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Marketing Analysis of Local Chicken Egg (*Gallus Domesticus*) in Pematangsiantar, North Sumatera

Rendel Herbert Ginting, Armyn Hakim Daulay, Nevy Diana Hanafi

Animal Husbandry Study Program, Faculty of Agriculture, Universitas Sumatera Utara, Indonesia

Abstract. The purposes of this research was to analyze the marketing system and marketing channel of chicken eggs and to analyze marketing efficiency based on marketing margin, price share and profit ratio of chicken egg cost in Pematangsiantar Municipality of Simalungun District. This research was conducted for two months, from July to August 2017. The methods used in data collection were: sampling of breeders and other marketing institutions selected by snowball sampling technique and data collection methods was done by interviewing techniques using questionnaire. Data analysis included: marketing costs, marketing margin, farmer share and profit cost B/C ratio of each marketing channel. The results of this study indicated that there were four marketing channels. The marketing margin on the Channel II showed the smallest cost margin and the largest profit margin so that it showed the largest cost-benefit ratio. The largest farmer share was obtained on the Channel IV but this channel used only the retailers as an intermediate channel (one level) and relatively few exchanged egg. So it was concluded that the Channel II was the most efficient channel becauseof the smallest cost and that the profits were spread evenly among all the marketing institutions that play a role. The need for chicken eggs in Pematangsiantar Municipality was supplied from outside the city (63.33%) and filled by breeders from within the city (36.66%).

Keywords: local chicken egg, marketing channel, marketing efficiency

1. Introduction

Egg is one of the poultry farm products that has a complete nutrition composition and easy to digest. Egg is also one source of animal protein besides meat, fish and milk. [1] suggests that egg is highly nutritious and relatively inexpensive compared to other protein sources, making them accessible to the community. The amount of calories, protein and fat per 100 grams of eaten part of the egg are: 162 cal of calories, 12.8 cal of fat and 11.5 cal of protein. Sources of the growth of livestock chicken breeding, including eggs, can be seen from both demand and supply sides. On the demand side, the demand of chicken eggs increased by the increase of population, the increase of income followed by awareness in consuming healthy food, as well as the growing people's appetite for the quality of food. This can be seen from the development of

*Corresponding author at: Animal Husbandry Study Program, Faculty of Agriculture, Universitas Sumatera Utara, Jl. Prof. Sofyan No. 3, Medan 20155, Indonesia

E-mail address: uchihaginting@gmail.com

baking, bread, herbal and other food industries. The rate of consumption of the eggs can be seen from the increase in percentage of population per capita expenditure by type of food to eggs and milk in 2012 by 5.74% to 6.35% in 2014.

On the supply side, the supply of chicken egg growing source is illustrated by the number of chicken population, productivity and competitiveness of chicken eggs. This is related closely to the characteristics of chicken farming livestock. The needs of eggs in the country cannot be met by domestic breeders. Indonesia still imports 1250 tons of eggs and has no exports. The success of livestock business depends on the breeder in terms of management and the size of production costs, and also depends on the marketing of the products. The cultivation of chicken eggs in this area has different levels of business scale. When the business scale is different than the chicken breeders will choose different marketing channels. The livestock marketing system is a unity between the marketing agencies that perform marketing functions to facilitate the flow of production from producer to consumer.

[2] states that the key to the success of the domestic market development is the innovation and improvement of domestic marketing efficiency which is reducing marketing costs and strengthening existing organizations. Marketing efficiency can be made and operated through strong vertical and horizontal integration and an increase in the added value ratio created at a lower cost. The problems faced were how to create a marketing system and handling livestock commodities that were in line with the improvement of prosperity of marketers involved in it. Furthermore, the short length of marketing channels will affect the benefits of market participants or institutions involved [3]. Therefore chicken egg marketing system was needed to be studied by identifying the establishment of marketing agency mechanisms, channel patterns, marketing functions and market structure.

The research objectives were to analyze the marketing system and marketing channel of chicken eggs in municipality of Pematangsiantar and to analyze marketing efficiency based on marketing margin, price share, and cost benefit ratio.

2. Method

The research was conducted in municipality of Pematangsiantar in Simalungun District from July to August 2017. Methods of data collection are (1). Method of with drawal of respondents. Samples of farmers and marketing institutions such as collecting traders, wholesalers and retailers were chosen by Snowball sampling technique that followed the channel of chicken eggs from breeders to retailers, (2). Interview method using questionnaire techniques. Questionnaire techniques is a way of collecting data by directly interviewing the respondents to collect information and data about the marketing and financial value of chicken eggs.

1. The distribution pattern of egg marketing was analyzed by following the marketing path of chicken egg from producer to consumer, then explained it using descriptive analysis.

2. According to [4], [5], marketing margin can be calculated using the formula Equation (1):

$$Mp = Pr - Pf \qquad (1)$$

Note:

MP : Marketing margin (Rp/kg)

Pr : Prices at consumer level (Rp/kg)

Pf : Price at farmer level (Rp/kg)

3. Analysis share price received by manufacturer. According to [6], the share price received by manufacturers can calculated using the formula Equation (2):

$$Spf = \frac{Pf}{Pr} \ x \ 100\% \qquad (2)$$

Note:

Spf : Farmer's Share (%)

Pr : Prices at consumer level (Rp/kg)

Pf : Price at farmer level (Rp/kg)

4. Analysis of share of marketing and share costs profit marketing agencies. According to [6], the share of marketing costs and profit share of marketing institutions can be:

$$Ski = \frac{Kpi}{(Pr - P \ )} \ x \ 100\% \qquad (3)$$

$$Sbi = \frac{Kbi}{(Pr - \ )} \ x \ 100\% \qquad (4)$$

Note:

Ski : Share profit i marketing agency (i = 1) (Rp/kg)

Kpi : The profit of i marketing agency (Rp/kg)

Sbi : Share marketing cost to-i (Rp/kg)

Kpi : i marketing costs (Rp/kg)

Pr : Prices at consumer level (Rp/kg)

Pf : Price at producer level (Rp/kg)

The benchmark used to measure marketing efficiency is by looking at the profit-share ratio of each marketing agency involved in the marketing process compared to the marketing costs of each marketing agency involved with the following criteria:

1. Marketing margin

   Marketing is said to be efficient if the marketing margin of a breeder is greater than the marketing margin received by the marketing agency as a whole, and vice versa.

2. Based on cost share and profit share

   Marketing is efficient if profit share > cost share, and vice versa.

3. Based on farmer's share

   Marketing is said to be efficient if the farmer's share is> 50%. The value of farmer's share has a negative relationship with the marketing margin, means that the higher the marketing margin, the lower the farmer's share

4. Cost Benefit Ratio

   Marketing is said to be efficient if the cost gain ratio is> 1, and vice versa.

3. Results and Discussion

3.1. Marketing Channel

In marketing activities there is a marketing agency that is an intermediary institution that connects producers to consumers in delivering the production:

a. Marketing Channel Scheme I

The breeders in this channel (Figure.1) came from Pantai Labu in Deli Serdang District which performed activities on a relatively large area. The first trader who plays the role was the collecting merchant who collected the chicken eggs and then sold them to the wholesalers. Large traders sent eggs to Pematangsiantar and sold them to wholesale traders. The wholesaler sold the eggs to the retailer and the retailer then distributed the eggs to the consumer.
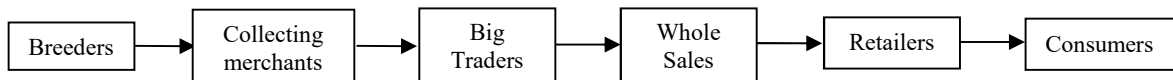
| Breeders | → | Collecting merchants | → | Big Traders | → | Whole Sales | → | Retailers | → | Consumers |

Figure 1. Marketing Channel Scheme I

b. Marketing Channel Scheme II

Based on marketing channel scheme II (Figure.2), the second marketing channel included three levels marketing due to the marketing of eggs from breeders to consumers was through three marketing agencies. In one day the volume of chicken eggs distributed per week was as many as 19200 eggs on big traders, 3,300 eggs on wholesalers and 1,300 eggs were marketed by retailers to consumers. Based on the calculation, chicken eggs sent to Pematangsiantar was equal to 63.33% of all egg production that marketed from marketing channels I and II.
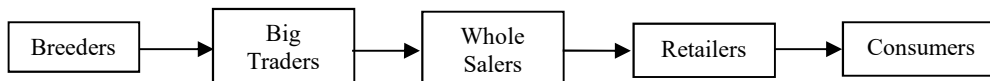
| Breeders | → | Big Traders | → | Whole Salers | → | Retailers | → | Consumers |

Figure 2. Marketing Channel Scheme II

c. Marketing Channel Scheme III

Based on the figure 3, the marketing channels was called two levels marketing because the distribution of chicken eggs from breeders to consumers was through two marketing institutions, namely wholesalers and retailers. Breeders came from Karangsari area and sold the

eggs directly to wholesalers. The reason that farmers considered to choose a two-tier marketing channel was because the distance from farm to market was not too far away. They transported eggs by motorbike or becak machine to sell to wholesalers. The volume of chicken eggs purchased by the wholesalers on this channel was 7,000 eggs per week.
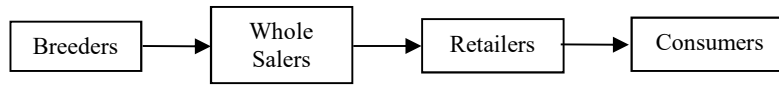

Figure 3. Marketing Channel Scheme III

d. Marketing Channel IV

This type of marketing was called one level marketing (Figure 4). Egg breeders in this channel produce eggs in small quantities. The egg channel distributors in this fourth channel are from farmers to retailers (in traditional markets and street vendors) located not far from the location of the farm.
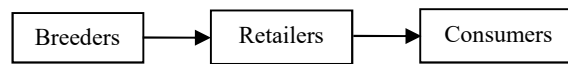

Figure 4. Marketing Channel Scheme IV

3.2. Marketing Margin

Marketing margin is the price difference received by chicken breeders and a price paid by consumers. The marketing margin consists of the cost margin of each marketing agency and the profit margin earned by the marketing agency. Through the calculation of marketing margins on each marketing channel, the distribution of costs and benefits of each market participants will be obtained. Marketing costs of each agency on Channel I can be showed in Table.1.

Table 1. Marketing Costs of Each Agency on Channel I

Cost of marketing channel I			
Type	**Number of eggs (grain/month)**	**Marketing cost (Rp)**	**Average cost (Rp/egg)**
Breeders (2,200 items)	8,800		
Carton tray @ 400		117,333	
Rope @ 7,000		28,000	
Total		145,333	16.50
Collector dealer (11,200 Items)	44,800		
1. Freight charges			
- Gasoline		40,000	
- Driver		480,000	
- Consumption		40,000	
2. Commission costs		48,000	
3. Labor		240,000	
Total		848,000	18.90
Large merchants (19,500 Items)	78,000		
1. Freight charges			
- Gasoline		120,000	
- Driver		480,000	
- Consumption		80,000	
2. Labor (2 persons)		480,000	
Total		1,160,000	14.90

Cost of marketing channel I			
Type	**Number of eggs (grain/month)**	**Marketing cost (Rp)**	**Average cost (Rp/egg)**
Wholesalers (7,500 items)	30,000		
1. Packing cost/Manpower		200,000	
2. Levy fees		40,000	
3. Sorting fee		40,000	
4. Loading and unloading costs		20,000	
5. Rental fees place		120,000	
Total		420,000	14.00
Merchant dealer (500 Items)	2,000		
1. Levy fees		32,000	
2. Place rental fees		80,000	
3. Packing cost		40,000	
Total		152,000	76.00
Total marketing cost		2,305,333	140.30

In marketing channel I the biggest marketing cost was borne by big traders because big traders transported eggs out of town so the freight cost was bigger. The second largest was the marketing costs of the collecting merchants because they had to purchase eggs on small farmers. The smallest marketing cost was found in the retailers, that was Rp152.000.

On channel II (Table 2.) breeders needed transportation costs to deliver eggs to wholesalers. Furthermore wholesalers sent eggs from Pantai Labu to Pematangsiantar with transportation cost of Rp824,000 and the number of eggs marketed was 76,800 eggs. Total marketing cost for marketing channel II was Rp1,976,000 and the cost per item was Rp105.

Table 2. Cost of Local Chicken Egg Marketing Issued by Each Marketing Institutions on Marketing Channel II

Cost of marketing channel II			
Type	**Number of eggs (grain / month)**	**Marketing cost (Rp)**	**Average cost (Rp/Item)**
Breeders (6,600 items)	26,400		
1. Freight charges		240,000	
2. Carton tray		264,000	
Total		504,000	19.09
Large traders (19,200 Item)	76,800		
1. Freight charges			
- Gasoline		160,000	
- Driver		480,000	
- Consumption		80,000	
2. Levy fees		16,000	
3. Commission costs		8,000	
4. Labor		80,000	
Total		824,000	10.70
Wholesalers (3,300 items)	13,200		
1. Packing cost		200,000	
2. Levy fees		40,000	
3. Sorting fee		40,000	
4. Loading and unloading costs		20,000	
5. Rental fees place		120,000	
Total		420,000	31.80

Cost of marketing channel II			
Type	**Number of eggs (grain / month)**	**Marketing cost (Rp)**	**Average cost (Rp/Item)**
Merchant dealer (1,300 Items)	5,200		
1. Levy fees		20,000	
2. Place rental fees		80,000	
3. Packing cost		80,000	
4. Plastic cost and rope		48,000	
Total		228,000	43.80
Total marketing cost		1,976,000	105.50

On marketing channel III in Table 3, breeder in Karangsari brought eggs to wholesalers in Pematangsiantar then wholesalers sold eggs to retailers. The total cost of marketing was Rp296,000 and the sale amount was 28,000 eggs, the average cost per egg was Rp11. Total marketing cost of marketing channel III was Rp630,800 with total average marketing cost was Rp116.

Table 3. Cost of Local Chicken Egg Marketing Issued by Each Marketing Institutions on Marketing Channels III

Channel cost marketing III			
Type	**Number of eggs (item / month)**	**Marketing cost (Rp)**	**Average cost (Rp / grain)**
Breeders (1,100 items)	4,400		
1. Freight charges		120,000	
2. The cost of cardboard tray and plastic rope		58,800	
Total		178,800	40.6
Wholesaler (7,000 Items)	28,000		
1. Packing cost		40,000	
2. Levy fees		40,000	
3. Sorting fee		20,000	
4. Cost of loading/unloading/manpower		96,000	
5. Rental fees place		80,000	
6. Freight charges		20,000	
Total		296,000	10.6
Merchant dealer (600 items)	2,400		
1. Levy fees		20,000	
2. Place rental fees		56,000	
3. Cost of packaging (rope, plastic, rice scale)		40,000	
4. Packing cost		40,000	
Total		156,000	65
Total marketing cost		630,800	116.5

In marketing channel IV (Table 4), the retailer was divided into two types. The eggs from farmers were brought to retailers in traditional markets and to modern retailers. However, at the time of the research, some retailers in the modern retail market did not sell chicken eggs, although in modern retail stores chicken eggs were usually available in small quantities. Total marketing cost was Rp81,000 and the total average cost of marketing per egg was Rp122

Table 4. Cost of Local Chicken Egg Marketing Issued by Each Marketing Institution on Marketing Channel IV

Traditional channel IV marketing charges			
Type	Number of eggs (item/month)	Marketing cost (Rp)	Average cost (Rp/grain)
Breeders (500 items)	2,000		
1. Freight charges		100,000	
2. Cart package @ 300		36,000	
3. Labor costs		40,000	
Total		176,000	88.00
Merchant dealer (1,100 items)	4,400		
1. Rental fees place		80,000	
2. Packaging cost (rope, plastic bag and husk ash)		48,000	
3. Levy fees		20,000	
Total		148,000	33.64
Total marketing cost		324,000	121.64

The biggest marketing margin was in the marketing channel I, that was Rp600. This was because channel I was the longest chain among the existing distribution channels and the consumers were not residents of Pematangsiantar Municipality only, so the retailers sold the commodity with a considerable high price. The marketing of eggs in Lubuk Pakam was considered potential because of its huge market and higher selling price. The smallest marketing margin was found in marketing channel IV which was IDR 200. This was due to the destination of marketing areas was solely to traditional markets and small markets in the Municipality of Pematangsiantar and Kisaran. The retailers sold eggs with a fairly low margin in accordance with the cost incurred and always kept the quality so the profit was not visible. In marketing channel I, II, III, and IV, the marketing margin was determined by the distribution distance and the short length of the marketing chain.

Tabel 5. Marketing Margin

Description	Marketing channel									
	1		2		3		4a		4b	
	Value (Rp/item)	%	Value (Rp/item)	%	Value (Rp/item)	%	Value (Rp/item)	%	Value (Rp/item)	%
Breeders										
Selling price	1,450.00	70.73	1,500.00	75.00	1,450.00	74.36	1,800.00	90.00	1,950.00	92.86
Marketing Cost	16.50	0.80	19.00	0.95	40.60	2.08	88.00	4.40	23.30	1.11
Collector										
Dealer										
Purchase price	1,450.00	70.73								
Marketing Cost	18.90	0.92								
Advantages	81.10	3.96								
Selling price	1,550.00	75.61								
Margin	100.00	4.88								
Wholesalers										
Purchase price	1,550.00	75.61	1,500.00	75.00						
Marketing Cost	14.90	0.73	10.70	0.54						
Advantages	185.10	9.03	189.30	9.47						
Selling price	1,750.00	85.37	1,700.00	85.00						
Margin	200.00	9.76	200.00	10.00						
Wholesalers										
Purchase price	1,750.00	85.37	1,700.00	85.00	1,450.00	74.36				
Marketing Cost	14.00	0.68	31.80	1.59	10.60	0.54				
Advantages	111.00	5.41	118.30	5.92	239.40	12.28				
Selling price	1,875.00	91.46	1,850.00	92.50	1,700.00	87.18				
Margin	125.00	6.10	150.00	7.50	250.00	12.82				

Merchant Dealer

Purchase price	1,875.00	91.46	1,850.00	92.50	1,700.00	87.18	1,800.00	90.00	1,950.00	92.86
Marketing Cost	76.00	3.71	43.80	2.19	65.00	3.33	33.60	1.68	40.00	1.90
Advantages	99.00	4.82	106.20	5.31	185.00	9.49	166.40	8.32	110.00	5.24
Selling price	2,050.00	100.00	2,000.00	100.00	1,950.00	100.00	2,000.00	100.00	2,100.00	100.00
Margin	175.00	8.54	150.00	7.50	250.00	12.82	200.00	10.00	150.00	7.14
Total Marketing cost	140.30	6.84	105.30	5.27	116.20	5.96	121.60	6.08	63.30	3.01
Total Profits	476.20	23.23	413.80	20.69	424.40	21.76	166.40	8.32	110.00	5.24
Total Margin	600.00	29.27	500.00	25.00	500.00	25.64	200.00	10.00	150.00	7.14
R / C Ratio	3.40		3.93		2.96		1.37		1.74	

In the four existing marketing channels in Pematangsiantar Municipality the largest cost was borne by the marketing channel I, that was IDR 140. This was because of the long distribution distances. Although the chain of marketing was the longest but the eggs in this channel were of better packaging so they lasted longer and were not destroyed on the way. While the smallest cost was in the marketing channel II, that was IDR 105, because at this point the distances were close enough to the research location and the marketing chain was quite short. Meanwhile, the costs borne by the marketing channels III and IV amounted to IDR 116 and IDR 121, respectively, represented the total cost between Channel I and II and was the shortest marketing chain.

The biggest marketing margin was in the marketing channel I, that was IDR 476, because it was the longest chain of marketing and the consumers were not only local residents so that traders sold their commodities at a considerable high price. The smallest profit was found in marketing channel IV, that was IDR 166.This was because the number of commodities distributed on this channel was small, although the selling price given to consumers was quite high. In addition, in this channel the chicken eggs were sold along with other commodities so that the absorption of the market was relatively smaller.

3.3. Farmer's Share

The amount of the accepted part of the chicken breeder can be seen in Table 6.

Table 6. Farmer's Share Analysis on Local Chicken Marketing Channel in Pematangsiantar Municipality

Marketing channel	Price at Farmer Level (Rp/grain)	Price at Consumer Level (RP/Item)	Farmer's Share (%)
I	1,450	2,050	70.73
II	1,500	2,000	75.00
III	1,450	1,950	74.35
IVa	1,800	2,000	90.00
IVb	1,950	2,100	92.80

Farmer's share was highest on the marketing channel IV, that was 92.8 percent, meaning that producers (farmers) received a price of 92.8 percent of the price paid by consumers. In addition, marketing channel IV derived the smallest total marketing margin. Marketing channel II and III respectively provided a share price for farmers 75 percent and 74.35 percent of the price paid by

consumers. Marketing channel I gave the price part for the breeder with a lowest share. In general, the price received by farmers in the analysis of chicken egg marketing was quite high.

3.4. Profit and Cost Ratio

The profit cost ratio in chicken eggs marketing in Pematangsiantar can be seen in Table 7. In the channel I total cost per egg was equal to 123.8. The largest cost was borne by the retailer; that was equal to Rp76/egg. The lowest marketing cost was borne by the wholesaler, that was Rp14/egg. The highest profit was gained by big traders, that was IDR 185/egg, while the smallest profit obtained by collecting traders, that was equal to Rp81/egg.

On channel II the total cost was Rp86.3/egg. The highest marketing cost was borne by the retailer of Rp43.8/grain, while the lowest marketing cost was borne by the wholesalers of Rp10.7/egg. The largest profit was obtained by big trader that was equal to IDR 189/egg, while the smallest profit was obtained by the wholesaler that was equal to Rp118,2/egg.

Table 7. Profit to Cost Ratio Analysis on Local Chicken Egg Marketing Institutionsin Pematangsiantar

Marketing Institution	Profit (Rp/egg)	Cost (IDR/egg)	π/C
Channel I			
Breeders	1,433.50		
Collecting Merchants	81.10	18.90	4.29
Big Traders	185.10	14.90	12.40
Wholesalers	111.00	14.00	7.93
Retailers	99.00	76.00	1.30
Total	476.20	123.80	3.85
Channel II			
Breeders	1,481.00		
Big Traders	189.30	10.70	17.70
Wholesalers	118.20	31.80	3.72
Retailers	106.20	43.80	2.42
Total	413.70	86.30	4.79
Channel III			
Breeders	1,382.10		
Wholesalers	239.40	10.60	22.60
Retailers	185.00	65.00	2.85
Total	424.40	75.60	5.61
Channel IVa			
Breeders	1,712.00		
Retailers	166.40	33.60	4.95
Total	166.40	33.60	4.95
Channel IVb			
Breeders	1,933.30		
Retailers	121.40	28.60	4.24
Total	121.40	28.60	4.24

In channel III the total cost was Rp75.60/egg. While the largest marketing cost was borne by retailers that was amounted to Rp65.00/egg, the smallest cost was borne by the wholesalers and

amounted to Rp10.60/egg. The highest profit was earned by wholesalers that was Rp239.00/egg, while the retailer's profit was Rp185.00/egg.

Channel IV, which was the shortest channel, was divided into two channels. The first was from farmers to retailers in the market then to consumers, while the second channel was from breeders to retailers in shops and then to consumers. The total costs on channel IVa amounted to Rp33.6/egg, equal to the cost incurred by the retailer. The profit earned by retailers was Rp166.4/egg, the same as those issued by retailers. On channel IVb the cost incurred by the retailer was Rp28.6/egg while the profit was Rp121.4/egg. Then the cost profit ratio was 4.24

4. Conclusion

The marketing of chicken eggs in Pematangsiantar Municipality consisted of four marketing channels. Marketing agencies involved are farmers as egg producers, collecting traders, big traders, wholesalers and retailers. The function of selling, the function of financing and market information are the marketing functions undertaken by all institutions that played a role.

The need of chicken eggs in Pematangsiantar Municipality was mostly (63.3%) supplied from outside the city that was from Pantai Labu Subdistrict located in Deli Serdang District. Only a small portion (36.6%) was filled by farmers in Pematangsiantar. The channel marketing system of chicken eggs in Pematangsiantar already has its own network. The practice of buying and selling has its own system. Each trader already has its own subscription and marketing system has been going on for so long that a good cooperative relationship exists and all parties trust each other. The payment system was divided into two types, namely direct payment or with a note system (payment at the end of delivery).

Based on marketing margin analysis, farmer's share and profit-to-cost ratio, the following conclusions were obtained: The marketing margin of Channel II that consisted of cost margins and profit margins showed the smallest cost margin and the largest profit margins. In the Channel II the profit cost ratio was the highest. In terms of parts gained by farmers (farmer's share) Channel IV got the highest value of 88 - 90%. The channel used onlyretailers(one level) and the total amount exchanged was relatively small. So it was concluded that the Channel II was the most efficient channel because the smallest cost and benefits are evenly distributed across all of the market participating institutions.

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