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Economic Analysis of the Surcharge Payment System*

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This paper examined the deterrent effects of the Japanese FTC on cartel cases. As a result, we reach the following conclusions. 1) To make companies voluntarily cease to take part in cartels, the most effective means is to increase the FTC's investigation activity expenditure, as well as the number of warnings and cautions. 2) To reduce the number of cartel occurrence cases, an effective means is to increase the surcharge payment amount. 3) To make companies reduce the cartel implementation period, an effective means is to increase the number of staff in the FTC and the number of payment order cases. We also confirmed that when economic activity grows, which is an external variable for the FTC, the cartel deterrent effects increase.

1. Introduction

This paper aims to analyze the treatment of cartel cases by the Surcharge Payment System in the Japanese Antimonopoly Law (Articles 7-2, 8-3), which was enacted in the 1977 Amendment, and then examines the deterrent effects of this system on cartel cases. The period of analysis is from 1977 to 1990. This kind of study has already been carried out in the United States, which is the homeland of Antimonopoly Law (hereafter referred to as the "AML"). In Japan¹, many AML scholars have been legally interpreting the violation cases, but so far, economists have not tried to analyze them quantitatively.

The most important cause of this Amendment in 1977 was that after the 1973 Oil Crisis, "hidden cartels, formed by the petroleum industry with the intention of fixing prices, were discovered and a public outcry ensued concerning the price manipulations of private industry" (Matsushita, 1990, p. 4). The Japanese Fair Trade Commission (hereafter referred to as the "FTC") published an outline of the Tentative Proposal² for the Antimonopoly Law Amendment in September 18, 1974. Thereafter, this proposal was revised twice, and then passed as a definite program in the 80th General Diet³ and was enacted on May 27, 1977.

The primary objective of this system is not only to eliminate illegal cartels,

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but also to prevent the occurrence of them. To achieve this objective, "when a price cartel fixes prices by collusion, the FTC is empowered to order participants to pay an administrative fine in order to deprive such participants of excess profit resulting from the cartel" (Matsushita, *ibid.*, p. 5). The FTC prevents an abuse of cartels by this administrative fine.

Before the introduction of this system, even if the FTC executed elimination measures for cartels, price competition did not recover and moreover prices raised by the cartel still maintained their high level, and therefore such measures had little effect. That is to say, though cartels were disclosed, as participants did not suffer any economic sanctions, they abused cartels, which was shown in the increase of the repeated offense cases. As the method which regulated such cartel prices, the FTC's Tentative Proposal had an order system that cartel prices return to their original level. However since this system also has a price control function, this system was deleted from the amendment law proposal, and consequently the present surcharge payment system was adopted as an economic sanction.

In section 2, we survey the content of the surcharge payment system. In section 3, we analyze the following two points. First, as the actual state which the FTC ordered to pay the surcharge payment during the period 1977-1990, we examine the industries, the number of cases concerning each Article 7-2 and Article 8-3, the number of cartel participants, the cartel implementation period, and the surcharge payment amount. Through such an examination, we examine features of the industries concerned and the violation cases relating to Article 7-2 and Article 8-3. Second, we examine the cartel deterrent effects of the investigation activity of the FTC. We hypothesize that the final objective of the FTC is to minimize the social cost which derive from cartels, and then employ a regression analysis to examine the policy instruments which the FTC uses to 1) make a suspicious company voluntarily cease taking part in cartels, 2) reduce the number of cartel occurrence cases, and 3) make companies reduce the cartel implementation period.

As a result, we reach the following conclusions. To make companies voluntarily cease taking part in cartels, the most effective means is to increase the FTC's investigation activity expenditure, as well as the number of warnings and cautions. To reduce the number of cartel occurrence cases, an effective means is to increase the surcharge payment amount. To make the companies reduce the cartel implementation period, an effective means is to increase the number of staff in the FTC and the number of payment order cases. We also confirmed that when economic activity grows, which is an external variable for the FTC, the cartel deterrent effects increase. Finally, section 4 contains some concluding remarks.

2. Content of The Surcharge Payment System

This system is different from the other legal penal provisions in the AML⁴. The punishments (Articles 89, 95) are criminal sanctions as an ethical criticism against the cartel participants. The damages (Article 25) are civil measures to remedy the victims of the cartel. On the other hand, the surcharge payment system (Articles 7-2, 8-3) is only an administrative measures to prevent the occurrence of cartel and thereby to realize the administrative purpose⁵.

2.1. Cartel Covered by This System

Cartels covered by this system are not only domestic cartel, but also international ones. Up to the present time (1990) since the introduction of this system, however, international cartel cases did not occur and all the cartels in this paper occurred in the domestic market.

2.2. Entrepreneur Covered by This System

When an illegal cartel affecting the price of goods or services is committed by an individual entrepreneur, the FTC is empowered to order the participant to pay a surcharge against a price affecting cartel (Article 7-2). When an illegal cartel is committed by a trade association, the FTC may order the constituent entrepreneurs to pay a surcharge (Article 8-3). The former is the offender against the latter of Article 3 (the unreasonable restraint of trade). The latter is the offender against Article 8-1(1) (the prohibited acts of a trade association).

2.3. Category of Cartel

Cartels under the FTC's supervision are defined as follows: 1) it is directly related to the price, and 2) it influences the price by a substantial restricting of volume of supply. That is to say, the cartels which are imposed on the surcharge are limited to ones which affect price of goods or services, namely a price increase cartel, a price maintenance cartel as well as an order adjustment cartel.

2.4. Calculation of Surcharge⁶

The surcharge amount is equivalent to one-half of a sum equal to 3% times the sales amount (concretely, ratio of current profit to sales) of the goods sold or the value of services supplied during the period in which an illegal cartel was committed. The ratio of multiplication is 2% in the case of the manufacturing industry, 1% in the case of retail trade, 0.5% in the case of wholesale trade, and 1.5% in the case of other industries (i. e., construction industry and service trade). In case the amount thus computed falls below 200 thousand yen, the FTC may not order such a surcharge payment. The reasons why such a calcula-

tion method was adopted, are mentioned as follows. 1) From a theoretical viewpoint, illegal earnings by a cartel is the difference between the price level during the cartel implementation period (from the time of commencement to the termination) and the price which would be set, if it was not committed. However, it is difficult for us to compute this difference exactly. 2) In the case of price cartel, it is reasonable that we regard the price difference between before and after the cartel formation as illegal earnings. However, it is difficult for us to construct a reasonable computation method which is common to all the cartels. Furthermore, to improve the effectiveness of law enforcement, it is desirable that we construct a "simple and plain" computation method, if possible.

2.5. Limit of Enforcement

The surcharge amount depends on both implementation period and ratio of current profit to sales during implementation period. In this case, the time of commencement for the implementation period is the date that a cartel member carried out a part of the cartel agreement. The termination is the date that a business activity concerning its agreement ceased. If any entrepreneur is dissatisfied with a payment order, he may, in accordance with the Rules of the FTC and within thirty days from the date on which the certified copy of such order was forwarded, request the Commission to initiate the hearing procedures on the said case ([Article 48-2(5)]). If the hearing procedures are initiated and then the entrepreneur's opinion is dismissed, payment is ordered after the FTC's decision. In such a case, the termination extends until the time of decision, and thus the said entrepreneur must pay more surcharge amount. If surcharge payment rates were increased, by thus increasing the payment amount, we can expect that the number of initiation of hearing proceedings cases will increase.

Collection of surcharge is not the FTC's discretion, but its duty. Therefore, provided that the number of staff and the budget do not increase, the FTC becomes busy with more office management, and thus its cartel detection ability will weaken. Particularly, investigating cartel cases of trade associations which are composed of many entrepreneurs, the FTC has many difficulties in both quality and quantity. Furthermore, calculating the sales amount, as the FTC must compute every individual entrepreneur or cartel's item, such work will result in an increasing of transaction cost in the law enforcement process.

Judging from the existing calculation method, this system can merely collect a part of the illegal earnings. However, provided that the ratio of current profit to sales depends on the then economic conditions, there remains a possibility that an entrepreneur was collected an amount greater than the illegal earnings. For example, declining this profit rate, the burden of an entrepreneur is bigger, but increasing profit rate, its burden is less.

3. Disposition of Cartel Cases by Surcharge Payment System : Actual State

3.1. Cartel Cases

The upper column in Table 1 shows the disposition of cartel cases during the 10 years before and after 1977 when this system was enacted. When we examined the number of decisions concerning this system, the number of Article 8-1(1) violation cases was more than that of the latter of Article 3. After the enactment of this system, the number of decisions, the number of recommendation decisions and initiation of hearing proceedings were extremely lower. On the other hand, the number of investigation annulment cases tended to increase.

The total number of cases and entrepreneurs which were ordered to pay surcharge payments, were 78 cases and 1,190 entrepreneurs, respectively. Comparing these figures with the number of Sherman Act 1 violation cases (i. e., price fixing cartel and bid-rigging cases), there was 352 cases⁷ from 1970 to 1985 in the United States. If we compare the number of cases, the figure in Japan was extremely lower than in the United States. However, including the number of self-elimination cases, the number of violation cases in Japan is not always less. Furthermore, in recent years, an increasing number of caution cases suggests that the FTC is cautious to disposition of cases. As the purpose of elimination measures by the FTC is to cease illegal acts, the caution achieves such a purpose. However, if the FTC uses the disposition method of recommendation decision, which shows more severe judgement except for the warning and caution, thereby the number of cartel cases will increase.

The column below shows the disposition of cartel cases for each industry. The number of recommendation decision + initiation of hearing proceedings cases decreased greatly after 1978. When we examined the number of price cartel cases in each industry, many cases were found to occur in the manufacturing industry, the retail trade, and other industries. The number of self-elimination and evidence imperfectness cases increased in the manufacturing industry, the wholesale and the service trades, but decreased in the retail trade. In total, there were many cases in the retail trade and the manufacturing industry. The number of surcharge payment order cases was extremely numerous in the manufacturing industry.

3.2. Applied Articles

Table 2 shows the number of applied Articles in each cartel type. When we read this table vertically and find that the total is 78 cases, the number of the latter of Article 3 violation cases is 41 cases, and that of Article 8-1(1) is 37 cases. Many industries relating to the latter of Article 3 were the manufacturing industry (31 cases), and the ratio of participants to total number was about 70%.

Table 1. The Number of Cartel Cases¹⁾ and Their Disposition (1967-1990)

Year	Decision			Recommendation+Initiation of Hearing Proceedings	Investigation Annulment ²⁾			Surcharge Payment Order	
	Latter of Arti. 3	Arti. 8-1(1)	Total		Self-Elimination	Evidence Imperfectness	Total		
1967-1971	71	108	125	141	201	91	292		
1972-1976	102	65	167	177	168	31	199		
Subtotal	119 (71.7)	173 (79.7)	292 (76.2)	318 (77.4)	369 (42.9)	122 (43.8)	491 (43)		
1977-1981	16	21	37	38(2) ⁴⁾	100	34	134	24(490) ³⁾	
1982-1986	18	11	29	30(1)	168	109	277	28(333)	
1987-1990	13	12	25	25(2)	224	15	239	26(367)	
Subtotal	47 (28.3)	44 (20.3)	91 (23.8)	93(5) (22.6)	492 (57.1)	158 (56.4)	650 (57)	78(1,190)	
Total	166 (100%)	217 (100%)	383 (100%)	411(16) (100%)	861 (100%)	280 (100%)	1,141 (100%)		
Industry ⁵⁾ \ Year	Recommendation+Initiation of Hearing Proceedings			Self-Elimination			Evidence Imperfectness		Surcharge Payment Order ⁷⁾
	1967-1977	1978-1989	Total	1967-1977	1978-1989	Subtotal	1967-1977	1978-1989	1978-1990
<Price Cartel>									
Manufacturing ⁶⁾	53	42	95	48	83	131	10	28	39
Wholesale ⁶⁾	10	8	18	2	21	23	—	10	6
Retail	90	8	98	150	65	215	60	27	5
Service	22	7	29	91	106	197	20	24	3
Other	119	12	131	87	53	140	41	24	—
Subtotal	294	77	371	378	328	706	131	113	53
<The Other Cartel>	30	9	39	56	43	99	15	29	25
Total	324	86	410	434	371	805	146	142	78

Notes. ¹⁾ Cartels are the price cartel and the other cartels (: quantity, market, prohibition of price reduction, prohibition of customer movement, and restrictive equipment etc.).

²⁾ After 1980, these figures are the number of warning and caution cases. Furthermore, the evidence imperfectness is expressed as the annulment case, and often included caution cases.

³⁾ () : The number of cartel participants.

⁴⁾ () : These figures are the number of cases that initiated the hearing proceedings when any person did not accept the recommendation.

⁵⁾ After 1990, the items of every industry are not published in *the Annual Report*.

⁶⁾ These figures do not include the number of cases in the period 1967-73.

⁷⁾ The figures in this column are the price increase cartel+the price maintenance cartel. Other one within the price cartel is the construction industry, but in this industry, this type of cartel did not occur. The other cartel is the sum of the order adjustment cartel, and many of these cartels were in the construction industry.

Source: The data in the following tables is calculated from *the Annual Report*, provided that we will not notify.

The retail and service trades did not violate the latter of Article 3.

When we examined each cartel type, many cases concerning price increase cartel were in the manufacturing industry. The only industry which violated the price maintenance cartel was wholesale trade. Various industries violated the order adjustment cartel. Generally speaking, the latter of Article 3 was mainly applied to the manufacturing industry, and in addition this industry was applied to the price increase cartel.

On the other hand, the industry relating to Article 8-1(1) was mainly the construction industry (15 cases), and the ratio of participants to total number was about 51.3%. This fact is obvious, because this Article is applied to the trade association. There were also many cases in the manufacturing industry and the retail trade industry. When we examined each cartel type, the price increase and the price maintenance cartels were numerous in the manufacturing industry, and the order adjustment cartel was mainly practiced in the construction industry. It is interesting that the retail and the service trades violate only this Article. Generally speaking, Article 8-1(1) was mainly applied to the construction industry, and in addition this industry was applied to the order adjustment cartel.

Table 2. Applied Articles and Cartels (1978-1990)

	Latter of Arti. 3	Arti. 8-1(1)	Total
Price Increase	Manufacturing (224) 30	Manufacturing (159) 7	(383) 37
	Wholesale (14) 2	Wholesale (16) 1	(30) 3
	—	Retail (107) 5	(107) 5
	—	Service (22) 2	(22) 2
	(238) 32	(304) 15	(542) 47
Price Maintenance	—	Manufacturing (25) 2	(25) 2
	Wholesale (34) 3	—	(34) 3
	—	Service (1) 1	(1) 1
	(34) 3	(26) 3	(60) 6
Order Adjustment	Manufacturing (6) 1	—	(6) 1
	Construction (41) 2	Construction (442) 15	(483) 17
	Wholesale (9) 3	Wholesale (8) 1	(17) 4
	—	Service (82) 3	(82) 3
	(56) 6	(532) 19	(588) 25
Total	Manufacturing (230) 31	(184) 9	(414) 40
	Construction (41) 2	(442) 15	(483) 17
	Wholesale (57) 8	(24) 2	(81) 10
	Retail (—) —	(107) 5	(107) 5
	Service (—) —	(105) 6	(105) 6
	(328) 41	(862) 37	(1,190) 78

Note. (): The Number of Cartel Participants.

Next, we read this table horizontally. The main industry which violated the price increase (47 cases) and the price maintenance cartels (6 cases) was the manufacturing industry (39 cases). The industry which violated the order adjustment cartel was mainly the construction industry.

To sum up, the main industry which violated the latter of Article 3 was the manufacturing industry, and that of Article 8-1(1) was the construction industry. The industry which violated the price increase and the price maintenance cartels was mainly the manufacturing industry, and that of the order adjustment cartel was mainly the construction industry. The number of participants who violated Article 8-1(1) was about 2.6 times larger than that of Article 3. Assuming the fact that the business sector in Japan has been operated by trade associations, this finding is obvious.

3. 3. Distribution of Participants

The substantial requirement to increase an effectiveness⁸ of cartel is to lessen the number of cartel members. Table 3 shows the distribution of the number of participants for each Article. The distribution differed distinctly between two Articles. In total, 59 cases (about 76%) out of all 78 cases involved less than 16 companies. When we examined each Article, 39 cases out of all 41 cases concerning the latter of Article 3 were less than 16 companies, and in particular 15 cases out of 39 cases were less than 5 companies. The 20 cases out of all 37 cases concerning Article 8-1(1) were less than 16 companies, and 11 cases out of 20 cases were 11-16 companies. Contrasting the distribution of the latter of Article 3 with that of Article 8-1(1), the latter extended to the most 86 companies. Assuming the application province of Article, this finding is also obvious.

Table 3. Distribution of Participants

Number of Participants	Latter of Arti. 3	Arti. 8-1(1)	Total
1— 5	15	2	17
6—10	17	7	24
11—16	7	11	18
18—21	1	3	4
22—28	—	4	4
30—36	1	4	5
42—45	—	3	3
61—	—	1	1
70—	—	1	1
86	—	1	1
Total	41	37	78

Table 4. Trends in the Implementation Period (1978-1990)

Number of Cases • Period	Manufacturing	Construction	Wholesale	Retail	Service	Total
Latter of Arti. 3	31	2	8	—	—	41
Aver • Imple • Period	14.2 months	19.5	14.2	—	—	14.5
Arti. 8-1(1)	9	15	2	5	6	37
Aver • Imple • Period	6.6 months	15.3	44.1	2.6	15.7	13.1
Total	40	17	10	5	6	78
Aver • Imple • Period	12.5 months	15.8	20.2	2.6	15.7	13.8
Shortest Imple • Period	1 month	1.2	5	2	1.7	1
Longest Imple • Period	57.2	40.3	76.1	3	36	76.1
Mode	6-7	14-18	12	2-3	33-36	6-8
Trend	Mean	Variance	Standard Deviation	Variation Coefficient	Total	
Manufacturing	12.5 months	165.4513	12.8628	1.029	40	
Construction	15.8	172.7581	13.1437	0.8319	17	
Wholesale	20.2	467.2078	21.615	10.7	10	
Retail	2.6	0.175	0.4183	0.1609	5	
Service	15.7	225.856	15.0285	0.9572	6	
Total	13.8	192.3852	13.8703	1.0051	78	

Notes. 1) The shortest implementation period (1 month), which occurred in the manufacturing industry, was "the Noritake Kanpani hoka Iipan Kensaku to Ishi Seizōgyōsha ni taisuru case (1983)".

2) The longest implementation period (76.1 months), which occurred in the wholesale trade, was "the Kagawaken Sekyū Syogyō Kumiai Takamatsu Shibu no Shibuin ni taisuru case (1986)".

3) Mode concerning the retail and service trades is not necessarily an effective figure because of the scarcity of data.

3.4. Implementation Period

Table 4 shows the implementation period for each Article and industry. An average implementation period in all 78 cases was 13.8 months and the mode was 6-8 months. The shortest period was 1 month in the manufacturing industry and the longest was 76.1 months in the wholesale trade industry. When we examined the average implementation period in each industry, the longest was 20.2 months in the wholesale trade, and the shortest was 2.6 months in the retail trade. The mode was 33-36 months in the service trade and next was 14-18 months in the construction industry. When we examined each Article, the average period⁹ of the latter of Article 3 (41 cases) was slightly longer than that of Article 8-1(1) (37 cases). The average period concerning the latter of Article 3 was longest in the construction industry, and that of Article 8-1(1) was longest in the wholesale trade. Generally speaking, in both Articles, the construction industry had a longer implementation period than the other industries. When we examined the trend of implementation period for each industry, differences from the average period were large in the wholesale, the service trades, and the construction indus-

try. Variation coefficient was large in the wholesale trade and the manufacturing industry, and was small in the retail trade and the construction industry. Contrasting the manufacturing industry with the construction industry, variation coefficient of the former was larger than that of the latter. This reason is thought to be that, as cartels in the manufacturing industry are organized among an individual entrepreneur, and that of the construction industry are organized by trade associations, thus cartels of the latter are more stable than that of the former.

3.5. Surcharge Payment Amount

Next, we examine the paid surcharge amount in Table 5. The total surcharge amount was about ¥23.58 billion.

When we examined the ratio of payment amount to the total amount, big-companies paid about 9 times as much as the small and medium enterprises, and particularly that of registered companies out of big-companies was about 8 times larger than small and medium enterprises. Examining the number of participants, the small and medium enterprises occupied about 55% of the total number.

Table 5. Surcharge Payment Amount by Company Size (As of March 31, 1991)

	Surcharge Amount	The Number of Participants	Average Surcharge Amount
Total	23.58254 (billion yen) (100%)	1,190 (100%)	19.82 (million yen)
Big-company	21.18272 (89.8)	538 (45.2%)	39.37
(of which Registered)	(16.47299) ((77.8))	(228) ((42.4%))	(72.25)
Small and Medium Enterprises	2.39982 (10.2)	652 (54.8%)	3.68

Note. Classification of Company Size by Capital (yen) only.

	Big-company	Small and Medium
Retail • Service Trade	10 million or more	less than 10 million
Wholesale Trade	30 million or more	less than 30 million
Other Trade	0.1 billion or more	less than 0.1 billion

Source. The Executive Bureau of the Fair Trade Commission (1991).

Examining an average surcharge amount per participant, big-companies paid about 11 times as much as the small and medium enterprises, and the registered companies paid about 20 times as much as the latter.

When we examined the total surcharge amount in each industry, the manufacturing industry paid about 86% of the total amount. Next the construction industry paid about 12% (Appendix Table 1). When we examined the trend of payment amount concerning total industries, the highest payment amount was

Table 6. Cartel Type and Surcharge Payment Amount

	Price Increase	Cartel Type Price Maintenance	Order Adjustment	Total	(1)	(2)	(3)	(4)	(5)	(6)
Manufacturing	37	2	1	40	2,021,153	50,529	414	4,882	12.5	10.4
Construction	—	—	17	17	284,013	16,707	483	588	15.8	28.4
Wholesale	3	3	4	10	26,614	2,661	81	329	20.2	8.1
Retail	5	—	—	5	4,793	959	107	45	2.6	21.4
Service	2	1	3	6	21,952	3,659	105	209	15.7	17.5
Total	47	6	25	78	2,358,525	30,238	1,190	1,982	13.8	15.3
(1) Total Surcharge Payment Amount (10 thousand yen)	1,958,531	73,470	326,524	2,358,525						
(2) Total Surcharge Payment Amount/The Number of Cases (10 thousand yen)	41,671	12,245	13,061	30,238						
(3) The Number of Participants	542	60	588	1,190						
(4) Total Surcharge Payment Amount/The Number of Participants (10 thousand yen)	3,613	1,225	555	1,982						
(5) The Implementation Period/The Number of Cases (month)	11.3	7.7	21.4	13.8						
(6) The Number of Participants/The Number of Cases	11.5	10.0	23.5	15.3						

about ¥12.6 billion in 1990. In that year, payment amount per participant was also the highest. Calculating the ratio of surcharge amount to the FTC's budget, the amount exceeded by about 49% the latter in 1981. In the years 1979, 1980, 1981, and 1983, surcharge amount occupied more than half of the FTC's budget. Examining distribution of surcharge amount (Appendix Table 2), total amount of the latter of Article 3 was 5 times as large as that of Article 8-1(1). In the ratio of each Article to total amount, the latter of Article 3 and Article 8-1(1) occupied about 83% and about 17%, respectively. For example, in the latter of Article 3 (41 cases), 10 million-50 million yen: 12 cases (the number of participants: 81), 100 million-500 million: 14 cases (115), more than one billion: 3 cases (23). In Article 8-1(1) (37 cases), 10 million-50 million yen: 15 cases (284), 100 million-500 million: 9 cases (297). In total, 10 million-50 million yen: 27 cases (365), 100 million-500 million: 23 cases (412).

3. 6. Cartel Type and Payment Amount

Table 6 illustrates the industry, the cartel type, and the surcharge amount. When we read this table horizontally, surcharge amounts per case and participant were the highest in the manufacturing industry. On the other hand, the number of participants were the highest in the construction industry, and the implementation period was the longest in the wholesale trade. Reading this table vertically, surcharge was the largest in the price increase cartel, and next was in the order adjustment cartel. Surcharge amounts per case and participant were also the highest in the price increase cartel. On the other hand, the number of participants were the highest in the order adjustment cartel, and also the implementation period was the longest in this cartel. Payment amount and the number of participants were the largest in the manufacturing industry and the construction industry, respectively. Examining each cartel type, payment amount was the largest in the price increase cartel, and next was in the order adjustment cartel.

4. Cartel Deterrent Policy by The FTC

4. 1. Simple Correlation Analysis

Table 7 shows the simple correlation analysis concerning the number of cartel participants, the surcharge payment amount, and the implementation period. Examining only the significant results in each Article, the latter of Article 3 and the total had a high and positive correlation with surcharge amount and implementation period. In Article 8-1(1), we had a high and positive correlation between the number of participants and surcharge amount. This finding is an obvious result since this Article was applied to the trade association. We confirmed a negative correlation in the latter of Article 3 and the total. In the

former Article, a negative correlation was confirmed between the number of participants and the implementation period. In the latter, this correlation was confirmed between the number of participants and the surcharge amount. Negative correlation in the latter of Article 3 suggests that an increasing of the number of participants raises the possibility of cartel detection.

Examining each cartel type, price increase cartel had a high and positive correlation between surcharge amount and implementation period. This cartel type again had a negative correlation between the number of participants and the implementation period. Negative correlation suggests that, as mentioned above, the possibility of cartel detection increases. Price maintenance and order adjustment cartels had a positive correlation, and that correlation was the strongest between the number of participants and the implementation period. Consequently, price increase cartels are easily monitored, and thus the number of participants and the implementation period had a negative correlation, but price maintenance and order adjustment cartels stabilize as the number of participants increases, and thereby a positive correlation was confirmed between two variables.

Table 7. Simple Correlation Analysis : Article and Cartel

<Article>		A	B	C
Latter of Arti. 3 (41 cases)	A	1.000000		
	B	0.119246	1.000000	
	C	-0.127144	0.682486	1.000000
Arti. 8-1(1) (37 cases)	A	1.000000		
	B	0.530696	1.000000	
	C	0.215283	0.024002	1.000000
Total (78 cases)	A	1.000000		
	B	-0.013185	1.000000	
	C	0.097498	0.460633	1.000000
<Cartel>		A	B	C
Price Increase (47 cases)	A	1.000000		
	B	0.008272	1.000000	
	C	-0.200986	0.763168	1.000000
Price Maintenance (6 cases)	A	1.000000		
	B	0.650551	1.000000	
	C	0.919455	0.607714	1.000000
Order Adjustment (25 cases)	A	1.000000		
	B	0.494494	1.000000	
	C	0.517322	0.233579	1.000000

Note. A : The Number of Cartel Participants

B : Surcharge Amount

C : Implementation Period

Table 8 illustrates the same analysis in each industry. The manufacturing industry, the service trade and the total had a high and positive correlation between surcharge amount and implementation period, and the construction industry had a high and positive correlation between the number of participants and the implementation period. The retail trade had a high and positive correlation between the number of participants and the surcharge amount. Negative correlation was confirmed between surcharge amount and implementation period in the wholesale trade, and also was confirmed between the number of partici-

Table 8. Simple Correlation Analysis : Industry

		A	B	C
Manufacturing (I) (37 cases)	A	1.000000		
	B	0.045972	1.000000	
	C	-0.148603	0.774517	1.000000
Manufacturing (II) (40 cases)	A	1.000000		
	B	0.049934	1.000000	
	C	-0.151758	0.756934	1.000000
Construction (17 cases)	A	1.000000		
	B	0.218667	1.000000	
	C	0.509923	0.016846	1.000000
Wholesale (10 cases)	A	1.000000		
	B	0.114172	1.000000	
	C	-0.151119	-0.257081	1.000000
Retail (5 cases)	A	1.000000		
	B	0.897314	1.000000	
	C	0.222898	0.318862	1.000000
Service (6 cases)	A	1.0000000		
	B	0.782691	1.000000	
	C	0.774237	0.843450	1.000000
Total (78 cases)	A	1.000000		
	B	-0.013892	1.000000	
	C	0.095187	0.460267	1.000000

Notes. 1) A : The Number of Cartel Participants

B : Surcharge Amount

C : Implementation Period

2) Manufacturing industry (I) and Retail trade are only the price increase cartel. Construction industry is the order adjustment cartel.

Manufacturing industry (II), wholesale and Service trades are the price increase + the price maintenance + the order adjustment cartels.

pants and the implementation period in the manufacturing industry and the wholesale trade. We recognize that such a correlation and its degree reflect the difference of internal affairs concerning cartel formation within each industry.

4.2. Cartel Deterrent Effects by The FTC

In this section, we consider that the final objective of the FTC's investigation activity is to minimize the social cost which cartels bring. As a method to minimize the social cost, we consider the following three methods: 1) increasing the number of self-elimination cases, which signifies to make a violator voluntarily take self-elimination measures, 2) reducing the number of cartel occurrence cases (e.g., the number of surcharge payment order cases), and 3) decreasing the cartel implementation period.

We consider these three methods as the dependent variables, and employ a regression analysis on the independent variables (14) to examine the effectiveness of the FTC's investigation activity. On methods 2) and 3), we examine the effectiveness of each Article (i.e., the latter of Article 3 and Article 8-1(1)).

Table 9 illustrates the result of the regression analysis. To increase the number of self-elimination cases (Y_1) concerning cartel, which signifies to make a violator eliminate cartel before an initiation of hearing proceedings, an effective means was to increase the investigation expenditure (X_2) and the number of warnings and cautions (X_{10}). While the significance level was low, it was also an effective means to increase the endogenous variables, i.e., the number of staff in the Investigation Department (X_1), the surcharge amount (X_5), and the number of decisions (X_6). Similarly, while the significance level was low, Y_1 had a negative correlation with the economic growth rate (X_{11}). This relation shows that as economic activity increases, it lessens the inducement to voluntarily cease cartel. That is to say, we guess that in addition to decreasing a cartel formation inducement in an economic growth period, cartel detection and its proof by the FTC become more difficult. Yokokura (1974) called this circumstance a "visibility". Such a case comes under the other cartels except for price cartel which is easily monitored. We noticed that the endogenous variables were an effective means for the FTC, but an exogenous variable (i.e., economic growth) was not necessarily an effective one¹⁰.

Y_2 to Y_4 show the effective means to decrease the number of cartel occurrence (or surcharge payment order) cases in each Article. When we examined the latter of Article 3 (Y_2), it was not significant, but an increasing of surcharge amount (X_3) resulted in decreasing the number of cases. The said Article had a negative and significant correlation with the economic growth rate (X_{11}) which is an exogenous variable for the FTC. Similar results were shown in Article 8-1(1) (Y_3) and the total. On the other hand, Y_2 to Y_4 had a positive correlation with the investigation expenditure. To decrease the number of cartel occurrence cases in each Article, it is desirable for us not to enrich the FTC's investigation attitude, but increase the surcharge amount in each Article and in addition hope for economic growth.

Table 9. Cartel Deterrent Effects

	Constants	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	R ²	D.W.
Y ₁	-75.989 (-0.598)	0.644 (0.51)	6.865*** (3.063)			0.004 (0.151)	1.626 (0.968)				0.275**** (2.186)	-0.333 (-0.072)				0.623	2.322 [4.31***]
Y ₂	-79.103 (-0.219)	1.408 (0.39)	4.538 (1.744)	-0.0009 (-0.48)								-9.939**** (-1.922)				0.131	2.512 [1.454]
Y ₃	75.006 (0.694)	-0.38 (-0.359)	6.54*** (2.407)		-0.007 (-1.611)							-5.047 (-1.036)				0.173	2.524 [1.627]
Y ₄	52.352 (0.32)	0.433 (0.263)	8.883** (3.086)			-0.002 (-0.62)						-14.037*** (-2.484)				0.46	2.519 [3.56]
Y ₅	42.504 (0.242)	-0.066 (-0.037)	2.25 (1.266)	0.0005 (0.51)				-0.205 (-0.739)				-4.86 (-1.645)	-0.049 (-0.219)			0.11	2.313 [1.257]
Y ₆	161.036*** (2.881)	-1.383*** (-2.517)	9.211* (5.26)		-0.003 (-1.588)				-0.602** (-3.202)			-4.039 (-1.752)		0.137*** (2.84)		0.688	1.953 [5.415***]
Y ₇	58.198 (1.307)	-0.239 (-0.522)	5.014* (4.8)				0.0008 (1.022)			-0.221*** (-2.607)		-5.35*** (-3.125)			0.023 (0.927)	0.683	2.54 [5.307***]

R²=Coefficient of Determination Adjusted for Degrees of Freedom.

() : t-Values, [] : F-Values.

Significance level : * = 1%, ** = 2%, *** = 5%, **** = 10% (Two-tailed test).

$$Y_i = a_0 + \sum a_i \cdot X_i + U_i$$

<Dependent Variables>

Y₁=The Number of Self-Elimination Cases Concerning Cartel.Y₂ to Y₄: The Number of Surcharge Payment Order Cases/The Number of Total Decisions.Y₂=Latter of Article 3.Y₃=Article 8-1(1).Y₄=Total.Y₅ to Y₇: Cartel Implementation Period.Y₅=Latter of Article 3.Y₆=Article 8-1(1).Y₇=Total.

<Independent Variables>

X₁=The Number of Staff in the FTC's Investigation Department.X₂=(Investigation Expenditure of FTC/Total Budget of FTC)×100%.X₃ to X₅: Surcharge Payment Amount (per participant).X₃=Latter of Article 3.X₄=Article 8-1(1).X₅=Total.X₆=The Number of Decisions (Latter of Arti. 3+Arti. 8-1(1)).X₇ to X₉: The Number of Surcharge Payment Order Cases/The Number of Total Decisions.X₇=Latter of Article 3.X₈=Article 8-1(1).X₉=Total.X₁₀=The Number of Warning and Caution Cases Concerning Cartel.X₁₁=Economic Growth Rate (relative to previous year : real).X₁₂ to X₁₄: The Number of Cartel Participants.X₁₂=Latter of Article 3.X₁₃=Article 8-1(1).X₁₄=Total.

Y_5 to Y_7 show an effective means to reduce the cartel implementation period. When we examined the latter of Article 3 (Y_5), it was not significant, but this dependent variable had a negative correlation with the number of staff (X_1), the number of surcharge payment order cases (X_7), and the economic growth rate (X_{11}). While this Article was not significant, it also had a negative correlation with the number of participants (X_{12}). This result shows that as the number of participants increases, the cartel concerned is more easily detectable, and thus its implementation period shortens. This finding also showed the same results in Table 7. Article 8-1(1) (Y_6) also had the same result as the latter of Article 3, but in particular the significance was high in variables X_1 and X_8 . While this Article had a positive and significant correlation with the number of participants (X_{13}), as this cartel relates with the trade association, such a result is obvious. When we examined the total (Y_7), this variable had a negative and significant correlation with the number of payment order cases (X_9) and the economic growth rate (X_{11}). An effective means to shorten the cartel implementation period was to increase the number of staff.

The analytical results in this section can be summarized as follows. To increase the number of self-elimination cases, an effective means was to enrich the FTC's investigation attitude and increase the warnings and cautions which are endogenous variables for the FTC. To reduce the number of cartel occurrence cases, an effective means was to increase the surcharge amount, or hope for economic growth which are exogenous variables for the FTC. To shorten the implementation period, an effective means was to increase the number of surcharge payment order cases, and thereby threaten an entrepreneur, or hope for economic growth.

5. Concluding Remarks

The main results of this paper can briefly be summarized as follows.

<Disposition of Cartel Cases>

- 1) The number of cases which ordered to pay surcharge payment was less than that in the United States. One reason is that the Japanese FTC tends to deal with cartel cases as the warnings or cautions.
- 2) The main industry which violated the latter of Article 3 was the manufacturing industry, and the main industry which violated Article 8-1(1) was the construction industry. As the former cartel is organized among an individual company and the latter one is organized by a trade association, it is obvious that the above two industries relate to each Article. The retail and service trades violated only Article 8-1(1).
- 3) Examining each cartel, the main industry which violated the price increase and the price maintenance cartels was the manufacturing industry, and the main

industry which violated the order adjustment cartel was the construction industry.

4) The number of participants of Article 8-1(1) were about 2.6 times compared to that of the latter of Article 3. Judging from the application province of each Article, this is also an obvious result. Examining the distribution of the number of participants in each Article, many of the latter of Article 3 were among only 16 companies, but that of Article 8-1(1) had the most 86 companies.

5) The implementation period distributed as follows: the mode period was 6-8 months, the shortest one was 1 month and the longest one was 76.1 months. Average implementation period of the latter of Article 3 was slightly longer than that of Article 8-1(1).

6) The paid surcharge amount was the highest in the manufacturing industry, and next was in the construction industry. Examining each cartel type, the largest amount was in the price increase cartel, and next was in the order adjustment cartel. Mode of surcharge amount distributed as follows: in the latter of Article 3, it was 100 million-500 million yen, and in Article 8-1(1) and the total, it was 10 million-50 million yen.

<Policy Instruments>

1) Examining the results of simple correlation analysis, the latter of Article 3 had a positive and significant correlation between the surcharge amount and the implementation period, and Article 8-1(1) had a positive and significant correlation between the number of participants and the surcharge amount. Judging from the application province of Article, this finding is an obvious result. The price increase cartel which can be easily monitored had a negative correlation between the number of participants and the implementation period, and the price maintenance and the order adjustment cartels had a positive correlation. This finding is also an obvious result, because an increasing of the number of participants in the latter two cartels results in cartel stabilization.

2) To increase the number of self-elimination cases, an effective means was to enrich the investigation attitude or increase the warnings and cautions which are endogenous variables for the FTC.

3) To reduce the number of cartel occurrence cases, an effective means was to increase the surcharge amount or hope for economic growth which is an exogenous variable for the FTC.

4) To decrease the implementation period, an effective means was to increase the number of surcharge payment order cases and thereby to threaten an entrepreneur, or hope for economic growth.

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Notes

1. There are many law interpretations. For example, see IMAMURA, TANSŌ, SANEKATA and ATSUYA (eds.) (1985, pp. 351-360, pp. 389-392), NEGISHI (1977), and WADA (1987). NAGOU (1987) and Nogimura and Nanbu (1984) analyze the surcharge payment system from an economical standpoint. SANEKATA (1987) analyzed some regulation effects by the FTC. IKEDA (1974), (1976), SHINJŌ (1991), UEKUSA (1982), and YOKOKURA (1974) analyzed an important factor of cartel formation in Japanese industry. IMAMURA (1992) pointed out an objective of cartel deterrence and its limits by the FTC.
2. The purport and necessity of the surcharge payment system was mentioned in an interim report (July 26, 1974) of the FTC's Tentative Proposal. For a detailed argument, see *Hōritsu Jihō* (1975).
3. *Kōsei Torihiki* (1977, No. 320), MATSUSHITA (1990, chapter 1, pp. 52-53), NAKAGAWA (1984), and NEGISHI (1977, p. 52) refer to details of the 1977 Amendment and Article 7-2. Process of amendment was as follows: the first government bill (April 25, 1975: the 75th General Diet), the second government bill (May 21, 1976: the 77th General Diet), and the third government bill (April 11, 1977: the 80th General Diet, enactment in May 27, 1977).
4. As long as a final objective of the surcharge payment system is to secure cartel deterrent effects, contents of surcharge and punishment in the AML must not violate Article 39 (i.e., prohibition of double jeopardy) in the Constitution. Double jeopardy was described as follows. "No person shall be held criminally liable for an act which was lawful at the time it was committed, or of which he has been acquitted, nor shall he be placed in *double jeopardy*" (Article 39 in the Constitution). Refer to KATŌ, KISUGI, KYOTŌ, SANEKATA, and SHŌDA (1991) and KISUGI (1991).
5. SCHERER (1980, pp. 502-504) mentioned a historical controversy concerning price fixing cartel deterrent effects by fine and punishment.
6. The surcharge amount was increased in the 1991 Amendment. For a detailed argument, see *the Annual Report* (1991, pp. 9-11) and KISUGI (1991).
7. SNYDER (1990, Table 1, pp. 448) and Posner (1970).
8. HAY and KELLEY (1974), SCHERER (1980, chapters 5, 6, 7), and UEKUSA (1982) analyzed an important factor which increased the effectiveness of cartel.
9. If we regard the period from commencement of cartel to accusation as the implementation period, STIGLER (1966, pp. 233-236) reached the following conclusion in the United States. The cartel period which was organized among an individual company (efficient type: 7 cases) was 21.6 months, and that by trade association (inefficient type: 10) was 56.7 months.
10. When we employ the logarithmic linear regression, all signs of explaining variables were positive, and both $\bar{R}^2$ and F-value also improved.

$$\text{Log}(Y_1) = -3.657 + 0.831 \cdot \text{Log}(X_1) + 0.335 \cdot \text{Log}(X_2) + 0.163 \cdot \text{Log}(X_5) + 0.04 \cdot$$

$$\quad \quad \quad (-0.358) (0.368) \quad \quad \quad (3.759) \quad \quad \quad (0.772) \quad \quad \quad (0.357)$$

$$\text{Log}(X_6) + 0.568 \cdot \text{Log}(X_{10}) + 0.13 \cdot \text{Log}(X_{11}). \quad \bar{R}^2 = 0.898, \text{ D.W.} = 2.398 \quad [18.764*] .$$

$$\quad \quad \quad (6.032) \quad \quad \quad (0.359)$$

$$\bar{R}^2: \text{Coefficient of Determination Adjusted for Degrees of Freedom.}$$

$$(\quad): \text{t-value, } [\quad]: \text{F-value. Significance level: } * = 1\% \text{ (Two-tailed test).}$$

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Appendix Table 1. Trends of Surcharge Payment Amounts (10 thousand yen)

	1978	79	80	81	82	83	84	85	86	87	88	89	90	Total
Manufacturing	507 (4) ¹⁾	39,888 (16)	102,677 (27)	370,510 (122)	15,308 (15)	143,857 (67)	35,288 (4)	14,567 (16)	— (—)	14,758 (54)	11,565 (5)	50,460 (48)	1,221,768 (36)	2,021,153 (414)
Construction	— (—)	117,287 (118)	6,767 (53)	— (—)	54,226 (118)	— (—)	— (—)	— (—)	25,094 (12)	— (—)	28,980 (70)	29,889 (6)	21,771 (106)	284,013 (483)
Wholesale	— (—)	— (—)	19,547 (31)	— (—)	1,869 (16)	1,259 (4)	— (—)	125 (1)	2,460 (20)	— (—)	1,354 (9)	— (—)	— (—)	26,614 (81)
Retail	— (—)	— (—)	4,120 (92)	— (—)	— (—)	— (—)	— (—)	673 (15)	— (—)	— (—)	— (—)	— (—)	— (—)	4,793 (107)
Service	— (—)	— (—)	— (—)	5,437 (27)	2,333 (23)	1,485 (21)	22 (1)	— (—)	— (—)	— (—)	— (—)	— (—)	12,675 (33)	21,952 (105)
Total	507 (4)	157,174 (134)	133,111 (203)	375,947 (149)	73,736 (172)	146,601 (92)	35,310 (5)	15,365 (32)	27,554 (32)	14,758 (54)	41,899 (84)	80,349 (54)	1,256,214 (175)	2,358,525 (1,190)
Per participant	126.8	1,172.9	655.7	2,523.1	428.7	1,593.5	7,062	480.2	861.1	273.3	498.8	1,487.9	7,178.4	1,982.0
FTC's budget (%) ²⁾	215,028 0.2	230,395 68.2	241,296 55.2	252,444 148.9	259,901 28.4	264,295 55.5	282,605 12.5	292,926 5.2	304,875 9.0	316,144 4.7	347,975 12.0	3,585,631 2.2	3,930,297 32.0	

Notes. 1) (): The Number of Cartel Participants,

2) The Ratio of Surcharge Amount to the FTC's Budget.

Appendix Table 2. Distribution of Surcharge Payment Amount (10 thousand yen)

	Less than 500	500-	1,000-	5,000-	10,000-	50,000-	100,000 and more	Total
〈Latter of Arti. 3〉								
The Number of Cases	2	2	12	3	14	5	3	41
(The Number of Participants)	(5)	(8)	(81)	(25)	(115)	(71)	(23)	(328)
Total Amount	539	1,504	54,648	17,897	299,091	346,107	1,240,121	1,959,907
Total Amount/The Number of Cases	269.5	752	4,554	5,965.7	21,363.6	69,221.4	413,373.7	47,802.6
Total Amount/The Number of Participants	(107.8)	(188)	(674.7)	(715.9)	(2,600.8)	(4,874.7)	(53,918.3)	(5,975.3)
〈Arti. 8-1(1)〉								
The Number of Cases	3	5	15	3	9	2	—	37
(The Number of Participants)	(14)	(62)	(284)	(103)	(297)	(102)	(—)	(862)
Total Amount	541	3,205	30,660	20,072	204,381	139,759	—	398,618
Total Amount/The Number of Cases	180.3	641	2,044	6,690.7	22,709	69,879.5	—	10,773.5
Total Amount/The Number of Participants	(38.6)	(51.7)	(108)	(194.9)	(688.2)	(1,370.2)	(—)	(462.4)
〈Total〉								
The Number of Cases	5	7	27	6	23	7	3	78
(The Number of Participants)	(19)	(70)	(365)	(128)	(412)	(173)	(23)	(1,190)
Total Amount	1,080	4,709	85,308	37,969	503,472	485,866	1,240,121	2,358,525
Total Amount/The Number of Cases	216	672.7	3,159.6	6,328.2	21,890.1	69,409.4	413,373.7	30,237.5
Total Amount/The Number of Participants	(56.8)	(67.3)	(233.7)	(296.6)	(1,222.0)	(2,808.5)	(53,918.3)	(1,982.0)

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