

Optimal Enforcement Structures for Competition Policy: The Implications of Judicial Reviews and Internal Error Correction Mechanisms¹

by

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Abstract

In this paper we use the welfare-based framework proposed by Katsoulacos and Ulph (2009) to examine a number of questions related to enforcement structures for competition policy. Does the presence of judicial reviews, offering an independent judgement on Competition Authority decisions *and* checking procedural correctness, make *effects-based* decision approaches more attractive than *Per Se*? Under what conditions will judicial reviews and internal error correction mechanisms improve welfare? What are the implications of internal error correction mechanisms for decision procedures? In the presence of such mechanisms should decisions be reached unanimously or through a majority rule?

We demonstrate that judicial reviews do not in general make *effects-based* decision approaches more attractive than *Per Se*. However, by reducing false-convictions costs and increasing false-acquittals costs of *effects-based* procedures they tend to make these more attractive than *Per Se* when the former effect outweighs the latter. Further, judicial reviews and internal error-correction mechanisms subject to unanimity reduce deterrence. More “confirmatory” procedures involving judicial appeals and internal error-correction mechanisms subject to unanimity are therefore more likely to improve overall *welfare* when actions are “*presumptively legal*” than when they are “*presumptively illegal*”. Indeed because of their *beneficial deterrence effects* they may improve welfare even when they increase decision errors for presumptively legal actions. As regards in particular internal reviews we show that, *ceteris paribus*, final decisions in the Competition Authority should be taken unanimously when the action investigated is presumptively legal and through a majority rule when the action investigated is presumptively illegal.

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1. Introduction

Recent years have witnessed significant changes in Competition Policy enforcement procedures especially in the European Union⁵. At the same time, both economists and legal experts have become increasingly involved in analysing the optimal design of Competition Authority (CA) decision practices and other enforcement procedures⁶. Following the seminal contribution of Easterbrook (1992), the discussion on optimal procedures has typically used the decision-error cost minimisation approach. Recently Katsoulacos and Ulph (2009) – hereafter K&U (2009), extended this and developed a general *welfare-based framework* for determining the conditions under which, for *any* type of potentially anti-competitive business practice, an *effects-based* procedure is superior to a *Per Se*⁷ legal standard. However, their analysis abstracts from a number of fundamental features that characterise the institutional context within which competition law is enforced. Appeal courts constitute one such important institutional feature, providing mechanisms for referring decisions reached by CAs. Another feature, that has become also very common in recent years concerns the internal error-correction mechanisms introduced by the Commission and many national CAs in their enforcement structures⁸.

In this paper we use the welfare-based framework proposed by K&U (2009) to examine the implications of referral and internal review mechanisms on the choice of decision procedures and the conditions under which these mechanisms are welfare improving taking into account their decision error *and* deterrence effects⁹.

⁵ See for example the collection of articles in “The Reform of EC Competition Law”, edited by I. Kokkoris and I. Lianos, Kluwer Publishers, 2008.

⁶ See in particular Ahlborn, Evans and Padilla (AEP, 2008), Carlton (2008), Christiansen and Kerber (2006), Immordino and Polo (2008), Katsoulacos (2008) Katsoulacos and Ulph (2008a,b and 2009), Schinkel and Tuinstra (2006) and Sorgard (2009).

⁷A *Per Se* legal standard allows or disallows an entire class of actions without trying to identify more carefully subclasses of actions that might generally be harmful or generally benign. A *discriminating* legal standard or *effects-based* approach requires the CA to establish explicit criteria for deeming some actions to be harmful and others benign and to then investigate each case to see which of these criteria it meets. An extreme form of the *effects-based* approach is what in US is termed *Rule – of – Reason* under which CAs have the discretion to apply economic methodologies on a case-by-case basis (see also Vickers, 2007a,,b).

⁸ These have taken the form of review panels, chief economist departments, hearing officers etc.

⁹ Ahlborn, Evans and Padilla (2008) explore the issue of whether enforcement procedures should involve some kind of appeals or referral process. They focus on the impact of such a process on the cost of decision errors and argue that an appeals process will reduce these costs. However their argument is rather informal and also they ignore the impact of an appeals process on deterrence effects – in which case it will be important to recognise the possibility that an appeals process will also involve more delay.

We show that both of these enforcement features will alter the costs of decision errors and the more general welfare implications related to deterrence effects, of any given decision rule (or legal standard). More specifically we show the following.

- (i) Appeals reduce the probability of an action being disallowed. They do not affect the decision errors of *Per Se* legal standards, while they affect the decision errors of *effects-based procedures*, increasing Type II error costs (costs of false acquittals) and reducing Type I error costs (costs of false convictions). They do not in general make *effects-based* more attractive than *Per Se*.
- (ii) Appeals are more likely to reduce the Costs of Decision Errors (CDE) of an *effects-based rule*, and make it more attractive than *Per Se*, for presumptively legal than for presumptively illegal practices. For such a rule, the stronger the *presumption of legality* the more likely that the appeals process reduces the CDE while the stronger the *presumption of illegality* the less likely that the appeals process reduces the CDE.
- (iii) Appeals reduce deterrence and thus tend to improve overall *welfare*¹⁰ for presumptively legal actions and tend to worsen overall welfare for presumptively illegal actions. Indeed because of their beneficial deterrence effects they may improve welfare even when they increase decision errors for presumptively legal actions.
- (iv) Internal error-correction mechanisms such as those introduced by the Commission since 2004 have the same implications for decision errors as a judicial review system if there are as many internal review panels as there are potential judicial reviews (usually two) **and** decisions in the authority are reached unanimously.
- (v) If decisions in the CA are not reached unanimously but rather a majority rule is used the internal review panels will produce more Type I errors and fewer Type II errors relative to unanimity.
- (vi) Under unanimity, internal reviews unambiguously reduce deterrence and thus tend to improve welfare for a presumptively legal practice and tend to worsen

¹⁰ Overall welfare refers to welfare when account is taken of both costs of decision errors and of indirect / deterrence effects.

welfare for a presumptively illegal practice. However, if decisions in the CA are reached using a majority rule then internal review panels will increase deterrence. This suggests that, *ceteris paribus*, final decisions in the CA with internal review panels should be taken unanimously when the action investigated is presumptively legal and through a majority rule when the action investigated is presumptively illegal.

1. The Model¹¹

Assume a population of firms, whose size is normalised to 1. Firms take actions that are privately beneficial but potentially socially harmful. Assuming that some sort of intervention is considered desirable with the objective to disallow harmful actions, this intervention can take two forms. If for a specific action or class of related actions it is possible to assess its *average* social harm then one form of intervention would be to use a blanket rule that disallows this sort of action, whenever such an action is identified, if its average harm is positive. This is an example of a *Per Se* rule¹². Alternatively, a Competition Authority (CA), which is set up to verify whether an action has taken place, is given the mandate to carry out an *investigation* in order to determine whether this action is actually socially harmful or not. This would be an example of using an *effects-based* procedure or a *Discriminating Rule*. Anticipating what type of decision rule will be used firms have to decide whether or not to take them¹³ given also that disallowing an action implies that the firm might be required to reverse it and face a penalty.

Let $b > 0$ denote the present value of the expected change in profits from the action over its “natural” lifetime¹⁴ for a typical firm. The extent to which an action causes social harm, which we take to be measured by the negative of the present value of the change in consumer surplus, will depend on the firm’s environment which encompasses various characteristics of both the firm and of the markets in which it operates. For

¹¹ For full details see Katsoulacos and Ulph (2009).

¹² An action is defined sufficiently narrowly that it makes sense to think of authorities’ potentially operating *Per Se* Rules – see also K&U (2009).

¹³ Note that this is an *ex-post* investigation process. An alternative decision process involving *ex ante* intervention by the authority is a *prior clearance* process whereby firms contemplating taking an action have to get prior approval before proceeding.

¹⁴ This captures the idea that firms operate in a changing environment and that an action taken at a particular time might be modified or even reversed at some later date.

simplicity we assume that there are just two environments – Harmful and Benign – and that if the action is taken by a firm from the Harmful environment it will generate harm $h_H > 0$ - while if the action is taken by a firm from the Benign environment it will generate harm $h_B < 0$ - i.e. will be socially beneficial. Let the fraction of firms in the underlying population of firms who could take the action that come from the Harmful environment be γ , $0 < \gamma < 1$. We assume that the values of γ, h_H and h_B are common knowledge, as is therefore the value of average harm/benefit $\bar{h} = \gamma h_H + (1 - \gamma) h_B$. We will say that the action is *presumptively legal* if $\bar{h} < 0$ and *presumptively illegal* if $\bar{h} > 0$.

While in principle the distribution of private benefits could be different in each of the two environments, here we impose the *symmetry assumption* that the two distributions are identical¹⁵. So we suppose that the private benefit has a positive continuous probability density $f(b) > 0$ on $[0, \infty)$, with cumulative distribution function $F(b)$, $0 \leq F(b) \leq 1$; $F'(b) = f(b) > 0$.

For simplicity we also assume here that the process of verification and investigation is costless¹⁶. Further, while as noted by Ehrlich and Posner (1974), different decision rules also “affect the speed, and hence indirectly the costs and benefits, of legal dispute resolution...”¹⁷ and *Discriminating Rules* cause additional delays or have a longer *litigation cycle* than *Per Se* rules for the purposes of this article we also abstract for simplicity from these differences¹⁸. Finally, while in practice only a fraction of firms who have taken the action will come to the attention of the authority (i.e. the *coverage rate* will be less than one), here we will *assume that all actions come to the authority’s attention* (and they are investigated when *Discriminating Rules* are used).

If the CA operates a *Discriminating Rule*, the data, tests and analysis available to it will typically be imperfect and lead it to classifying some genuinely harmful actions as

¹⁵ In the absence of compelling evidence to the contrary this assumption may be thought to be quite reasonable. For a discussion and extensions see K&U (2009).

¹⁶ We recognise that, as emphasized in the literature there are costs involved in collecting and analysing the information needed to implement an *effects-based* procedure which would not need to be incurred under *Per Se* Rules, and that therefore before deciding to use a *Discriminating Rule* in preference to a *Per Se Rule*, it is important to ensure that whatever advantages it has in other respects are sufficient to outweigh these additional costs, we take it that this point is well understood and in what follows we will simply ignore these costs. See e.g. Christiansen et al. (2006).

¹⁷ Page 265-6.

¹⁸ See K&U (2008a, b and 2009) for analyses that allows for differences in delays, specifically assume zero delays under *Per Se* Legality, a verification delay under *Per Se* Illegality and a larger delay under a *Discriminating Rule*. K&U (2008a, b and 2009) also assume a coverage rate that is less than unity.

benign and some genuinely benign actions as harmful. So let p be the probability of correctly identifying the environment from which an action comes and suppose that $p_B, 0 < p_B \leq 1$ is the probability that if an action is Benign it is correctly identified as such, and $p_H, 0 < p_H \leq 1$ is the probability that an action that is truly Harmful it is identified as such. In what follows the quality of the information/analysis available to the CA is characterised by these two probabilities. We assume that $p_B + p_H > 1$ but $p_B < 1, p_H < 1$ so firms from the Benign environment are more likely to have their actions identified as benign than are firms from the Harmful environment, while firms from the Harmful environment are more likely to have their actions identified as harmful than are firms from the Benign environment, so the information/analysis available to the CA has genuine discriminatory power.

If an action is investigated and disallowed, then the firm may have to pay a penalty and it may have to reverse the action which could cause it to incur significant costs. We will denote these costs by $f > 0$.

Firms' Decisions – Deterrence Effects

Assume that firms know:

- the environment $e = H, B$ from which they come;
- what type of decision rule the CA employs;
- if the authority uses an *effects-based* procedure or *Discriminating Rule*, the quality of the model (the probabilities p_H, p_B);
- the cost if the action is disallowed, f .

Note that any decision rule/procedure can be characterised by the parameters $\delta_e, e = H, B$ where $\delta_e, 0 \leq \delta_e \leq 1, e = B, H$ is the probability that, if investigated, a firm from environment e will have its action disallowed.

Definition 1: A *Per Se Legal rule* is characterised by $\delta_e = 0, e = H, B$; a *Per Se Illegal rule* by $\delta_e = 1, e = H, B$; and any *Discriminating Rule* by $\delta_H = p_H$ and $\delta_B = 1 - p_B$.

Given that the fraction of firms from environment e who will be deterred under a rule is $F_e = F(\underline{b}_e)$, where \underline{b}_e is defined by $(1 - \delta_e)b - \delta_e f = 0$, it is easily established

that, in an obvious notation the fraction of firms deterred under any given rule and environment will be¹⁹:

$$0 = F_B^{PSL} = F_H^{PSL} < F_B^D < F_H^D < F_B^{PSI} = F_H^{PSI} < 1.$$

Costs of Decision Errors - Welfare

The Costs of Decision Errors (CDE) are equal to the Costs of Type I Errors (or Costs of False Convictions, CFC) plus the Costs of Type II Errors (or Costs of False Acquittals, CFA). The CDE under *Per Se* and under a *Discriminating Rule* will be respectively:

$$CDE^{PSL} = \gamma h_H = CFA^{PSL} \quad (1)^{20}$$

$$CDE^{PSI} = (1 - \gamma)(-h_B) = CFC^{PSI} \quad (2)^{21}$$

and

$$CDE^D = \gamma h_H (1 - p_H) + (1 - \gamma)(-h_B)(1 - p_B) = CFA^D + CFC^D \quad (3)$$

Note that the *Discriminating Rule* will be *effective* i.e. it will reduce CDE relative to *Per Se Legality* iff:

$$q_H \equiv \frac{p_H}{1 - p_B} > \frac{(1 - \gamma)(-h_B)}{\gamma h_H} = s_L > 1$$

where $s_L \equiv \frac{(1 - \gamma)(-h_B)}{\gamma h_H} > 1$, s_L been what we call the *strength of the presumption of*

legality and $q_H \equiv \frac{p_H}{1 - p_B} > 1$ is a measure of how good is a decision rule's classification

of an action as being harmful - since it measures how often the rule declares an action to be harmful when it is so compared to how often it declares an action to be harmful when it isn't.

Also, the *Discriminating Rule* will be *effective* i.e. it will reduce CDE relative to *Per Se Illegality* iff:

¹⁹ See for details Katsoulacos and Ulph (2009).

²⁰ Clearly under PSL the only costs are Cost of False Acquittals (CFA) – i.e. costs of Type II errors – while costs of Type I errors (Costs of False Convictions (CFC)) are zero.

²¹ Clearly under PSI the only costs are Cost of False Convictions (CFC) – i.e. costs of Type I errors – while costs of Type II errors (Costs of False Acquittals (CFA)) are zero.

$$q_B \equiv \frac{p_B}{1-p_H} > \frac{\mathcal{H}_H}{(1-\gamma)(-h_B)} = s_I > 1$$

where $s_I \equiv \frac{\gamma \cdot h_H}{(1-\gamma) \cdot (-h_B)} > 1$, s_I been what we call the *strength of presumption of*

illegality and $q_B \equiv \frac{p_B}{1-p_H} > 1$ is a measure of how good is a decision rule's classification

of an action as being benign - since it measures how often the rule declares an action to be benign when it is so compared to how often it declares an action to be benign when it isn't²².

Social welfare under any generic rule is the social gain from benign actions minus the social harm from harmful actions undertaken (not deterred and not disallowed):

$$W = \gamma(-h_H)(1-F_H)(1-\delta_H) + (1-\gamma)(-h_B)(1-F_B)(1-\delta_B)$$

Welfare under *Per Se* rules is:

$$W^{PSL} = (1-\gamma)(-h_B) + \gamma(-h_H) = -\bar{h} \quad (\bar{h} < 0)$$

and

$$W^{PSI} = 0 \quad (\bar{h} > 0)$$

Thus²³:

(i) If the action is *Presumptively Legal* ($\bar{h} < 0$) then:

$$\begin{aligned} W^D - W^{PSL} = & \\ & [\mathcal{H}_H p_H - (1-\gamma)(-h_B)(1-p_B)] \cdot (1-F_B^D) \\ & + F_B^D \bar{h} \\ & + (F_H^D - F_B^D) \cdot \mathcal{H}_H \cdot (1-p_H) \end{aligned} \quad (4)$$

(ii) If the action is *Presumptively Illegal* ($\bar{h} > 0$) then:

$$\begin{aligned} W^D - W^{PSI} = & \\ & [(1-\gamma)(-h_B)p_B - \mathcal{H}_H(1-p_H)] \cdot (1-F_B^D) \\ & + (F_H^D - F_B^D) \cdot \mathcal{H}_H \cdot (1-p_H) \end{aligned} \quad (5)$$

²² Notice that the strength of the presumption of legality/illegality depends on all the factors that have been identified in the existing decision theoretic literature as being relevant to the decision as to whether or not to use *Per Se Rules* – base-line probability of anti-competitive harm, and the magnitudes of the associated harms.

²³ The full implications of (4) and (5) for the general case are set out in K&U (2009).

2. The Implications of judicial reviews

In practice if the CA decides to disallow an action the case can be referred to an appeals court²⁴ which then re-examines the case. Assume that the appeals court has two functions²⁵:

- (i) To check the procedural correctness of the CA decision.
- (ii) To re-examine the case and offer a genuinely new independent judgement using the same information and criteria as the CA.

That is, we assume that in principle the court could identify mistakes made because the quality of the CA “model” (captured here by p_H, p_B) is imperfect and mistakes made because the CA has not followed the right procedures. Assuming that p_H, p_B are independent of the correctness of procedures, then if p is the probability that the CA follows the right procedures, something that the court can correctly identify, under an appeal process the probability of a harmful action being disallowed becomes:

pp_H if the court does not refer decisions back to the CA

$pp_H + p_H(1-p)p_H$ if the court refers decision back to the CA

Where:

$$pp_H < pp_H + p_H(1-p)p_H < p_H$$

Similarly for the probability of a benign action been disallowed under an appeals process.

This implies that:

Lemma1

Under a referral process effectively the decision rule becomes $(\tilde{p}_H, \tilde{p}_B)$ where:

$$\tilde{p}_H < p_H \text{ and } 1 - \tilde{p}_B < 1 - p_B$$

That is, the probability of being disallowed always falls. Note also that if the CA does not make procedural mistakes ($p = 1$), then appeals is not going to affect the probability of

²⁴ We do not examine here the case where an action that is allowed by the CA is referred to the court (e.g. by a competitor) though we recognise that this can sometimes happen in practice.

²⁵ And that the court’s decision is final.

being disallowed (and, hence, is not going to affect the choice between *effects-based* and *Per Se* in decision error terms).

Let us now consider the implications of this, first for decision errors and then on deterrence.

a. Effects on the Costs of Decision Errors

First, we concentrate on the Costs of Decision Errors (CDE) of different decision procedures and how these are affected by judicial reviews. Under our assumptions, with an appeals process the CDE under the various rules will be:

$$CDE_a^{PSL} = \gamma h_H = CFA_a^{PSL} \quad (6)$$

$$CDE_a^{PSI} = (1 - \gamma)(-h_B) = CFC_a^{PSI} \quad (7)$$

and

$$CDE_a^D = \gamma h_H (1 - \tilde{p}_H) + (1 - \gamma)(-h_B)(1 - \tilde{p}_B) = CFA_a^D + CFC_a^D \quad (8)$$

Thus, we have, comparing equations (1)-(3) to equations (6)-(8) respectively:

Proposition 1

The appeals process does not affect the CDE of *Per Se* rules²⁶, while it lowers (raises) the CDE of *effects-based* or *discriminating rules* by lowering (raising) the costs of false convictions (acquittals) of such rules. Thus it makes the latter more attractive than *Per Se* when the reduction in the costs of false convictions outweighs the increase in the costs of false acquittals.

Proof:

The CDE of an effects-based rule will be reduced if:

$$\gamma h_H (1 - \tilde{p}_H) + (1 - \gamma)(-h_B)(1 - \tilde{p}_B) < \gamma h_H (1 - p_H) + (1 - \gamma)(-h_B)(1 - p_B)$$

or, when

$$\frac{p_H - \tilde{p}_H}{\tilde{p}_B - p_B} < \frac{(1 - \gamma)(-h_B)}{\gamma h_H} = s_L = \frac{1}{s_I} \quad (9)$$

where

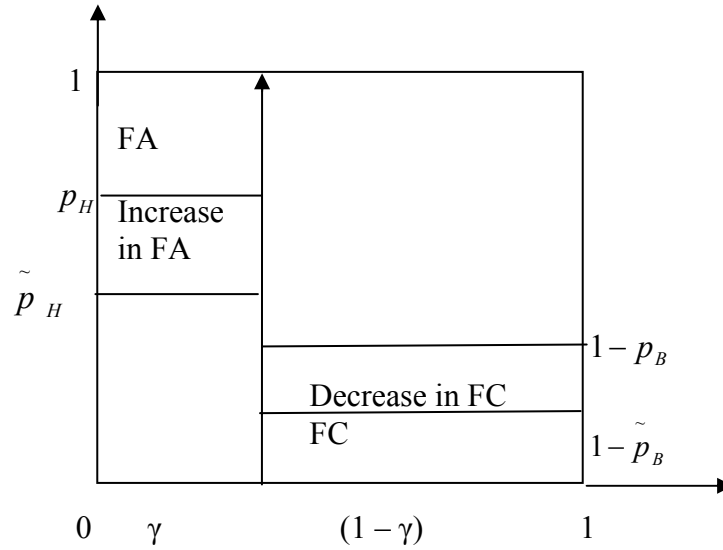
²⁶ *Per Se* Legality or *Per Se* Illegality.

$s_L > 1$ for a presumptively-legal practice

$s_I > 1$ for a presumptively-illegal practice

$\gamma h_H (p_H - \tilde{p}_H) =$ increased cost of false acquittals and

$(1 - \gamma)(-h_B)(\tilde{p}_B - p_B) =$ reduced cost of false convictions



This result is illustrated in the Figure above, where without an appeals procedure, $FC = \text{False Convictions} = (1 - \gamma)(1 - p_B)$ and $FA = \text{False Acquittals} = \gamma(1 - p_H)$ while with an appeals procedure $FC = (1 - \gamma)(1 - \tilde{p}_B)$ and $FA = \gamma(1 - \tilde{p}_H)$: clearly, ***there is in general no reason to expect that the gain from the decrease in FC will outweigh the cost from the increase in FA and, therefore, to expect that judicial reviews favour the use of effects-based procedures.***

An Example

As an example consider the case where the court only offers a judgement on the CA's decision but does not check procedural correctness (this is the case analysed by Ahlborn, Evans and Padilla, 2008). Then:

$$1 - \tilde{p}_B = (1 - p_B)^2; \tilde{p}_H = (p_H)^2$$

and

$$CDE_a^D = \gamma h_H (1 - p_H^2) + (1 - \gamma)(-h_B)(1 - p_B)^2 = CFA_a^D + CFC_a^D \quad (8')$$

Thus, for a presumptively legal practice ($\bar{h} < 0$):

$$CDE_a^D < CDE^D \Leftrightarrow \frac{p_H \cdot (1 - p_H)}{(1 - p_B) \cdot p_B} < \frac{(1 - \gamma) \cdot (-h_B)}{\gamma h_H} = s_L > 1 \quad (10)$$

For a presumptively illegal practice ($\bar{h} > 0$):

$$CDE_a^D < CDE^D \Leftrightarrow \frac{p_B \cdot (1 - p_B)}{(1 - p_H) \cdot p_H} > \frac{\gamma \cdot h_H}{(1 - \gamma) \cdot (-h_B)} = s_I > 1 \quad (11)$$

From (10) and (11) we see again that in general there is no guarantee that an appeals process reduces the CDE of *effects-based* rules²⁷ - thus, there is no guarantee that an appeals process makes such rules more attractive relative to *Per Se* rules.

Rewriting the LHS and RHS of the inequalities in (10) and (11) we see that essentially our conditions (10), (11) for the CDE to fall under an appeals process can be expressed as:

$$\frac{q_H}{q_B} < s_L = \frac{1}{s_I} \quad (12)$$

(12) says is that *for an appeals process to produce lower decision error costs the quality of a decision rule's ability to correctly classify harmful actions must be low relative to the quality of its ability to correctly classify benign actions*. This makes sense since an appeals process kicks in because firms appeal against decisions to ban their actions i.e. when they are classified as harmful.

Note that for presumptively legal practices if $p_H > p_B$ then the appeals process reduces the costs of decision errors of a *discriminating rule*²⁸. However note that this condition²⁹ is neither necessary nor sufficient for the appeals process to reduce the CDE of *discriminating rules*: (10) may hold even if the condition does not hold and even if this condition holds the CDE may not be reduced under an appeals process for a presumptively illegal practice – i.e. (11) may not hold even though the LHS of (11) will be greater than unity.

²⁷ Contrary to the claim in AEP (2008)

²⁸ This is true given that if $p_H > p_B$ the Left Hand Side of (10) is less than unity.

²⁹ AEP (2008) assume that this condition will be true in their discussion of potentially abusive unilateral practices examined in EU under article 82. For the arguments and empirical evidence to which they allude see Section II. of their article.

Corollary 1

From (9) it follows that the appeals process is more likely to reduce the CDE of a *discriminating rule* for presumptively legal than for presumptively illegal practices. For such a rule, the stronger the presumption of legality the *more* likely that the appeals process reduces the CDE while the stronger the presumption of illegality the *less* likely that the appeals process reduces the CDE. The intuition for this result is that an appeals process increases false acquittals but reduces false convictions. For a presumptively legal action false convictions matter more than false acquittals, whereas for a presumptively illegal action false acquittals matter more than false convictions.

b. Full Welfare Comparison

An appeals process will not only affect decision errors. It will also influence administrative procedure factors as well as the deterrence effects of legal standards. In this section we turn to a consideration of these.

To start with, appeals affect the length of time in reaching a final decision. Assume that under an appeal procedure the total length of time is ϕ_a , $\phi < \phi_a \leq 1$, where $\phi = 0$ (by assumption here) is the length of time if there is no appeal. Next, assume that the cost to a firm from having its action disallowed might depend to some extent on the length of time for which the practice was in operation. So we suppose that the total costs a firm faces if its action is disallowed after a time ϕ is $\phi c + f$ where f is now the fixed (time-independent) cost / penalty that the firm faces and c is the component of the penalty that depends on the length of time the action is in place³⁰.

If there is no appeal process then, as noted in the previous section, the expected profits of a firm if it takes the action will be: $(1 - \delta)b - \delta f$.

So a firm will take the action iff:

$$b > \underline{b}^0 = \frac{\delta f}{1 - \delta} \quad (13)$$

Of course the value of δ depends on the type of the firm and since $\delta_H = p_H > \delta_B = (1 - p_B)$, \underline{b}^0 will be greater for firms whose action is harmful than

³⁰ For example in the *Microsoft* (2007) case, the company had to pay a certain amount per day for its alleged refusal to license practice during the period of the appeals process.

for firms whose action is benign – *more firms from the harmful environment will be deterred.*

With an appeal process a firm is involved in a two stage decision: in stage 1 it has to decide whether or not to take the action; in stage 2 – if the CA has decided to disallow the action, it has to decide whether or not to appeal. If it decides to appeal then there is a cost $m > 0$ to mounting an appeal³¹. Consider each stage in turn.

Stage 2

If the firm having taken an action which was disallowed by the CA does not appeal then its net income will be $-f$. If the firm appeals then it will incur cost m and with probability δ its action will be disallowed by the court generating net income $\phi_a b - (\phi_a c + f)$ ³². On the other hand with probability $(1-\delta)$ the action will be allowed by the appeal court generating income b . Thus, the firm will appeal iff:

$$\delta[\phi_a b - (\phi_a c + f)] + (1 - \delta)b - m \geq -f$$

That is, iff:

$$b \geq \underline{b}_a = \text{MAX} \left[\frac{m - f + \delta(\phi_a c + f)}{\delta\phi_a + (1 - \delta)}, 0 \right] \quad (14)$$

Notice that the first term in square brackets is negative (and so all firms will definitely appeal) if the expected penalty from appealing is no greater than from not appealing. Put differently, the factors that would cause the firm to consider not appealing are: (a) the costs of mounting an appeal – i.e. $m > 0$. (b) the fact that, because the action persists longer, the expected fine is greater than not appealing.

Note from (14) that since $\delta_H = p_H > \delta_B = (1 - p_B)$ the value of \underline{b}_a will be greater for a firm whose action is harmful than for a firm whose action is benign – so:

Lemma 2

³¹ We assume that the firm always pays this, though in practice it may only have to pay this if disallowed.

³² Assuming that the court imposes the same penalty proposed by the CA.

Fewer firms from the harmful environment will be appealing having taken an action that was disallowed³³.

Proof: Follows from the fact that in (14) \underline{b}_a is increasing in δ .

We can now turn to Stage 1 and consider the decision to take an action³⁴.

Stage 1

There are two cases to consider:

CASE 1: $\underline{b}_a > \underline{b}^0$.

Here firms with $b \leq \underline{b}_a$ will not appeal and will have expected profits from taking the action that are exactly the same as if there were no appeal process. So their decision to take the action is exactly the same as if there were no appeal process. Firms with $b > \underline{b}_a$ will definitely appeal and so make greater profits from taking the action than if no appeal were possible. But they were already making positive net profits from taking the action so, once again, the fact that an appeal is possible will not change their decision as to whether or not to take the action. *So in this case the deterrence effects are exactly the same as in the case where no appeal is possible.*

Now for those firms with $\underline{b}^0 \leq b \leq \underline{b}_a$ i.e. those who do not appeal, the decision cost errors will be exactly the same as if there were no appeal. However for those with $b > \underline{b}_a$ who do appeal the decision to disallow will be made with a smaller probability and so will produce different decision cost errors. As we saw above these could be higher or lower than if there were no appeal.

So in this case welfare could be higher or lower with an appeal than without depending on how decision cost errors go.

CASE 2: $\underline{b}_a < \underline{b}^0$

Here everyone with $b \geq \underline{b}_a$ will appeal if they take the action. Those with $b < \underline{b}^0$ were making negative net profits from taking the action without an appeal, but since they

³³ This follows from expression for \underline{b}^0 which is increasing in δ .

³⁴ In the discussion below we abstract from differential deterrence effects.

appeal their profits will be higher from taking the action. Hence there exists a $\underline{b}^1, \underline{b}_a \leq \underline{b}^1 < \underline{b}^0$ such that every firm with $b \geq \underline{b}^1$ will both take the action and will appeal. So now:

Lemma 3

With the possibility of appeals available, fewer firms are deterred from taking the action.

Thus appeals produce a favourable, welfare enhancing, deterrence effect if the practice is presumptively legal – since then too many firms are deterred – and a negative, welfare reducing, deterrence effect if the practice is presumptively illegal – since then too few firms are deterred. Further, as we saw above, decision cost errors could be higher or lower than if there is no appeal. Thus, for a *presumptively legal* practice, if decision errors are lower under an appeals process then this is an overall welfare improvement; if they are higher then one has to trade-off higher decision error costs against lower mis-deterrence costs. For a *presumptively illegal* practice, if decision errors are higher under an appeals process then this is an overall welfare deterioration; if they are lower then one has to trade-off lower decision error costs against higher mis-deterrence costs.

Putting Proposition 1 (with Corollary 1) and Lemma 3 together we obtain:

Proposition 2

The appeals process is more likely *to improve welfare*³⁵ when a *discriminating rule* is used, relative to *Per Se*, if the practice is presumptively legal. Indeed, in this case, the appeals process may improve welfare even if it increases the CDE, due to its beneficial deterrence effects. If the practice is presumptively illegal the appeals process is more likely to *reduce welfare* when a *discriminating rule* is used, relative to *Per Se* – because in this case the *discriminating rule* is unlikely to reduce the CDE and will generate adverse deterrence effects.

Overall our analysis shows that the impact of the appeals process on the choice of decision procedure depends crucially on the *type of action* (presumptively legal or illegal) considered.

³⁵ Taking, that is, into account both effects on CDE and on deterrence.

3. The Impact of Internal Error Correction Mechanisms

As already noted, especially since 2004 the European Commission (and other Authorities) has established a number of internal error correction mechanisms, such as the system of internal peer review panels, in order to reinforce internal scrutiny³⁶. To examine the implications of such mechanisms and to compare them to judicial reviews one needs to take into account “the level of consensus that is required” when the internal mechanisms are used. Specifically, does a final decision require unanimity in the internal decisions of all review panels? Or is there a majority rule used (if the number of panels is more than two)?

There are, of course, other important differences between internal error-correction mechanisms and judicial reviews. Thus, in contrast to the latter, under internal reviews cases are reviewed automatically and the firm has to bear no additional costs – though in both cases there is further delay in reaching a final decision.

Consider first **decision errors** and assume that the internal review panels only examine cases disallowed by the CA’s case team³⁷. Also assume that for the final decision *unanimity* is required. If there are $N \geq 2$ review panels then effectively the decision rule becomes $(\tilde{p}_H, \tilde{p}_B)$ where:

$$1 - \tilde{p}_B = (1 - p_B)^{N+1}; \tilde{p}_H = (p_H)^{N+1}$$

Therefore the CDE when N internal review panels are used will be:

$$CDE_r^D = \gamma h_H (1 - p_H^{N+1}) + (1 - \gamma)(-h_B)(1 - p_B)^{N+1} = CFA_r^D + CFC_r^D$$

In the context of the EU Commission $N = 2$, the two peer review panels being the so-called devil’s advocate panel and the Chief Economist Team. Comparing we see that if the judicial process allows for two appeals, as is the case in EU with the CFI and the ECJ, then *the CDE with the Commission’s two internal review panels will be exactly the same as the CDE in the absence of internal panels but with the possibility of two judicial reviews*³⁸.

³⁶ For a brief discussion see AEP (2008), p. 28.

³⁷ As in AEP (2008), see p. 29.

³⁸ Assuming that the courts only offer an independent judgement on the CA’s decision.

If, on the other hand, internal decisions are reached by a *majority rule* and, for example, $N = 2$ ³⁹, then the decision rule becomes $(\tilde{p}_H, \tilde{p}_B)$ where:

$$1 - \tilde{p}_B = (1 - p_B)^3 + 2(1 - p_B) p_B ; \tilde{p}_H = (p_H)^3 + 2p_H(1 - p_H)$$

Substituting into the expression for the CDE it is easily seen that:

Lemma 4

With a majority rule there is a decrease in Type II errors (false acquittals) and an increase in Type I errors (false convictions) relative to unanimity.

Coming now to **deterrence**, under internal review panels all cases disallowed are reviewed. Thus with N panels and assuming unanimity the critical value of b above which firms decide to take an action is⁴⁰:

$$\underline{b}_r = \frac{\delta^{N+1} f}{1 - (\delta^{N+1})(1 - \phi_r)} \quad (15)$$

where $\phi_r, \phi < \phi_r \leq \phi_a \leq 1$ is the delay in reaching a final decision after all internal reviews. The lower probability of having the action disallowed plus the increase in delay reduce \underline{b} and thus there is an unambiguous reduction in deterrence relative to having no internal reviews. This tends to improve welfare if the practice is presumptively legal and to worsen welfare if it is presumptively illegal.

However, this will not be true if final decisions are taken using a majority rule. For example, with $N = 2$ then the probability of a harmful action been disallowed will be greater if the CA uses the review panels than if such panels do not exist iff:

$$\tilde{p}_H = (p_H)^3 + 2p_H(1 - p_H) > p_H$$

and this will hold given that $p_H \leq 1$. So in this case there will be an *increase in deterrence* (if internal panels do not delay a lot the decision process of the authority) and this improves welfare if the practice is presumptively illegal and worsens welfare if it is presumptively legal.

Thus our analysis in this section has established the following results:

³⁹ In this case one of the review panels has to agree with the case team's decision to disallow for a final decision to disallow.

⁴⁰ We abstract from differential deterrence effects on firms of different types. Also we assume that, in contrast to an appeals process, here the cost to the firm of been disallowed is not affected by the delay in reaching decisions.

Proposition 3

- (i) Internal review panels that allow the same number of reviews as there are potential judicial reviews (usually two), have exactly the same implications for the CDE as the judicial review system if decisions in the authority are reached unanimously.
- (ii) If decisions in the CA are not reached unanimously but rather a majority rule is used the internal review panels will produce more Type I errors and fewer Type II errors relative to unanimity.
- (iii) Under unanimity, internal reviews unambiguously reduce deterrence and thus tend to improve welfare for a presumptively legal practice and tend to worsen welfare for a presumptively illegal practice.
- (iv) If decisions in the authority are reached using a majority rule then internal review panels will increase deterrence effects. This and (iii) suggest the interesting result that, *ceteris paribus*, *final decisions in the CA with internal review panels should be taken unanimously when the practice is presumptively legal and through a majority rule when the practice is presumptively illegal.*

4. Conclusions

In this paper we have examined a number of questions related to enforcement structures for competition policy. Does the presence to judicial reviews, offering an independent judgement on Competition Authority decisions *and* checking procedural correctness, make *effects-based* decision approaches more attractive than *Per Se*? Under what conditions will judicial reviews and internal error correction mechanisms improve welfare? What are the implications of internal error-correction mechanisms for decision procedures? In the presence of such mechanisms should decisions be reached unanimously or through a majority rule?

We demonstrated that judicial reviews do not in general make *effects-based* decision approaches more attractive than *Per Se*. However, by reducing false-convictions costs and increasing false-acquittals costs of *effects-based* procedures they tend to make these more attractive than *Per Se* when the former effect outweighs the latter. Further, judicial reviews and internal error-correction mechanisms subject to unanimity reduce deterrence. Thus they

more likely to improve overall *welfare* when actions are "*presumptively legal*" than when they are "*presumptively illegal*". Indeed because of their *beneficial deterrence effects* they may improve welfare even when they increase decision errors for presumptively legal actions. As regards in particular internal reviews we have shown that, *ceteris paribus*, final decisions in the Competition Authority should be taken unanimously when the action investigated is presumptively legal and through a majority rule when the action investigated is presumptively illegal.

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