

## ANALYSIS OF COMMODITY DISTRIBUTION PATTERN AND PRICE SETTING PATTERN

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### ABSTRACT

*This paper concerns the distribution (marketing) channel behavior and price formation of commodities. It is a successive analysis answering question what commodities most contribute to inflation in Batam. These commodities are chicken meat, spinach, red chili pepper, string bean, water spinach (kangkung), mackerel (selar), and tuna fish (tongkol). The objectives of this research are (1) to break down the nature of marketing channel of commodities, i.e. chicken meat, spinach, and mackerel (selar); (2) to know the formation of selling price of the commodities. The research was conducted by purposive - snow ball sampling starting from producers. The respondents involved are 19 producers, 3 importers, 22 wholesalers, and 58 retailers. As a whole, the research proves that the common channel level is channel three for vegetables and chicken meat involving producers/importers, wholesaler, and retailers. Whereas the number of channel levels for fish is four since collectors (pengepul) gather from fishermen then bring the fish to wholesalers.*

**Key words:** *distribution (marketing) channel, formation of selling price, commodities of CPI Inflation.*

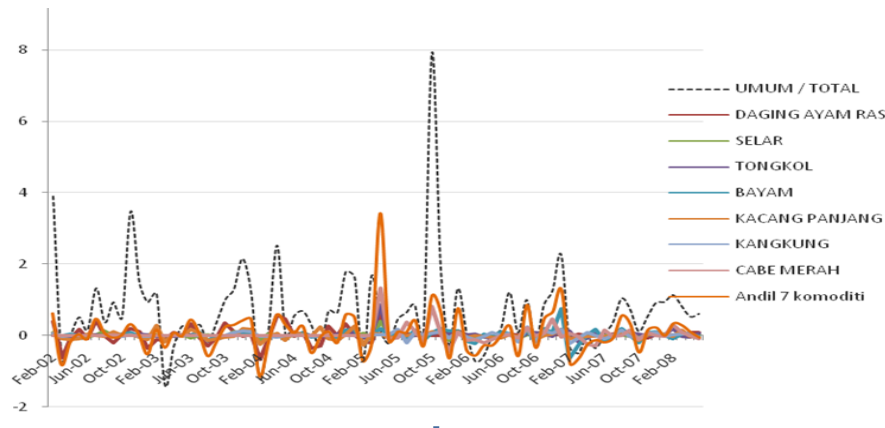
### INTRODUCTION

One essential component in maintaining economic stability is the establishment of price stability. Price stability matters not only to stimulate productive economic activity, but also to lift up the effective demand of the society. Productive economic activities along with the support of effective demand will become the roaring engine into maximizing nation's state of welfare. However, there is an obstacle in the way as the inflation rate widely and continuously goes higher, so that inflation control policies is becoming essential and inevitable.

This study is a follow-up response towards a research by *Bank Indonesia Batam*

regarding the factors that affect inflation in Batam (BI 2009) in which it found seven commodities considered as the biggest contributors towards the movement of inflation rate in Batam. The seven commodities are chicken, spinach, red chili pepper, string bean, *kangkung* (water spinach), mackerel fish, and tuna fish. Exhibit 1 below presents the details of the commodities which significantly drive the movement of inflation or deflation in Batam. As a matter of fact, such commodities are the most consumed by people in Batam, thus, those put together will significantly effect on inflation or deflation in Batam.

**Exhibit 1**  
**The Development Chart of Inflation Driver Commodities in Batam**  
**2002 - 2008**



Source: *Bank Indonesia Batam*

Furthermore, through this study, *Bank Indonesia* in cooperation with the *Politeknik Batam* work together in the efforts to provide an in-depth explanation of the distribution pattern and the pattern of price setting of these commodities. Thus, by knowing the characteristics of these commodities, it is expected that a price control mechanism will get more effective and efficient.

Due to the limitations of space and focus of writing, the discussion was narrowed down to three commodities which are mackerel fish from the fishery commodity group, spinach from the vegetable group, and chicken meat from farm/breeding product groups. These three commodities are chosen over their characteristic similarities with the rest of the commodities in the same group category.

Based on the description above, this research aims to:

- a. Find out the distribution pattern of chicken meat, mackerel fish and spinach; beginning from farmer / breeder / fisherman until they reach the hands of consumers in city of Batam.
- b. Acknowledge the price setting process and pattern of chicken meat, spinach, and mackerel fish at each level of distribution and to acknowledge factors affecting it.

### THEORETICAL FRAMEWORK

In brief, inflation is a general and progressive tendency of price increase. The price increase of one or two items in the market would not be considered as an inflation, unless the price rise for such items triggered or being the cause of most other items to rise. Note that inflation is also about the tendencies to continue rising over time. A price rise over, such as seasonal, prior-to-holidays, or one-time business activities (and has no further effect) are not considered as inflation because such price rises won't result in a problem or economic turmoil that requires special attention to deal with (Boediono 1999).

In general, inflation could risk a nation in a decrease in investment, interest rates hike, increased number of speculative investments, the failure in economic development, economic instability, balance of payments deficits, and the declined welfare of the society. Even a zero percent inflation is not where the government is trying to go to, since it is almost impossible to do so; thus, the most important thing to do is the effort in keeping lowest rate of inflation possible (Sukirno 1998).

In the efforts to maintain price stability, it is necessary to comprehend with the characteristics of commodities by examining the distribution pattern and its influence on price setting.

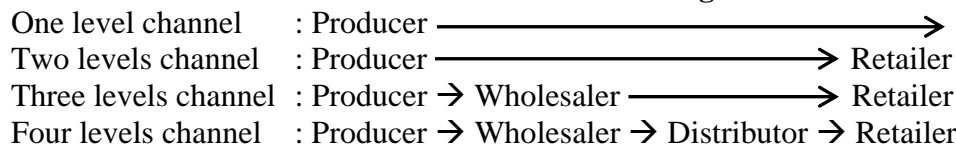
**Distribution Pattern**

In the context of distribution of goods, producers and end-user-customers are part of a distribution channel (Kotler, 2000). The number of intermediaries involved determines the length of a channel. Consumer marketing channel is the marketing strategy that involves external parties as part of the distribution channel. While business marketing channel involved internal parties as part of its distribution channels. Nowadays, however,

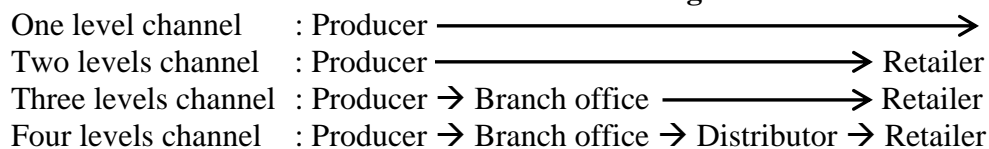
there is a distribution system where producers create two or more distribution channels to reach one or more consumer segmentation called multi-channel marketing system or commonly called hybrid marketing channel. The following pictures illustrate the consumer, business and the hybrid marketing channels.

Each channel has its own unique strengths and weaknesses. From the viewpoint of producers, the efforts to obtain information about end-user-customers and then to control the distribution will get even more difficult as the number of channel levels increases. The problems will get more complicated since the fact that most companies are now applying mix of channels.

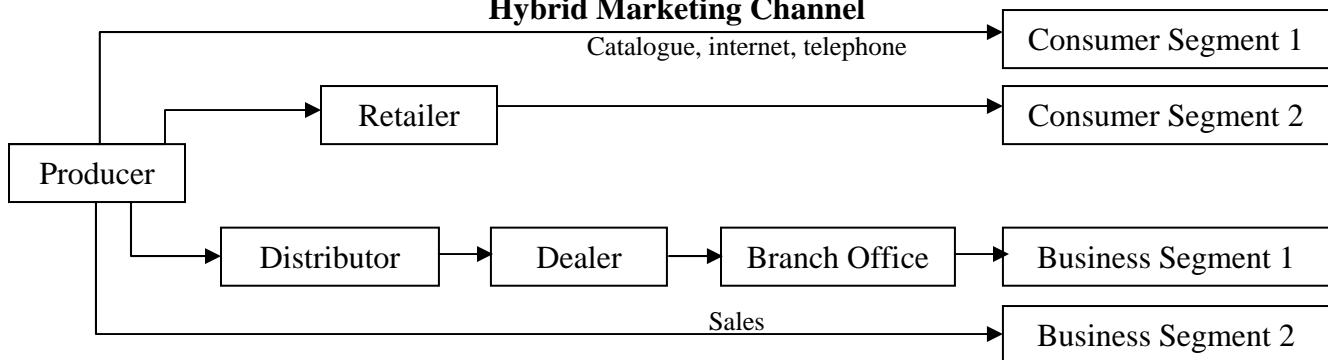
**Exhibit 2  
Consumer Marketing Channels**



**Exhibit 3  
Business Marketing Channels**



**Exhibit 4  
Hybrid Marketing Channel**



Source: Kotler (2003)

However, any distribution channel brings one main purpose that is to reach

### ***Price Setting***

Setting the market price involves the factors which affect market demand and supply. Each of these factors can cause the demand and supply to shift, in which ultimately causing the equilibrium price level to shift as well (Nopirin, 2000).

Garrisen, Eric H & W. Moreen (2007, p. 824) stated that:

"Under normal circumstances, demand is negatively associated with price, which is the higher the price the lower the demand. However, in terms of luxury goods, the demand curve sometimes tend to slope in uprising way. The demand curve shows the number of market purchases possible at various prices. The curve shows various reactions of individuals about their sensitivity towards various prices in the market."

Demand determines the highest price limit the seller/retailer can charge upon their commodities. While the seller cost determines its lowest price limit. Sellers need to set a price that covers the cost of production, distribution, and selling cost, as well as expected investment returns over the risks they are imposed in doing the business. Cecep Hidayat (2000, p. 73-74) suggested the following three methods in determining the selling price:

#### ***Cost Oriented Pricing***

Cost Oriented Pricing is a method of setting the selling price by taking into account costs of production plus adding a certain percentage of desired profit. Gayle Rayburn (1999, p. 335-340) divided this method into following three categories:

Cost Plus Pricing method. This category includes: a) variable cost pricing, b) cost differential pricing, c) Full-cost pricing, d) conversion cost pricing, and e) direct cost pricing.

#### **Mark-Up Pricing Method**

This pricing method is a variation of those

various segments of buyers and distribute with the lowest cost possible.

of Cost Plus methods, except that this particular method is applied to products purchased for resale (without further processing – unlike in the cost plus pricing methods which involve the activity of production). Retailers or intermediary sellers commonly apply this Mark-up Pricing Method. This method can be formulated as:

**Selling price = purchase price + mark-up**

The Mark-up provides an add-on to its purchase price which also contributes to profit. In addition, retailers are also incurred with exploitation cost which then paid off from a portion of the mark-up.

#### **Target Pricing**

The target pricing is based on the targetted corporate return in which company prices its products in an amount to earn desired Return on Investment (ROI).

#### ***Demand Oriented Pricing***

This pricing method concerns with the market demand. The price will move along the rise and fall of the market demand despite the exact same cost of production. The increasing price will cause the price to rise, and vice versa.

#### ***Competition Oriented Pricing***

In this method, products are priced by benchmarking on competitors' prices in order to avoid higher gap of the commonly accepted prices among competitors. Pricing can be based on three policies; they could be around the equal, lower, or even higher than competitors' prices.

## **RESEARCH METHODS**

### ***Source and Type of Data***

This study employs both quantitative and qualitative data. Quantitative data are presented in the average buy-and-sell price on suppliers, importers, distributors, and retailers, the average distribution costs,

depreciation costs, and other labor costs (see enclosed questionnaire). While qualitative data are presented in in-depth interview with

### ***Research Sample and Location***

- Location of research: cities and/or counties in Riau Islands relevant to the distribution of commodities, ranging from producers to consumers.
- Number of respondents: 102 respondents.
- Samples are proportionally distributed at each level of distribution channel in the commodities (quota sampling) with compositions of at least two or three farmers/breeders/fishermen/importers for each commodity, at least three or four intermediaries/collection agents/wholesalers for each commodity, and at least five or six retailers for each commodity.

### ***Sampling Methods***

Surveys were conducted with snow-ball sampling technique in which to identify and select cases within a network. This sampling technique could provide a network of information that built the entire framework of a symptom. Besides, information concerning the respondents' subjective point of views could also be obtained because they would comfort to trust the researcher as each of the respondent give reference to the next ones. Nonetheless, the snow ball sampling technique carries its own implications as it will cause the sample less smooth as the survey would be conducted in different day. Besides, the samples chosen may not represent the majority that could have influence towards the market conditions.

At first, the research team was sent to Aviari and Sagulung traditional market to collect samples from retailers of those seven commodities. Both traditional markets are chosen as they are perceived by consumers as the price maker of the commodities in Batam. Thus, both markets could present the basis for calculating inflation or deflation in the city.

distributors, retailers, and producers, as well as the review comparison of related previous researches.

However, then, the research team was obstructed by the hesitation of the retailers to mention their suppliers. When the bottom-to-top approach failed, the team then came up with an approach by collecting samples from the cooperative reference from Department of KP2K in Batam. From this reference, team was able to obtain initial samples of respondents into categories of farmers, fishermen, breeders, and importers for the seven commodities.

Those initial samples were taken by using non-probability purposive sampling method. In this method, sampling was taken by judgment (judgment sampling) and by quota (quota sampling). 'By judgment sampling' means that samples were deliberately chosen by the criteria of either as producers, distributors, or retailers who produce or distribute the seven commodities in Batam and the surrounding areas. Whereas 'by quota sampling means' to consider samples as representation of proportion of producers, wholesalers, and retailers (Cooper and Schindler, 2006).

### ***Data Collection Methods***

- Direct Interview with questionnaires.
- In-depth interviews with main respondents or experts (from KP2K, *Disperindag*/ Department of Industry and Trade, *Apindo Batam*/Batam Business Association).
- Documentation Study.

### ***Data Analysis Technique***

- Quantitative analysis is conducted on survey data of respondents which has been statistically processed.
- While qualitative analysis (descriptive - exploratory) is conducted in building the commodity distribution model.

## **REVIEWS**

**Distribution Pattern**

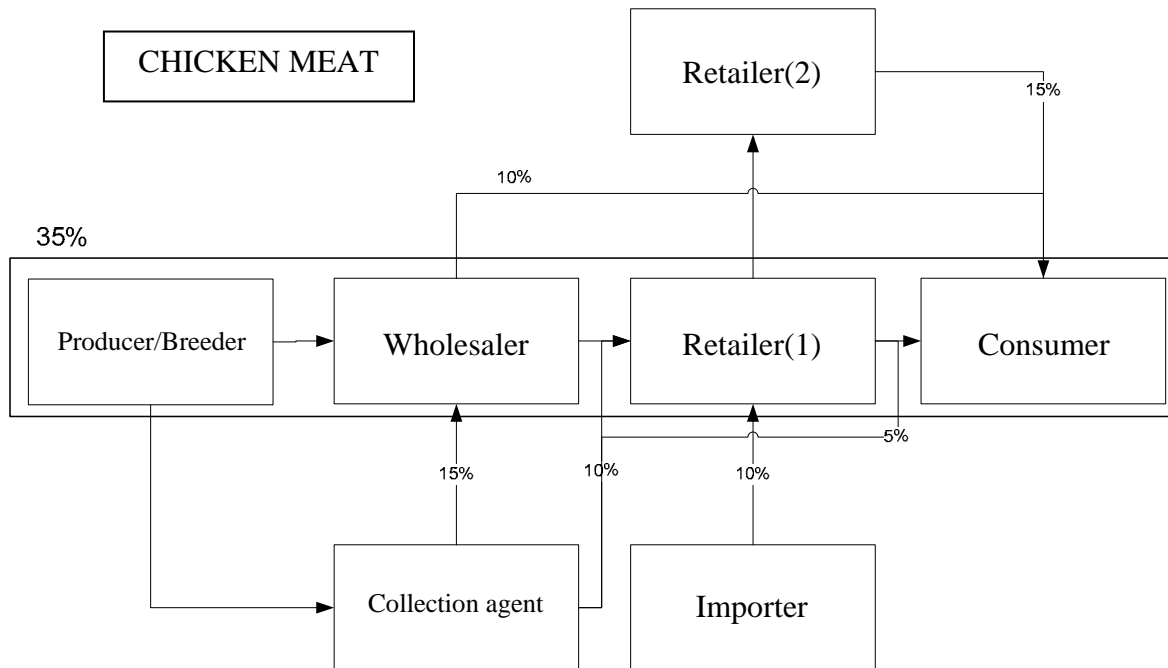
Based on the questionnaires, the respondents delivered answers as illustrated below:

**Exhibit 5  
Distribution Pattern of Chicken Commodity**

- Two levels channel, 10% : Breeder → Wholesaler
- Two levels channel, 5% : Breeder → Collection agent
- Two levels channel, 10% : Importer → Retailer
- Three levels channel, 35% : Breeder → Wholesaler → Retailer
- Three levels channel, 10% : Breeder → Collection agent → Retailer
- Four levels channel, 15% : Breeder → Collection agent → Wholesaler → Retailer
- Four levels channel, 15% : Breeder → Wholesaler → Retailer (1) → Retailer (2)

Source: Field research, processed

**Exhibit 6  
Distribution Pattern of Chicken Commodity (Improved)**



Source: Field research, processed

Exhibit 5 presents the predominant three levels channel distribution pattern from majority of respondents. To enhance the illustration of three levels distribution pattern, exhibit 5 has been improved with exhibit 6 below.

The featuring distribution patterns above are explained with the following description:

a) Two Levels Channel

Two levels channel consists of two sales intermediaries. In distribution channel of chicken, the pattern was found as follows:

*Pancur* Breeder → *Pancur* Market retailer → Consumers  
PT. Ciomas Adisatwa (broiler chicken farms in Bogor) → Batam importer → Major consumers (hotels, ships, restaurants)

*Setokok*, *Tembesi*, *Sei Beduk*, *Barelang* breeders → PT. SMS (Collection Agent) → Major consumers

#### **b) Three Levels Channel**

This research discovered the commonly known three levels channel pattern as follows:

*Setokok Barelang* Breeder (Batam) → TOS 3000 and *Bida Ayu* wholesalers → *Aviari, Jodoh, Sagulung, Piayu, perumahan* retailer → Consumers

Domestic (Jakarta, Batam) and foreign (Australia and Singapore) Producers → Batam importer → retailer in the market → Consumers

Domestic (Jakarta, Batam) and foreign (Australia and Singapore) Producers → Batam importer → supermarket → Consumers

*Setokok*, *Tembesi*, *Sei Beduk*, *Barelang* breeders → PT. SMS (Collection Agent) → all retailers → Consumers

*Setokok*, *Tembesi*, *Sei Beduk*, *Barelang* breeders → PT. SMS (Collection Agent) → wholesalers → Consumers.

Domestic (Jakarta) and foreign (Australia and Singapore) Producers → Batam importer → Major consumers (hotels, ships, restaurants)

*Barelang* Breeder → Nagoya Wholesalers → Major consumers (catering and *Ayam Penyet* Restaurants)

#### **c) Four Levels Channel**

*Setokok*, *Tembesi*, *Sei Beduk*, *Barelang* breeders → PT. SMS (Collection Agent) → wholesalers → all retailers → Consumers

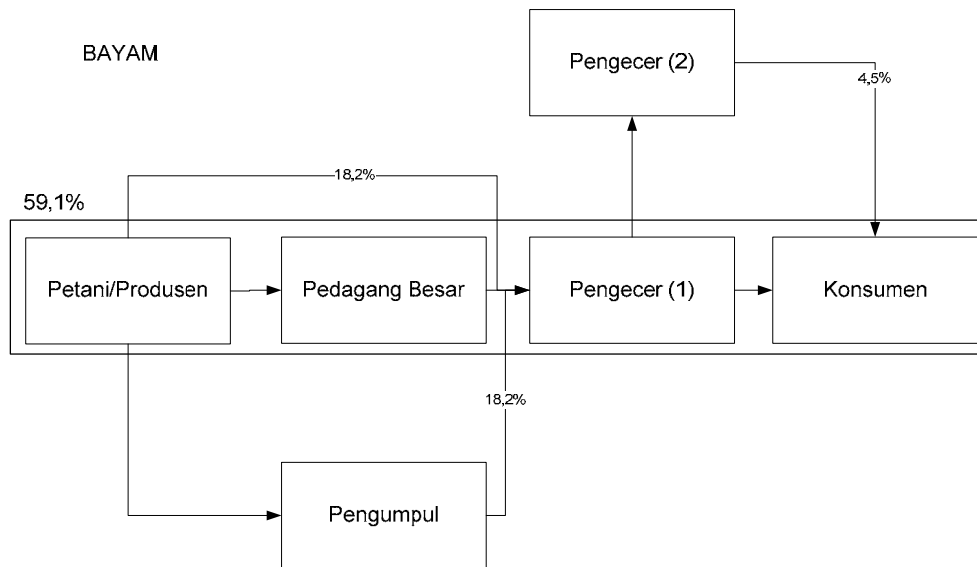
*Setokok Barelang* Breeder (Batam) → TOS 3000 and *Bida Ayu* wholesalers → *Aviari, Jodoh, Sagulung, Piayu* retailer → Home / small-sized retailers → Consumers

The prognosis for chicken meat consumption in Batam from KP2K mentioned that local breeders have been able to produce 5.04 tons of fresh chicken meat. On the other hand, there is 605.53 tons consumption of imported frozen chicken meat. This proved the domination of import frozen chicken meat over the local ones.

Back to exhibit 6, it shows that in general the distribution pattern of chicken meat is formed on the basis of the company's partnership with breeders. Then, from the breeder the chicken went to a distributor where finally it is distributed to retailer to reach consumers.

By employing the same method, the distribution pattern for mackerel fish and spinach are illustrated as follows:

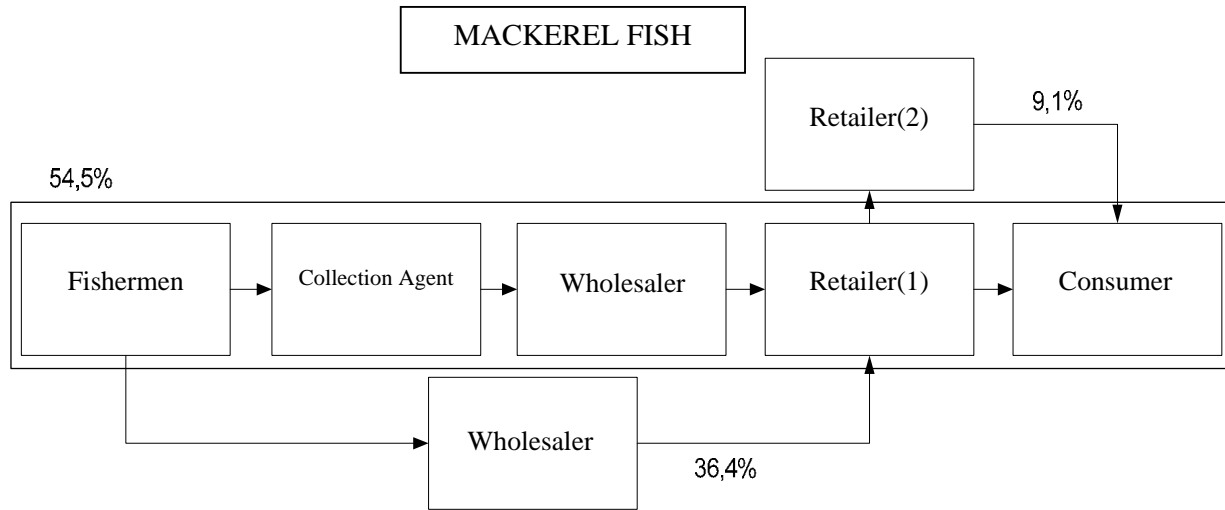
### **Exhibit 7 Distribution Pattern of Spinach Commodity**



Source: Field research, processed



**Exhibit 8**  
**Distribution Pattern of Mackerel Fish Commodity**



Source: Field research, processed

Fresh Spinach is usually marketed by local farmers through the wholesalers in Batam. Their locations are spreaded throughout the farming centers in Batam. Most farmers grow their crops in an illegally owned land as the bylaw No.2 Year 2004 regarding Spatial Planning and Regional Batam only provide *Sei Temiang* as legal agricultural site. The areas where they grow the crops are usually bare lands that are left unoccupied by its owner. Several wholesalers and retailers stock their spinach from *Tanjung Pinang* and *Bintan*. Supply from outside Batam is quite abundance that an excess in stock will lower its prices.

Fresh mackerel products are usually marketed by the local fishermen to collection agents. In fact, these collection agents/*tauke* have provided the farmers with initial capital. Unfortunately, it disadvantages the fishermen group as the collection agents determine the price for them (see table 11). Fisheries productions are located in *Galang*, *Belakang Padang*, *headdress*, and *Nongsa* (CBS, 2009).

**Price Setting Pattern**

This section discusses the costs affecting the price setting of commodities and their

implications towards the price movement on end-consumer. Cost control in production and distribution process is one way necessary to control inflation (cutting cost push inflation policy). Snow ball sampling technique is used in this research caused a time gap between data collection period of farmers, wholesalers, and retailers. Thus, there are differences between per day average purchase price and selling price for each distribution level.

Based on field price information from respondents, it is discovered that commonly applied method is the Mark-Up Pricing by calculating costs and added amount of mark-ups. In addition, Unit cost concept is used in calculating the production cost per category in which costs for each unit of product/service/classification are calculated by dividing total cost with total product sales.

**CHICKEN COMMODITY ANALYSIS**

In order to calculate the price setting of frozen chicken at the importer level, for example, importer “A” incurred a total transportation costs at Rp 2.000.000, - per month. Within a month importer “A” can distribute up to 112 tons of frozen chickens.

Thus, the unit cost of transporting the product of importer "A" is:

$$\text{Importer "A" transporting cost} = \frac{\text{Rp}2.000.000}{112.000\text{kg}} = \text{Rp}17,86/\text{kg}$$

While the transporting cost of importer "B" is at Rp 23.000.000, - with distribution capacity up to 50.000 tons per month. Thus,

$$\text{Importer "B" transporting cost} = \frac{\text{Rp}23.000.000}{50.000.000\text{kg}} = \text{Rp}0,46/\text{kg}$$

Unit costs presented in the table of price setting patterns are the mean value of prices from all respondents. For example, from importer "A" and "B" situation, the unit production costs per kg of frozen chicken meat is calculated as follows:

$$\text{Unit transporting costs per Kg} = \frac{\text{Rp}17,86/\text{kg} + \text{Rp}0,46/\text{kg}}{2} = \text{Rp}9,16/\text{kg}$$

The percentage of unit production cost is acquired by comparing the unit costs with total costs. For example, the percentage of transporting costs from above situation is:

$$\text{Percentage of transporting costs} = \frac{\text{Rp}9,16/\text{kg}}{\text{Rp}20,250/\text{kg}} = 0,045\%$$

In this research, the 'Kariyasa K and Sinaga B. (2003)' assumption is used to simplify the costs calculation, in which a single chicken can averagely produce approximately 0.87 kgs of chicken meat.

Thus, the price setting pattern for frozen chicken meat is described in the following table,

**Table 1**  
**Price Setting Costs of Frozen Chicken Commodity**

No	Price Setting Costs (Frozen Chicken)	Cost of Production	
		Rp / Kg	%
I	<b>Importer</b>		
	Purchase Price	19,750	97.5
	1. Depreciation	4	0.0
	2. Transportation	9	0.0
	3. Packaging	1	0.0
	4. Electricity	36	0.2
	5. Water	2	0.0
	6. Tax/retribution	0	0.0
	7. Unloading	13	0.1
	8. Profit	437	2.2
	Total Cost	20,250	100.0
II	<b>Wholesaler</b>		
	Purchase price	20,000	89.9
	1. Rent	129	0.6
	2. Electricity	50	0.2
	3. Water	17	0.1
	4. Display	38	0.2
	5. Other labor	375	1.7
	6. Profit	1,631	7.3
	Total Cost	22,240	100.0
III	<b>Retailer</b>		
	Purchase Price	20,857	89.0
	1. Rent	484	2.1
	2. Electricity	280	1.2
	3. Water	128	0.5
	4. Profit	1,676	7.2
	Total Cost	23,425	100.0

Source: Field research, processed

**Table 2**  
**Distribution of respondents of Chicken Commodity in Categories**  
**of Price determiners Parties**

Price Determiner Party	Respondent Category				Total (%)
	Retailer (%)	Wholesaler (%)	Importer (%)	Producer (%)	
Seller	100.0	100.0	100.0	0.0	81.3
Agreement	0.0	0.0	0.0	66.7	12.5
Buyer	0.0	0.0	0.0	0.0	0.0
Other (market price)	0.0	0.0	0.0	33.3	6.3
<b>Total</b>	100.0	100.0	100.0	100.0	100.0

Source: Field Research, 2009

**Table 3**  
**Distribution of respondents of Chicken Commodity in Categories**  
**of Selling Price determiners**

Selling Price Determiner	Respondent Category				Total (%)
	Retailer (%)	Wholesaler (%)	Importer (%)	Producer (%)	
Cost + Fixed profit	85.7	50.0	50.0	0.0	56.3
Cost + % profit	14.3	0.0	0.0	0.0	6.3
Highest Price	0.0	50.0	0.0	100.0	25.0
Government rules	0.0	0.0	0.0	0.0	0.0
Fixed profit	0.0	0.0	0.0	0.0	0.0
Other (market price)	0.0	0.0	50.0	0.0	12.5
<b>Total</b>	100.0	100.0	100.0	100.0	100.0

➤ **Importer Costs**

In general, the costs incurred by importers consist of purchase price, transporting costs, unloading costs, water and electricity costs, packaging costs, and etc. Most respondents shipped the commodity from Jakarta by sea using containers. Total frozen chicken meat could reach up to 50 tons per shipment. Of this amount, though, there are defects as they might decay during shipment which finally could add up a depreciation costs.

Importers set their own selling prices (see table 2). While the purchase price from its suppliers is also set by the importers or by the amount agreed of both parties. There are two ways an importer could set the commodity price from. First, by calculating production costs per unit then add up with the desired profit, or second, by adding up certain mark-ups (mark-up pricing). Both pricing methods are either based on current market price (see table 3) or following the general price method (going-rate pricing).

➤ **Wholesaler Costs**

Wholesalers play an important role in distributing the chicken commodity from importers to retailers or consumers. At the wholesale level, the average costs incurred is at Rp 22.240 per kg. This includes the costs of purchase price, rents, electricity, water, labor, and wholesalers' profit. The total purchase price of chicken meat at wholesale level is at Rp 20.000 or 89.9% of the total cost. Labor costs contribute at approximately 1.7% of the total cost (see Table 1 above for complete breakdown). At the wholesale level, the purchase price is determined by importers. However, wholesalers determine their own selling prices to retailers as well (see table 3).

➤ **Retailer Costs**

Retailers play an essential intermediary role to reach end-consumers (for public consumption). Table 4 and 5 reveals the average per kilogram of chicken meat unit costs at retailer level amounting Rp 23.425.

This includes average purchase price is at Rp 20.857/kilogram or about 89% of the total cost.

This study also attempted to discover the factors causing fluctuations in commodity price as illustrated by the following table:

**Table 4**  
**The Characteristic of respondents in Categories of Price Fluctuation**

Factors contributing to Price Fluctuation	Commodities							Total (%)
	Chicken	Spinach	Red chilli pepper	String bean	Kangkung/ water spinach	Mackerel fish	Tuna fish	
a. Weather	0.0	28.1	11.4	25.0	34.3	50.0	50.0	27.0
b. Demand	0.0	6.3	5.7	11.1	11.4	6.3	14.3	14.0
c. Purchase Price	11.1	21.9	31.4	13.9	17.1	18.8	21.4	20.9
d. Supply quantity	50.0	21.9	22.9	25.0	22.9	25.0	14.3	20.4
e. Cost of Production	11.1	6.3	2.9	5.6	2.9	0.0	0.0	4.4
f. Oil price	16.7	15.6	22.9	19.4	11.4	0.0	0.0	12.9
g. Other	11.1	0.0	2.9	0.0	0.0	0.0	0.0	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Research, 2009

Table 4 presents the fact that the fluctuation of supply quantity in the market contributes the most (50%) to cause the price fluctuation of chicken commodity. Percentage of price increase (added value) from producer to retailer is calculated as follows:

$$\begin{aligned} & \text{Percentage of price increase} \\ & = \frac{\text{retailer price} - \text{importer price}}{\text{importer price}} \\ & = \frac{23.425 - 20.250}{20.250} = 15.68\% \end{aligned}$$

Somehow, the importer also tends to attempt to sell directly to retailer (see table 5) which it will reduce the percentage of price increase.

**Table 5**  
**Distribution of Respondents in Categories of Chicken Sales Channel**

Respondents sells to	Respondent Category				Total (%)
	Retailer (%)	Wholesaler (%)	Importer (%)	Producer (%)	
Individual	100.0	20.0	25.0	0.0	51.9
Cooperation/ <i>Koperasi</i>	0.0	0.0	0.0	0.0	0.0
Retailer	0.0	80.0	25.0	33.3	29.4
Supermarket	0.0	0.0	25.0	0.0	3.1
Exporter	0.0	0.0	0.0	0.0	0.0
Wholesaler	0.0	0.0	0.0	0.0	0.0
Collection Agents	0.0	0.0	0.0	66.7	12.5
Other (major consumer)	0.0	0.0	25.0	0.0	3.1
<b>Total</b>	100.0	100.0	100.0	100.0	100.0

#### SPINACH COMMODITY ANALYSIS

By applying similar calculation method, price setting pattern of spinach can be illustrated in table 6 below:

**Table 6**  
**Price Settings Costs of Spinach Commodity**

No	Price Setting Costs (Spinach)	Cost of Production	
		Rp / Kg	%
I	<b>Farmer</b>		
	1. Seeds	87	2.0
	2. Fertilizer	16	0.4
	3. Insecticide	36	0.8
	4. Profit/farmer's wage	4,130	96.8
	Total Cost	4,268	100.0
II	<b>Wholesaler</b>		
	Purchase price	3,000	53.0
	1. Depreciation	1,000	17.7
	2. Transportation	521	9.2
	3. Other labor	397	7.0
	4. Security	35	0.6
	5. Parking	13	0.2
	6. Profit	689	12.2
	Total Cost	5,656	100.0
III	<b>Retailer</b>		
	Purchase Price	5,091	69.8
	1. Transportation	241	3.3
	2. Rent	160	2.2
	3. Electricity	29	0.4
	4. Water	15	0.2
	5. Other labor	150	2.1
	6. Cleaning service	16	0.2
	7. Security	23	0.3
	8. Profit	1,572	21.5
	Total Cost	7,296	100.0

Source: Field Research, 2009

➤ Farmer Costs

In general, farmer costs include the cost of seeds purchase, fertilizer, insecticide, farmer's wages, transporting costs, and etc. There is also initial capital outflow when farmers must prepare the land for crops and build pipes for irrigation. However, this initial capital cost will not be discussed in

this study. Farmers determine the selling price based on an agreement with the buyer (50%) or sometimes determined by the buyers (see table 7). The price setting by the buyer is considering the current and/or the highest market price (see table 8).

**Table 7**  
**Distribution of respondents of Spinach Commodity in Categories of Price determiners Parties**

Price Determiner Party	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Seller	100.0	66.7	0.0	81.3
Agreement	0.0	33.3	50.0	12.5
Buyer	0.0	0.0	50.0	6.3
Other (market price)	0.0	0.0	0.0	0
<b>Total</b>	100.0	100.0	100.0	100.0

Source: Field Research, 2009

**Table 8**  
**Distribution of respondents of Spinach Commodity in Categories**  
**of Selling Price determiners**

Selling Price Determiner	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Cost + Fixed profit	41.7	0.0	0.0	28.6
Cost + % profit	0.0	0.0	0.0	0.0
Highest Price	41.7	66.7	50.0	47.4
Government rules	0.0	0.0	0.0	0.0
Fixed profit	16.7	33.3	0.0	17.7
Other (market price)	0.0	0.0	50.0	6.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Research, processed

➤ Wholesaler Costs

At the wholesale level, the average cost to acquire each kilogram of spinach is at Rp 5.656. This includes the costs of purchase, transporting costs, depreciation costs, other labor wages, security costs, parking costs and profits. The purchase price of spinach is at Rp3.000 or 53.0% of the total cost. Other costs including depreciation costs, transporting costs and other labor wages contribute about 17.7%, 9.2% and 7.0% respectively of the total cost. (See table 6).

➤ Retailer Costs

At retailer level, table 5 reveals that the average cost per kilogram of spinach is at Rp

7.296. Average purchase price is at Rp 5.091/kg or approximately 69.8% of the total cost.

Percentage of price increase (added value) from producer to retailer is calculated as follows:

$$\begin{aligned} \text{Percentage of price increase} &= \frac{\text{retailer price} - \text{farmer price}}{\text{farmer price}} \\ &= \frac{7.296 - 4.268}{4.268} = 70.95\% \end{aligned}$$

Percentage of price increase of spinach is higher than that of chicken commodity. This is due to longer distribution channels of spinach (see exhibit 7).

**Table 9**  
**Distribution of Respondents in Categories of Spinach Sales Channel**

Respondents sells to	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Individual	61.1	20.0	0.0	45.8
Cooperation/ <i>Koperasi</i>	0.0	0.0	0.0	0.0
Retailer	22.2	60.0	50.0	32.8
Supermarket	0.0	0.0	0.0	3.1
Exporter	0.0	0.0	0.0	0.0
Wholesaler	0.0	0.0	0.0	0.0
Collection Agents	0.0	0.0	50.0	6.3
Other (major consumer)	16.7	20.0	0.0	15.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Research, 2009

**MACKEREL FISH ANALYSIS**

Table 10 below presents the price setting of mackerel fish commodity:

**Table 10**  
**Price Setting Costs of Mackerel Fish Commodity**

No	Price Setting Costs (Mackerel Fish)	Cost of Production	
		Rp / Kg	%
I	<b>Fishermen</b> Selling Price	14,667	100.0
II	<b>Wholesaler</b> Purchase price	18,000	97.3
	1. Depreciation	176	1.0
	2. Transportation	108	0.6
	3. Other labor	215	1.2
	Total Cost	18,500	100.0
III	<b>Retailer</b> Purchase Price	22,000	86.6
	1. Transportation	69	0.3
	2. Rent	167	0.7
	3. Electricity	83	0.3
	4. Water	3,079	12.1
	Total Cost	25,399	100.0

Source: Field Research, 2009

➤ **Fishermen Costs**  
Instead of bred in fish farm, generally most of mackerel fish in Batam is extracted from the natural sea. During years 1996 - 2007, fish farm breeding could produce 207 tons/year, while sea extraction could go up to 16,235 tons/year or just as much as 1.2% of total production per year. Nevertheless, from the aspect of value, fish farm breeding could contribute up to 24.4% of the total value of production per year, amounting at 151 billion rupiah/year compared to sea extraction production at 467 billion rupiah / year. In addition, there was also growing number of fish farm breeding as it grew 26%/year, whereas sea extraction activities could grow only 11%/year (processed data from BPS, 2008). These figures were higher than the growth of national fishery production which

was at 5.70% (Ocean, 2009). In Batam, fish farm breeding are facing the risk of premature death, raw material price increase, declining local demand, stagnant export demand and stagnant price.

Respondents are fishermen who extract fish commodity from the sea. It is difficult for them to detail the costs they are incurred of their activity. However, in general, these fishermen were provided with initial capital from the *tauke*/collection agents. Fishermen often complained about the difficulty to access source of funding from banks, thus they have no other option but to depend and follow the *tauke* rules, particularly in pricing the fish. Table 10 presents the data that fishermen sell their fish product at Rp 14.667, - per kg.

**Table 11**  
**Distribution of respondents of Mackerel Fish Commodity in Categories of Price determiners Parties**

Price Determiner Party	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Seller	100.0	0.0	0.0	45.5
Agreement	0.0	0.0	33.3	9.1
Buyer	0.0	0.0	66.7	18.2
Other (market price)	0.0	100.0	0.0	27.3
<b>Total</b>	100.0	100.0	100.0	100.0

Source: Field Research, 2009

**Table 12**  
**Distribution of respondents of Spinach Commodity in Categories of Selling Price determiners**

Selling Price Determiner	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Cost + Fixed profit	80.0	100.0	33.3	72.7
Cost + % profit	0.0	0.0	0.0	0.0
Highest Price	20.0	0.0	0.0	9.1
Government rules	0.0	0.0	0.0	0.0
Fixed profit	0.0	0.0	0.0	0.0
Other (market price)	0.0	0.0	66.7	18.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Research, processed

#### ➤ Wholesaler Costs

At the wholesale level, the average cost to acquire each kilogram of mackerel fish is at Rp 18.500. This includes the costs of fish purchase, transporting costs, other labor costs, and profit. The purchase price of mackerel fish is at Rp 18.000 or 97.3% of the total cost. Other costs including the transporting cost, other labor costs, and profits which contribute to 1.0%, 0.6% and 1.2% respectively towards the total costs (see table 10).

#### ➤ Retailer Costs

At the retailer level, Table 8 reveals that per kilogram, the mackerel fish averagely costs Rp 25.399. While, the average purchase

price is at Rp22.000/kg or approximately 86.6% of the total cost. Percentage of price increase (added value) from producer to retailer is calculated as follows:

$$\begin{aligned} \text{Percentage of price increase} &= \frac{\text{retailer price} - \text{fishermen price}}{\text{fishermen price}} \\ &= \frac{25.399 - 14.667}{14.667} = 73.13\% \end{aligned}$$

Percentage of price increase of mackerel fish is higher than those of chicken and spinach commodity. This is due to longer distribution channels of spinach (see exhibit 8). The tendency of fishermen to sell to collection agents (75%) according to the table 13 below will cause the distribution channels of mackerel fish to become longer than other commodities.

**Table 13**  
**Distribution of Respondents in Categories of Spinach Sales Channel**

Respondents sells to	Respondent Category			Total (%)
	Retailer (%)	Wholesaler (%)	Producer (%)	
Individual	83.3	0.0	25.0	44.7
Cooperation/ <i>Koperasi</i>	0.0	0.0	0.0	0.0
Retailer	16.7	100.0	0.0	34.8
Supermarket	0.0	0.0	0.0	0.0
Exporter	0.0	0.0	0.0	0.0
Wholesaler	0.0	0.0	0.0	0.0
Collection Agents	0.0	0.0	75.0	20.5
Other (major consumer)	0.0	0.0	0.0	0.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Field Research, processed



Based on table 4, fluctuation on fish price is driven by the weather condition. Thus, the average fishermen income is quite low at Rp 1.340.314, -/month, but it will vary according to season on going (LIPI-Institute for Marine Aquaculture - Coremap CRITC, 2005).

## CONCLUSIONS

Based on the field research and reviews of the result, this study concludes the following points:

### a. Commodities Distribution Patterns

► Commodity Mackerel fish relatively has the longest distribution channel compared to the other two commodities in this study. Before finally reach end-consumers, fishery products are distributed through series of intermediaries. 54.5 percent of respondents believed that mackerel fish involved four level distribution channel.

► The majority of respondents (59.1%) believed that vegetables product such as spinach, string bean, and *kangkung*/water spinach are distributed through three levels of distribution channel involving wholesalers and retailers. Few others responded by showing the pattern of two levels distribution channels. While the rest stated the four levels pattern with the involvement of home retailers in addition to the market retailers.

► There are two types of distribution line of chicken commodity in Batam which are frozen chicken meat and fresh chicken meat. In this study, distribution channel of frozen chicken meat is discussed involving the role of importers and retailers.

### b. Price Setting Patterns

► The commodity price moves along as it is driven by each distribution level the commodity passes through. Differences in distribution patterns cause the commodity price to differ despite the exact same products. The longer the distribution chain, the higher the percentages of price increase in such commodity; vice versa.

► Factors affecting the fluctuation of commodities prices are the weather

condition, production costs, and the supply quantity of commodities in the market.

► In all three of commodities examined above, averagely less than 33.3% of respondent at the producer level were able to take role in setting the selling price towards the wholesalers.

In addition, this study suggests the following implications and recommendations:

- Local government can take part in shortening the distribution channels, particularly towards the fishery commodity which relatively had the longest distribution channel, by encouraging banks and other financial institutions to provide financing and source of fund to fishermen so that fishermen can be more independent.
- *Bank Indonesia*, as a central bank, also can take part in the socialization of credit risk in the fishery sectors.
- Local government is expected to strive hard to maintain sufficient stocks of commodities in order to maintain price stability.

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