring work efficiency;
- Human resources development is always associated with labour market demands.

To date, economists confirm that investment in human resources development, through education and training activities, health care, social security and welfare programmes, etc. are considered as the most effective investment having decisive impact on rapid and sustainable economic development of a nation. The world economic development history proved that high and stable economic development could only be reached by the improvement of technical labours, i.e. the improvement of education and training quality. The improved human resources (educational qualifications, working skills and health) are the premise for the success of some new industrial countries in Asia, namely Korea, Singapore, Hong Kong, etc. In the context of globalization, the ability to adopt and apply scientific and technological advances depends on the pool of technical labours and intelligentsia. As such, investment in HRD is the most effective way to socio-economic development.

Recently, much has been talked about the economy in which knowledge makes up most of the product content. In a knowledge economy, knowledge and creativeness are the decisive factors contributing to each nation's and region's competence. To have a knowledge economy, it is essential to build a firm infrastructure for technology and science development and attach importance to education and training improvement. In other words, investment in HRD is a must and knowledge is the indispensable outcome of HRD. It is vital for all countries to invest in human development with high focus on education and training expansion, particularly investment in talented people if they at all want to develop their knowledge economies. With the same meaning, many scientists believe that development is only possible if the labour force is trained in line with the development of various economic fields of the economy. Obviously, HRD not only means education and training development but also includes the development of health and medical services, and improvement of the people's living standard though education and training remains the core of HRD strategies. I believe that participants of ACD members present here would further share your experience in this particular theme.

Vietnam is one of the developing countries which has just kick-started its national industrialization and modernization process. So in terms of time, Vietnam has started much later than other countries in the region and the world. For example, Britain's industrialization and modernization (starting and ending time) were from 1785 to 1860, France from 1840-

1920, Germany from 1869 to 1960, the US from 1843 to 1900, Japan from 1886 to 1960, Taiwan from 1952 to 1970, Korea from 1962 to 1975, etc. However, Vietnam enjoys the advantage of learning experiences from countries that went ahead to grasp the knowledge and attainments of the world to shorten the time for its own national industrialization and modernization process. This is really a great challenge as Vietnam will have to basically become an industrialized country in about 20 years as aimed by the Vietnamese Government. To this end, we have to carry out the strategy of "taking shortcuts" to absorb the intellectual quintessence of mankind and work out correct and appropriate HRD investment strategy.

How is Vietnam's current human resources situation? It could be confirmed that along with the successes in healthcare and enhancement of the people's living standard, Vietnam's education and training (the core of HRD) has gained remarkable achievements as follows:

- The national education system has been built in a fairly complete way, including different levels from pre-school to higher education with diversification of studying forms and types (regular and irregular, public and non-public schools).
- By the end of 2006, the literacy rate among over-15 population reached 98%; provinces and cities nationwide basically meet the national standard for illiteracy eradication and universalisation for primary education, and then, secondary education.
- Labour forces in the working age are over 42 millions, accounting for 94.2% of the total workforce. Vietnam's labour force is young with the 15-34 year-old age group accounting for 45.46%, 35-54 year-old age group 46.36% and over-55-year-old age group 8.18%.

Labour quality is unceasingly been improved. The rate of trained labours continuously increases form 10% (1996) to about 20% (2000). And in a preliminary estimate, the rate of trained labours over 15 years of age in 2006 is proximately 28%, (increasing by 6.6% in comparison with that of 2005, making an average increase from 2001-2006 by 2.5%) in which the rate of trained labours reached about 20%. Educational qualifications of the workforce have also been improved. In 2001, the rate of labours completing primary education and below was 49.71%, while those graduated from secondary education was 17.58%. In 2005, these rates were 46.21% and 21.23%, respectively. It might be said that the improvement of educational qualifications and technical skills of Vietnam's workforce is a result of achievements made in the education and training system. At present, Vietnam possesses a rather large pool of scientists, including more than 900 thousands at university level; 14 thousands at Masters' level; more than 8 thousands doctors and more than 1,000 professors and associate professors; about 45 thousands executives doing scientific research and 20 thousands teaching staff at universities and institutes. They have the capacity to successfully acquire and master modern science and technology while at the same time absorbing the latest science and technology achievements of the world. This is an important factor for Vietnam to be able to "take shortcuts" in the development process and catch up with other countries.

Thanks to these education and training achievements as well as other social policies, according to UNDP's ranking method, Vietnam's HDI in recent years has been remarkably increased from 0,456 (ranking 121st in 1990) to 0,705 (ranking 108th among 177 countries in 2005), higher than many countries in the region while Vietnam's GDP per capita is much lower than that of those. This is really a great achievement of Vietnam in developing human resources.

However, the quality of Vietnam's education and training system remains inappropriate, particularly its training structure. Workers' technical skills have not met the labour market requirements. There is a severe lack of qualified technical workforce, labours for such

services as finance, banking, tourism and sales, etc. Foreign labours are still in demand in various trades and professions.

In Vietnam's Strategy for Education Development and Strategy for Human Resources Development, the key targets are:

- To improving the overall quality of the Vietnamese people in terms of politics, ethics, determination, knowledge, technical skills, health, and physical strength.
- To use the current labour force in an effective way, especially trained workforce.
- To double the current rate of trained labour forces.
- To form a highly skilled labour force that has a structure and qualification meeting the requirements of the socio-economic development plan (SEDP) in the 2001-2010 period, thus preparing the human resources for the next development stages that follow.

2. Vocational Training and the Role of Vocational Training Centres at a Glance

A trained labour force is considered an important part of Vietnam's human resources. In the HRD policy, vocational training is regarded as key to create professionally skilled technical workers with firm political stuff for the cause of industrialisation and modernisation.

We have seen positive changes in vocational training in the context of economic growth and education and training development since 1998. So far, the training scale has been rapidly widened while the number of vocational training centres increased. The targeted number of trainees has climbed from 447 thousand in 1997 to 1.34 million in 2006 as follows:

Year	*Long term trainees*	*Short term trainees*	*Total*
1997	57,000	390,000	447,000
2001	126,100	761,200	887,300
2002	146,500	858,500	100,500
2003	176,400	897,700	1,074,100
2004	202,700	950,300	1,153,000
2005	230,000	977,000	1,207,000
2006	260,000	1,080,000	1,340,000

The rapidly-widening training scale has made increasingly better contribution to the demand on human resources for socio-economic development, enhancing the rate of trained labour in the total number of Vietnam's labour force.

Vocational training centres have simultaneously helped address job demands and poverty reduction in rural areas while training highly skilled labours for key industries. Short-term trainees have mostly been trained in vocational centres. Upon graduation, they are able to find better employment opportunities or start their own businesses. Therefore, they have made positive contributions to the process of economic and labour restructuring, increasing the rate of consuming work-time among Vietnamese rural labours. It could be said that the

activities of community vocational training centres are very much significant for social development while improving the quality of the Vietnamese human resources in general.

In addition to technical schools, there have been about 600 vocational training centres under the management of districts or social organizations, 150 employment centres, hundreds of general technical and vocational education centres as well as regular educational and training centres. In addition, there are also thousands of technical training classes set up by enterprises, organizations, individuals and craft villages providing in situ training.

Vocational training centres not only train labours but also directly or indirectly create jobs or offer employment opportunities. From 1990 to 2006, employment centres in particular have conducted employment consultancy to 3 million people, helping offer over 2.5 million jobs, short-term training associated with employment on graduation for 1.8 million labours. That is the difference between vocational training centres and technical schools. Upon graduation, trainees could start their own businesses or work for enterprises introduced by vocational training centres or employment centres. Thanks to the vocational training courses, many of the poor have been able to find jobs. Therefore, their income has been raised, thus helping them eradicate poverty. Some have been introduced to work for enterprises that send guest labours to overseas. There are 60-70 thousands of Vietnamese guest workers travelling abroad every year, of which about 500 thousands are working at present. Such labours received training in these enterprises' vocational centres before starting to work abroad. These guest workers have sent back home about US$ 1.6 billion, helping their families eradicate poverty and creating employment opportunities for their relatives.

In short, public vocational training centres help:

- enhance the quality of Vietnam's human resources,
- offer jobs to the unemployed,
- associate vocational training with job introduction,
- contribute to economic and labour restructuring in the rural areas,
- reduce poverty, and
- improve professional skills for prospective guest workers.

To realise the goals of poverty reduction and basically turning Vietnam into an industrialised country in 2010, the Vietnamese has worked out the following measures for vocational training and human resources development and improvement in the upcoming periods:

- Vocational training must serve socio-economic development targets, contributing to upgrading the quality of human resources, creating new jobs and helping labours create jobs themselves, supplying the increasing demand of labour markets and labours' demand of studying for life.
- Changing the orientation of vocational training from supply into demand in the labour market, rapidly widening the training scale and upgrading training quality, focusing on high skill training for economic integration, pushing up job universalisation, attaching vocational training to job introduction and poverty reduction.
- Setting up a practical technical training system with 3 levels (semi-professional, professional and advanced) with close connectivity among those levels.
- Increasing the rate of trained labours from 20% in 2006 to 32% in 2010.

- There will be 270 intermediate vocational schools, 90 vocational colleges, of which 40 are of high quality and 3 meeting regional standards, 750 vocational training centres, at least one centre for each district or district cluster. A number of vocational training centres shall be equitized.

3. Policy Directions

There are some solutions to the above-mentioned targets and orientations. As for vocational training centres, concrete solutions are as follows:

- Strongly developing vocational training centres under districts' or socio-economic establishments' or professional organisations' management. Designing policies to assist the development of vocational training centres in the rural, remote and difficult areas.
- Promoting vocational training in enterprises, communes, services and business companies, craft villages, workplaces, vocational training for rural labours, ex-servicemen, ethnic minority youths, labours in areas of land-usage transferring.
- Improving the training programs and contents to make them more flexible with changes in the labour markets.
- Upgrading training infrastructure to enhance training quality in vocational centres such as equipments, practice rooms and teaching staff.
- Diversifying the resources for training in vocational training centres.