Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

15-Oct-2015

English - Or. English

DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE

DAF/COMP/GF/WD(2015)38
Unclassified

Global Forum on Competition

SERIAL OFFENDERS: WHY SOME INDUSTRIES SEEM PRONE TO COLLUSION

Contribution from Japan

-- Session IV --

This contribution is submitted by Japan under Session IV of the Global Forum on Competition to be held on 29-30 October 2015.

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JT03384156

English - Or. English

WHY SOME INDUSTRIES SEEM PRONE TO ENDEMIC COLLUSION

-- Japan --

1. Introduction

1. As competition law generally applies to all economic sectors, where to allocate limited resources may be a common concern for most competition authorities. Therefore, it must be useful to focus on collusion-prone sectors and identify their common characteristics and other factors.

2. Economic analysis is expected to serve as a complement in detecting cartels that are not easy to be found. The Competition Policy Research Center (hereinafter, "CRPC")[1] of the Japan Fair Trade Commission (hereinafter, "JFTC") has published a report titled "Utilization of Economic Analysis in Cartel Regulation - CPRC Handbook Series No.2 –" to deepen the understanding of applying economic analysis to the investigation of cartels. The second section of this report presents an empirical analysis of factors related to cartels to identify characteristics of cartels and of the industries where the cartels have been found in Japan.

3. This contribution paper provides the summary of this analysis, as it would be useful for competition authorities to allocate limited resources to monitoring some industries with characteristics found to have a significant relationship to cartel formation.

4. Apart from the empirical analysis mentioned above, this paper also introduces the analysis of the chemical sector—one of the four sectors suggested by the OECD Secretariat regarding the theme of this roundtable—in view of the fact that there are enterprises in this sector that repeatedly violated the Anti Monopoly Act (hereinafter, "AMA") .

5. In addition, this paper touches upon the regulation to impose increased surcharge on an enterprise that repeatedly violated the AMA, which was introduced in order to deter repeated collusion

2. CPRC collaborative research report: "Utilization of Economic Analysis in Cartel Regulation"

2.1 The purpose of this research

6. Cartels are considered most common type of violation of the Antimonopoly Act in Japan and other countries' competition laws. However detecting cartels is not easy, because cartel members naturally seek to implement their cartels in such a way as to minimize risks of being detected. From these reasons, the economic analysis is expected to play a complementary role in detecting cartels. In order to promote better

[1] The CRPC was set up by the JFTC within its General Secretariat in June 2003 to strengthen the theoretical and empirical foundation on which to enforce the AMA and related laws as well as to plan and evaluate competition policies. The CRPC conducts activities intended to build and improve functional and sustainable cooperative platforms between outside researchers and experts and JFTC staff members.

understanding of the use of economic analysis, this report summarizes the literature-based survey, empirical analysis of factors facilitating cartels following the method used by the U.K. Office of Fair Trade (OFT), the use of the economic evidence in cartel cases and current status of the use of the economic evidence in other countries.

7. The following section summarizes chapter 2 of this report "Empirically Analysis of Factors Facilitating Cartels"[2], as it is relevant to the theme of this roundtable.

2.2 Summary of "Empirical Analysis of Factors Facilitating Cartels"

2.2.1. The purpose of this analysis

8. The purpose of this analysis is to empirically investigate characteristics of cartels and of the industries where the cartels have been found in Japan by conducting empirical analysis on the probability of cartel formation, using violation cases of the AMA in which an "unreasonable restraint of trade" was found and recommendations for elimination of conduct were issued by the JFTC or surcharge payment was directly ordered without issuance of recommendations.

2.2.2. The Data

9. The target of the analysis was cartels (which does not include bid-rigging in government procurement) of Japanese manufacturing industries (Category F in Japanese Standard Industry Classification (hereinafter, "JSIC")) where "unreasonable restraint of trade" was found and recommendations for elimination of conduct were issued or surcharge payment was ordered directly without the issuance of recommendations between 1990 and 2004. This data includes discovered cartels only and does not include cartels against which no government actions were taken. Thus, the cartel data may not have covered all the cartels which existed within these industries over the sample periods.

2.2.3. Theoretical hypotheses on the effect of demand and supply on cartel

10. The relationship, whether positive or negative, that is expected to exist between the structural factors of industries such as demand factors and supply factors and the cartel formation (either whether or not cartels existed or the number of cartels) is as follows:

11. With respect to demand factors, it is hypothesized that the growth rate of the value of shipments has a positive relation with the formation of cartels, while fluctuations in the growth rate of the value of shipments has a negative relation. Because a smaller number of companies are thought to make it easier to sustain a cartel, there will be a positive relation between the degree of industry concentration and cartel formation. As for entry barriers, when there is a high entry barrier, it is considered that the number of existing companies is smaller and new entries cannot be expected. Therefore, similarly to industry concentration, there will be positive relation between entry barriers and cartel formation.

[2] Chapter 2 "Empirical Analysis of Factors Facilitating Cartels" is available in English as a discussion paper of the CPRC on the JFTC's website: Yasushi Kudo and Hiroyuki Odagiri, "Empirically Investigating Structural Factors Facilitating Cartels: A Case of Japanese Manufacturing", CPRC Discussion Paper Series CPDP-61-E, April 2014 (http://www.jftc.go.jp/cprc/discussionpapers/h26/index.files/CPDP-61-E.pdf)

2.2.4. Results of estimation of the factors to facilitate or hinder collusion

2.2.4.1. Results of estimation of the model[3] for the cartel formation

12. The estimation results show that the value of shipments positively affects, the likelihood of cartel formation, suggesting that the larger the size of an industry is, the greater the likelihood of occurrences of cartels. However, considering the fact that our dependent variable is constructed based on the cartels which were captured by the JFTC, the following interpretation is also possible. That is, because it is expected that the greater the size of an industry is, the greater the damage afflicted by a cartel on the overall economy, competition authorities may put more attention and resources to the investigation of large-scale industries.

13. Both of the two demand factors in our model (the growth rate of the value of shipments and its fluctuations) are confirmed to have a significantly negative effect on the formation of cartels. The result concerning the fluctuations in the growth rate of the value of shipments supports the theoretical hypothesis. In other words, in industries with unstable demand and uncertain economic environment, cartels will become more difficult to form (or will collapse more easily). In contrast, the result that the growth rate of the value of shipments has a negative impact on cartel formation does not support the theoretical hypothesis. This result may be interpreted as follows: In a state of declining demand, companies seek to secure a certain level of profits through, for example, the formation of cartels instead of competing for their survival. This might be the reason for the negative relationship between the growth rate of the value of shipments and cartel formation.

14. Similarly, for the inventory value per establishment and the machinery/equipment acquisition value per establishment used as proxy variables for entry barriers, there was a positive relationship between these two variables and the formation of cartels, and thus this supports a theoretical hypothesis that high entry barriers will facilitate collusion. The analysis empirically confirmed that a higher degree of entry barriers make it more difficult for new competitors to enter a market, which can facilitate cartels.

15. Contrary to the predictions of the theoretical hypothesis on the relationship between industry concentration and cartel formation, the estimation result shows that as industry concentration increases, the likelihood of cartel formation decreases, although not statistically significant. The following two interpretations can be inferred from the estimation results: the first is that, as is often found in classical industrial organization literature, it is implied that industries with a high level of industry concentration also have a high profit rates. Therefore, there is no need to form cartels in industry with high concentration and thus there is no relationship between them. Another interpretation is that while this analysis uses data only for cartels which are captured by the JFTC, in concentrated industries firms successfully form tighter cartels making it difficult for the JFTC to capture them.

2.2.4.2. Results of estimation of the model[4] for the multiple (or repeated) cartel formation

16. Almost all of the results shown in 2.2.4.1. above were maintained, except that the coefficient on machinery / equipment acquisition value per establishment became statistically insignificant.

2.2.4.3. Results of estimation of the model[5] for the frequency of cartel

[3] Analysis by a binary logit model (BLM)

[4] Analysis by Ordered Logit Model (OLM)

[5] Analysis by Negative Binomial Model (NBM)

17. In the equation for the number of times a cartel is formed, signs of coefficients were found to be the same as those in the 2.2.4.1. above, but some of the statistical significances were lost. For example, fluctuations in the growth rate of value of shipments still had significantly negative effects on cartel occurrences, but negative effect of the growth rate of value of shipments became insignificant.

2.2.5 Industries predicted to have high probabilities of cartel formation

18. Based on these estimation results, the paper also predicted the probability of cartel formation of each industry and the number of cartels, and then made a list of the 30 industries with the highest probabilities. Among the top ten, seven actually had cartels. Possibly there remained factors that were not addressed in this analysis due to the unavailability of data. There were also industries with a low estimated cartel formation probability despite the fact that cartels were in fact detected.

2.2.6 Conclusion

19. In this paper, the data on Japanese manufacturing industries was used to conduct an empirical analysis on the relationship between structural factors of industries and cartel formation. Because it was impossible to know the total number of cartels (both overt and hidden) in manufacturing industries, the data covers only for cartels against which legal actions were taken, and therefore there are some limitations on the scope of the analytical results. Still the analysis identified characteristics of the structural factors of industries in which cartels are confirmed in Japanese industries.

20. First, regarding the relationship between the demand factors and cartel formation, the analysis found that the growth rate of value of shipments and its fluctuations had negative effect. While the former did not support the theoretical hypothesis, the latter supported the hypothesis. As regards the relationship between the supply factors and cartel formation, although market concentration does not have a statistically significant effect, contrary to the theoretical hypothesis, it has a negative relationship with cartel formation. The barriers to entry has a significantly positive relationship with cartel formation, and this result implies that higher entry barriers results in an environment that makes the formation of cartels easier, which supports the theoretical hypothesis.

21. Second, the report discusses the policy implications derived from the analysis. The results can be used as an indicator for the discovery or selection of industries in which cartels are more likely to be formed. In determining which industries competition authorities should focus in the allocation of its resources across various possible industries, it would be more efficient to allocate more resources toward the monitoring of industries with demand or supply factors (or both) observed as having a significant relationship with cartel formation.

22. Having noted the above, the report pointed out three limitations in this analysis. The first is that the analysis focuses only on industries against which legal actions were taken by the competition authority. The second is that the analysis is confined to the manufacturing industries, and thus the estimated relationship may not apply to non-manufacturing industries. The third is that the other industrial factors may be also important. The theoretical literature suggests that the quality of goods (substitutes or complements), the type of competition within an industry (price or quantity competition), product differentiation (horizontal or vertical differentiation) can affect cartel formation. However, the scope of the analysis was limited to factors whose numeric data are easily obtained. By conducting an analysis that incorporates these and other factors, it is desirable to empirically examine the relationship between them and cartel formation in greater detail.

3. Case Study in Specific Sector

3.1. Sector covered by this section

23. The OECD Secretariat's call for contributions (DAF/COMP/GF (2015) 2) lists sectors to focus on at this roundtable: chemical, construction, cement & concrete, and food.

24. In Japan, many violations of the AMA (especially bid-rigging in procurements) have occurred in the construction sector. However, as bid-rigging and other antimonopoly violations in this sector are found to involve various types of enterprises including small- and medium-size ones and non-listed ones, and most cases occur in limited domestic regions (for example, bid-rigging in contracts offered by specific local governments), tremendous efforts are required to identify enterprises in the sector against which the JFTC has issued cease and desist orders more than once. Furthermore, even with such efforts, useful results may be hard to obtain. In the cement & concrete and food sectors, no enterprises have been identified against which the JFTC has issued cease and desist orders more than once in the same sector during the period between 1985 and 2014. Accordingly, this section focuses on the chemical sector—in which the largest number of cartels are identified by the empirical analysis mentioned in Section 2 above—describing its trends and characteristics.

3.2. Japan's industrial classification

25. The chemical sector is generally regarded as one that is difficult to classify. For example, an industry that uses materials such as rocks in their raw state is classified as mining, but one using the chemical reaction of the same raw materials to produce something new may be classified as chemical. The classification may also vary depending on the intended use. For example, an industry using chemical reactions for production may yet be classified as belonging to the food, rather than chemical, sector if the products are finally consumed as food or beverages.

26. Japan has official domestic standards in place to classify industries, called the Japan Standard Industrial Classification (JSIC), established by the Ministry of Internal Affairs and Communications. Of the JSIC sub-divisions, "manufacture of chemical and allied products" falls squarely under the chemical sector. Another sub-division, "manufacture of plastic products," is also judged as belonging to the chemical sector because plastic products are produced mainly from petroleum via chemical reaction. It is therefore from these two sub-divisions, aggregated as the "chemical sector", that cases are sampled for the following analysis.

3.3 Outline of collusion cases in the chemical sector

27. Analysis was performed on collusion cases that occurred in the chemical sector during the period from 1985 to 2014. It turned out that no collusion was repeated for exactly the same products and that no multiple cases of collusions occurred in the same sub-subdivisions[6].

[6] The JFTC may issue multiple cease and desist orders for one case for legal technicality reasons. In such a case, the antimonopoly violation was counted as one occurrence even though the violator receives multiple cease and desist orders, because the violator is not regarded as "having repeated the violation" in the sense discussed in the text.

28. The analysis also identified 18 companies (hereinafter, "repeaters") in the chemical sector against which the JFTC has issued cease and desist orders several times[7]. Annex 1 gives the summary of the cases in which these repeaters were involved while Annex 2 shows the distribution of the repeaters across cases.

29. The following details these 18 repeaters and the collusion cases in which they were involved.

3.4. Overview of the 18 repeaters and their collusion cases

30. All of the 18 repeaters were well-established major companies or the subsidiaries of such. None were so-called startups.

31. Annex 1 indicates that cartels were a more common type of collusion than bid-rigging in this sector.

32. As shown in Annex 2, three of the 18 repeaters were most often—five times—recipients of cease and desist orders, followed by two repeaters that received them four times, two repeaters for three times and 11 repeaters for twice.

33. It also shows that two or more of the 18 repeaters were involved in 13 of the 18 collusion cases in which the 18 repeaters were involved. Of the 18 collusion cases, the largest number of participants from 18 repeaters was six (in one case), followed by five repeaters in two cases, four in four cases, three in two cases, and two in four cases.

3.5. Possible factors to create a collusion-prone situation in the chemical sector

34. Considering generally accepted characteristics of the chemical sector, as well as the results of the analysis in 3.4. above, possible factors to create a collusion-prone situation may include the following:

3.5.1. Difficulty of new entry

35. As described in 3.4. above, all of the 18 repeaters were well-established major companies or the subsidiaries of such, with no so-called startups among them.

36. Generally, the chemical sector is a typical capital-intensive industry and companies operating in this sector need large-scale plants which require massive investment for chemical production. In addition, economies of scale tend to work well in such a sector.

37. These characteristics of the sector may have something to do with the fact that no startups were included among the 18 repeaters. That is, non-involvement of startups may be because starting business in the sector requires massive investment, which acts as an impediment to new entry.

38. In other words, the situation where few new entrants are coming into the market may facilitate collusion. The unlikeliness of new entrants coming into the market reduces the risk that existing players engaging in collusion may lose customers to new entrants.

3.5.2. Similarity of lineup of players in collusion

39. As described in 3.3 and 3.4 above, the chemical sector saw neither repeated collusion regarding the same products nor multiple collusion cases in the same sub-subdivisions of the sector. Meanwhile, two or more of the 18 repeaters were involved in a majority of the 18 collusion cases mentioned in 3.3 and 3.4.

[7] For this analysis, parent companies and subsidiaries for which they owned a more than 50% share were regarded as the same companies. So were pre- and post-merger corporations.

These facts suggest that the lineup of players in collusion, even though for different products, is often the same in the chemical sector.

40. As described in 3.5.1. above, entry into the chemical sector may require massive capital investment for constructing chemical plants, which is an obstacle to new entrants. Meanwhile, for example, a petrochemical complex, once constructed enables the production of various chemical products. This means that although difficult to enter, the chemical sector is considered to have technical similarities in chemical production, which is likely to allow the regular lineup of players to participate in different collusions regarding various products.

41. This situation, as well as the difficulty of new entry, may create opportunities for the players to cooperate with each other and strengthen their collusion. This is because, in the case of collusion regarding two or more products, betrayal of collusion regarding one product could invite retaliation in terms of the other products, making it difficult to stop colluding.

3.5.3 Similarity in cost structure

42. Most raw materials for use in the chemical sector, such as industrial salt, crude oil, fluorite, and coal, are not found in Japan. They are mainly imported from overseas.

43. The main pricing elements of such raw materials are the demand-supply balance in Japan or the wider region and the foreign exchange rate. In the chemical sector, therefore, changes of materials costs are similar across companies. Meanwhile, materials costs in this sector make up a relatively larger portion of costs of goods sold than in other manufacturing sectors, thereby making it easier for the enterprises to predict the competitors' cost structures. For example, if materials costs rise due to tight supply and demand of a certain material or depreciation of the yen, chemical sector companies would generally wish to pass on increased costs in the form of higher product prices. All the companies would be in the same boat. If they all wish to pass on increased costs in the form of prices for their products, and are in a situation where they can know the others also wish to do the same, then it would be easy for one company to approach others with a proposal for collusion.

44. We see this actually played out in Case 12 (See Annex 1), for example, where the increased materials costs acted as one of the triggers for cartel formation. In order to raise the prices of products subject to the cartel, there needed to be circumstances where a large number of customers were easily persuaded, such as a persistent increase in prices of raw materials, so that the companies involved in the cartel can refer to the increase in material prices when launching the cartel formation.

45. Therefore, such cost-related characteristics of the chemical sector may be a factor that facilitates collusion.

3.6 Summary

46. To make an accurate analysis, it is necessary to discuss carefully to what extent the term "chemical sector" should cover and by what factors "serial offenders" should be defined. In addition, while a parent and its subsidiary companies in this analysis are regarded as one, the parent-subsidiary relationship was determined based on the current capital ownership because it was difficult to confirm their capital ties at the time of violation. Accordingly, it should be understood that this analysis is subject to certain assumptions and data limitation. Therefore although it can be argued that some characteristics of the chemical sector were found by this analysis, specific numbers and data included in the paper are for reference purposes only and the evaluations in 3.5. above can be speculative. Still, it is noteworthy that there are some common features between the results of quantitative study in Section 2 and the findings of Section 3 which also took qualitative factors into account.

4. Application of Increased Surcharge Rates for Repeated Violations under Article 7-2(7) of the AMA

47. Finally, this section explains the stipulation regarding increased surcharges for repeated violations, implemented under Article 7-2(7) of Japan's 2005 revised AMA[8].

4.1. Background for implementation of the regulation

48. Repeated offenders violate the AMA even though they paid surcharges in the past. This suggests that they may still benefit despite surcharge payment. Considering this point, the JFTC implemented a program to raise surcharge calculation rates applied to repeated violators to the levels necessary to prevent repeated violations.

4.2. Overview of the regulation

49. This regulation applies to violators who have received one or more surcharge payment orders during the period of 10 years prior to the date of the current surcharge payment order[9].

50. From the point of view of preventing violation, the provisions of the regulation apply to enterprises with repeated violations such as cartel, bid-rigging or private monopolization. For example, the provisions apply when an enterprise involved in bid-rigging in the period of 10 years engages in a cartel or a private monopolization.

51. When the provisions apply, the surcharge amount will be 1.5 times higher than when they do not.

52. For example, if a manufacturer that is not a small and medium sized enterprise is involved in a cartel, it will usually be surcharged at the rate of 10% of the sales of products covered by the cartel but at the rate of 15% when the provisions apply.

53. Annex 3 shows cases to which the provisions have been applied (numbers of the cease and desist order and violators) since their implementation and the industries (JSIC sub-divisions) where the cases have occurred.

5. Conclusion

54. This contribution paper presents the empirical analysis and the case analysis in Section 2 and 3, respectively. Neither may apply to other countries, given that circumstances in the chemical sector may vary from country to country and industrial classification also varies depending on the country.

55. However, in view of the fact that the empirical analysis in Section 2 and the case analysis in Section 3 have some common features, they may provide some insights that apply to cases in other countries, including factors that facilitate collusion. We hope they provide some useful information for the implementation of competition law in other countries.

[8] The regulation went into effect in 2006.

[9] Including cases where they have been exempted from the surcharge payment order under the leniency program, and where they have been excluded from the surcharge payment order under the provisions of adjustment with criminal penalties.

56. This paper has also explained the regulation to impose increased surcharges on repeat violators. This regulation has been implemented to give disincentives to repeat violations in Japan. Although its deterrence effect is yet to be proven it will hopefully serve as a useful reference.

ANNEX 1
Summary of the cases in which 18 repeaters were involved

Case Number	Type of conduct	Particular field of trade	Of the 13 collusion participants, those involved in individual cases	Summary of case
Case 1	Price Cartel	(i) A type of extruded foam in the Tokyo area (ii) A type of extruded foam in the Kinki area	A, D, E, H	The participants colluded to raise the sales prices of (i) a type of extruded foam in the Tokyo area and (ii) a type of extruded foam in the Kinki area.
Case 2	Price Cartel	Cartridge-type silicone sealants	B, C, I, Q, R	The participants colluded to raise the sales prices of silicone sealants.
Case 3	Price Cartel	Emulsions for painting materials	H, J, K, L, O	The participants colluded to raise the sales prices of emulsions for painting materials.
Case 4	Price Cartel	Paper-phenol copper clad laminates	A, F, H	The participants colluded to raise the customer-delivered prices of paper-phenolic copper clad laminates.
Case 5	Price Cartel	Stretch films	B, F, G, I, L, R	The participants colluded to raise the sales prices of stretch films.
Case 6	Bid-Rigging	PVC pipes ordered by Niigata Prefecture for use in agricultural and marine properties	B, C, I, M	The participants colluded to decide in advance which company should win contracts for PVC pipes for use in agricultural and marine properties ordered by Niigata Prefecture. They had the exclusive tubing dealers estimate the prices of pipes to ensure that the prospective bidder would successfully win the order to supply pipes to public works contractors at the lowest estimate price.
Case 7	Price Cartel	(i) Planographic regular ink, etc. (ii) Soft packing rotogravure ink (iii) Newspaper ink	J, K	The participants colluded to raise the sales prices of (i) planographic regular ink, etc., (ii) soft packing rotogravure ink, and (iii) newspaper ink.
Case 8	Bid-Rigging	Medical nitrous oxide	O, P	The participants decided the bid and other prices per 30-kg cylinder of medical nitrous oxide ordered through bidding or other process by national universities or other institutions.

ANNEX 1
Summary of the cases in which 18 repeaters were involved

Case Number	Type of conduct	Particular field of trade	Of the 13 collusion participants, those involved in individual cases	Summary of case
Case 9	Bid-Rigging	(i) Low salt sodium hypochlorite for 10 sewage disposal plants (ii) Low salt sodium hypochlorite for the Toyono water purification plant (iii) Low salt sodium hypochlorite for the Mishima water purification plant (iv) Low salt sodium hypochlorite for 4 water purification plants and 4 sewage disposal plants	A, G, H	The participants decided which company should supply (i) low salt sodium hypochlorite for 10 sewage disposal plants ordered through designated bidding or other process by Osaka City; (ii) low salt sodium hypochlorite for the Toyono water purification plant ordered through designated bidding by the Osaka Municipal Waterworks Bureau; (iii) low salt sodium hypochlorite for the Mishima water purification plant ordered through designated bidding by the Osaka Prefectural Waterworks Administrator; and (iv) low salt sodium hypochlorite for 4 water purification plants and 4 sewage disposal plants ordered through negotiation with estimates or other process by the Kyoto Municipal Water and Sewage Works Administrator. The participants ensured the prospective supplier could supply such products.
Case 10	Price Cartel	Polypropylene	G	The participants colluded to raise the sales prices of polypropylene.
Case 11	Bid-Rigging	Medical liquefied oxygen for stationary liquid oxygen storage tanks	N	The participants colluded to decide which company should win contracts for medical liquefied oxygen for stationary liquid oxygen storage tanks ordered through open bidding or other process by national and public hospitals or other institutions in Osaka Prefecture. They ensured the prospective bidder would successfully win the contracts.
Case 12	Price Cartel	Vinyl chloride resin modifiers	A	The participants colluded to raise the sales prices of modifiers to be added to vinyl chloride resin.

ANNEX 1
Summary of the cases in which 18 repeaters were involved

Case Number	Type of conduct	Particular field of trade	Of the 13 collusion participants, those involved in individual cases	Summary of case
Case 13	Price Cartel	(i) General-purpose PVC flooring sheets (ii) Composite vinyl flooring sheets (iii) General-purpose tile carpets	Q	The participants colluded (i) to set and raise the lowest sales price of general-purpose PVC flooring sheets in Japan except the Okinawa area, and keep offering prices in response to inquiries already made; (ii) to set the lowest sales price of 2.8-mm-thick composite vinyl flooring sheets in Japan except the Okinawa area, and keep offering prices in response to inquiries already made; and (iii) to set the lowest sales price of general-purpose tile carpets, and keep offering prices in response to inquiries already made. Contrary to the public interest, they thereby substantially restrained competition in the sales of general-purpose PVC flooring sheets in Japan.
Case 14	Price Cartel	(i) Polyethylene gas pipes (ii) Polyethylene gas pipe fittings	C,G,I,M	The participants colluded to raise consumer-delivered prices of (i) polyethylene gas pipes and (ii) polyethylene gas pipe fittings.
Case 15	Price Cartel	PVC pipes and PVC pipe fittings	C,I	The participants colluded to raise consumer-delivered prices of (i) PVC pipes and (ii) PVC pipe fittings.
Case 16	Price Cartel	Cross-linked highly foamed polyethylene sheets	F	The participants colluded to raise consumer-delivered prices of cross-linked highly foamed polyethylene sheets.
Case 17	Price Cartel	Specific air separate gas	N, P	The participants colluded to raise the sales prices of specific air separate gas.
Case 18	Bid-Rigging	Specific EPS blocks	A, D, E, H	The participants colluded to decide which company should win contracts for specific EPS blocks, and ensured the prospective bidder would successfully win the contracts.

ANNEX 2

Participation Situation of 18 Repeaters

Participant / Case Number	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Case 1	○			○	○			○										
Case 2		○	○						○								○	○
Case 3								○		○	○	○			○			
Case 4	○					○		○										
Case 5		○				○	○		○			○						○
Case 6		○	○						○				○					
Case 7										○	○							
Case 8															○	○		
Case 9	○						○	○										
Case 10							○											
Case 11														○				
Case 12	○																	
Case 13																	○	
Case 14			○				○		○				○					
Case 15			○						○									
Case 16						○												
Case 17														○		○		
Case 18	○			○	○			○										

ANNEX 3

Participation Situation of 18 Repeaters

The number of cases in which increased surcharge rates for repeated violations were applied, Gross number of companies and industrial classification

FY (From April to March)	Number of cease and desist orders, etc. (※)	Gross number of companies	Industrial classification of the case in which increased surcharge rates were applied（middle classification, Japan Standard Industrial Classification（※※））
FY 2014	1	1	Construction work, general including public and private construction work
FY 2013	4	9	Equipment installation work
FY 2012	4	4	Manufacture of electrical machinery, equipment and supplies
FY 2011	5	5	Manufacture of chemical and allied product, Road passenger transport and Manufacture of transportation equipment
FY 2010	5	9	Construction work, general including public and private construction work and Manufacture of non-ferrous metals and products
FY 2009	3	3	Manufacture of iron and steel
FY 2008	1	2	Manufacture of plastic products, except otherwise classified
FY 2007	6	18	Manufacture of plastic products, except otherwise classified, Construction work, general including public and private construction work, Equipment installation work, Professional services, n.e.c. and Manufacture of rubber products
FY 2006	0	0	
Total	29	51	－

※ “The number of cease and desist orders, etc” adds up the total number of orders issued in each case is different from the numeration used at note 6 in the body text of the contribution paper.

※ ※http://www.soumu.go.jp/english/dgpp_ss/seido/sangyo/index.htm