# Antitrust penalties: can the commonly used revenue – based structures be improved?

*Presentation prepared for the FNE Competition Day, Santiago, Chile*
*17th November, 2016*

**Yannis Katsoulacos**
Professor of Economics,
Athens University of Economics and Business

# Sanctioning: an important enforcement instrument

- Sanctions on antitrust violations are most important *ex ante* intervention instrument of Competition Authorities.
- Need to **distinguish public enforcement sanctioning and private damage actions.**
- The Public enforcement (PE) of Competition Law and private damage (PD) actions primarily serve different purposes:

- Public enforcement focuses on detection and investigation of cartels with objective to bring cartel activity to an end **and imposing sanctions for infringements aims to punish and deter future violations.**
- Private damages focuses on **compensating those who have suffered harm.**

- So, the two are **complementary**.
- **And, each can contribute to the objectives of the other.** PE can facilitate and stimulate PD actions. PD can contribute to deterrence and provides incentives to customers to discover and report price-fixers.

# Types of sanctions in **public** enforcement

- Variety of different types with different emphasis placed on each type over time and in different countries.
- Main types:

- Financial, or monetary penalties on corporations – **main subject of this presentation**.
- Financial penalties on managers involved in price-fixing.
- Criminal sanctions / imprisonment of individuals involved in price-fixing.
- Debarment of individuals involved in price-fixing.

- **Some Empirical Evidence on Cartel Activity and Penalties**

# Cartel activity and penalties: evidence (1)

- Overall conclusion from empirical evidence (large number of studies examining data bases extending to 2015): Levenstein and Suslow, L&S, 2012;2014; Connor, 2015 (sample: 1990 – 2015):

➢ **Cartels are still very active** in US, EU and other countries and pervasive in a wide variety of markets, despite the increased enforcement ("reported successes of leniency programs, the significant increase in government fines and the continued intensive use of incarceration".

➢ Connor's **estimate of total damages** (overcharge + DWL): 2,6 trillion USD.

# Cartel activity and penalties: evidence (2)

- Connor database: fines and private settlements from 1990 – 2015: 153 billion USD.
- One third of this is damage recoveries.
- In **EU, fines imposed have increased significantly in recent years** – they accounted on average to 42 million euro per cartel in the 1990s and to **290 million per cartel in the last 10 years** (data from DGCOMP site).
- After 1999, fines in EU exceed fines imposed by DOJ (Connor, 2015).
- Substantial increase especially after the 2006 revision of penalty policy leading to an increase in the maximum percentage of affected commerce that can be used as basis for estimating monetary penalties to **30%** (though max. rate must not exceed 10% of global sales).

# Cartel activity and penalties: evidence (3)

- In **EU** in period 2010 – 2013 the prosecution of cartels resulted in about 7.5 billion euro in penalties – even though % of affected sales lower than previous years (except of 1995 – 1999 period).
- In **US** In period 2010 – 2013, cartel prosecution resulted in 3,23 billion USD in fines and more than 270 years of jail time (Boyer and Kotchoni, 2014).

- Evidence on **severity of monetary penalties**:
- Severity = penalties / affected sales.
- In Connor (2015) data base **average severity world wide has been about 20%.**

# Cartel activity and penalties: evidence (4)

- **Severity of penalties (cont)**:
- In **US (and Canada)** it has been about **17%.**
- In **EU** Commission decisions it has been about **12%** (though in MSs it has been 30%) – rising to about **15%** in 2005 – 2009.
- Findings in EU must be adjusted even further downwards using the Bruegel's data base (Marinielo, 2015) of decisions on 73 cartels in 2001 – 2012 period: total fines 18.4 billion euro and affected sales 209 billion euro (**about 9% severity**).
- Connor (2015) also calculates the **Recovery Ratio** (the ratio of all penalties (including private action compensations) to total damages: it is everywhere less than 100%, it is highest in **US (close to 90%** - but falling after 2000) and is **close to (a bit less than) 50% in EU Commission decisions**.
- In Bruegel database for EU it is estimated that **total additional profits were lower than fines in 43% - 81% of cases** depending on estimate of additional profit.

- **What does the evidence show?**

# Serious under-deterrence? (1)

- "…that there is under-deterrence of collusion would seem to be a point that no reasonable person could dispute" (Harrington, 2010).
- This under-deterrence may be the result of managers making mistakes, or being myopic or over-confident ("that they will pull-off the perfect crime").
- Especially, the evidence on recidivism (while its magnitude remains uncertain) shows that **illegal collusion remains profitable and a sensible managerial decision.**

# Serious under-deterrence? (2)

- Nevertheless, many commentators would argue that **corporate monetary penalties cannot be raised to a level sufficient to deter collusion**.
- Doing this would violate **legal "proportionality criterion"** – so penalties would be reduced at the stage of appeal.
- Argument has been made most forcefully by Ginsburg and Wright (2010) - below.
- Emphasis must be placed on improving the **overall effectiveness of antitrust penalty regimes**. We return to this below.

# How do we achieve deterrence? (1)

- **How large must penalties be in order to deter collusion?**
- Recent literature has extended original approach based on Becker (1968) and Landes (1983) and has determined the **minimum penalty required to achieve deterrence** under a variety of circumstances.
- Specifically, assuming that in cases that we interested there are no efficiency gains, the following can be mentioned.
- If incremental profit per period due to collusion is $\pi$, the probability of detection and conviction in a period is $\beta$ and F is the penalty then according to original argument it is required

# How do we achieve deterrence? (2)

- For deterrence:

$$bF > p$$

- **If the penalty is a multiple of the incremental profit** from collusion, so

$$F = j_{p} p$$

- then, deterrence requires that

$$j_{p} > \frac{1}{b} \qquad (1)$$

(or, a minimum penalty rate on profits equal to (1/β). Thus, given that the value of β according to a series of studies has been estimated to be somewhere between about 0,1 and 0,25, the minimum penalty rate on incremental profit must be about 5 (or even more – values of β above 0,15 are likely to be overestimates, as this is the prob. of conviction conditional on been caught ).

# How do we achieve deterrence? (3)

- However, in most cases the **penalty is calculated using a revenue-base (R)**, where R is "affected-commerce". Given this, if:

$$F = j_R R$$

- Then, assuming that the "but-for" is the competitive situation, deterrence requires that

$$j_R > \frac{q/(1+q)}{b} \quad (2)$$

- where θ is the **"overcharge"** (the proportional excess of collusive price above competitive price (Katsoulacos and Ulph, 2013). The dependence of $\varphi$ on θ **is in practice neglected** – also below.
- Note that, given β = 0,2, the penalty rate on affected commerce must be about **65% if the overcharge is 15%** and it must be about 143% if the overcharge is 40%.

# How do we achieve deterrence? (4)

- If, as will be usually true**, the counterfactual is not competitive** then, as Boyer and Kotchoni (2014) show, expression (2) overestimates the penalty rate that will achieve deterrence by a factor that is higher the higher is the "but-for" price–cost margin.
- If, for example, the "but-for" excess of price above marginal cost is 20% then the overestimate factor is as high as 3, that is the **revenue penalty rate that would achieve deterrence with β = 0,2 would be about 20%.**

# How do we achieve deterrence? (5)

- Then, one also needs to take into account a number of other considerations.

1. One such consideration is that in practice the amount of penalty is calculated taking into account the documented **duration of the cartel**.

- Taking this into account, Harrington (2010) shows that the penalty rate on profits can be overstated by a factor that can be close to 3.

2. Another consideration is that, as Buccirossi and Spangolo (2007) had originally noted, "it is not necessary to make collusion unprofitable in order to deter cartel formation: it is sufficient to **make collusion unstable**".

# How do we achieve deterrence? (6)

- Thus, instead of focusing on the participation constraint we could focus on the incentive compatibility constraint.
- Harrington (2014) does this, taking also into account that the fine increases with duration. He shows that this "significantly lowers the maximum penalty multiple necessary to deter collusion" (from the value of 5 mentioned above to a value closer to 2).

3. Finally, Katsoulacos and Ulph (2013) take into account that infringements may be convicted after they come to a "natural" end. With this adjustment, they show that the maximum rate on revenue of 30% adopted by the EU in 2006 is not unreasonably low.

# How do we achieve deterrence? Concluding remarks

- Above review shows that, under reasonable assumptions:
- If penalties were based on profits, then a penalty rate of 5 that the US Guidelines suggest as maximum (though it has never been used) cannot be considered as low and is probably excessive.
- If, as is true in by far most cases in practice, penalties are based on revenue then **the rate needed to achieve deterrence depends on the overcharge**.
- While Connor and Lande (2012), taking into account their estimates of overcharge, conclude that actual penalty rates are lower than what is needed for deterrence (see also Bulotova & Conor (2005, 2006)), other authors (such as Allain et al, 2011 and Boyer and Kotchoni, 2014) suggest that overcharges are much lower than indicated by Connor and Lande and argue that penalty rates are sufficiently high or indeed they may be excessive.
- We return to the appropriate rate later.

- **Are current sanctioning policies effective?**

# How do we assess the effectiveness of current sanctioning regimes? (1)

- Given that sanctioning policies are necessarily second-best (first–best fines that deter all cartel activity are not feasible) the main issue is to choose the "best" among these policies.
- Or, to put it another way, we must ask whether current sanctioning policies are not as effective as they could be, if so, why, and how can we make them more effective?
- Recent economic literature examines the effectiveness of sanctioning policies.

# How do we assess the "effectiveness" of current sanctioning regimes? (2)

- The assessment of effectiveness needs to take into account:

- Effectiveness in deterrence (the **deterrence effect of a sanctioning regime**)
- Effectiveness in maintaining the prices of **cartels that are not deterred** as low as possible (the **pure price effect of a sanctioning regime**).
- Effectiveness in **minimizing other (non-price) potential distortions** of sanctioning (below).

# Why are current sanctioning policies ineffective?

We point to three reasons:

1. Current sanctioning schemes are misdirected towards corporations rather than individuals.
2. Currently, we do not adequately exploit complementarities with other enforcement instruments.
3. Monetary penalty designs are inefficient as they are based on the wrong penalty-base. Concentrate on this below.

We then concentrate on the question: **can we make current monetary penalty policies more effective?**

- **Current sanctioning schemes are misdirected**

# Current sanctioning schemes are misdirected (1)

1. Ginsburg and Wright (2010) suggest that current fining policies place too much emphasis on monetary penalties on **corporation**s rather than on sanctioning the **individuals** that are responsible for the illegal price fixing.
2. Thus, according to G&W (2010), it is not just infeasible to increase corporate monetary fines to the point where they achieve deterrence for the reasons mentioned above, it is also the wrong policy in the sense that **increasing corporate fines further will not have desirable deterrence effects** – as the individuals that are responsible for price-fixing are not affected by such fines.

# Current sanctioning schemes are misdirected (2)

- According to G&W (2010), "the *individuals* responsible for the cartel activity, whether they are engaged in, complicit with, or negligent in preventing the price-fixing scheme, should be given a sufficient disincentive to discourage them from engaging in that activity".
- The disincentive could be in the form of:
- Financial penalties levied on the individuals
- Jail sentences
- Debarment
- As pointed out by G&W (2010), the US Antitrust Division believes that "individual accountability through the imposition of jail sentences is the single greatest deterrent" to cartel activity.

# Current sanctioning schemes are misdirected (3)

- A survey done for the UK OFT confirms that criminal penalties are the penalties of greatest concern to business people.
- Still, while in US jail sentences for antitrust offences are common and a significant part of sanctioning schemes this is NOT the case in many countries and even now do not play any significant role in EU.
- G&W (2010) argue for **de-emphasizing monetary fines** and, instead placing much more emphasis on criminal sanctions AND – the unique twist of their argument – on **debarment**:

  > "debar individuals responsible for price-fixing from further employment in a position from which they could again violate or negligently enable their subordinates to violate the antitrust laws"

- G&W (2010) point to UK, Australia, Sweden and S.A. as countries where debarment has been authorized as a sanction for price-fixing.

# Current sanctioning schemes are misdirected (4)

- We agree that there is currently in most jurisdictions an imbalance in the use of different sanction types in favor of corporate monetary fines and that **individual penalties should be given much greater weight than at present** – perhaps with increased emphasis on debarment, especially where jail sentences are already a common feature of sanctioning schemes (as in US).
- However we agree with Harrington (2010) that putting greater emphasis on debarment **should not** imply reducing jail sentences or not increasing further corporate monetary fines.
- In relation to this, two points need to be stressed:

# Current sanctioning schemes are misdirected (5)

a) While debarment may be particularly attractive for those jurisdictions where jail sentences are not politically viable, there are **serious questions concerning the efficacy of debarment** (JH, 2010). This may explain why in countries where debarment is authorized (e.g. UK) it is not much used.

b) Putting additional weight on individual sanctions need not imply that corporate fines should not be further raised - there is no empirical evidence that shows that "corporate governance is so ineffective that senior managers are not influenced or affected by what matters to shareholders" and the latter certainly care about the magnitude of monetary fines (JH, 2010).

- SO: monetary penalties should be considered as **complementary** to other sanctions (such as imprisonment or disbarment).

- **Inadequately exploiting the complementarities between different intervention instruments**

# Exploiting to a greater extent complementarities between different intervention instruments (1)

- Recent article ["Modeling the Effectiveness of Anti-Cartel Interventions: a Conceptual Framework", Katsoulacos, Motchenkova and Ulph (DP 2015)] using a model of cartel birth and death inspired by Harrington and Chang (2009) shows the **strong complementarities that exist between different intervention instruments** and examines in detail the interaction between and the impact on welfare of these instruments.
- **The effectiveness of sanctioning increases significantly with the effectiveness of interventions related to detecting / prosecuting cartels and to interventions for preventing recidivism.**

# Exploiting to a greater extent complementarities between different intervention instruments (2)

- Thus, a pro-active anti-cartel enforcement policy that aims to provide regular screens of the markets with higher probability of cartel formation followed up by dawn-raids, could make sanctioning much more effective and have substantial welfare benefits, by increasing detection rates.
- Of particular importance are **interventions that aim to prevent recidivism.** Both the literature and the Competition Authorities have not directed enough attention to this type of interventions – something that is not justified (even though the extent of the phenomenon has not yet been unequivocally established by empirical evidence).
- Competition Authorities, through **heightened levels of monitoring of markets** in which firms have been convicted, can increase the probability that cartels stop after conviction and reduce the probability that they re-emerge in the future.

- **Inefficient Design of Penalty Structures (wrong penalty bases)**

# Inefficient Design of Penalty Structures (wrong penalty bases) (1)

- Recent economic literature also shows that the currently employed **designs of monetary penalty structures may be improved** (e.g. Bageri, Katsoulacos and Spangolo, *EJ*, 2013; Katsoulacos, Motchenkova and Ulph, *IJIO*, 2015).
- Current fining policies typically base fines on affected commerce, i.e. on **revenue** in the relevant market, and they often impose **caps** to max. applicable fines in terms of % of overall turnover.

# Inefficient Design of Penalty Structures (wrong penalty bases) (2)

- Current Sentencing Guidelines:
  - US - fines based on illegal sales and illegal gains
  - EU - fines mainly based on turnover
  - In some cases (e.g. UK) fines on damages (closer to fines on overcharges) are proposed as a supplement to fines based on turnover.
  - In summary, **turnover is the dominant penalty base**.

  - **Easiness in implementation** sometimes used to justify the base of turnover.
  - **Question: is the use of turnover (or profits) as the base for setting fines justified on social welfare grounds? If it is NOT - and the use of this base may imply potentially large welfare costs - could it still be justified on implementation grounds?**

# Inefficient Design of Penalty Structures (wrong penalty bases) (3)

- Recent economic literature concentrates on comparisons of the following types of **alternative penalty structures** (or penalty bases):

- Penalties on revenues (turnover) - $F_R(p) = j\,R(p)$
- Penalties on illegal gains - $F_p(p) = y\,p(p)$
- Fixed penalties - $F(p) = F$
- Penalties on overcharges - $F_o(p) = hqQ^N,\ q = (p^c - p^N)/p^N$

# Inefficient Design of Penalty Structures (wrong penalty bases) (4)

- **Literature examines two main effects** of alternative penalty structures :

1. Cartels that form - are not deterred - may adjust their **pricing strategy** in response to different penalty structures, so some penalty structures may result in higher cartel prices (and a consequent loss in consumer welfare) – a negative **"pure price effect"**.

With the currently employed penalty structures, **tougher penalties may well raise cartel prices**, rather than lower them - see e.g. Conor and Lande (2008 and 2012); Katsoulacos and Ulph (2013) – and also below.

# Inefficient Design of Penalty Structures (wrong penalty bases) (5)

2. The extent of **cartel deterrence** (and hence the number of cartels that form) is influenced by different penalty structures. This is due to penalty structures affecting differently **the stability of cartels** – the incentives of cartel members to continue to cooperate. Can call this the **"deterrence effect"**.

It is clear that the **overall effect on prices and welfare of a penalty structure** depends on its "pure price effect" AND on "deterrence effect".

# Inefficient Design of Penalty Structures (wrong penalty bases) (6)

- Some results **given** deterrence:
- For formed stable cartels the overcharge-based structure outperforms the other regimes in that it leads cartel members to set prices lower than the monopoly prices.
- Fixed penalties and profit-based structures lead to prices equal to the monopoly price.
- Revenue based structures do worst being distortionary in leading to prices **above** the monopoly level. Moreover, revenue based structures – that are the structures most commonly used – can generate additional distortions (Bageri et.al., 2013).

# Inefficient Design of Penalty Structures (wrong penalty bases) (7)

- **Other distortions of revenue-based penalties**

(Bageri, Katsoulacos and Spagnolo, 2013):

- **Distortion 1:** When total turnover is used either as a base for the fine or for a cap, there may be biases against more diversified firms.
- **Distortion 2:** Firms forming cartels at the end of a long value chain , with a low profit/revenue ratio, expect larger fines relative to collusive profits than firms that have a larger profit/revenues ratio.
- Empirically-based simulations suggest that the deadweight losses produced by these distortions can be large.


39

# Inefficient Design of Penalty Structures (wrong penalty bases) (8)

- **Results** taking account of **deterrence and price effects:**
- **The overcharge-based penalty regime outperforms all the other regimes** in terms of average prices, Consumer Surplus and Total Welfare.
- Thus, main conclusion is that current emphasis on revenue (and in some cases profits) based regimes is unjustified, **on welfare economics grounds**.
- Penalties that target the overcharge are in some sense optimal since they target what is the ultimate source of harm.

# Inefficient Design of Penalty Structures (wrong penalty bases) (9)

- **Policy Implications:**
- While there is no support from welfare economics for the currently widely utilized fining structures could it be that **differences in the implementation** of the four key penalty structures justifies current practice?
- Are implementation difficulties – in terms of getting the necessary data and making the necessary estimates – important enough to outweigh the likely welfare losses from the use of revenue-based regimes?

# Inefficient Design of Penalty Structures (wrong penalty bases) (9)

- **Policy Implications:**
- One thing that should be noted is that developments in economics and econometrics make it **possible to estimate overcharges** from a cartel infringement with reasonable precision or confidence, as regularly done in **the assessment of damages** (see, e.g. extensive review by Brander and Ross, 2006).
- **However, the standard estimation of damages (based on estimates of the overcharge) is NOT sufficient for implementing a penalty in which the overcharge is the penalty base – for the latter we need to estimate what the revenue (or output volume) would be on the counterfactual.** Return to this issue of implementability now.

- **How do we make current monetary penalty schemes based on revenue more effective?**

**- A proposal and a recommendation for the case of Chile**

# A proposal (1)

- Recent article (Katsoulacos, Motchenkova and Ulph, "Revenue penalties could work after all", 2016) examines how revenue-based regimes, characterized by easy implementability, can be Improved in terms of effectiveness (overall welfare impact), by making the overcharge an integral part of the monetary regime. Specifically:
- We show that a revenue-based penalty structure where **penalty *rates* depend on the cartel overcharge**, can mimic an overcharge based structure.
- So, it can be used to obtain the **same welfare improvements as an overcharge based structure while being much less difficult to implement.**

# A proposal (2)

- As an approximation, if the Competition Authority uses a revenue – based penalty rate of $r_R$ the penalty rate on revenue that would mimic an overcharge-based regime (the **effective penalty *rate***) would be:

$$r_R^e(q) = r_R \frac{(1+2\bar{e})q}{(1+q)(1-\bar{e}q)}$$

where θ is the overcharge rate and $\bar{e}$ is some benchmark or average elasticity.

- Remarks:

➢ The effective penalty rate is strictly increasing with the price overcharge (θ).

# A proposal (3)

- Remarks (cont.):

➢ If the cartel sets the monopoly price then the effective penalty rate will be twice the fixed-rate penalty.

➢ If, for example the cartel's overcharge is taken to be 23% then, with an average elasticity of unity, the effective penalty rate would be 70% of the fixed-rate, while if the overcharge was 40% then the effective penalty rate that would be applied would be 143% of the fixed penalty rate.

➢ By using observable cartel revenue as the base the implementability of the scheme is hugely increased but **CAs should announce that they will use the penalty *rates* implied by the formula above to obtain the desirable deterrence and overall welfare effects.**

# A proposal (4)

- Chile (1)

- In Chile the recent amendments in the statues concerning penalties allow the CA to use either revenue or profit-based penalties.
- In the former case, the FNE would use revenue in the line-of-business in which violation occurred.
- In the latter case, been considered more difficult to implement, FNE would use as profit the “benefit” accruing from the cartel.
- As noted above, the former case has been shown to be the worst possible penalty regime in terms of deterrence / welfare implications.

# A proposal (5)

- Chile (2)

➢ For the latter case, FNE would need to get an estimate of the overcharge – which would, of course, also be needed to get estimates of "damages".

➢ But, IF this is done, FNE can do much better, according to above argument, by adopting a revenue base and the formula above, to work out the effective penalty *rate* that should be used: this would have the best deterrence / welfare effects and no additional implementation cost.

➢ This would certainly be our recommendation!!

- **Thank you!**

- **ysk@hol.gr**
- **www.cresse.info**