

Deterring Price-fixers

Do EC cartel fines deter price-fixing?

An important aspect of EC competition law is whether the current level of fines adequately deters price fixers. This is determined by the answers to two related questions – (1) Do fines approximate accumulated consumers' losses over the life of the cartel? and (2) Do fines reflect the fact that not all cartels are detected and prosecuted? Here we explore these two questions using data from 24 recent cartel prosecutions by the EC Commission.

Do Fines reflect consumer harm?

Whether fines levied by the EC Commission adequately reflect the accumulated losses sustained by consumers can be approximated using several simplifying assumptions. The loss to consumers' consists of two components – the overcharge (*OC*) on the goods sold at the higher cartel price; and the lost consumers' surplus (*CS*) on the output not produced because in order to raise price the cartel must restrict output. The lost consumers' surplus is the difference between the price consumers would have paid and the 'but for' price in the absence of the cartel on the output not produced. If it is assumed that the 'but for' price equals constant unit costs and the demand curve is linear, then the consumers' surplus loss is 50% of the overcharge, and the total consumers' loss 150% of the overcharge. Thus one can approximate the consumers' losses based on estimates of the overcharges.

Unfortunately estimates of how much consumers have been overcharged are not available (and certainly not from EC Commission decisions), nor are they easy to estimate. Thus it is necessary to make assumptions as to the likely overcharges. The OECD has estimated that cartel overcharges average 15% to 20%. A more recent survey of over 200 'social science studies' suggest higher estimates – an average overcharge of 40% positively skewed with the median of 25%, and one-fifth at 10% or less. International cartels have a larger median overcharge of 30%-33% compared to 17%-19% for domestic cartels.

For illustrative purposes it is assumed that cartels impose an annual average overcharge of 20%, that annual sales are constant at the end period annual sales as reported in the EC Commission's decision, and losses attract compound interest at 4%. Based on these assumptions, the EC Commission's fines undervalued estimated consumers' losses in all but three (*Vitamins B2, B5 &*

D3) of the 24 cartels. The degree of undervaluation is over 60% in 18 cartels. If a lower average overcharge of 10% is assumed, then the EC Commission's fines reflect or more than reflect the consumers' loss in only 7 cartels (*Lysine, all vitamins' cartels except A, E & Carotinoids, Food Flavour Enhancers*).

Do fines deter price fixing?

A fine will only deter price-fixing if it makes it unprofitable for a firm. With less than certain detection and conviction, price fixers will react not to the nominal fine but to the fine discounted by the probability that it will be imposed (called the *expected* fine). To illustrate, if the fine is €100 million but only one in three cartels are successfully prosecuted, then the *expected* fine is 33% of the €100 million, or only €33 million. The corollary is that in order to deter price-fixers the fine must be grossed-up (multiplied) so that the *expected* fine equals the aggregate consumers' loss. Taking the same figures and assuming that the €100 million measures the consumers' loss, the optimal fine with a conviction rate of 33% is three times the loss i.e. €300 million. This idea that fine necessary for deterrence must be some multiple of the gains/losses is familiar to competition lawyers in the form of 'double fines' and 'triple damages' in US antitrust law.

Again there is no data on the probability of detection when these cartels were formed or today. There are some estimates of cartel detection rates. Bryant and Eckard, in a now dated study, estimate that about 1 in 7 cartels are detected. Others suggest a much lower figure of 1 in 10 cartels. To assess whether the present level of fines can be expected to deter price-fixing it is assumed that 1 in 3 (33%) cartels are successfully prosecuted, which is considerably higher than suggested by the above studies. The optimal fine can be calculated from the estimates of the overcharge for each cartel. The optimal fine equals $(1.5 \times OC)/c$ or slightly over 4.5 times the estimated overcharge (*OC*) assuming a 1 in 3 conviction rate (*c*).

Based on these assumptions the EC Commission's fines significantly under-deter price-fixing. As the last column in the table below shows, fines would have to increase substantially for each cartel – instead of nearly €3 billion collected in fines from the 24 cartels, over €50 billion or fines on average 18 times greater than those imposed by the EC Commission would be needed to deter price-

fixers. With a 10% overcharge things improve, but the optimal fine is still on average many times (about ten-fold) greater.

Conclusions

The above calculations have been based on arbitrary assumptions and simple calculations. They ignore, for example, the way that the substantial 'fine discounts' under the EC leniency programme increase the conviction rate. Nonetheless, if future more detailed research confirms the findings above, fines will need to increase substantially to deter price-fixing. The effectiveness of such high fines depends on the firms' ability to pay, and their enforcement costs, and political and public

acceptability. If fines are so high firms that firms are not able to pay them, this will not only send firms bankrupt but they will not deter price-fixing. The judgment proof firm will act as if it is not subject to sanctions! Moreover, very high fines may be difficult to fully implement and clash with core legal principles, such as proportionality, and undermine the legitimacy of the law. In the light of these potential constraints, other monetary (damages) and non-monetary sanctions (imprisonment/disqualification of directors), and/or an increase in enforcement activity to raise detection rates will be needed to achieve deterrence.

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Estimates of overcharges, fines and optimal Fines for 24 EU prosecuted cartels

Cartel	years	Fine €m	Sales €m	OC €m	C ^{er} Loss €m	Fine/C ^{er} Loss	Optimal Fine Fine €m	Multiplier
Lysine	4	103	164	121	181	57%	549	5.4
Vitamin A	9	132	150	275	413	32%	1,251	9.5
Vitamin E	9	203	250	459	688	29%	2,085	10.3
Vitamin B2	4	70	34	25	38	186%	114	1.6
Vitamin B5	8	106	35	64	96	110%	292	2.8
Vitamin C	5	114	120	112	168	68%	510	4.5
Vitamin D3	4	41	20	15	22	184%	67	1.6
Beta carotene	6	64	76	87	131	49%	397	6.2
Carotinoids	6	62	50	57	86	72%	260	4.2
Carbonless Paper	4	314	1,079	799	1,198	26%	3,631	11.6
Graphite Electrodes	6	164	420	481	722	23%	2,188	13.3
Methylglucanine	9	3	3	6	9	33%	26	9.1
Citric Acid	4	135	320	236	353	38%	1,071	7.9
Plasterboard	7	478	1,210	1,652	2,478	19%	7,508	15.7
Methionine	13	100	260	748	1,122	9%	3,400	34.0
Isostatic Speciality Graphite	5	42	84	79	118	36%	358	8.5
Extruded Speciality Graphite	4	9	42	31	46	19%	140	15.9
Food Flavour Enhancers	9	21	12	22	33	62%	100	4.9
Carbon & Graphite Products	10	101	290	604	905	11%	2,744	27.0
Organic Peroxides	25	70	250	1,694	2,649	3%	8,029	115.5
Choline Chloride	6	66	122	140	210	32%	635	9.6
Copper Plumbing Tubes	13	222	1,151	3,311	4,967	4%	15,052	67.7
MCCA Chemicals	15	217	125	434	651	33%	1,972	9.1
Rubber Chemicals	5	76	200	188	282	27%	854	11.3
Totals		2,911	6,467	11,639	17,567		53,232	18.3

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