Settlements in Cartel Cases

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Introduction: The need for a settlement procedure in cartel cases

There is little doubt that the fight against cartels is one of the most important objectives of Antitrust Authorities, and the European Commission (EC herewith) represents no exception in this regard. During the last decade or so, the EC has created a Directorate on cartels, has toughened its fines for antitrust violations (and in particular the most serious ones, such as cartels), and has relied on a Leniency Policy which has met considerable success. First introduced in 1996 without much effect, the Leniency Policy has been considerably improved in 2002, year in which it started to show very positive results: in the five years after the Leniency Notice of February 2002, more than 100 applications for immunity were filed to the EC, witnessing that this is an essential instrument for uncovering cartels. Indeed, a large part of the cartel Decisions by the EC during the last years were initiated by leniency applications.[1]

While the Leniency Policy has been successful in triggering evidence by cartel participants and thus in determining the collapse of several cartels, it has not reduced considerably the length of the cartel proceedings, which is another potential benefit of leniency programmes.[2]

Figures 1 and 2 indicate the average 'relative' length of cartel investigations for selected years, where the 'total' length of the investigation is the number of months elapsing from the dawn raid (the first publicly observable event that an investigation is under way) until the day the Commission Decision is made. There are then two possible ways to measure the 'relative' length of cartel cases: (i) to divide the total number of months by the number of undertakings involved; (ii) to divide it by the number of legal entities involved (several legal entities may belong to the same 'undertaking' as it may be the case when subsidiaries located in different member states belong to the same business group). By using the first measure (Figure 1), length in recent years is not very dissimilar from the length during the decade 1986-1996. By using the second measure, an improvement in recent years can be detected, although the raw data presented in Appendix 2 show that even the relatively 'quick' cartel decisions taken in 2006-7 rarely

[1] For a discussion and evidence on cartel activity of the EC, see e.g. Massimo Motta, "On Cartel Deterrence and Fines in the European Union", *European Competition Law Review*, 29(4), 2008: 209-220.

[2] The economic literature identifies two main beneficial effects from leniency programmes. The first one is to induce cartel members to report evidence about the cartel in order to benefit from immunity before other firms do; the second one is to make cartel prosecution easier and shorter, as leniency applicants provide the necessary evidence. See e.g. Motta and Polo (2003).

last less than three years: the Commission's scarce resources are clearly occupied for too long with cartel cases, even when leniency programmes have unveiled crucial documentary evidence.
Settlements in cartel cases may then allow to speed up the prosecution of cartels, and to a more efficient use of resources for competition authorities.

INSERT FIGURES 1 AND 2 HERE

In the rest of the paper, first we shall briefly report on the economic literature on settlements which may helpful to understand the role and effects of settlements in cartel cases in an administrative system; then we shall comment upon the possible design of such settlements, in particular trying to quantify the incentives that should optimally be given to the settling firms. To anticipate our results, we shall conclude that a 10% fine reduction to firms which agree to settle with the Commission may be too weak an incentive for firms. If we are correct (and we hope we are not!), this means that the settlements participation rate will not be high enough to effectively reduce the duration of cartel proceedings.

A Brief Economic Literature Review

The law and economic literature has devoted considerable attention to settlements and their criminal counterpart called "plea-bargaining". A rich literature has developed on the determinants which affect the likelihood that a case will settle, the terms on which it is settled and how the choice between settlement and litigation affects social welfare. The settlements analyzed by the economic and law literature slightly differ from the settlements in cartel cases since the former settlements:

1. can be interpret as private contracts used to avoid going to court;
2. are usually among private actors;
3. usually regard cases in which one of the issues at stake is the guilty of the defendant.

Settlements in cartel cases instead:

1. are used during the Commission's Decision process and are not an instrument used to avoid the court;
2. are between the undertaking and the Commission;
3. the only uncertainty of settlements in cartel cases is related to the amount of the fine the undertaking has to pay while violation of the law as already been established.

Because of these differences, only some of the elements investigated by the literature on settlements can be used in the analysis of settlements in cartel cases. We thus briefly report the literature relevant for settlements in cartel cases, and the pros and cons recognized by the literature that apply to them.

The literature lists a series of determinants that help the parties to settle. Rationality of agents would lead to believe that saving the costs of court proceedings is always efficient, however not in all cases there are settlements. Landes (1971), and Posner (1973) are the earliest authors who identify in the existence of divergent parties expectations, the most influential account of why parties may fail to settle, with

litigation ending up in courts. The authors therefore suggest that, in order to make the settlement possible, the negotiation process must be designed to make parties' beliefs converging.[3]
Another crucial factor that determines the success of the agreement is the division of the settlement's surplus among parties.[4] The surplus obtained in the settlement derives from saving the costs of trial. Each party has an incentive to seek the lion's share of this surplus, and if the parties do not reach a compromise on how to share the surplus, the settlement may again fail.
Finally the literature has devoted some attention also to the role of the settlement's timing; as time goes by, more information becomes available but cost savings go down. There is thus an optimal timing for settlements, which to determine is non-trivial, especially because the prosecutor and the accused may not have the same incentives related to time.[5]

Settlements' Pros

There is wide consensus on the benefits of the settlement procedure. The most important benefit of settlements is related to the conservation of economic resources. Landes (1971) considers the condition under which settlements benefit both the prosecutor and the defendant assuming that court trial would require considerable costs for both parties. Adelstein (1978) extends Landes' analysis to incorporate the time-related costs of trial proceedings. The authors conclude that there are advantages for both parties: prosecutors can save the trial costs and defendants can minimize the costs of punishment. Besides private costs saving there are also public costs savings: the parties' time and litigation expenses typically constitute only a small fraction of the costs incurred in adjudicating their dispute, the rest of these costs being borne by the public.[6]
Finally the resources freed through settlements can be allocated to the prosecution of more cases and in a more effective way.[7]

Settlements' Cons

The most relevant argument against settlements is that settlements can reduce deterrence. Miceli (1996) analyzes the deterrence effects on primary behavior generated by the anticipated resolution of a case. A settlement resolution, through the reduction of the expected punishment, can reduce the deterrence effect and increase the rate of infringement of laws. The higher the expected penalty reduction, the bigger will be the deterrence's decline. A possible way to avoid reduction of deterrence, as suggested by La Casse and Payne (1999) would then be to couple settlements with harsher sentencing.

[3] In the case of settlements in cartel cases parties which agree to settle save the costs they would sustain in a longer Decision process.
[4] See Cooter et. al (1982).
[5] See Franzoni (1999) about the role played by the timing and the information available to the parties.
[6] See Hay and Spier (1998).
[7] See Easterbrook (1983).

Benefits and Drawbacks of Settlements in Cartel Cases

The economic literature on settlements and plea-bargaining can be used to analyze the likely effects that settlements in cartel cases could generate. The European Commission has proposed to use settlements during the Decision process, in order to accelerate it. We devote this section to the analysis of potential benefits and drawbacks associated with settlements in cartel cases.

Benefits

There is large consensus that the saving of time and costs are significant benefits of cartel settlements. As pointed out in the previous section, even when firms apply for the Leniency Program (LP), and documentary evidence proving the involvement of firms has been established and is common knowledge to the firms and the Commission, the time span between the dawn raid and the infringement Decision remains quite long, due to the procedural steps involved in the Decision process. The settlement procedure should reduce this time by relieving the Decision's administrative burden. This would be done by minimizing costs and delays that are inherent to the ordinary procedures, such as the requirement of multiple translations, of holding oral hearings, or the requirement to organize a full access to file.

A shorter Decision process benefits not only the Commission, through the costs savings, but also the undertakings involved in the process: through a quicker Decision, undertakings save both legal and consultancy costs, and also the "managerial distraction costs" due to the decrease in productivity of the managers that are involved in the Decision process, and whose time and attention would be put to a better use in managerial activities.

Moreover, if the resources saved through the use of settlements are used by the Commission to deal with other cases, settlements can increase the detection rate of cartels, increasing the *ex ante* deterrence effects.[8]

Finally, since the parties involved in a settlement agreement are less likely to appeal the infringement Decision, settlements can reduce the likelihood of appeal to Court and can thus save the associated costs.

Drawbacks

A possible settlements' drawback is related to the fine reduction. Since the Commission guarantees a fine reduction to secure the deal, lower fines are imposed, and deterrence can be diluted. However deterrence may not be diluted, if more resources were directed to the detection of cartels.

When deciding whether to violate the law, the undertaking compares the gain it gets from the violation, with the expected costs associated with being detected, that is the fine it would obtain once detected times the probability of detection. In formal terms, this trade-off can be written as:

$$\prod \geq \rho F$$

[8] Motta and Polo (2003) analyze the effects of a change in the probability of being detected by the antitrust authority, in a model where the LP play a similar role as settlements: by supplying documental evidence to the antitrust authority, LP allow it to save costs of prosecuting cartels; resources saved in this way can be used to screen for new cartels.

where $\prod$ represents the profits from infringing the law, ρ represents the probability of being detected by the antitrust authority and F represents the amount of the fine. Assuming that the probability of being detected ρ is constant, if the expected fine decreases, for instance because of the settlement, the minimum profits required to infringe the law reduces as well, and a diluted deterrence effect occurs. This causal effect is true as long as the probability of being detected is constant. However, if the resources freed through the use of settlements, are devoted to the detection of other cases, then the probability of being detected increases. In this case the net effect on deterrence is ambiguous. The deterrence will decrease if the increment in the probability of being detected does not compensate the fine reduction, but deterrence can stay constant or even increase if the probability of being detected more than compensate the fine reduction.[9]

Several commentators remarked on another potential drawback of settlements, which may in principle come from the interplay of LP and cartel settlements. If the reductions in the penalty attainable via settlements were too high, there could be a negative effect on the incentives to apply for the LP. If the sum of the fine reduction associated with settlement and that associated with the LP is equal to the full immunity, the incentive of being the first undertaking that applies for the LP strongly declines, and with it also the LP efficacy in helping break cartels. In this occurrence the cartel detection rate may decrease since undertakings would prefer to use a "wait and see" strategy instead of competing against each other to be the first applying for the LP. In the Commission Notice on settlements, however, LP and settlements penalty reductions are made available on a cumulative basis, and the fine's reduction associated with settlements is not very high (10%). Therefore, the undertakings' possibility to cumulate the two fine reductions should create an incentive to apply for both programs, and the small reduction for settlements – relative to immunity and fine reductions under the leniency Notice – should guarantee that settlements will in practice not have any negative effect on LP.

The settlements' benefits and drawbacks suggest analyzing the optimal settlement design in order to maximize the advantages and minimize the disadvantages associated with settlements in cartel cases. In the next section we investigate the tools the Commission can use to achieve this goal.

[9] Obviously higher deterrence can be achieved by increasing the maximum fine imposed by the authority. However the authority cannot increase indefinitely the fine, since exceeded a given value, the fine negatively affects the overall economy outcome (for instance because firms would have to go in bankruptcy). More specifically there is in Europe nowadays the perception that antitrust fines have considerably increased since the adoption of the latest fining Notice, and it is unlikely that there could be further increase in fines.

Settlements Design

The design of a settlement procedure is fundamental for its success. In this section, we investigate the features that influence the decision to settle both for undertakings and for a competition authority. The analysis is divided into two parts. The first part is dedicated to the settlements design and the effects that the procedure can have on private actions. The second part is dedicated to the assessment of the optimal fine reduction that should be granted to firms to induce them to settle. We will propose a possible benchmark value using data on the Commission's and appeal Court's fines imposed to all the EC infringements from 1970 to 2007, and we shall conclude that the 10% reduction being awarded by the Commission under the Notice may well be too weak an incentive for firms to settle.

Settlement Procedure

Under the Notice, the Commission has the discretion to select cases that can settle and reserves the right to withdraw from the settlement procedure. For what concerns the selection of cases, the Commission's intent is to consider for settlement only those cases which present high probability to reach a common understanding: if a common agreement were not found, there would be large costs for both the Commission and for the undertakings. For the Commission there would be a waste of resources and time, for the undertakings there would be problems related to the disclosure of information during the settlement procedure that could be used against them in the final Decision.[10] As for withdrawal from the settlement procedure, the Commission's motivation is less clear, and probably resides mainly (or only) in the formal respect of the responsibility of the College of the Commissioners, which is the body that officially takes decisions. On the one hand, the Commission's discretion could reduce the undertakings' willingness to settle since they could fear that after revealing crucial information, the Commission might break the settlement. On the other hand, given the strong interest of the Commission in successfully concluding the settlement, and the careful choice of the case to settle, it is unlikely that the Commission will want to withdraw from a settlement agreements, unless unexpected circumstances occur after the settlement submission. If undertakings are aware of this, and they should be, then settlement agreements will not be affected by the discretion of the Commission.

The settlement's success can also be undermined by the uncertainty about the level of the fines to be imposed on the violators. The procedure foresees that the Commission proposes a possible range of fines, and then, in the settlement submission, the undertaking has to indicate the maximum amount of the fine which it is going to accept in order to settle. If the maximum fine proposed by the undertaking is smaller than the Commission final Decision's fine, the settlement fails. Instead of leaving the discretion and the choice of the maximum fine to the undertaking, the Commission and the undertaking should agree on a given fine before the settlement submission. In this case the process would be faster and the success of the settlement more certain.

When entering in the settlement agreement, undertakings evaluate also the impact of the settlement on follow-on damages actions. Settlements may affect firms' exposure to private litigation, by making them quicker and more likely. If the settlement increases the probability of private actions, the fine reduction associated with it could be not sufficient to attract undertakings to settle, and if the private actions'

[10] The Notice clearly states that if a common agreement is not reached by the parties, the acknowledgments provided by the parties in the settlement submission could not be used against any of the parties to the proceedings; however, parties may worry that any information disclosed during the procedure may later be used by the Commission.

damages exceed the fine reduction, undertakings will not find it optimal to settle. Therefore, it would be appropriate to design the settlement procedure in such a way that the probability of incurring in private actions would not be higher than the probability of private actions that the undertakings face in the standard Decision process. While the increment of private actions' risk can be interpreted as an instrument to increase deterrence, the voluntary nature of settlements suggests that the eventual increment of private actions' risk would have just a negative effect on settlements' participation rather than a positive effect on deterrence.

Optimal Fine Reduction

The Commission Notice specifies the amount of the fine reduction associated with settlement at the level of 10%. The fine discount is crucial for the success of a settlement procedure. On the one hand, too high a fine reduction might have negative effects on deterrence (and even on the participation to the leniency programmes); on the other hand, too low a fine reduction does not create incentives for undertakings to settle. Obviously, it is not straightforward to quantify the optimal amount of fine's reduction. In the previous sections we have listed a series of factors which affect the settlement success. We add to the list also the interplay between settlements and appeal to the Court. The Commission Notice does not impede undertakings to appeal to the Court after the settlement is over, but it would be surprising if undertakings that have settled will receive a fine reduction by the Court. When deciding to enter in a settlement the undertaking thus will compare the fine it would receive if settling, with the fine it would expect to receive if appealing the Court. If the latter exceeds the former, the undertaking will decide not to settle. Among all the factors that influence the undertakings' decision to settle, the expected fine reduction that an undertaking can receive by appealing the Commission's Decision can be quantified. In light of this consideration, in the next section we analyze the average fine reduction received by undertakings which appealed to the Court. Through the analysis of those data we propose a possible benchmark fine reduction associated with settlements.

A tentative benchmark: the fine reductions awarded by Courts

Through the analysis of the final Decision fines inflicted by the Commission and the correspondent reductions given by the Community Court, it is possible to establish the average fine reduction received by undertakings that appealed. The analysis is based on all the European competition law infringements occurred between 1970 and 2007.[11]

The data analysis suggests that the expected fine reduction received by undertakings if appealing the Commission's Decision is equal to 26%.[12] This percentage represents a benchmark value of the expected gain from appealing the Commission Decision to the Community Courts, but it may miss some important dimensions of the appeal. On the one hand, an undertaking appealing to Court bears legal costs and consultancy fees which are not easy to quantify but which are non-negligible; it also incurs a cost due to the managerial distraction, and all this can decrease the profitability of appealing. On the other hand, some commentators argue that a manager may have an incentive to postpone a final (negative) decision to a later period when he or she may not be working in the company any longer, rather than settling and

[11] We do not distinguish between infringements of Art.81 and Art.82, but the former consists of the vast majority of cases.
[12] See the Appendix 1 for more details on the analysis.

renouncing to the appeal, which may be interpreted as an admission of responsibility (and would entail an immediate payment of the fine, when financial assets may instead be used for other purposes).[13]

A more accurate estimate of the optimal fine reduction for settlements should try to quantify all the gains and losses that both parties have in entering the settlement, and we believe that a more structured empirical analysis in this direction could be a promising agenda for future research. However, to the extent that participation to the settlement procedure undermines the rationale of appeal to the Community Courts, or at least its possibility of success, even the mere estimate of the average expected fine reduction of an appeal can be suggestive. Our estimation tells us that – on the basis of all evidence on competition case law – a firm which appeals to the courts should expect a reduction of the fine by roughly a quarter: will a 10% reduction a sufficient incentive for agreeing to settle?

Conclusions

In this paper we have analyzed the economic effects of a settlement procedure in cartel cases, and argued that the settlement procedure will speed up the prosecution of cartels and save resources.

We have focused the analysis on the optimal fine reduction determination, since it is crucial for the success of settlements: on the one hand, too low a fine reduction would compromise the participation rate of firms into settlements; on the other hand, too high a fine reduction would affect deterrence.

We have proposed a tentative quantification of the optimal fine reduction through the analysis of the fines imposed by the Commission and the corresponding fine reductions awarded by the Community Courts, for all the European competition law infringements occurred between 1970 and 2007. This exercise has been motivated by the consideration that a firm which decides to settle likely foregoes the possibility to appeal to the Court since, even if the Commission Notice does not impede undertakings to appeal to the Court, it is unlikely that after settling undertakings receive a fine reduction by the Court. For this reason, when deciding to enter in a settlement the undertaking will compare the fine it receives if settling, with the fine it would expect to receive if appealing to the Courts. If the latter exceeds the former, the undertaking decides not to settle. Our empirical analysis shows that the expected fine reduction of a firm that appeals to the Community Courts is about 26%.
Our result is quite far from the 10% fine reduction established by the Commission. This discrepancy casts doubts on the ability of the fine reduction to attract firms to settle.[14] If we are right, then the settlement partecipation rate will be low and the whole impact of settlements' introduction on the lenght of cartels' prosecution will be quite small.

[13] However, empirical research shows that both the surprise inspection and the Commission's infringement decision are events which trigger a sizeable reduction – each by the order of 2% - in the firm's share prices. This would suggest that the market 'punishes' the firm for the violation (or expected violation) without waiting for the Court judgment. See Gregor Langus and Massimo Motta, "On the Effect of EU Cartel Investigations and Fines on the Infringing Firms' Market Value", in Claus-Dieter Ehlermann and Isabela Atanasiu (eds.), *Enforcement of Prohibition of Cartels*, Hart Publishing, 2007, pp. 363-376.
[14] This is especially true if the firms prefer to engage in delaying tactics (for instance if the current management prefers to postpone the payment of fines to the future, when a different management may be in charge) or if they are risk-lovers (there is some empirical evidence in support of this hypothesis).

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Appendix 1

The fine reductions awarded by the Court

In this appendix we describe in details the data's analysis. We have organized the dataset in two samples. The first sample (D1) coincides with the whole dataset. In this sample, we consider both the undertakings that appealed and those that did not appealed. The second sample (D2) is a subset of D1 which includes only the undertakings which appealed to the court. In D1 we have normalized to zero the hypothetical fine reduction that undertakings receive if they appeal. This assumption implies that the undertakings which decided not to appeal did so because they anticipated that in appeal they would receive a zero fine reduction. Of course if undertakings had appealed, they could also have received a discount bigger than zero. In this case the fine reduction would be bigger than the one we have estimated based on the zero discount assumption. We thus assume a zero discount for the firms that did not appeal to compute a lower-bound fine reduction, which represents the lowest possible average fine reduction given by the Court.

On each dataset we have computed two statistics. The first statistic (S1) has been computed by averaging the percentage fine reduction received by undertakings in each case. The second statistic (S2) has been computed by first averaging the Decision's fines, then averaging the appeals' fines, and finally by computing the fine reduction using those averages. The results are reported in the following table.

	S1	S2
D1	26%	24%
D2	39%	35%

From the analysis of S1 computed using the sample D1 it is possible to see that an undertaking which appeals the final Decision of the Commission has, on average, a fine discount of 26%. As expected the averages fine reduction computed on the sample D2 are bigger than that computed on D1, for the reason explained before. When taking the averages of the series before computing the percentage reductions, statistic S2, the fine reduction is smaller than when first computing the fine reductions and then averaging them, statistic S1. Statistic S1 can be interpreted as an unweighted average fine reduction, since the fine reductions are not weighted by their relative value. Instead when first is taken the average, the relative value of the fine is taken into account. The difference between the two statistics, tells us that the Court gives bigger fine discounts to cases which have received a relatively smaller fine during the Decision.

To explain this result we can use an example; suppose that our sample is made by only two cases: in the first, the undertaking receives a fine equal to 10, and on appeal it receives a fine reduction of 100%; in the second case the undertaking receives a fine equal to 100, and on appeal it receives no fine reduction. In this example the undertaking which has the lower fine receives the higher fine reduction. If we compute statistic S1 and S2 on this sample we find that S1 is bigger than S2 (they are respectively equal to 50%, and almost 10%).[15]

[15] If instead the undertaking which has the lower fine receives the lower fine reduction S1 would be smaller than S2.

We have also computed statistic S1 on different time spam to see if the Court's fines reduction has changed through time. The sample used is D2. The results are reported in the following table.

	S1
% Unweighted Average Fine Reduction (1970/1979)	24%
% Unweighted Average Fine Reduction (1980/1989)	16%
% Unweighted Average Fine Reduction (1990/1999)	42%
% Unweighted Average Fine Reduction (2000/2007)	51%

In the last years the fine reduction granted by the Court has increased with respect to the previous years. This increment is particularly pronounced after 2000. The average fine reduction granted from 1970 to 1999 is equal to 32%. [16]

[16] This exercise has been performed using statistic S1 since S2 would be biased from the use of current price fines. Since the official statistic of ECU's CPI is not available from 1970 to 2007, it is not possible to transform the fines from current values to constant values. A price index of ECU's is available from 1990 to 2007; we use this price index to compute constant price fines and to compute on them statistic S2. We find that S2 computed on constant prices fines does not differ much from S2 computed on current prices fines.

Appendix 2

Data on the length of decision

Name of the case	Number of undertakings	Number of legal entities	Inspection date	Date of decision	Length of investigation (months)	Leniency	Per-firm length of investigation (months/undertakings)	Per-firm length of cartel investi-gation (months / legal entities)
Polypropane	15	15	Oct-83	Apr-86	30	no	2.00	2.00
PVC	14	14	Oct-83	Dec-88	62	no	4.43	4.43
Flat Glass	3	3	Jul-85	Jul-88	36	no	12.00	12.00
Welded Steel mesh	14	14	Nov-85	Feb-89	39	no	2.79	2.79
Dutch Building cartel	30	30	Jul-87	May-92	58	no	1.93	1.93
Solvay/ICI	2	2	Mar-89	Dec-90	21	no	10.50	10.50
Solvay/CFK	2	2	Mar-89	Dec-90	21	no	10.50	10.50
Cartonboard	23	39	Apr-91	Jul-94	39	no	1.70	1.00
Far Eastern Freight	14	14	Apr-93	Nov-94	19	no	1.36	1.36
British sugar	4	4	May-94	Oct-98	53	yes	13.25	13.25
Greek Ferries	7	7	Jul-94	Dec-98	53	yes	7.57	7.57
Steamless Steel B	8	8	Dec-94	Aug-99	56	yes	7.00	7.00
Pre-Insulated pipe	10	10	Jun-95	Oct-98	40	yes	4.00	4.00
Carbonless paper	11	11	Feb-97	Dec-01	58	yes	5.27	5.27
Aminoacids	5	9	Jun-97	Jul-00	37	yes	7.40	4.11
Graphite electrodes	8	8	Jun-97	Jul-01	49	yes	6.13	6.13
Industial Glass	7	7	Dec-97	Jul-02	55	yes	7.86	7.86
Zinc Phospate	6	6	May-98	Dec-01	43	yes	7.17	7.17
Austrial Banks	8	8	May-98	Jun-02	49	yes	6.13	6.13
Plasterboard	4	4	Nov-98	Nov-02	48	yes	12.00	12.00
Bank Charges	5	5	Feb-99	Dec-01	34	no	6.80	6.80
Vitamins	13	13	May-99	Nov-01	30	yes	2.31	2.31
Methionine	3	4	Jun-99	Jul-02	37	yes	12.33	9.25
Interbrew	4	5	Oct-99	May-01	19	yes	4.75	3.80
French Brewers	2	4	Jan-00	Sep-04	56	no	28.00	14.00
Monochloroacetic acid	5	12	Mar-00	Jan-05	58	yes	11.60	4.83
SAS/Maersk	2	2	Jun-00	Jul-01	13	yes	6.50	6.50
Methyglycamine	2	3	Jan-01	Nov-02	22	yes	11.00	7.33
Industrial tubes	3	6	Mar-01	Dec-03	33	yes	11.00	5.50
Copper plumber tubes	9	21	Mar-01	Mar-04	36	yes	4.00	1.71
Raw Tobacco Spain	9	13	Oct-01	Oct-04	36	yes	4.00	2.77
Needles	3	6	Nov-01	Oct-04	35	yes	11.67	5.83
Thread	10	17	Nov-01	Sep-05	46	yes	4.60	2.71
Fench Beef	6	6	Dec-01	Feb-03	14	no	2.33	2.33
Rubber Chemicals	4	8	Mar-02	Dec-05	45	yes	11.25	5.63
Raw tobacco Italy	6	8	Apr-02	Oct-05	42	yes	7.00	5.25

Name of the case	Number of undertakings	Number of legal entities	Inspection date	Date of decision	Length of investigation (months)	Leniency	Per-firm length of investigation (months/undertakings)	Per-firm length of cartel investi-gation (months / legal entities)
Industrial Bags	16	26	Jun-02	Nov-05	41	yes	2.56	1.58
Butimen Netherland	14	31	Oct-02	Sep-06	47	yes	3.36	1.52
Methycrylates	5	14	Dec-02	May-06	41	yes	8.20	2.93
Hydrogen peroxide	9	17	Mar-03	Mar-06	36	yes	4.00	2.12
Synthetic Rubber	6	13	Mar-03	Nov-06	44	yes	7.33	3.38
Elevators and Escalators	5	26	Jan-04	Feb-07	37	yes	7.40	1.42
Gas Insulated Switchgear	11	20	May-04	Jan-07	32	yes	2.91	1.60
Copper Fittings	11	31	?	Sep-06		yes		0.00
Dutch beer	4	6	?	Apr-07		yes		0.00

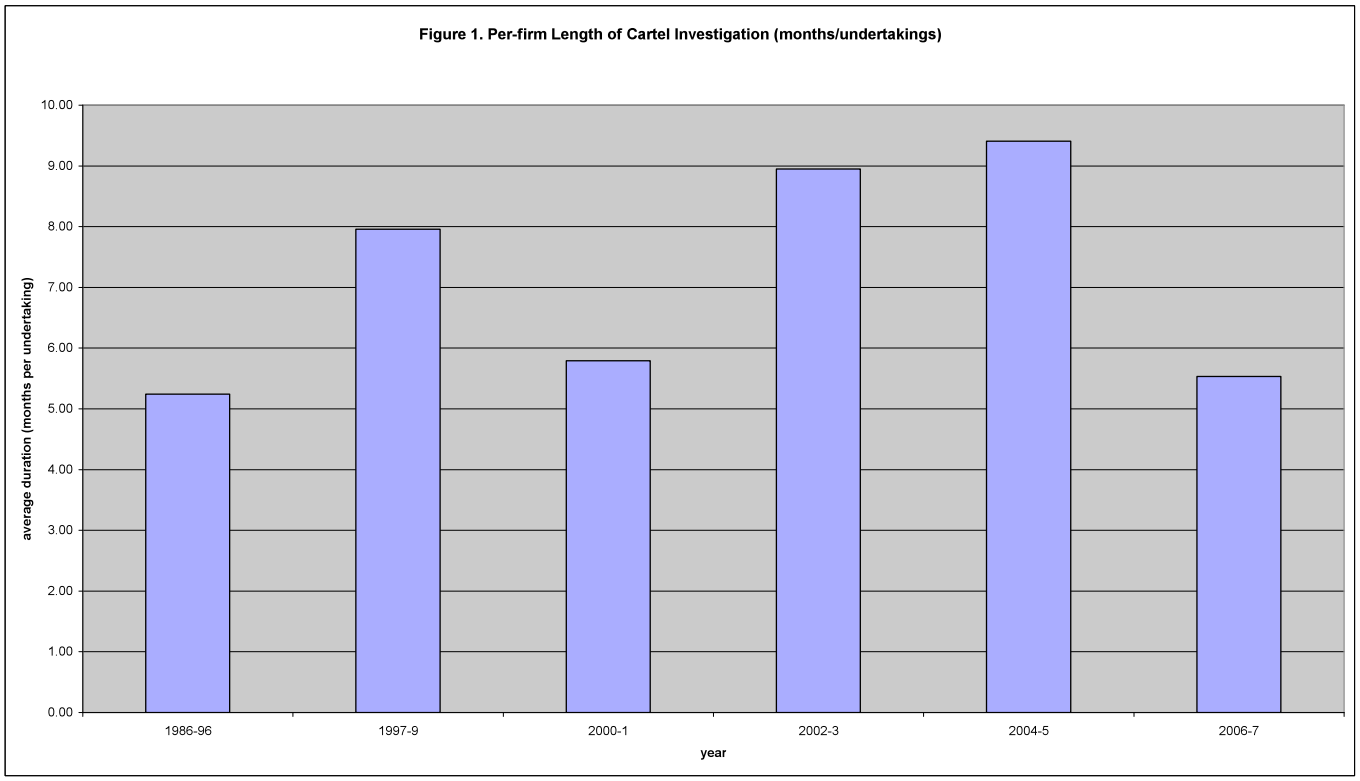
Figure 1. Per-firm Length of Cartel Investigation (months/undertakings)
average duration (months per undertaking)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1986-96
1997-9
2000-1
2002-3
2004-5
2006-7
year

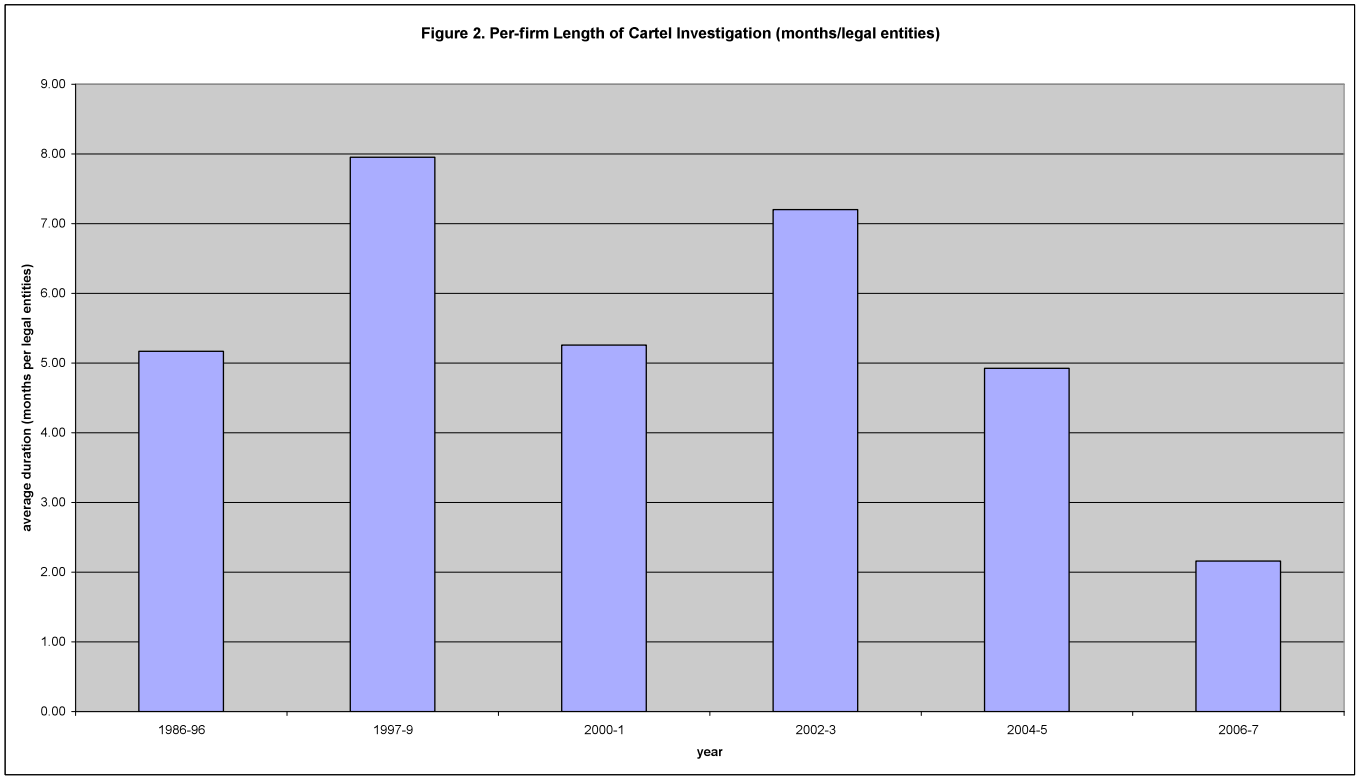
Figure 2. Per-firm Length of Cartel Investigation (months/legal entities)
average duration (months per legal entities)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1986-96
1997-9
2000-1
2002-3
2004-5
2006-7
year