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**MARKET STRUCTURE AND MARKETING CHANNEL ANALYSIS:
THE CASE OF PANGASIUS IN THE MEKONG DELTA –VIETNAM**

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ABSTRACT

The study of “Market structure and marketing channel analysis: The case of Pangasius in the Mekong Delta (MD) –Vietnam” was conducted in CanTho, AnGiang and DongThap provinces to describe the market structure of Pangasius marketing channels from the producers to consumers. The result showed that there was a competition Pangasius market in the MD. Pangasius product is rather homogenous and is not a barrier for competition. However, there are high entrance and exit barrier for Pangasius processing companies in the MD. On the other hand, the entrance and exit barrier of fishermen in raising Pangasius is low. The marketing channel of Pangasius is simple and includes six key players: fish breeder, trader, wholesaler, retailer, processing company and final consumer. The breeder, trader, and wholesaler could not access and update market information as fast as they could. Pangasius industry had been supported by Government through many decisions and resolutions in pushing up the growth of Pangasius industry and breeding Pangasius as well. Considering to gross margin, the retailer is the actor with the highest one. Next are trader and breeder. In general, all actors in marketing channel get positive gross margin. Finally, the study suggested some further researches related to make a research with all elements of SCP; to find out among actors who will get the best and the worst efficiencies in the pangasius marketing channels; to expand local market share significantly.

1. INTRODUCTION

1.1 Statement of problem

With the transition from a centrally controlled economy to a market economy, all sectors have been stimulated in the general, and fishery in the specific. Farmers have developed more fisheries in Vietnam. With strong supported policies from the Ministry of Fisheries, farmers have adopted many different fishery varieties and new high yield. In addition, new technology in Vietnam has made a large contribution to improve fishery productivity. As the market liberalization process continues, Vietnam faces the challenge of formulating and implementing an economic growth strategy. Vital in this growth strategy is the role of all sectors and, within them, the development of an efficient and flexible fishery marketing system. Since the present fishery marketing system in Vietnam is still very young.

In recent years, the fishery in Vietnam has been quickly developing, and Vietnam has potentials to become one of the large fishery export countries in the world. In fact, if the gross output of raised fish of the whole country in 1990 was 129,330 tons, this volume in 2003 was increased to 604,401 tons. Of which, in the MD, these volumes in 1990, and 2003 were 66,836 tons and 366,052 tons respectively. The value of gross fishery output in the MD in recent years is significantly increasing. According to the Statistical Yearbooks, these values were VND 19,721 billions, VND 22,660 billions, and VND 26,739 billions in 2001, 2002, and 2003 respectively. From the figures mentioned above are enough to recognize that fishery activities in general and the breeding fishery in particular have contributed to generate income for farmers in the MD.

In addition, the exported fishery has been increasing dramatically in recent years and has become one of the most export fishery countries. Earnings from fishery industry which increased from USD 285 millions in 1991 to about USD 621 millions in 1995 and sharply to around USD 2,021 millions in 2002.

Currently, the fishery product is the third largest export commodity (after crude oil and garment and textile) in terms of value and accounts for about 12% of the total export. Vietnam's fishery has been exported to around 64 countries, of which Japan, the US, the EU, China, South Korea and Taiwan are the biggest importers. Specially, export sales to the US market have been increasing rapidly in recent years from USD 34 millions in 1996 to USD 617 millions in 2002.

With the suitable natural conditions, breeding fish in the MD has been developing in recent years. Specially, Tra and Basa fish are famous products of the MD. The farmers in the MD have big hope on Tra, Basa fish as business people and scientists are keen to turn the Tra and Basa fish production into major industry that can compete well in the world market.

Although the challenge by the US department of commerce, the feeding, processing and exporting of the fish soared in the MD, in 2004 output and sales are likely to double in 2003 to more than 300,000 tons and USD 240 million. At present, Europe makes up 45% of Vietnam's Tra, and Basa fish export, the US 25% and other markets the rest.

However, beside the development and achievements have been obtaining, there are still some weaknesses and difficulties in term of distribution channels, production,

processing and consumption systems in both domestic and foreign markets. Especially, the domestic market for Pangasius does not pay much attention as the foreign one. Moreover, most of farmers lack of fish breeding techniques that lead to high cost in production process. The low quality of fish bred is also one of the reasons that create poor competition in domestic and foreign markets as well.

From the issues mentioned above, it is likely necessary to find out the current situation of fishery and how to get big sales in Tra, Basa fish consumption, and increase competitive ability in both domestic and foreign markets in the future. Therefore, the conduction of study on “Market structure and marketing channel analysis of Pangasius in the MD, Vietnam” is so significant in giving good consideration for fishery industry in the MD and answer the following questions:

- (1) What is the situation of the Pangasius marketing system in MD?
- (2) How is the value-created of marketing channels in the MD?
- (3) What are recommendations for further researches?

1.2 Objectives of the study

The objective of this study is to describe the market structure of Pangasius marketing channels from the producers to consumers; to find out value-created of marketing channels in the MD and give some recommendations for further studies of the Pangasius marketing channels in the MD.

1.3 Study Methodology

1.3.1 Conceptual framework

One of the key objectives of the study is to examine the domestic market structure of Pangasius in the MD and suggest further researches to improve the effectiveness of Pangasius supply channels. The model of market structure, conduct and performance (SCP) is applied to study in agricultural marketing system in developing countries by many researchers including Jones (1972), Van Tilburg (1988), Lutz and Van Tilburg (1992), Toolens (1992), Gooseens (1994) and Dijkstra (1997). The SCP analysis was developed by Brain (1959, 1968), Clodius and Mueller (1961), Slater (1968) and Bateman (1976) (Luu Thanh Duc Hai (2003), *The organization of the Liberalized Rice Market in Vietnam*). Therefore, SCP model is used partly in this research paper.

In this study, the SCP approach is integrated with the marketing channel approach and the division of value-created. These approaches are used as a guideline, to identify the different aspects of the problem.

According to SCP model, there is a simultaneous relationship between market structure, conduct and performance. Market structure and market conduct influence market performance. In turn, market performance will influence market structure and market conduct in the long run (See Figure 1 below). It is clear that performance in particular industries or markets is said to depend upon the conduct of sellers and buyers with regard to pricing policies, product line, investment in production facilities, and so on. Conduct depends in turn upon the structure of the relevant market, embracing such features as the number and size distribution of sellers and buyers, the type of marketing channels, the degree of product differentiation, the presence or absence of barriers to the entry, etc.

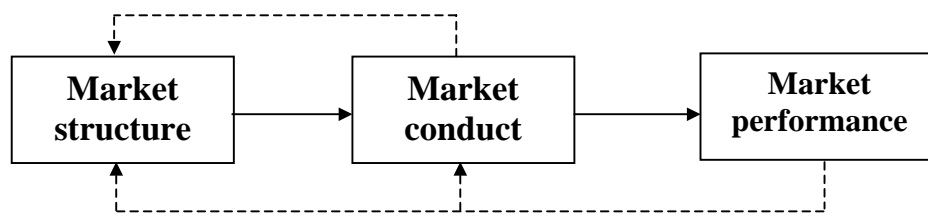


Figure 1: Dynamic model derived from the SCP approach

According to Hai (2003), he applied SCP model and integrated some concepts of the theory of institutional economics and the marketing channel approach in his paper. Table 1 presents the principal aspects that were used by Hai.

Table 1: Elements of Structure-Conduct-Performance

Elements of structure	Elements of conduct	Elements of performance
- Intermediaries involved in the marketing system	Conduct with respect to:	- Effectiveness of supplied services; product suitability in relation to consumer preferences
- Barriers to entry and exit	- Buying	- Efficiency of supplied services
- Buyer and seller concentration	- Selling	+ Rate of profit in relation to marketing costs and price margins (arbitrage in time, space and form).
- The assortment of product quality	- Transport	+ Transaction cost analysis (market searching; negotiating and concluding a contract; enforcing a contract)
- Distribution of market information	- Storage	+ Analysis of price differences and seasonal price fluctuation
- Structure of marketing channels	- Negotiation	+ Market integration
- Price formation process	- Processing	- Dynamic analysis of the market process
- Rules and/or regulations that coordinate market exchange.	- Information	
	- Finance/risks bearing	
	- General trading strategies that traders conducted in order to follow market rules and increase marketing efficiency (reduce transaction costs)	

Source: Luu Thanh Duc Hai, 2003

Knowing that there are thousands of producers and collectors involved in the Pangasius market, we are allowed to assume that competition is high. Therefore, there is not much room for actors in the market to behave independently; they have to follow the market rules as defined by its structural elements. In this paper, element of “buyer and seller concentration” will not be considered as thousands of breeders and traders are small scale producers and traders. Therefore, buyer and seller concentration is not a relevant element and will not be used in this study. In addition, to analyze the elements of performance, this paper will not analyze and evaluate the efficiency of marketing

channel, the market integration, the transaction cost as well as analysis of price differences and seasonal price fluctuation because of limited data.

In Hai’s model, one of the components concerned is an analysis of “margin”. We also apply this method and use the result to analyze the distribution of value created among actors in the supply channel. Base on these issues, table 1 was modified into table 2 that is used for this research paper.

Due to the objectives of study, we modified table 1 and built elements that suitable with our research (see table 2)

Table 2: Modified Elements of Structure-Conduct-Performance

Elements of structure	Elements of performance
- Intermediaries involved in the marketing system	- Value-added and value created analysis to identify
- The existences of entry and exit barriers	where the economic value is
- The assortment of product quality	created within a value chain.
- The distribution of market information	
- Characteristics of marketing channels	
- Price formation process	
- Rules and/or regulations that coordinate market exchange.	

With respect to market structure, first of all we pay attention to the actors/intermediaries involved in the market. This information defines the general picture of the channel systems. Secondly, we focus on competitiveness by using three major criteria such as barriers to entry and exit, the assortment of product quality and distribution of market information.

- The existence of entry and exit barriers influences the competitive relationship between firms and potential entrants. If the barriers to entry and exit are minimal, new firms can easily enter into and exit from the Pangasius markets and compete with established firms. However, with the presence of very high barriers to entry and exit, new established firms become well protected from potential rivals (*Philip Kotler, Marketing Management, 8th*). There are three main types of structural entry barriers: (1) Control of

essential resources: an incumbent is protected from entry if it controls a resource necessary for production; (2) Economies of scale and scope. When economies of scale are significant, established firms operating at or beyond the minimum efficient scale will have a substantial cost advantage over smaller entrants. Economies of scope in production stem from the flexibility in materials handling and scheduling that arises from having multiple production lines within the same plant. Economies of scope in marketing are due to substantial up-front expenditures on advertising that are needed for a new entrant to establish a minimum acceptable level of brand awareness. Economies of scale and scope create barriers to entry because they force potential entrants to enter on a large scale or with many products to achieve unit cost parity with incumbent firm; (3) marketing advantages of incumbency. Exit barriers arise when firms must meet obligations whether they produce or not (*D.Besanko, D.Dranove, M. Shanley and S.Schaefer, PP 301-310, Economics of strategy, International Edition*). In the case of pangasius, the entry and exit barriers will be measured by (1) Government policy; (2) control of essential resources (raising techniques, land); (2) marketing advantages of incumbency (fluctuation of market price, low demand, market information); and (3) economies of scale and scope (capital requirement).

- The assortment of product quality examines the extent to which buyers differentiate, distinguish or express their specific preferences among competing products of the various sellers. Factors such as product quality and kinds of product marketed are common attributes of product differentiation. In the case of Pangasius, product differentiation both at the farmers' and the traders' level are examined in terms of different kinds of Pangasius (basa or tra fish); degree of weight; and color of the meat (white or yellow).

- The distribution of market information refers to the availability of relevant market information. This could be expressed by assessing the producers' awareness of the market price, the manner by which price information is disseminated among producers. The distribution of market information shows how market information is disseminated to producers and traders, what/who are the sources of market information, and the adequacy of this information in terms of reducing risks.

Another element of structure is characteristics of marketing channels. Marketing channels are defined as the flow of products from the place of production to the place of

ultimate consumption. The structure of marketing channels helps to determine the relationships between different actors in the markets.

- The process of price formation is determined by the following elements: market power, bargaining skills, and some transaction specific characteristics like quality of product, volume of sales per transaction, and sales location. In general, a processor who is considered as a leader usually has high market power on setting prices in the market. Quality of product is related to consumers' preferences and color of the meat. Volume of sales expresses the sales of traders and retailers. Finally, sales location will directly effect to the price of a product as transport costs may be significant.

From an institutional viewpoint, to examine the market structure we also describe major policies and regulations of the government in pangasius industry.

Analyzing market performance we focus on the *Division of value – created*

Division of value – created

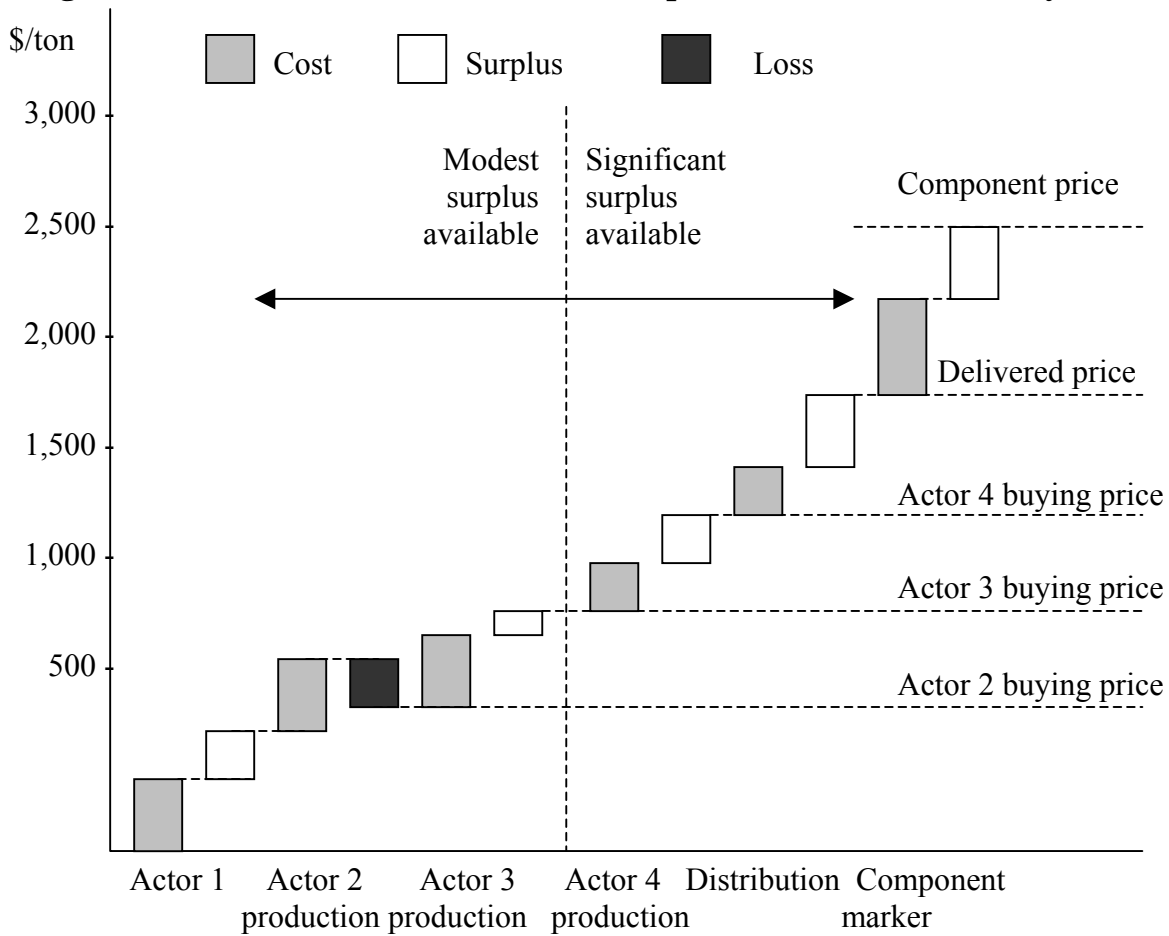
Value-created is the difference between the benefit B and the unit cost C of the product. Value-added analysis is a tool for understanding where economic value is created within a firm's value chain.

The value-added analysis proceeds as follows:

- Value-added in manufacturing = profit that would have been made if the all products of producer are sold to next actor in the channel

Value-added in distribution = incremental profit made by self-distributing product to retailers or to wholesalers (*D.Besanko, D.Dranove, M. Shanley and S.Schaefer, PP 418-419, Economics of strategy, International Edition*)

Figure 1: Division of value – created in the production of one industry



Source: Adapt from Figure 11.11 in D.Besanko, D.Dranove, M.Shanley and S.Schaefer, “Economics of Strategy”, Wiley International Edition, 3, 2004, pp. 382.

Figure 1 illustrates the division of value-created in one industry. Actor 1, 2 and 3 capture only modest portions of the overall value-created. They are characterized by strong price competition and low profitability. Distributors and actor 4, by contrast, capture a relatively larger proportion of value-created and earn high profit.

Division of value-created will be applied in the case of Pangasius. Each actor in pangasius marketing channel will be analyzed base on their production costs, incremental cost and marginal profit in order to define the distribution of profit among actors. Then there are two ratios will be used in analyzing: profit margin_total cost ratio and profit_extra cost ratio.

$$\text{Profit margin_total cost ratio} = \frac{\text{Profit margin}}{\text{Total cost}} \quad (1)$$

$$\text{Profit_Extra cost ratio} = \frac{\text{Profit}}{\text{Extra cost}} \quad (2)$$

These ratios will show the relationship between profit margin and total cost (or extra cost) that each actor earns. Then, a comparison between these ratios for each actor in distribution channel will be performed to determine which actor has high percentage of profit in order to find out reasons why profit of each actor is distributed differently and have further researches in the future.

To do above things, primary data are collected to estimate production cost of producers; marketing costs and marketing margins of various traders. From these results, total cost and total marketing costs of various marketing channels will be calculated. Direct marketing costs include costs for transportation, electricity and water, rent selling-buying ground, processing will also be taken into account. Thus the percent share of each cost item for each type of trader is computed.

Secondly, profit margin measures the rate of return on gross sales after all costs in rendering marketing services have been deducted. The profit margin will be calculated as follows:

$$\begin{array}{l} \text{Profit margin} \\ \text{of each type} \\ \text{of trader} \end{array} = \begin{array}{l} \text{Total marketing margin} \\ \text{of each type} \\ \text{of trader} \end{array} - \begin{array}{l} \text{Variable marketing cost} \\ \text{of each type} \\ \text{of trader} \end{array}$$

1.3.2 Data collection

To conduct this study, both primary data and secondary data are used as well. The primary data is collected by interviewing actors in supply chain of Pangasius consisting of breeders, traders, wholesalers and retailers in three provinces: CanTho, AnGiang and DongThap provinces. These provinces are main Pangasius production areas in MD. The data was used to analyze the situations, constrains/obstacles, which affect to the actors in Pangasius marketing system. In addition, the data was used to estimate marketing costs and margin; and demonstrate the behavior of actors.

The survey was conducted in 40 fish breeders, and 15 assemblers/traders. The samples of fish breeders, which consisted of 20, 10,10 in AnGiang, DongThap, and

CanTho respectively, were collected. The samples of traders also were done from these provinces, where are popular with Pangasius breeding.

The secondary data, time series data from the Statistical Yearbooks, Annual Summary Reports, and previous researches were gathered and used to describe the situation of fishery and Pangasius production and distribution in Vietnam and in the MD as well.

Furthermore, data and information about Pangasius were obtained in other ways. For example, the numbers of cages, companies, fish breeding area, etc. were collected from websites. However, these data and information contain some useful things for the study, but not much as expected.

1.4 Limitation and scope of the study

The data of production, marketing cost and processing were collected from three provinces including CanTho, AnGiang and DongThap provinces that are good representatives to fish breeding in the MD. However, the number of samples is limited so the data was not able to demonstrate all SCP elements. Besides that, due to the limitation of time, the study just only concentrated on analyzing Tra and Basa fish named Pangasius. Moreover, the study focused only on domestic Pangasius marketing channel, and some elements of SCP model, but not all.

1.5 Outline of the study

The study is organized into 6 parts. The introductory part presents a statement of study problem and the objectives of the study, the study methodology, and the scope of the study. Part 2 covers the situation of Vietnamese fishery sector, and Pangasius production in the MD. Part 3 presents the structure of the Pangasius market in the MD. This information will help to describe the functions of actors who join the channel. Part 4 analyses the Government policies and regulation that influence Pangasius industry and market in the MD. Part 5 presents the value-created in the pangasius marketing channels in the MD. Final part gives the conclusions and some recommendations.

2. OVERVIEW OF VIETNAMESE FISHERY INDUSTRY AND PANGASIU PRODUCTION IN THE MD

2.1 GENERAL CHARACTERISTICS OF VIETNAMESE FISHERY

Vietnam is situated at the South East Asian region, has a 3,260 km coastline stretching from MongCai to Ca Mau. The area of inland and territorial waters of Vietnam is 226,000 km. The sea area of Vietnam is divided into four areas, namely the North Sea, the Central Sea, the South-East Sea and South-West Sea areas. There are more than 2,000 fish species in Vietnam, in which about 130 species have high economic value. The marine fish stock in the whole sea area is estimated for 4.2 million tons, in which the annual allowable catch is 1.7 million tons.

The Vietnamese seafood was ranked highly in list of EU, US markets and the market share expanded rapidly from year 1998 to currently. On June 12, 1998 the Vietnam Association of Seafood Exporters and Producers (VASEP) was established and become the center of gathering almost fishery companies. In 1999, export turnover reached about US\$938 million, in which the market share of each export markets was followed: Japan 41%, US 14%, EU 10%, China and Hong Kong 12.5%. Until year 2000, Vietnam had built 70 fishing ports, including 54 coastal ports and 16 ports located on the island. The infrastructure of fishing ports consists of some services such as providing fuel, vessel services and maintaining fish, etc... The fishery industry had a high growth rate with averagely 20% per year. This made it become a third position among export revenues of Vietnam, accounting for 12.24% of total export of Vietnam in 2002 and Vietnam had become a world nineteenth nation in terms of export volume and twenty-ninth nation in terms of export value¹. In 2003, the value of Vietnamese fishery is about 24,125 billion VND, and accounts 3.93% of total GDP.

In addition, Vietnam has much freshwater resources such as rivers, lakes and ponds, etc. that are great potential of freshwater fishes. Generally, the natural conditions

¹ Huy HT, 2003, *Export promotion of fishery products the case of tra and basa fish products in the Mekong Delta, Vietnam.*

in MD are quite good and suitable for raising freshwater fishes and marine species that contribute to improve income and living condition of people in rural areas. Therefore, fishery industry plays an important role in development Vietnam economy. Especially, in the MD along with rice, fresh water fisheries are the key to develop regional economy and play an essential role in rapidly increasing export market for Vietnamese fish products, especially Pangasius.

Table 3: Fish culture area by province in the MD **Unit: ha**

Province	2001		2002		2003	
	Total	Of which: Fresh water fish	Total	Of which: Fresh water fish	Total	Of which: Fresh water fish
MD	104,575.6	90,888.6	88,421.8	82,029.7	92,531.0	84,332.0
Long An	1,508.0	1,508.0	1,466.2	1,466.0	2,048.0	1,985.0
Dong Thap	1,678.0	1,678.0	2,035.4	2,035.4	2,226.0	2,226.0
An Giang	984.0	984.0	1,465.0	1,465.0	1,123.0	1,123.0
Tien Giang	4,247.6	4,114.6	4,885.3	4,779.2	5,257.0	5,194.0
Vinh Long	1,254.6	1,254.6	1,342.9	1,342.9	1,487.0	1,487.0
Ben Tre	2,873.0	1,731.0	3,670.0	1,952.0	3,722.0	2,506.0
Kien Giang	15,000.0	15,000.0	10,993.0	10,993.0	10,284.0	10,284.0
Can Tho	13,089.0	13,089.0	15,995.0	15,995.0	10,284.0	10,284.0
Tra Vinh	22,167.0	10,483.0	8,139.0	4,649.0	16,913.0	16,913.0
Soc Trang	3,820.0	3,170.0	5,272.0	4,694.0	6,166.0	5,846.0
Bac Lieu	1,577.4	1,577.4	1,929.0	1,429.0	2,200.0	150.0
Ca Mau	36,377.0	36,299.0	31,229.0	31,229.0	29,660.0	28,763.0

Source: www.fistenet.gov.vn

Figures from table 3 indicate that the fish culture area is in tending to reduce. Especially, KienGiang, TraVinh, SocTrang, BacLieu and Ca Mau provinces have considerably reduced the fish area production because they are in good and suitable conditions to develop shrimp production. However, other provinces such as AnGiang, CanTho, DongThap and so on, which can increase the area of fish breeding, especially Pangasius, because of their suitable natural conditions.

2.2 GENERAL INFORMATION ABOUT PANGASIOUS AND DEVELOPMENT PROCESS OF PANGASIOUS INDUSTRY

In this study, Basa and Tra fishes are named Pangasius and raised in the MD. In general, the Pangasius has a history of more than 50 years and Pangasius farm has been a traditional mean of livelihood to many farming households who have been settled along Mekong River. More than 400,000 poor farmers have subsisted on Pangasius farms, especially in the provinces of AnGiang, DongThap and CanTho. Pangasius farm is not only an important food supply source for residents in the region, but also an important source of income for many rural families who might be farmers, labors involved in terms of producers, traders, or feed suppliers etc. Pangasius is one kind of the catfishes getting a high economic value in both of export and domestic markets.

Before 1986, farmers raised Pangasius mainly for domestic market. In 1986, under supported by Australian experts and the establishment of Agifish Company in AnGiang, Pangasius were produced and exported to Australia under fillet products. Until 1990, Pangasius fillets were exported in Asian, Hong Kong, Japan and China markets, etc. Some intermediary markets were also established to push Pangasius fillets into Northern European and EU markets. In the same time, Pangasius farming was enlarged to other provinces of MD because of increasing demand for raw fish material. Most of involved farming households were changing from traditional culture into intensive culture.

Thanks to the Government's trade liberalization reforms, Pangasius farms have increased substantially in every year to meet international market demand. Since 1996, there have been many customers come from the U.S. and created a new potential market that Vietnam supplied about 2% Pangasius product to this market.

Fishery development has made good chances for many farmers in the MD to diversify their production activities and improve their living standard. In year 2002, fish ponds were increased regularly in Vietnam. For the poor farming households, they had participated in form of rearing fingerlings in small and large ponds or in cages along the

Mekong River in case of rich farming households as the value of a cage was costly and usually more than VND 200 millions.

In fact, the number and volume of cages of fish and Pangasius in the MD have increased. Specifically, DongThap, AnGiang and CanTho provinces have expanded the volume of Pangasius culture. For example, AnGiang has the largest area volume with 578,822 m³. The next one is DongThap with 105,446 m³.

Table 4: Number and volume of cages by provinces in the MD

Province	2001		2002		2003	
	Quantity (cage)	Volume (m ³)	Quantity (cage)	Volume (m ³)	Quantity (cage)	Volume (m ³)
MD	7,015	182,048	8,357	720,151	7,267	744,118
LongAn	1,556	10,242	1,340	12,016	757	10,626
DongThap	1,917	35,930	2,388	113,927	2,420	105,446
AnGiang	3,237	127,825	4,053	573,323	3,178	578,882
TienGiang	39	624	20	1,176	56	5,115
VinhLong	0	0	108	4,080	165	7,396
BenTre	0	0	0	0	8	158
KienGiang	0	0	70	1,810	70	1,992
CanTho	262	7,232	307	10,523	366	19,695
TraVinh	0	0	18	648	219	13,304
SocTrang	4	195	53	2,648	28	1,504
BacLieu	0	0	0	0	0	0
CaMau	0	0	0	0	0	0

Source: www.fistenet.gov.vn

2.3 SITUATION OF PANGASIOUS PRODUCTION AND PROCESSING IN MEKONG DELTA

In 2002, there were 19 companies joining in the field of Pangasius processing and exporting. More than 4 million people have involved in fishery activities, and it is considered really as a necessary source for the development of fishery, accounting for an important ratio in fisheries production. However, this workforce did not really meet the demand of fishery development due to low educated level, lack of professional

knowledge and finance etc. that leading the process of raising Pangasius was limited as well as inefficiency².

Since 1997, Vietnamese enterprises have exported directly to the foreign markets. In 1998, exported volumes were about 6,000 tons of Pangasius fillet products, and in 2002 it was around 27,987 tons. The export volume rose more than 32,875 tons in year 2003. Moreover, the value of gross output of fishery in the MD was increased significantly. According to Statistical yearbooks, these values were VND 19,721 billions, 22,660 billions, and 26,739 billions in 2001, 2002 and 2003 respectively.

From 1997 to 2002, the field of processing Pangasius fillet for exporting had been developed rapidly in the MD provinces such as CanTho, AnGiang, DongThap, VinhLong and TienGiang provinces. For example, the processing capacity in 1997 was about 17,895 tons, but it increased to 86,600 tons in 2002.

Currently, Vietnam exports Pangasius to many countries such as the U.S., the EU, Japan, Hong Kong and Singapore. In addition, because the MD has suitable natural conditions for raising Pangasius and high experience fishermen, Pangasius farms have been developed rapidly every year from 1996 until now. Fishermen usually apply advanced production ways in order to improve the productivity and their income as well.

After the US lifted its embargo on products from Vietnam in 1994, export of frozen basa fillets has risen continuously and helped hundreds thousand of fishermen overcome poverty. This dynamic development was interrupted, however, when the US government imposed penal duties as dumping price of catfish in June 2003. Penal duties were imposed on basa fillets by the US International Trade Commission upon the instigation of American catfish farmers who alleged that subsidies in Vietnam were distorting competition. Within just a few months Vietnam's exports of basa to the US fell about 50%. Vietnamese producers managed to sell a part of their surplus of production on other markets and in Vietnam but the resulting problems are still immense about 32,875 tons and 81 millions USD (table 5).

² Huy HT, 2003, *Export promotion of fishery products the case of tra and basa fish products in the Mekong Delta, Vietnam*

Table 5: Pangasius products export to foreign markets

Market	2001		2002		2003	
	Quantity (Ton)	Value (US\$1,000)	Quantity (Ton)	Value (US\$1,000)	Quantity (Ton)	Value (US\$1,000)
Total	1,739.5	5,058.3	27,987.3	86,979.2	32,875.9	81,070.6
Japan	9.3	41.3	631.9	1,895.6	505	1,412.1
EU	50.0	161.0	2,264.8	7,278.1	5,922.2	15,525.9
U.S	1,279.6	3,911.6	17,250.0	54,828.2	8,803.0	23,956.1
Asia, others	400.6	944.4	7,840.6	22,977.3	17,645.7	40,176.5

Source: www.fistenet.gov.vn

However, the production of farms raised Pangasius is still one of the fastest growing industries in the MD. Over half of the production was exported to the US, Europe, China, Russia and Japan while consumption of fish products within Vietnam has also been on the rise. Pangasius production is now ranked the second position after rice in the region in term of value . The turnover from exported Pangasius in 2004 stood at 125 millions USD, more than 1.5 times what it was in 2003³. Therefore, increasing productivity has become an urgent issue for a fishery industry in MD that has developed rapidly in recent years. In year 2004, hundred thousands of people were engaged in the fish sector and raising Pangasius has been expanding. This development has called for increased automation and processing proficiency to meet demand both from processors and customers around the world. Moreover, in the MD there are 27 fisheries export processing companies which their processing productivities are 1,100 tons fresh fish per day. Volumes of Pangasius fillet exported by these export processing companies increased from 5,000 tons in 1996 to 40,000 tons (including other kinds of fish) in 2004.

On August 2005, three states in US ban pangasius imported from Vietnam because of unsatisfied the quality and dumping price, leading to the export market structure has been changed considerably. According to VFA, there are 60% of exports to the EU

³ *Reorganize aquaculture production in the MD 21/9/2005*

market, 30% to markets like Asian nations, Mexico and Australia, and only 10% to the US market compared to nearly 40% in previous years. In general, Vietnam's export markets in the first 6 months of 2005 has been still growing exclude EU market (see table 6).

Table 6: Vietnam's export markets (Jan-June 2005)

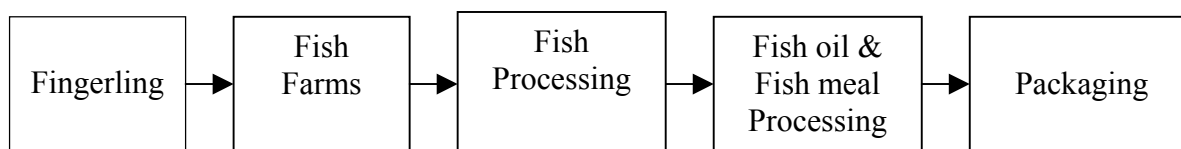
Market	Revenue (US\$ billion)	Year on year growth (%)
Asia	7.30	21.3
ASEAN	2.35	40.0
Europe	2.77	-2.0
Americas	3.08	24.9
The U.S.	2.50	15.0
Oceania	1.20	55.6
Africa	0.29	18.0

Source: Ministry of Trade

3. STRUCTURE OF THE PANGASIUS MARKET

3.1 ROUND CIRCLE OF PANGASIUS PRODUCTION

Figure 2: Round circle of Pangasius production



Source: Nam Viet Company, Ltd.

According to figure 2, the fish farms usually buy the fingerlings (3-4cm) from fish feed producers in the same districts in the case of DongThap or ChauPhu (AnGiang) provinces; an average quantity bought from fish farms is approximately 50,000 fingerlings per time. Feed producers will deliver fingerlings to the fish farm gate and guarantee the quality of fingerlings within 7 days. In some case, feed producers also come to ChauPhu or DongThap provinces to visit fish farms and introduce fingerlings to them.

Fish farms will raise fingerlings until their weights are more than 700 gram which has the white and light yellow meats of Pangasius. At that time, fish breeders will sell

harvested Pangasius to processing companies such as Nam Viet Company Ltd., Tuan Anh Company Ltd., Agifish, Afiex, Cafatex and etc. that located at CanTho, AnGiang and DongThap provinces. In processing companies, fish will be processed under quality control standards such as HACCP, EU Code DL152 & ISO 9001: 2000.

In case of Nam Viet Company Ltd. (NAVICO), which is the biggest Pangasius processor and exporter not only in Vietnam but also in South East Asia with 3 aquatic product processing factories such as Nam Viet Fish Freezing factory, Pacific Seafood Freezing factory, and Atlantic Seafood Freezing factory. With 12,000 processing engineers and skillful workers, everyday NAVICO uses 720 million tons of raw material to produce 75,000 million tons of fish fillets and other processed aquatic products per year; 30,000 million tons of fish oil per year; 9,000 million tons of fish skin per year; and 30,000 million tons of fish meal and fish powder per year. The total cold-storage capacity of NAVICO is 13,000 million tons.

To be more specific, the fresh fish products (value added products) of Pangasius processing companies are presented in following products

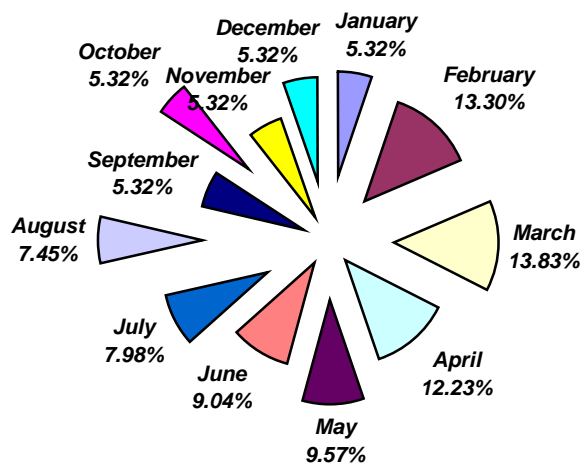
- Pangasius Fillet
- Pangasius Steaks
- Pangasius Balls
- Pangasius Head
- Pangasius Portions
- Skinless Pangasius Steaks
- Skin-On Pangasius Fillet
- Untrimmed Pangasius Fillet
- Whole Dressed H&G Pangasius
- Pangasius Stomachs
- Pangasius Skewers
- Pangasius Strips
- Whole Cleaned Gutted Pangasius
- Pangasius Steaks
- Etc.

Finally, these fresh fish products will be packaged by cartons or plastic bags and put label on them. In general, Pangasius of Vietnam have better quality, hygiene, nutrition and competitive price than Pangasius bred from other countries on the world, particularly from American fish.

3.2 INTERMEDIARIES INVOLVED IN PANGASIOUS MARKETING SYSTEM

3.2.1 Trader

Traders collect and buy Pangasius in around the year. In the peak months such as February, March and April, the percentage purchased Pangasius of traders will be the highest in the year as shown in the figure 3. There are two reasons to explain the peak months of buying Pangasius. First of all, fish breeders worry about the polluted water from rice fields flowing into rivers as flooding season coming on August, September and October. As the result, it can cause epidemic diseases to Pangasius easily. Secondary, because of the weather, fish farmers want to sell their products before the winter coming due to more risks of epidemic diseases. Figure 3: Procurement percentage of trader



Source: Market analysis of cultured Pangasius in the MD, Vietnam, Son NP, 2003

In some provinces such as AnGiang, DongThap, CanTho and TienGiang provinces, there are hundreds of traders who collect and supply fresh Pangasius to local market in the MD, accounting for 20% of fish quantity. In harvesting time, traders will go to anywhere that fish breeders are located to purchase Pangasius; even some places are far from the market place. At those places, they can purchase Pangasius with the price is lower than market price as transportation cost increased. They negotiate with fish

breeders, get samples of Pangasius to make a quality tests by their own experiences or by modern testing machine. In addition, the negotiation process of Pangasius price will base on main issues such as quality of fish, price and time to delivery. After reaching agreement, traders will take purchasing persons of processing companies that come and buy Pangasius. Then traders will rent motorcycle to carry Pangasius from farm gate to concentration points where they will be transferred to processing companies by trucks (2-5 tons).

In another case, traders use boats to carry Pangasius bought from farm gates with a large volume and deliver them to processing companies which buy and process them, and then export processed products to the markets. In the case of unsatisfied the requirements of processing company, for example, less than 1 kg per fish, non-white color meat, etc., the Pangasius will be sold to domestic markets such as HoChiMinh city and provinces in the MD. The price of these fishes was only identified by 60-70% in comparison with the price of exported fishes. Although traders do not depend on any processing company or organization in business process, it is very difficult for their business in case of abundant fish supply.

Traders will face more risks concerned to look for consumption markets; in some cases, they accept to sell with low prices to the wholesalers at local markets even their fishes satisfy exported requirements.

After purchasing Pangasius from fish breeders, traders sell immediately to wholesalers and processors. They do not store Pangasius for few days because of facing risks such as costly for breeding (ten millions dong per day) and using capital, fluctuation price of the markets, especially the fluctuation and unstable of foreign markets like US and EU markets. Therefore, traders will clarify Pangasius that qualify the requirements of processors then deliver to processors by their own boats or by processors' trucks within one day. In some cases, traders will take processors' employees in purchasing division to check, test Malachite Green in Pangasius then processors will decide to sign purchasing agreements with fish breeders or not. Traders clarify Pangasius base on the quality, color, size and weight of Pangasius. In addition, almost traders sign advance contact agreements with processors to confirm purchasing price, volume and time to deliver.

3.2.2 Processing company

According to survey, most of processing companies have their own purchasing Pangasius forces. Base on the processing plan, they will go and buy Pangasius from the fish breeders. Sometime they visit fish breeders and purchase Pangasius through raising schedule of fish breeders. In some cases, the processing companies give cash in advance to fish breeders to invest in raising fingerlings and they will sell to processing companies when they harvest their harvesting fishes. The processing companies also give cash in advance to fish breeders to invest in nearly stage of harvesting fish. At that time, fish breeders have money and pay more attention on feeding and raising techniques so that they can harvest high quality Pangasius soon. In short, fish breeders sell fish to buying forces under contract between fish breeders and companies.

Nowadays, processing companies use modern technologies and equipments. Automatically, efficient weighing and grading have been some of the primary requirements for many Pangasius processors. Processors who grade fillets before they are frozen either into bulk or IQF have received the Compact Grader very well. The capacity of the grader is up to 120 pieces/min, and the accuracy 2g for pieces fewer than 500g, otherwise 5g. Configured as a six-gate grader the machine is user friendly with minimal installation requirements. The equipment can be installed, in most cases, by the customer, and be operational in just a few hours. This has proved very beneficial in this market, as simplicity and ease of operation are very important to Vietnamese processors.

3.2.3 Fish breeders/fishermen

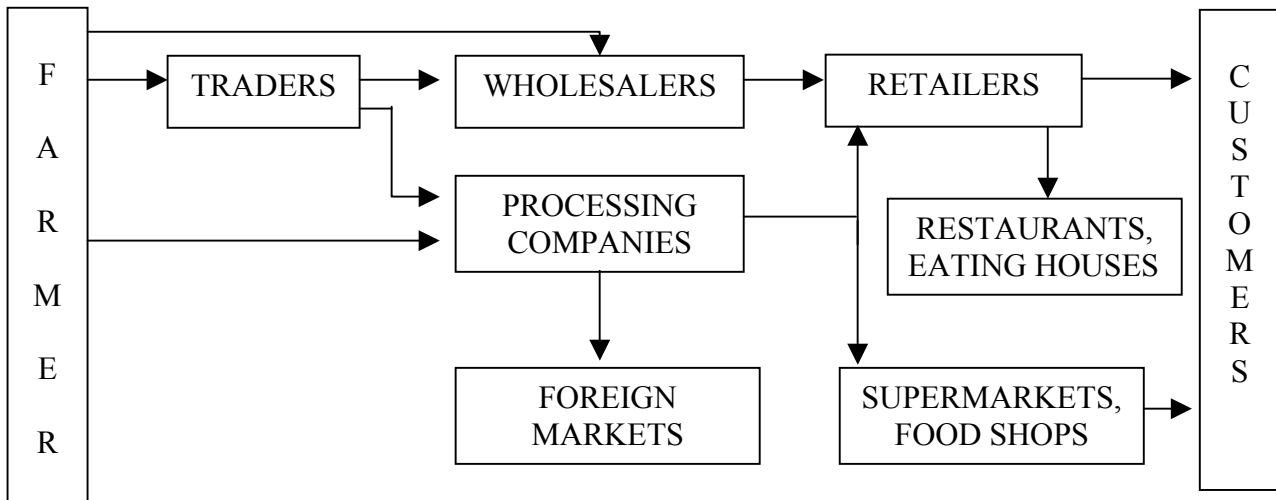
Fish breeders are farmers breed Pangasius directly in their own ponds, or floating cages on the rivers. Actually, the employment of Pangasius breeding has been traditional for fish breeders living in the MD. According to the survey, the average experience years of fish breeders are very much mature in their professional, in which the average experience years of Pangasius breeders are between from 8 to 20 years. With many years of experience in breeding, farmers have knowledge about production technique; protection environment and fishery natural resource; food safety security; and market information to capture the demand of domestic and foreign consumption markets.

Nowadays, Pangasius are freshwater fishes growing widely in AnGiang, CanTho and DongThap provinces; they are virtually raised in the natural ponds and floating cages on the rivers and farmers usually yield two crops a year. In the year 2000s, due to develop of exported market, the quantity of Pangasius have been grown up rapidly. Many farmers have decided to dig many ponds for raising Pangasius instead of growing rice or fruit crops which are low efficiency and profit. It will take 8-10 months to raise Pangasius in the ponds and 6-7 months in the case of raising Pangasius in the floating cages along the rivers respectively due to water flow conditions. Raising Pangasius by cages, fish farming will fix their owned cages on a river where the stream flow of water is good and consistent with fish biology. The average area of a floating cage is 280m^3 , in which the average size of length is 12m; the average size of width and depth are 6m and 4m, respectively. Breeding Pangasius by pond, however, is only popular for the tra fish because of specific biology characteristics of tra fish. Normally, the average area of pond is $10,000\text{m}^3$, in which the length and width of pond are much longer and wider than that of the cage (length is 70m and width is 45m). But the difference between floating cage and pond depths is around one meter, in which the depth of cage is deeper than the pond. In addition, it will take costly to build a floating cage rather than to build a pond as a cage uses much wood to build it.

Moreover, as the river is a transportation way of boats and ships, so the floating cages are only allowed to build within limited areas and get permission from local authority as well as satisfy the requirements of local authority. For example, the cage must avoid traffic jam and not obstruct water flow, particularly in flood seasons in the MD. In the case of the pond, fish farmers will dig in their owned land, so the area of the pond will depend on the available of their owned land area and finance. Most of the ponds were dug near by the rivers to facilitate of changing water through pumping water from rivers to ponds and inverse so that Pangasius can grow up quickly.

3.2.4 PANGASIOUS MARKETING CHANNEL IN THE MEKONG DELTA

Figure 4: Pangasius marketing channels in the MD



After harvesting, farmers (fish breeders) will sell Pangasius to processing companies in which they will be processed into value added products as mention in the first part of part 3. Then processing companies not only export their products to foreign markets such as US, Europe, China, etc. but also sell them in domestic market through supermarkets, food shops and retailers systems (figure 4). The processing companies also buy raw materials from traders who buy Pangasius from fish farms. Therefore, both fish farms and traders sell directly Pangasius to the processing companies. In some cases, buying forces of processing companies will visit and sign agreement with fish farms base on quality and quantity of Pangasius. A contract agreement between fish farms and processing companies, however, has been not much popular yet in the MD because fish farms dislike being tightly control selling price by companies. They want to be free in selecting buyers with reasonable prices at harvesting time. On the other hand, the contract between traders and processing companies are more popular because traders have prestige and can guarantee stable input materials to processing companies. Beside that, traders also sell fresh Pangasius to wholesalers who will resell to retailers and consumers.

According to survey, payment by cash is a popular way in doing business between fish breeders, traders and processing companies. Nevertheless, 25% of trader respondents and 13% of processing companies still apply payment way without cash which means that the payment coming later after they get product. The credit term for payment is about

two weeks by traders and one week by processing companies. The reason why traders need long term payment than processing companies is that traders is limited in capital and must pay by cash to the farmers while traders get money from processing companies by cash and credit.

3.3 COMPETITION IN FISH MARKET OF THE MEKONG DELTA

3.3.1 The existence of entry and exit barriers

Processing company

In 2005, there are 27 processing companies in the MD. Among of them, some companies concentrate on producing main exported and processed Pangasius products such as AnGiang Fishery Import Export Co. (Agifishco), AFIEX, Nam Viet Co. Ltd. (NAVICO), Tuan Anh Company Ltd. (NTACO), AFASCO, CanTho Animal Fishery Products Processing Export Enterprise (CAFATEX), and Kim Anh Company Ltd., etc. Their main activities also concentrate on raising fish in floating cages process, fish paste, frozen fish, cut squids, and seafood mix, etc. Generally, most of these companies have at least 1,000 employees, of which average number of female employees accounting for about 75%, as AGIFISH with 2,300 employees, of which 72% is female. Average capacity of a firm can reach around 40 tons of fresh fish per day (according to 12 tons of product). Some of the exported companies exported 90-95% of products to foreign markets and only 5-10% of the rest were delivered to local market through agencies, supermarkets and food shops.

Government policies

The main entrance barrier for export processing companies in AnGiang, DongThap, CanTho provinces and in Mekong Delta as well is that the government has not allowed building any more processing company in processing Pangasius. Therefore, the current processing companies need to invest and upgrade modern processing system aimed to meet technical requirements of foreign markets such as US, EU and Japan markets but also need to invest in fish farms for quality control of Pangasius. For example, Agifish has recently poured over VND 30 billion into a frozen aquatic product processing factory.

Control of essential resources (raising techniques, land)

The new comers get barrier in raising techniques as they do not have their own farms. So their raw material will be depended much on fish breeders. Currently, processing companies got difficulties in qualified quality of supplying raw material because most of fishermen did not follow strictly feeding techniques; they over used chemical treatments for Pangasius. Moreover, in southern Vietnam, there are only two quality testing centers, which located at HoChiMinh city. The processing companies want to test the quality of pangasius; they must send samples to quality testing centers in HoChiMinh city and it take at least one week to have result of quality testing. During that one week, other companies can buy Pangasius by simple testing method. Of course, they will get high risk with these Pangasius but at least they will not loss a chance to buy them.

Marketing advantages of incumbency (fluctuation of market price, low demand, market information)

With the high competition in local and world market, the marketing advantages of incumbency are also a barrier for new comers. Nowadays, many processing companies get difficulty in their businesses because of market price fluctuation and degree of competition of international market. Almost processing companies export 90-95% products to foreign markets such US and EU. Therefore, their business activities strongly depend on the fluctuation of international price markets due to technical and trade barriers such as anti-dumping price, imported tariff, antibiotic residue etc. of imported market. They had high risk as choosing single market strategy rather than multi market strategy. In year 2004, the US market imposed high import tariffs, ranging from 36-63%, on Vietnam's Pangasius. As a result, it was hard for processing companies to compete in US market. In addition, Cambodia and Thailand have begun to export catfish to the world market. These issues also affected to the entrance barriers of export processing companies and fishermen as well. Processing companies are also less pay attention to enhance trade promotion in export markets such as investing in organizing fairs, exhibitions and international conferences as well as domestic market; supply materials for export processing and expand export markets.

Beside high entrance barrier, the exit barrier is also high as existing processing companies are heavy investment capital on technology and raising Pangasius on floating cages. In AnGiang province, some processing plants are rushing to sell their cages as the supply and demand of Pangasius become unstable. According to Buu Huy, deputy director of AnGiang Import-Export Foodstuff and Agriculture Product Company (Afiex), as well as director of Afiex Refrigerator Aquatic Product Enterprise owners, who confirmed that the Company needs to urgently sell 20 fishing cages for any cost, even sell at loss. But it is very hard to sell them as they cost about VND 300 million to build a fishing cage with the capacity to turn out 100 tons. With the same amount of money, it is possible to buy 1 ha of land to dig ponds for raising Pangasius. With ponds, fishermen can control water source properly. Moreover, according to AnGiang Fisheries Association (AFA) released statistics showing that there are about 2,000 fishing rafts in the whole province in 2004, nearly 50 percent less than last year. The number will most likely continue to plummet and the raft fishing industry may sink with the ship. One of the reasons is that Pangasius raised on fish rafts used to have the best quality and price. In previous years, fishermen did not have the technique to breed white meat Pangasius in ponds; but now they can do it properly because they have been conducted by fishery extension staff. In addition, the production costs of fishing raft raised Pangasius is higher than of pond raised and the problems of fish raft raised Pangasius are lack of light and uncontrollable water environment. That is one of the reasons that fish breeders invest more raising Pangasius on ponds rather than on floating cages.

In the year 2000s, due to attractive by exported market, most of companies have ignored domestic market. Since the fish products have been trouble by technical and trade barriers from US market; the companies have begun to look for a new business chance in the domestic market. According to Khanh, Vice chairman of AFA said that AFA in accordance with AnGiang Department of Trade have begun to establish a network of delivery in HoChiMinh city; and until 2005 there are at least 4 companies participating in the program. This will make the domestic market more competitive and attractive processing companies penetrating domestic market.

In short, there are high entrance and exit barrier in Pangasius industry. It is hard to attract new processing companies in Pangasius industry. However, with the number of processors in MD currently is 27, the market is still a competitive market.

Fishermen

The entrance and exit barrier of fishermen in raising Pangasius is quite low as the switching costs are low and they can get money from the banks to build their floating cages, equipments, and technology. For example, they can borrow more than 200 million VND to build one floating cage. According to AnGiang Provincial Department of Agriculture and Rural Development reported that the province's Pangasius farm area expanded to 1,016 ha by April 2005, a 35% greater area than in 2004. This came about because a lot of local farmers thought it was a good idea to jump on bandwagon and also go into fish farm following a sharp rise on the average. And several localities like SocTrang, CaMau and TraVinh provinces that were engaged in shrimp farms, switched over to Tra fish. In September, 2005, however, 30-50% fishermen in the MD stopped or transferred to feed other kinds of fish instead of Pangasius. Therefore, the competition among fish farms is rather high, especially in the over supply Pangasius situation.

3.3.2 Degree of product differentiation

Pangasius is the general named of basa and tra fishes. Basa fish is *Pangasius bocourti*, one of 21 species belonging to the pangasiidae family of catfish, which is found throughout most of Southeast Asia. Basa is a pretty tasty fish, with a delicate texture and nice white flesh. The fast-flowing water of the Mekong River gives basa meat a cleaner taste than a lot of local freshwater fish raised in stagnant ponds, where algae impart a noticeable of flavor. In addition to *Pangasius bocourti*, Vietnamese fish farmers started farming another member of the Pangasiidae family, *Pangasius hypothalamus*, which was known locally as tra fish. Compared to basa, tra is considered somewhat inferior eating, with thinner fillets and a coarser texture. Tra is a hardier fish that doesn't require expensive aeration, and the species is easier to spawn in captivity. It is also faster-growing and cheaper to raise. In just eight to 10 months, tra grows to almost 3 pounds, big enough to yield two 8-ounce fillets. Fillets cuts from basa will be whiter than fillets cut from tra which will tend to be more beige. Also basa will have a more delicate flake

than tra, which tends to be grainier in texture. Frozen basa and tra fillets are usually sold in 10-kilo shatter packs or IQF in 15-pound boxes⁴.

In doing business, there are two classes of Pangasius. Class one: Pangasius weights larger than 700g and class two Pangasius weights less than 700g. In addition, people often classify Pangasius base on their size, color and quality aimed to set up buying/selling price of Pangasius. In fact, processing companies will take samples of Pangasius from fish farms and test them based on some criteria such as antibiotics, quality and color of the meat, etc. before making purchasing decision.

The results of analysis in this part show that Pangasius sold in domestic and exported market are rather homogenous. Product differentiation is based on the color and quality of meat. Therefore, we can conclude that product differentiation is not expected to be a barrier for competition.

3.4 THE PROCESS OF PANGASIOUS PRICE FORMATION

Generally, Pangasius price will be set up by negotiation between Pangasius breeders and traders. Before selling Pangasius, however, fish breeders usually collect price information from neighborhoods or from public media such as TV, radio or brochure of market information provided by Department of Agriculture. Although farmers can get price information on public media, the price usually lower 500-1,000VND/kg than market price. One of the reasons to explain this issue is that the announced price is collected from processing companies; meanwhile the fish breeders sold Pangasius at farm gates. Then, the difference on price can be considered as loading costs.

In addition, over half of production Pangasius is exported to the US, Europe, China, Russia and Japan, so Pangasius price depends strongly on the exported markets. Therefore, the processing companies will base on exported market price to set up purchasing price for traders or fish breeders. In some cases, the farmers need money and need to sell Pangasius immediately; at that time, they have to sell fish at low price. Sometime, fish breeders must accept to sell Pangasius at break even point or even loss

⁴ *Diversified Business Communications, Basa Catfish*

profit. In short, the process of Pangasius price formation depends on international market price and processors are price setters - key important players in the marketing channels.

4. GOVERNMENT POLICIES AND REGULATIONS FOR PANGASIUS INDUSTRY

4.1 MARKET INFORMATION

On May 17, 2002 Minister of Fisheries issued a decision No 15/2002/QĐ-BTS about “Control residual antibiotics in raising animals and aquaculture” and signed by Nguyen Thi Hong Minh, Vice Minister of Fisheries. But the implementing and supplying information about this decision to fishermen and export processing companies were not well performed. As a result, some processing companies had a trouble in residual antibiotics in exporting Pangasius products to US market in year 2003.

On August 16, 2005 the U.S. Food and Drug Administration (FDA) press released “Vietnamese Basa Banned in Mississippi”. But until August 18, 2005 the Ministry of Fisheries issued a decision No 26/QĐ-BTS announcing 11 kinds of antibiotics which are forbidden to use in processing fish exported to the US and North America. However, because of a breakdown in communication, the announcement did not reach and inform to the fishermen. As a result, fishermen still used antibiotics in feeding Pangasius. On August 19 2005, Le Dung, Vietnamese Foreign Ministry official stated that Vietnam’s control over antibiotics aquaculture is similar to regulations in Europe, the U.S. and other markets like Japan, Canada, the Republic of Korea and Switzerland. On August 21, 2005, the Fisheries Ministry added Fluoroquinilones to the list of chemical prohibited in aquaculture. Regular inspections are conducted at farms and processing facilities to ensure all the banned substances are not used. Adherence to this ban is monitored by the National Fisheries Inspection and the Quality Assurance Center in 32 provinces.

Moreover, local authorities urged the farmers to report their fish breeding activities and sign contracts with processors to minimize risk, but most of them chose to avoid the headaches and expenses involved in getting official permission and registration. With such a situation, it was and is impossible to access production figures for the province’s Pangasius and over supply is impossible to avoid.

Besides, Ministry of Agriculture and Rural Development issues a press (newspapers) on every month and at each province’s department of Agriculture and Rural Development

has its own press. Its main activities will supply information about agricultural activities, market information, government policies, etc. to many kinds of audience such as Provincial Committee; Leaders of Provinces, districts, villages; Cooperatives, Extension Club, and Excellent Farmer Club, etc. However, the information is lately update, used much technical words that are hard for farmers to understand. Especially, market information is not updated quickly as it is issued once a month.

Another source of supplying market information is from radio. In the MD, radio is one of the main media to supply market information to fishermen. There is a market information program after news program in every morning or evening and in the weekend there is a summary market situation for whole week.

Specifically, in AnGiang province, there is only one Unit of Market Information belonging to AnGiang Department of Agriculture that have responsibility for collecting market information of some main products from different areas and sources such as: price at local markets, price at the export companies, etc. Of which, fish price usually is set by negotiation between farmers and traders. On the other hand, before selling fish, farmers usually refer selling price from other farmers in same village or from traders. Sometimes, farmers compare the fish price announced on TV, radio or market information brochure provided by the Unit of Market Information (AnGiang Department of Agriculture).

In short, market information is not well established and updated lately. Key players in Pangasius industry are hard to access and update market information as fast as possible.

4.2 TAX POLICIES

To aid covering aquaculture in Vietnam is an instrument to overcome structural problems and to regulate overall developments in the sector. According to decision No 51/1999/NĐ-CP issued by the Government on July 08, 1999 about Implementation Encouraging Investment Law: Anyone invests in poor regions with weak infrastructures facilities, and thereby creating jobs, is free from land tax and income tax, for example, for the period of first four years. Investment in some areas, such as the building of hatcheries, is encouraged by low interest loans of up to 3,200 dollars. Moreover, the bureaucratic license procedures for new farms has been simplified.

4.3 FINANCING POLICIES

According to circular letter No 82/2000/TT-BTC of Ministry of Finance about “Financing policy guideline to develop economics farming” issued on August 14, 2000 and signed by Tran Van Ta, Vice Minister of Finance. Investment on building processing factory to process aquaculture products will be delivered a loan and supported with preferential interest by Development Funds. Therefore, the processing companies have advantage of loaning during the first stage of investment.

For most of fish farming households at the initial stage of farming have to borrow money from the Bank of Agriculture and Rural Development, Commercial Banks or Credit Funds to build pond or cage, buy fingerlings and facilities. According to result of survey indicated that the fish breeders have to pay at market interest from 0.5 – 1.2% per month depended on the various credit organizations. However, a loan was identified by scale of production like pond or cage; normally, the maximum loan size for the household is not more VND 100–200 millions. Therefore, many households also borrow from their family members, friends or from “hot credit” sources with high interest rates (5-10% per month). All the banks require collateral for the loans, a property ownership or land certificate. Nevertheless, the money is limited while the fish breeders’ demand for loan is 1.5-2 times higher than the current loan. In some cases, the fish breeders can get a feeding investment from the export processing companies based on business contract or traditional relationship so that these fish breeders do not pay much attention on loans from the financial organizations.

In year 2003, companies that increased their exports were supported by a Ministry of Finance fund. Therefore, some companies have invested considerable sums in the processing sector and increased their production of value added products. For example, Agifish, one of the leading Pangasius processors in the region, invested 1.3 million US dollars in the expansion of its processing lines. It has produced 60 value added products from Pangasius. Another company, Afiex, has enlarged its processing section and added to its frozen storage capacity and produced over 30 value added products from Pangasius.

Due to three US states (Alabama, Louisiana and Mississippi) banned basa catfish imported from Vietnam (in August 2005) as catfish might contain flouroquinolones, a class of antibiotics unapproved in food in the US, thousands of Vietnamese fishermen are

facing bankruptcy. As a result, in August 2005 raw catfish price had plunged in the MD, fishermen tried to sell them to avoid a further fall of price. They really need money to pay the loans of the banks. Base on this situation, Nguyen Huu Khanh, vice chairman of the Vietnam Fisheries Association (VFA) said that VFA would open talks with local banks, and to persuade them to continue offering low interest loans to catfish farmers like 0.5-0.85% per month or delay payment period so that fish breeders could continue production.

In short, financial policies have strongly affected to processors and fish breeders, especially loan and interest rate policies. Most of fish breeders depend on amount of loan and interest rate offered from the banks during production process.

4. 4 MONITORING AND POLICIES OF GOVERNMENT

4.4.1 At national level

Since the 1990s, the fishery industry has been paid attention by the government to develop fishery industry and issued some decisions such as: Decision No 224 on fishery development in the period of 1999 – 2010; Decision No 80 on associating the stakeholders in the business process.

According to circular letter guideline implementation decision No 09/2000/NQ-CP of Government on June 15, 2000 about “Some policies to transform economic structure and consume agricultural products” issued on November 13, 2000 and signed by Nguyen Viet Thang, Vice Minister of Fisheries. In the next 10 years, fisheries industry needs to be invested strongly in following fields: exploiting, feeding, processing, services, especially sustainable feeding aquaculture; and focused on increasing exported aquaculture products. Planning for total aquaculture output in 2005 is 2,450,000 tons and 3,400,000 tons in year 2010. Among these target numbers, planning for raising aquaculture in 2005 is 1,150,000 tons and 2,000,000 tons in year 2010. Especially government has encouraged raising floating cages in AnGiang, DongThap and CanTho provinces. Moreover, it is necessary to update new technologies and improve current processing factories in the MD so that they can process many kinds of aquaculture product for export markets. Nationally, it needs to improve 80 export processing factories and build 20 new ones based on international standards and using quality management systems such as GMP, SSOP and HACCP.

From year 2000-2005, the fish industry had exported 2.35 million tons of seafood and earned \$11 billion in exports. The country has a total of 410 seafood processors.

Until new stage, the Ministry of Fisheries publicized the plan to increase Pangasius production to one million tons per year during the period 2005-2010. But in 2005 with the situation of supply Pangasius has outstripped demand in the market, Viet Nam has set forth the target to keep Pangasius output of around 500,000 tons per year during 2005-2010.

One of the reasons of surplus supply is that the fresh water fishery in the MD is primarily organized by locals and not belongs to formal organization. Therefore, local authorities are not able to have an estimate of the actual output from each province. Generally, Viet Nam Fishery Association (VFA) has discussed much about encouraging more cooperation among the State, the scientist, the enterprise and the farmer. However, because of the lack of legal regulations, this cooperation has not been well implemented.

According to official report from the Ministry of Fisheries on August 30, 2005 at a conference on industry competition, the fisheries industry expects to gain USD4-5 billion in seafood export value by 2010. VFA reports that in year 2005, Vietnam expects to earn USD 2.5 billion in seafood exports to 80 countries and to become the seventh largest seafood exporter on the world market. Until the first eight months of 2005, Viet Nam gained USD 1.63 billion, an increase of 13% over the same period last year, even though seafood exporters had difficulty exporting their products to key markets; 60% of Vietnamese fish products are now consumed in the EU, 30% is consumed in Asian countries and Mexico and only 10% is consumed in the US. Furthermore, the fisheries industry will focus on building a national brand name and quality standards for Vietnamese seafood at domestic and foreign markets. It is also currently making an effort to introduce their products to areas around the country and build some fish markets nationwide. Ministry also asked domestic seafood producers to increase their range of products as well as their volume for the domestic market via supermarkets and restaurants. In short, VFA needs a long term domestic distribution plan because many regions, especially remote ones, have not tasted this delicious fish.

4.4.2 At regional level

Local trade authorities have helped Pangasius producers promote domestic trade and seek new overseas markets. AnGiang People's Committee, for example, sent samples of aquaculture products, including Pangasius products to commercial agencies in U.S. and EU to promote and build good business relationship with these markets. In long term, it would tighten supervision over antibiotics use in seafood farms. It is set to launch an inspection in several MD provinces in October 2005. Moreover, the Ministry of Fisheries has released a list of 28 chemicals and antibiotics prohibited for use in fishery farms, and another 28 that may only be used in limited quantities.

With the difficult situation in 2005, the Ministry of Fisheries, Ta Quang Ngoc, has just issued a decision on establishing Board of Pangasius Production Control in the MD aimed to coordinate between Pangasius breeding provinces in production management, productivity capacity, product quality, competition and export possibility. Moreover, he signed a decision to establish an Executive Board on Producing and Consuming Pangasius in Vietnam. There are 11 members of the executive board, including the Ministry of Fisheries officials, members VASEP and VFA, and people's committee authorities from provinces where fish are bred in the MD. In addition, 14 officials from provincial department of fisheries and from processing and exporting Pangasius companies will help the executive board to fulfill its important tasks. The executive is assigned to give guidance and to organize programs for the fisheries industry, such as the quality and trademark of Pangasius in Vietnam in the period 2005-2010. The board can decide which measures should be taken to keep stable in production and consuming of Pangasius the in MD

4.4.3 At provincial level

Generally, the Provincial People's Committee (PPC) and different departments under the PPC are responsible for management and promote economic development of different sectors in the province. The PPC provides guidelines for fishermen, designation of areas, estimation of productivity as well as the capacity of the factories to encourage the fishermen to raise Pangasius within their suitable capacity.

In early 2004, Department of Agriculture and Rural Development in AnGiang Province has cooperated with Department of Commerce and Tourism-AnGiang Province

and signed an Agreement on the price of material procurement with 5 provinces, namely DongThap, CanTho, VinhLong, SocTrang, and TienGiang in order to protect the fish breeders and fight against the price coercion for the households.

The Fisheries Association, including representatives of the fish farmers, which are the key to stabilize development of fishery in this region, and act as the bridge between the households and the factories to help them in terms of productivity, needs of market, and negotiating with banks to increase the loan for the members. Further, AFA has attracted more than 800 members from many different economic sectors who are mostly fish farmers. Also, people contribute more than VND 20 billions (USD 1.2 millions) for establishing the AnGiang Fisheries Association's Joint Stock Import-Export Company (AFASCO) in order to ensure the fish material for processing and exporting, and create stable income for all members in fish production. AFASCO cooperated with SIPPO of Switzerland to learn how to raise ecologically sound fish to meet the new demands. The ministry also decided to set up the Pangasius processing management board in order to coordinate the industry throughout the entire region. Moreover, Pangasius is strength of this region so the ministry supports the efforts of the province to specialize in the production and export of this kind of fish and each region must have a trademark product.

The government has encouraged processors to look for new markets beside US market and focused on diversifying their products range in a bid to increase their sales in the domestic market. For example, every month, Agifish markets about 5-10 new products, which help increase the company's sales in the domestic market by 15-20% a year. Domestic sales account for more than 10% of its total revenue of 40 million USD. At present (2005), Agifish is supplying over 100 Pangasius- based products through a system of sales agents across the country⁵.

In 2005, to keep farmers from having to take such sink or overcome risks, the AFA and the AnGiang People's Committee have proposed that businesses are not built more processing plants. There is now a target to keep domestic Pangasius output at around 500,000 tons per year. This is just one half of the Ministry of Fisheries' previous call for one million tons of Pangasius per year for the period 2005-2010.

⁵ Ngo Phuoc Hau, Chairman of the company's Management Board

5. VALUE-CREATED IN THE PANGASIOUS MARKETING CHANNELS.

In this part, the analysis of marketing cost, price margins, and profitability among each actor in order to find out the value-created in the Pangasious marketing channels. Based on the primary and secondary data, the average price at different market levels will be estimated. Then the average margins for all actors related to Pangasious marketing channels will be computed.

5.1 ANALYSIS OF MARKETING COST AND MARGINS

5.1.1 For Pangasious breeders

The Pangasious price was VND 15,000 per kg in 2004, until September 2005, the farmers can only sell at highest VND 10,200 per kg. Before 2002, raising Pangasious was one of highest income occupations in rural. Its benefit might be about 80% of its production cost. However, currently due to a decrease of exported price and increase of feed, fuel, material costs; this leads to the benefit from the fish farm dropped remarkably. Table 7 shows that one ton of harvesting Pangasious costs about VND 9.88 millions and they get gross margin about VND 119,000 per ton of Pangasious. Among the cost items, the feed cost occupied highest proportion.

Table 7: Cost and gross margin of farmers in Pangasious production

Unit: VND 1,000/ton

Items	Cost
Feed	8,300.0
Depreciation	616.6
Fingerlings	596.8
Veterinary medicine	124.5
Fuel	96.8
Other	146.2
Total cost	9,881.0
Selling price	10,000
Gross margin	119.0

Source: survey data

5.1.2 For traders/collectors

Table 8: Marketing cost and profit margin for traders

Unit: VND 1,000/ton

Items	Cost
Transportation in selling process	550.0
Loss in trading process	84.6
Unloading	79.3
Harvesting	74.0
Classifying, packaging, loading	63.5
Transportation in buying process	60.3
Taxation	42.3
Depreciation (net, pump, barrel)	37.0
Commission to agents	21.2
Others	45.5
Total marketing cost	1,058
Buying price	10,000
Selling price	11,300
Marketing margin	1,300
Gross margin	242

Source: survey data

During business process, the collectors or traders usually use their own ships or rent ships for transportation; it is estimated that transportation cost was around VND550 for a distance of 50 km. The people, who undertake the loading of fish, have to guarantee on quantity until Pangasius to be weighed at the processing companies or wholesalers' place. In short, traders get high gross margin VND 242,000 per ton. They spend VND 1,058 thousands per ton for total cost in which the transportation cost in selling process occupied largest proportion cost 550,000 per ton.

5.1.3 For wholesalers

Wholesalers play a role as middlemen in the marketing process. The figure in table 9 shows that wholesalers pay marketing cost VND 214,300 per ton of fish in the business process. The highest marketing costs to the wholesalers are labor rent, selling ground, and quarantine. To wholesaler, they only get VND 185,700 per ton for gross margin.

Table 9: Marketing cost and profit margin for wholesalers**Unit: VND 1,000/ton**

Items	Cost
Labor	57.9
Fee for renting the selling ground	57.9
Cost for quarantine	45.0
Depreciation	12.9
Taxation	11.8
Cost of electricity	11.8
Storage	10.7
Others	6.4
Total marketing cost	214.3
Buying price	11,300
Selling price	11,700
Marketing margin	400
Gross margin	185.7

*Source: survey data***5.1.4 For retailers**

Retailers in the marketing process have to pay some marketing costs like selling-buying ground, market management, market place clean-up, and others. The figures in table 10 indicate that retailers have to pay a marketing cost of VND 1,100 per ton of fish. Retailers take more effort to sell Pangasius than other actors that is why their gross margin also high and equal VND 1.2 million per ton.

Table 10: Marketing cost and profit margin for retailer**Unit: VND 1,000/ton**

Items	Cost
Total marketing cost	1,100
Buying price	11,700
Selling price	14,000
Marketing margin	2,300
Gross margin	1,200

Source: survey data

To see the general situation of marketing cost and gross margin of actors in marketing channel, table 11 will present the summary.

Table 11: Marketing cost and gross margin of actors in marketing channel**Unit: VND 1,000/ton**

Actors	Production cost and buying price	Selling price	Marketing cost	Gross margin
Farmer	9,881	10,000		119
Trader	10,000	11,300	1,058	242
Wholesaler	11,300	11,700	214.3	185.7
Retailer	11,700	14,000	1,100	1,200

In table 11, retailer is the actor in marketing channel with the highest gross margin. Next is trader. The fish breeder gets high risk in production, but lowest gross margin in the marketing channels. In general, all actors in marketing channel get positive gross margin.

5.2 ANALYSIS OF PRODUCTION COST AND PROFIT

In year 2002, based on the calculation of the Fisheries Ministry, it was indicated that if the price of raw material fish was of 14,200 VND/kg (approximate USD 1/kg) and with the selling price of USD 3.61 –3.62/fillet kilo (class 1) under the FOB price, the processing enterprises get a profit of USD 180/fillet kg.

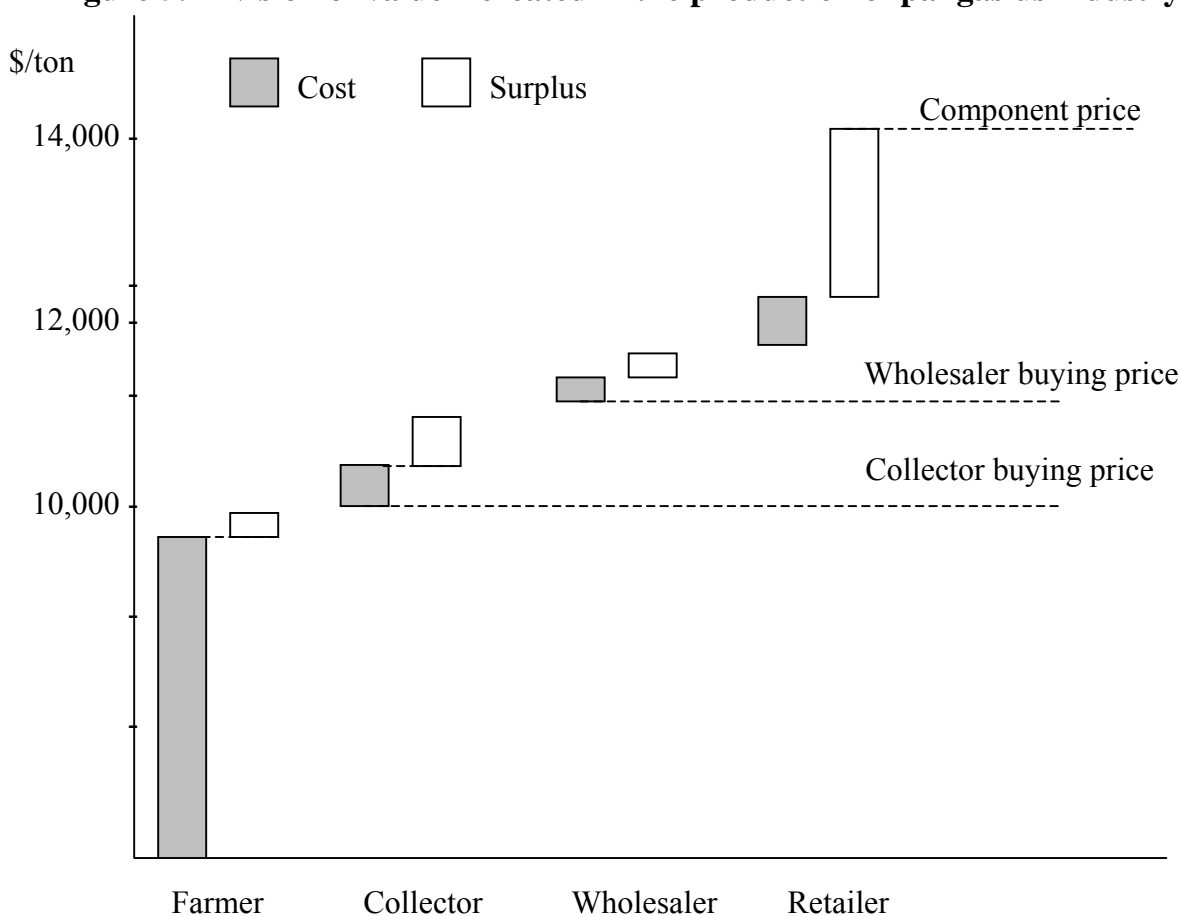
In recent months of year 2005, fish farms have got difficulties in terms of production cost, which has increased while the selling price of Pangasius decreased. The price of feed has increased 2-3 times compared with few years ago. According to fish farmers, the price of bran was 3,000VND/kg; sea fish, which is used for feeding Pangasius, was 3,500VND/kg. To breed one floating cage Pangasius per day, there were 600 kg bran and 200 kg sea fishes; total feeding cost were 2.5 millions VND per floating cage per day. The production cost for 1 kg harvesting Pangasius in second quarter of 2005 was from 10,000-11,000VND/kg.

In few years ago, when price of Pangasius was 7,000-8,000VND/kg, fish farmers get more profit. But in second quarter of 2005, the price of Pangasius was 11,000VND/kg, the fish breeders still lose, even in some periods the market price was 9,000-10,000VND/kg, fish breeders get negative profit so much. However, during this period, to sell Pangasius equal production cost is not easy. With class 1 Pangasius, processing companies purchased less than 11,000VND/kg. With this situation, many fish breeders could not stop their businesses as they have already invested much money on

feeding Pangasius. They have loaned money from banks with 0.89% interest rate. But when they could not sell mature Pangasius, they had to loan money from non-formal credit institutions with 10%-15% interest rate even they already extended the pay back period of the banks one to two times, so that they had money to maintain their fishes⁶.

5.3 THE DIVISION OF VALUE – CREATED IN THE PANGASIOUS MARKETING CHANNELS

Figure 5: Division of value – created in the production of pangasius industry



Source: survey (2005)

Figure 5 illustrates the division of value –created in Pangasius industry. Pangasius breeder captures a relatively larger proportion of value-created and earns low profit.

However, the fish breeder gets the highest risk in raising Pangasius. Retailer, by contrast, only captures the modest portions of the overall value-created. They are characterized by strong price competition and highest profitability. To retailers, they also face with high risk because of many substitute products to Pangasius.

⁶ *Fish farming of tra and basa fishes get trouble*

Consider to the percentage of contribution in value-created, the highest percentage contribution in value-created is breeder sector (having highest production cost). They play an important role in pangasius marketing channel. However, their profit is lower than other actors (in the case of using Profit_Incremental cost ratio)

To be more detail, there are two ratio used to analyze the situation of distribution profit among actors in the channels:

$$\text{Profit margin_total cost ratio} = \frac{\text{Profit margin}}{\text{Total cost}} \quad (1)$$

$$\text{Profit_Incremental cost ratio} = \frac{\text{Profit}}{\text{Incremental cost}} \quad (2)$$

Table 12: The distribution profit among actors **Unit: %**

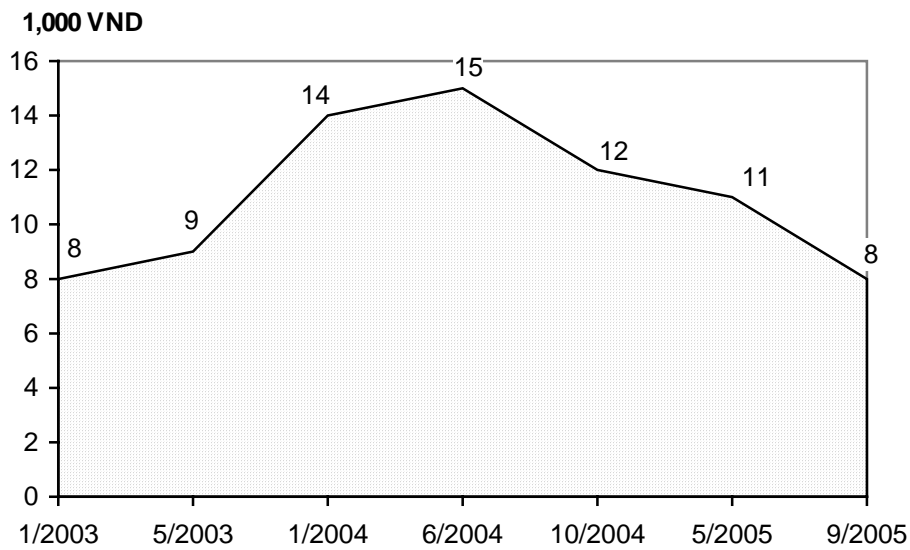
Actors	Breeder	Collector	Wholesaler	Retailer
Ratio				
Profit margin_total cost ratio	1.20	2.19	1.61	9.38
Profit_Incremental cost ratio	1.20	22.87	86.65	109.09

These ratios will show the relationship between profit margin and total cost (or Incremental cost) that each actor earns. The retailer has the highest percentage in both cases. The lowest percentage in two ratios is breeder sector (Table 12).

5.6 THE TRENDS OF PANGASIOUS PRICE

In 2003, America accused Vietnamese enterprises of dumping catfish. Meanwhile Europe erected many technological barriers for Vietnamese catfish products. As the result, since 2003, catfish producers have faced the fluctuation of market price. In October 2004, the price of Pangasius dropped to VND 9,500-VND 12,000 per kg from VND14,000-VND15,000 per kg in the previous months (figure 4). Until December of 2004, the Pangasius price was better and reached VND 13,000 per kg. One of the reasons to raise the Pangasius price is a Tet's holiday period and the demand of domestic market for Pangasius was also high. People consumed more Pangasius in this season.

Figure 4: Market price of Tra and Basa fish in the period of 2003-2005



(Source: The newspapers of Tuoi Tre, CanTho in 2003, 2004, 2005)

Since April 2005, the price of catfish has remained low and in mid December 2005, three states in the United States prohibited selling catfish imported from Viet Nam. These obstacles are difficult to avoid in the integration process. In the initial stages, businesses sold catfish for \$4 a kg. However, some reduced the price to \$3, that why they accused Viet Nam farmers of dumping the fish. Recently, at a fishery fair organized in Belgium, a few big fishery outfits reduced the price of their products so others had to lower their prices too. These also lead to the price of Pangasius reducing in recent months. For example, on October 2005, the price of Pangasius was dropped to VND 9,900-VND 10,200 per kg from VND10,500-VND11,000 per kg in June 2005.

In short, with the above situation, it is said that the tendency of Pangasius price is still rather fluctuation in the current and future time. It is hard for fish farms and processing companies to overcome this situation if they only focus on some foreign markets like US.

6. CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

In recent years, economics reforms in Vietnam have created many changes and opportunities in fisheries production and have lead to strong changes in the Pangasius market structure and performance. The result of market structure analysis shows that the Pangasius market in the MD can be characterized by competition. Pangasius sold in

domestic and export markets are rather homogenous and product differentiation is not expected to be a barrier for competition. There are high entrance and exit barrier in Pangasius industry to the processing companies. However, the entrance and exit barrier of fishermen in raising Pangasius is rather low.

The marketing channel which Pangasius passes from fish breeders to final consumer is not really complex. The key players in Pangasius marketing channels are fish breeder, trader, wholesaler, retailer, processing company and final consumer. There are four main Pangasius marketing channels, in which marketing channel from fish breeder to processing company is the most important channel.

Although pangasius of Vietnam have better hygiene, nutrition and competition price than pangasius from other countries on the world, the breeders got difficulties in quality control and lack of knowledge in curing epidemic diseases on pangasius. As the result, the antibiotic residue was over the permission standards. Breeders got difficulties in selling pangasius as processing companies did not buy unsatisfied quality standards. They accepted to sell pangasius with low price to traders and wholesalers for consuming in local markets.

All actors in pangasius marketing channels have strongly effected by fluctuation price and unstable of world market, especially the fluctuation and unstable of US and EU markets.

With regard to government policy and regulations in Pangasius industry and market, market information is not well established and update lately. Tax policy encourages in the first stage of investment on breeding and processing Pangasius. Financial policy has strongly affected to processing companies and fish breeders, especially loan and interest rate policies.

At national level, the Government issued many decisions to develop Pangasius industry. Beside that at regional and provincial levels, the local authorities play important role in pushing development of Pangasius industry and breeding Pangasius as well.

Among actors in marketing channel, retailer is the actor with the highest gross margin. Next one is trader. Farmer gets lowest gross margin, but high risk in production, too. In general, all actors in marketing channel get positive gross margin.

6.2 RECOMMENDATIONS

Some recommendations for the actors and policy makers

To reach the target of domestic Pangasius output around 500,000 tons per year, the Ministry of Fisheries should cooperate tightly with the Vietnam Association of Seafood Exporters and Producers (VASEP) to enhance trade promotion in domestic market such as investing in organizing fairs, exhibitions and international conferences. Actually, with the population of about 82 million, the potential demand for Pangasius is still big. If they can expand the consumption of Pangasius products in local market, they can avoid dependence on oversea markets as present time.

In addition, The Ministry of Fisheries should also solve problems in food hygiene and safety standards to improve the quality of seafood products. Especially, dynamic and expandable marketing channel should be made for domestic.

VASEP and members of fishermen, processing companies, should be the members of VFA so that all parties have good cooperation and recognize that working together is the only direction that can bring about mutual benefit and sustainable. VFA should supply knowledge of market as well as new feeding techniques to fishermen.

Build legal regulations so that the cooperation among the State, the scientist, the enterprise and the fishermen are well implemented. The enterprises play important role in looking for expanding consuming markets; focus not only on exported market but also on domestic market because it is still much potential for domestic markets.

Limitations of the study and suggestion for further study

Although the study has widened understanding of Pangasius marketing channel for domestic market in the MD. However, it still has some limitation, which should be indicated in further researches.

First, a limitation is concerned to the weaknesses of the data and information that can not address all SCP elements. Particularly, C elements are skipped in the study that makes the study imperfect.

Second, the number of sample is fairly small and mainly concentrates in AnGiang, DongThap, and CanTho. These characteristics of samples and information may not cover

exactly all things of all the actors, who concerning to the Pangasius marketing channel. A further study, which can be done is to find out who will get the best and worst efficiencies in the marketing channel.

Third, with increasing value added products, Vietnamese producers should be on the one hand targeting the EU and US markets, there are no penal duties on value added products. On the other hand, processors' interest is also growing in the domestic market which is gradually developing. Although frozen value added Pangasius products will initially remain regional niche products, demand for such products is increasing. Interest is developing in the big urban centers, in particular, where there is already a network of modern supermarkets and a financially strong middle class. So the further research is how to expand local market share significantly.

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