Judicial Review, Economic Evidence and the Choice of Legal Standards
by Utility Maximizing Competition Authorities
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Abstract
For most of the various types of business conduct that can potentially violate Competition Law, with the exception of hard-core collusive conduct and horizontal mergers, the issue of which legal standard (or decision rule) Courts or a Competition Authority (CA) should adopt for assessing the conduct has been hotly debated for many years. In the EU, while about 10-15 years ago there were many voices arguing for a movement towards effects-based legal standards, as many commentators recognize at present, this movement never seriously took off, so much so that currently the main question concerns whether we are actually moving towards its demise. This is opposed to the situation in countries such as Canada, UK and US and contradicts a growing body of economic theory using a welfare-based approach to show the superiority of effects-based standards in many circumstances.

In contrast to the traditional normative approach for examining the choice of legal standards, we propose a framework that does not associate this choice exclusively with error-cost minimization or welfare maximization. Rather, in our framework, the CA maximizes its utility, which depends positively both on the expected welfare benefits of its enforcement choices but also on its reputation and public image. Within this framework we are able to identify the fundamental role of the judicial review process in explaining why CAs may favor Per Se type standards (for conduct other than hard-core agreements), with sub-optimal utilization of economic analysis and evidence, how the choice of standard affects the optimal choice of the number of investigations undertaken and how these choices depend on the type of conduct examined. We also derive a number of empirically testable predictions.

JEL: K21, K41, L40
Keywords: Antitrust enforcement procedures, effects-based, Per Se, economic analysis, judicial review.

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1. Motivation, Objectives and Literature Review

1.1 Motivation, objectives and main results

Economic analysis has been extensively applied for many years in Competition Law (CL) enforcement in order to provide analytical tools and models for understanding cartel behavior, types of monopolization and the impact of vertical and horizontal mergers. More recently, it has been playing an increasingly important role in the assessment and optimal choice of legal standards and the shaping of tools of enforcement, such as leniency programs, commitments and settlements, determination of fines and alternative sanctions.

Nevertheless, the issue of the appropriate role and the extent to which economic analysis and evidence should be applied in the enforcement of CL has always been very controversial. How widely divergent the opinions have been and how dominant specific points of view become, in terms of their influence on enforcement practice, has varied over time and across countries and continents. Thus, while not without dissenting voices that even become dominant at certain periods over the last hundred or so years, the US (or North America) point of view has tended to give economic analysis and evidence a much more important role to that which the dominant point of view has assigned to economic analysis in Europe.

The debate concerning the appropriate role and extent of economic analysis and evidence in CL enforcement is usually couched in terms of what is the best legal standard or decision rule that should be used on how the assessment of potentially anticompetitive conducts should be made. A distinct, though interrelated issue, is

2 For discussions and empirical information concerning the use and usefulness of economics in competition law enforcement see Baker (2003), Gavil (2008), Neven (2006), Schinkel (2008) and Lianos (2012).

3 Both at the level of the EU Commission and that of Member States. For an excellent overview of the application of economics in a century of antitrust enforcement in US see Kovacic and Shapiro (2000). As Gavil et al. (2008) note, after the Sylvania decision “the Court systematically went about the task of dismantling many of the per se rules it had created in the prior fifty years, and increasingly turned to modern economic theory to inform its interpretation and application of the Sherman Act”. Also Gual and Mas (2011) for the use of concepts and tools from modern Industrial Organization theory and Fisher (1989) for an early skeptical view. For an exchange that encapsulates quite perfectly the controversy raging presently again in Europe, see articles of Wils (2014) and Rey and Venit (2015) discussing the recent EU Intel decision.

4 Some clarifying comments on the meaning of terms should be useful here. By “legal standard” below we will always mean the “decision rule” used by the CA in order to undertake its assessment of any given conduct that potentially violates the CL. The decision rule prescribes the type of evidence that the CA will seek and consider, the presumptions on which it will rely and the series of tests and economic argumentation that will take into account in making the assessment and reaching a decision. The decision rule can differ for different conduct: sometimes relying on presumptions and proving certain behavior will be all that is required; in other cases detailed market investigation and proving likely or actual effects of the specific conduct will be required. Also, below we will treat “effects-based” as more or less synonymous to “economics-based” (a term that has also become very popular in Europe in recent years). Sometimes, a distinction is drawn by legal scholars between “rules” (like Per Se) and “standards” (like “rule of reason”) – see for example, Blair and Sokol (2012). Below we neglect this distinction. Also, sometimes, the notion of “substantive standard” seems to be confused with that of “legal standard”. The two notions are clearly distinct. The substantive or liability standard is the criterion used (e.g. impact on consumer welfare) in order to decide whether or not a conduct violates the law. Legal standards refer to how decisions are reached. Per Se rules (or standards, such as the one applied in hard-core cartel cases) are perfectly consistent with welfare-based substantive standards (such as consumer surplus or total welfare). See also Katsoulacos (2017)............
that of what is the appropriate criterion (the substantive or liability standard) on the basis of which the CA or a Court will decide whether or not there is liability or CL violation.

The primary objective of this paper is to propose a framework for examining the choice of legal standards by CAs that does not associate this choice exclusively with error-cost minimization or welfare maximization. Rather, in our proposed framework, a CA maximizes its utility, which depends positively both on the expected benefits that its enforcement choices bring to society but also on its public image or reputation. This is consistent with the widely recognized fact that, in many cases, CAs operate under performance criteria that are not related to the effects of enforcement on welfare (see, for example, Avdasheva et al, 2017). Within this framework we are able to identify the fundamental role of the judicial review process in explaining why the extent of economic analysis and evidence used by CAs, can be severely limited.

More specifically, in our framework the CA’s utility is influenced by its public image and reputation and the latter is determined by an indicator of reputational enforcement success (see for details below) which is affected negatively when the number of infringement decisions by the CA falls and when the reversals of its infringement decisions in Courts of Appeal during the judicial review process are increased. The CA’s utility is also allowed to be affected positively by the welfare impact of the CA’s enforcement choices – the quality of its enforcement. Using this framework, we analyze the CA’s optimal application of economic analysis and evidence in Competition Law investigations and its optimal choice regarding the number of investigations undertaken and decisions reached.

Our main results are as follows.

For any given legal standard (LS) anticipated to be used by Appeal Courts, in assessing conducts of some type, the amount of economic analysis and evidence will tend to be lower for a reputation maximizing CA (that does not take into account the implications of its choices on welfare because its performance criteria are not linked to welfare effects) than for a mixed-objectives AC (that takes into account welfare effects). Also this amount will tend to be lower than the optimal amount of economic evidence corresponding to the legal standard adopted.

Reputation maximizing CAs will tend to concentrate on investigations of types of conduct assessed by low legal standards: the optimal number of decisions for the latter will be higher than for conduct types assessed by high legal standards.

A number of empirically testable predictions are derived too, among the most important of which are the following:

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5 For other important attributes of this process see Katsoulacos and Ulph (2011) and Shavell (1995).
6 Even though the CAs have access to suitable expertise.
(i) Increasing the amount of economic analysis and evidence utilized by a CA may decrease and then increase the probability of annulment of its decision by Courts of Appeal.

(ii) An increase in the legal standard adopted by Courts for assessing a conduct type will not necessarily increase the amount of economic analysis and evidence utilized by CAs in the assessment of this conduct type. This is most likely to be the case for reputation maximizing CAs.

(iii) Given that Courts change the legal and substantive standards only slowly over time and that CAs will become more productive in their enforcement activities, we expect that the probability of annulment of decisions by Courts will be reduced over time.

The explanation behind our main results is that while for any given legal standard the utilization of additional economic analysis and evidence will tend to reduce (or not increase) the probability that the CA’s decisions are annulled in Courts of Appeal, adopting higher standards will increase (or will not reduce) this probability for any given amount of economic analysis and evidence utilized. The later effect, that constitutes a basic premise of our analysis and is discussed in detail below, can be justified by two considerations:

(i) Given the legal standards adopted by Courts, any amount of economic analysis and evidence utilized by the CA, beyond what the Courts would consider as the appropriate level of economic analysis and evidence, can and will be neglected by Courts and will not affect the probability of decision annulment.

(ii) On the other hand, moving towards higher (more effects-based) standards implies an increase in the disputability of the conclusions reached by the CA – as the Courts are more likely to consider appropriate to take into account in reaching decisions, less or additional or different criteria, tests, models, explanations and interpretations to those adopted by the CA. Indeed, the ambiguity often introduced by assessing potential liability in competition cases on the basis of economic arguments and models is responsible for the uneven utilization of economics over the last 100 years in US antitrust enforcement (Kovacic and Shapiro, 2000). Even modern economics will usually provide competing explanations and assessments depending on the context characterizing the facts on any given case (as stressed by Fisher, 1989). This is particularly true when trying to interpret the implications of conduct using an effect-based approach.

7 Irrespective of whether these criteria etc are right or wrong, sufficient or deficient, and thus satisfactory or not in discriminating truly harmful from truly benign conduct. Such well defined pre-specified sets of criteria are, on the other hand, associated with object-based standards. Essentially, a move to higher legal standards may well imply that the CA and Courts cannot devise decision rules for assessing conduct that are based on a succinctly defined pre-specified set of easily identifiable and unanimously (or, more or less unanimously) accepted criteria or conditions, on the basis of which the assessment leads to conclusions that are very difficult to dispute.
It is important to note that the extent to which the judicial review process will be associated with this effect will be dependent on the conditions related to the institutional and legal/cultural context of the jurisdiction/country considered. Thus, the effect is expected to be stronger in jurisdictions in which there is no tradition in the application of economic analysis and evidence in legal proceedings and, specifically, in competition law enforcement, especially when the latter surpasses a certain amount of sophistication and complexity. Also, in jurisdictions or legal traditions in which judges lack any formal training in economics and the necessary relevant experience in assessing economic arguments. These are likely to hold in the relatively newer jurisdictions like those of for example the BRICS and other developing countries but may well hold too, at least to some extent, in more mature jurisdictions (e.g. of the EU) in which the legal tradition is not one that is receptive to economic arguments in substantive evaluations of CL cases.

The structure of the paper is as follows. Section 2 sets out the model while Section 3 derives our main results concerning the optimal application of economic analysis and choice of legal standards and the optimal choice regarding the number of investigations/decisions reached. Section 4 provides concluding remarks offers some recommendations and discusses opportunities for future research.

1.2 Brief literature review

Broadly speaking, there are two types of legal standards or decision rules that can be used, those (to use the terminology common in the EU) that are effects-based and those that are object-based, which in US are referred to as rule of reason and Per Se rules, respectively, though the terms are not, strictly speaking, exactly equivalent. Of course, there are variations in these rules and for some purposes it is probably best to think of legal standards as forming a continuum at the extremes of which are the Per Se (or object-based) and the (“full”) rule of reason (or full effects-based) standards (see below).

Of course, the choice of legal standard may also be affected by the substantive standard of the CA. While in academic discussions this is usually

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8 Further, while in US a Per Se offence concerns conduct that is necessarily and irretrievably unlawful, this is not necessarily the case in EU where the object-based standard may refer to a “rebuttable Per Se” rule and an effects-based standard is usually thought of as falling short of the full-blown rule of reason in terms of how discretionary is the Authority’s case-by-case decision making approach - see Katsoulacos Y and D Ulph (2009). Also, Gavil (2008), ab.cit. p.141. In EU, agreements under Art.101 are rebuttable. There are however cases in EU CL which are strictly Per Se prohibited: RPM, Parallel Trade restrictions and restrictions on cross-sales in vertical contracts. We return to some of these distinctions below.

9 Below we will use the term “higher” legal standard to refer to a standard closer to rule of reason, while by “lower” standard we mean a standard closer to Per Se..

10 Alexander Italianer, ab.cit. p. 2, referring to Justice Stevens who was probably the first to point out that one should think of legal standards (for dealing with restraints under US Section 1) as forming a continuum with Per Se and Rule of Reason being at the opposite ends of this continuum. As Italianer notes, the US Supreme Court has explicitly recognized that “the categories of analysis cannot pigeonholed into terms like “per se” or .... “rule of reason”. No categorical line can be drawn between them. Instead, what is required is a situational analysis moving along what the Court referred to as a “sliding scale”.
assumed to be welfarist (liability requiring a showing of adverse effects on welfare\textsuperscript{11}), in practice this is often not the case. For example, the substantive standard may be just to “protect the economic freedom of market participants”, or, the pursuit of a “system of undistorted competition” (Wils, 2014), without obligation to show adverse effects on consumer welfare or efficiency (Rey and Venit, 2015) – which would imply that any conduct that puts one or more competitors at a disadvantage would be considered unlawful\textsuperscript{12}, irrespective of the ultimate consequences of the conduct for welfare\textsuperscript{13}. The link between substantive standards and the choice of legal standards has been examined recently and it has been shown that the adoption of non-welfarist substantive standards increases the likelihood that Per Se legal standards are applied and a limited amount of economic analysis and evidence is utilized in investigations of specific conducts.

We can think of the difference between the two broad types of legal standard mentioned above as follows. While for certain conducts a sufficiently high standard of proof\textsuperscript{14} of anticompetitive harm can be reached by applying an objective-based legal standard, that is, purely on the basis of identifying the exact nature of the conduct, for many other conducts this will not be the case. In these latter

\textsuperscript{11} Consumer or total welfare – see also below.

\textsuperscript{12} The meaning of “preserving undistorted competition” was actually made clear by the EU General Court which, upholding in its entirety the Commission’s Decision on Intel, argued that making it more difficult for a rival to compete “in itself suffices for a finding of infringement”.

\textsuperscript{13} Rey and Venit (2015) note that the effects-based standard starts with a showing of a distortion of the competitive process but, in order to assess this distortion and find liability, one “should (also) look at the actual or likely effects of the conduct”, on consumer welfare or efficiency (p. 17, italics ours) which (a) includes assessing impact on prices but also on all other factors that influence consumer welfare such as consumers’ choice, product variety and product quality and (b) does not imply a focus on just the short-run effects. Note that in this paper we will not try to examine the pros and cons of using “consumer welfare” or “total welfare / efficiency” as the right substantive standard. Some CAs are already using a total welfare standard (e.g. in Canada, Australia and New Zealand) though in US the CAs lean towards the «consumer welfare» standard and in EU often a weaker standard – such as that concerning the «competitive process» - is used. There is currently quite an intense debate on this issue, with some eminent economists arguing for a total welfare standard, e.g. D. Carlton (2007). For a recent contribution also containing a review of the recent debate see Katsoulacos et.al. (2016). Also CAs often take into account the presence of “public interest concerns” as additional liability criteria.

\textsuperscript{14} We should stress that we will be using the term «standard of proof» rather loosely. To explain: formally, by «standard of proof» is meant the degree of evidence required in order to establish proof, or for the Authority to discharge its ultimate contention (that welfare will be adversely affected). Or, it is the threshold, in terms of the probability that must be met, for the Authority or Court to discharge its burden of proof. Common standards (associated with a progressively higher probability) include: “substantial evidence”, “Preponderance of the evidence” (or “balance of probabilities” – it is demonstrated, with at least 51% probability, that contention is true – mostly applied in civil cases), “clear and convincing evidence” and “beyond reasonable doubt” (mostly applied in criminal cases). While, however, these concepts are well understood and widely applied in common law systems, “in other jurisdictions, particularly in (EU) continental legal systems, such “probabilistic” standards of proof generally do not exist. The amount of evidence required is rather a question of the personal conviction of the judge (intime conviction). That is to say, a party who bears the burden of proof must satisfy the judge to the point of persuading him of the existence of a pertinent fact. The concept of intime conviction does not require courts to apply any specific standard of proof, nor does it refer to the rules of legal proof (i.e. the rules determining, in general and binding terms, the probative force of specific items of evidence). Instead, the courts in continental legal systems are vested with the power to determine the weight of evidence on the basis of a discretionary evaluation, even though the extent of the so-called principle of free evaluation may differ from one legal system to another” (see Per Hellstrom, 2009; p. 2; our emphasis). We should stress that our use of the term “standard of proof” in this article does not necessarily rely on a “probabilistic” interpretation; we may interpret it as “sufficiency in the evidence required to convince a judge”.

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circumstances, where the standard of proof reached by adopting object-based is too low, effects-based legal standards, relying on extensive investigation of firm and market characteristics and the application of economic analysis and evidence, are needed in order for the Authority to be able to identify whether it can reach its threshold for discharging its burden of proof and establishing its ultimate contention that the conduct will result in a reduction in welfare. The exact variant of object-based or effects-based rule that is required will depend on the conduct under consideration. While of course this implies that the extent and sophistication of the economic analysis and evidence utilized under an effects-based rule is greater than that under an object-based rule, how much greater will depend on the exact variant of Per Se / object-based or effects-based rule that is used.

Other legal standards that the literature and case law has identified along the continuum are the “modified Per Se (or modified object-based)” legal standard, where the application of the object rules can require application of quite extensive contextual analysis of market and firm characteristics, “structured rule of reason” where conduct is assessed through a specific series of screens to distinguish lawful from unlawful cases, in contrast to the (unstructured) “full” or “open” rule of reason where all potentially anti-competitive and pro-competitive effects are assessed and compared. For business conduct associated with vertical restraints or abuse of dominance or concerted practices, a Truncated Effects-Based legal standard can be thought of as a legal standard in which decisions about whether or not there is liability in the case of a specific conduct are reached on the basis of a presumption about the effects of the class of conducts of this type and of market characteristics that distort the competitive process by disadvantaging rivals (i.e. through exclusionary effects, widely defined or enhancing market power), so assessment just requires a showing that in the specific investigation the conduct and market characteristics belong to this class.

Existing literature has examined the question of what is the optimal choice of legal standards along the continuum, and hence of the role of economics in CL enforcement, assuming a welfarist substantive standard and using a minimization-of-costs of decisions errors framework and, more recently, a more general maximization-of-welfare framework (that incorporates the former). The main factors that then need to be taken into account and have been discussed quite extensively in the literature can be summarized as follows:

- the cost of decision errors (of Type I and Type II) under the alternative standards
- the deterrence or indirect (or incentive) effects of the standards
- whether the standard generates legal uncertainty

Assuming that an welfarist substantive standard is adopted.

See Feme Alese, 2008 (page 129); R O’Donohue and A J Padilla, 2008 (page 183 – 184); Kai Huschelrath, 2009 (p. 241). The term “quick look” as another intermediate standard falling short of the “full” rule of reason is also sometimes used – see Italianer (ab.cit., 2013) and Gavil (ab.cit., 2008).
other enforcement costs (including the administrative costs of enforcement and the costs to firms of self-assessing their actions or of reducing legal uncertainty).

In a series of papers, Katsoulacos and Ulph (2009, 2011, 2015 and 2016) have attempted, by using a maximization-of-welfare framework to provide answers on how the factors above affect the choice of the (optimal) legal standard and hence, indirectly, about the appropriate role and extent of economic analysis in CL enforcement. Their analyses, point quite strongly to the view that for a range of conducts, which now are understood not to be strongly presumptively illegal and for which the developments in economic theory and modelling in the last 20 or so years improved significantly the discriminating quality of the assessment, moving to assessment with effects-based standards will improve welfare due to a reduction in the costs of decision errors and an improvement in deterrence effects. But, as is widely recognised, the legal standards actually adopted in many countries and, most importantly in the EU and its member states, remain close to Per Se (and the extent of economic analysis applied by the vast majority of CAs today remains low). As Geradin and Petit (2010, p. 31) note, the assessment of abuse of dominance cases in EU has relied on «old, formalistic legal appraisal standards, and (has shown) a reluctance to endorse a modern economic approach». This implies that the arguments concerning decision errors, deterrence effects (as well as legal uncertainty and administrative costs), may not be the only, or even the most important, influences in choosing legal standards. In practice, other factors may be very important. One important factor is the substantive standard adopted by the Authority or the Court, while another factor, that is examined in this paper and is related to reputational effects may be also very important.

In the meantime, the importance of effects-based standards and of the role of economic evidence and relying on the predictions of sound economic analysis in

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17 Extensive references and reviews of the literature related to these issues are contained in these papers. See also J Padilla (2013), page 435.
18 But which up to the 1990s were widely considered as strongly presumptively illegal. See for more details Katsoulacos, Avdasheva and Golovanova (2016).
19 That is, the ability of the assessment to discriminate accurately between harmful and benign conducts.
20 Which are likely to more than compensate for any detrimental effects due to higher administrative costs and legal uncertainty. As Jones and Kovacic (2017, p 7) note «many jurisdictions apply a rule of per se illegality, or virtual per illegality, against some horizontal agreements such a price fixing. The extent to which such a rule should be expanded beyond this......is much more controversial and contested». As they indicate (p. 16) nowadays in US, vertical restraints, mergers and single-firm exclusionary behaviour are not assessed by a rule of per se. See also Blair and Sokol (2012).
21 There are exceptions to this, such as US or Canada (see Hovenkamp, 2017, especially onwards from p. 43), but the statement does reflect accurately the reality in the vast majority of other jurisdictions. The statement concerns conducts other than hard-core horizontal collusion for which all arguments – decision theoretic, welfare maximizing, relating to LU or implementability favor a Per Se legal standard. Thus, the type of practices that we will have in mind are the other business conduct for which there is no universally accepted choice of legal standards i.e. unilateral conduct by dominant firms, vertical restraints and concerted practices
22 Generally, the CA will recognize from case law and will adopt the substantive standard that is used by the Courts. See Katsoulacos (2017).
CL enforcement has been stressed by OECD not just in the context of developed countries but equally and perhaps more importantly in developing ones. For example, in its recent report evaluating the Russian competition authority, that has in the last few years become the largest competition authority in the world, the OECD (2013) makes as its top recommendation that the authority must “improve the quality of economic analysis and its application to competition enforcement throughout the competition authority and in support of improved judicial decisions”.

2. The Model

Our model of CA behavior is based on the basic premise that the CA is a government agency and as such it will typically have a certain freedom to choose among different possible courses of action. Its objective (or, the CA Commissioners’ objective) is concerned with society’s benefits from the agency's activities, but also with the organization's (and hence their) public image or reputation. Thus, while the Commissioners are concerned with the expected benefits that the CA’s activities bring to society, which depend on the CA making the right choice of legal standards in terms of error avoidance, deterrence effects and level of legal certainty, that is on the Quality of Enforcement, they are also attaching value to how the CA’s enforcement activities impact on their reputation and public image, or what we can terms the Reputational Success of Enforcement. Good reputation, that is essential for the furtherance of career concerns is dependent on satisfying certain performance criteria that can be objectively measured and easily identified and measured and which provide the basis for identifying the success or lead to positive appraisal of the head and commissioners on the basis of their “case record”. We formalize this objective through a utility function (U) that depends on the reputation (R) and welfare (w) effects of enforcement activities.

2.1 Legal Standards and Economic Analysis

Increased economic analysis and evidence is associated with “higher” legal standards, $LS_k$ for legal standards adopted by Courts for conduct of type k (i.e. ones closer to Full Effects-Based) and thus may influence the CA’s utility by affecting the probability of decision reversals ($\Phi$) in Courts of Appeal and hence the reputational

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24 With a degree of independence that varies quite a lot between countries.
25 See for an extensive discussion of these assumptions and of empirical evidence, as well as for a review of related theoretical work, Schinkel, et. al. (2014). They construct a model to examine the behavior of government agencies by assuming the same overall objective as we advocate here. As they note, in governmental agencies like Competition Authorities, the measurement of “output”, in terms of welfare impact of activities is difficult and this allows other performance criteria and hence incentives than just serving social welfare to hold. For example, as Lever (2009) stresses, agency officials may try to minimize their “mistakes” for fear of been publicly marked as incompetent rather than try to maximize social welfare.
26 As Kovacic et al (2011) note “...CA heads have concerns other than social welfare, including “being busy” with an eye to the media and political superiors”.

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success of enforcement (S) and by affecting the quality of enforcement and hence its welfare impact (w). We examine both of these effects in detail below.

In this paper we treat $LS_k$ as a variable determining and increasing with the extent to which economic analysis and evidence relating to the market / contextual circumstances of a specific conduct under investigation ($e_k$) is utilized in order to assess whether liability exists. When no such economic analysis and evidence is utilized and the question of liability relies just on information about the nature and characteristics of the conduct (and what we can presume about the consequences of the general class of conducts with similar nature / characteristics) then we take the value of $LS_k = 0$. A positive value of $LS_k$ implies that at least some contextual economic analysis $e_k$ relating to the specific conduct is undertaken. What we can term a Modified Per Se (MPS) $LS_k$ implies that contextual market analysis sufficient to establish the extent of extant market power is undertaken. The legal standard referred to as Truncated Effects Based (TEB) implies that additional blocks of economic analysis and evidence are utilized (to those utilized under MPS) in order to establish that the specific conduct and market characteristics generate exclusionary or market power enhancing effects. Finally the legal standard referred to as Full Effects Based (FEB) implies that additional blocks of economic analysis and evidence are utilized (to those utilized under TEB) in order to establish the net effect of the specific conduct on some measure of welfare taking into account potential efficiencies to be generated by this conduct.

To start our analysis, we note that in choosing legal standards the CA will of course take into account the legal standards that Appeal Courts apply for any given type of conducts. So we first need to examine the factors that influence Courts’ choice of legal standards.

Courts’ choice of Legal Standards

Courts adopt legal standards in CL enforcement under the influence of the following factors:

(i) What the evolving body of economic theory and evidence suggests in relation to the potential anticompetitive and efficiency effects of different conducts, that affect the strength of the presumptions that can be made about the effect on average of the general population of these conducts and the discriminatory quality of the underlying economic models – their ability to distinguish harmful from benign cases in specific investigations\(^{27}\). If the presumption is very strong and the discriminatory quality is low, Per Se or

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\(^{27}\) As Blair and Sokol (2012) describe “In the US, it was the law-and-economics academy that first transformed the analysis of antitrust, starting in the 1950s. The Courts followed, responding to the emerging scholarship. Courts began to shift antitrust doctrine from per se to rule of reason (and greater economic analysis) starting in the late 1970s, while at the same time transforming procedural standards. These changes next influenced the antitrust agencies, which in turn further strengthened the changes within the courts.”
close to Per Se standards will be selected. If the presumption is relatively low and the discriminatory quality high then EB legal standards will be preferred.

(ii) What they consider to be the appropriate objective(s) of CL enforcement and hence the appropriate Substantive (or Liability) Standards (SS) that they adopt. SS differ substantially between countries. More specifically, while in the vast majority of cases welfarist objectives are incorporated among the criteria of assessment in order to define under what circumstances there will be a liability finding, there are significant variations in practice as evidenced by case-law, in relation to:

(a) Whether the welfarist objectives cover just consumer welfare (as would seem to be the case in UK and US, or extend to wider welfare notions of economic efficiency or total welfare (as recently in Canada).

(b) Whether welfarist objectives are in practice replaced by other competition-related objectives such as “putting competitors at a disadvantage” or “protecting the competitive process” that can be considered as part of a set of criteria for assessing impact on welfare but, on their own, do not constitute a complete assessment. What is important in this respect in our context is that non-welfarist SSs will imply that Courts will favor lower legal standards.

(c) Whether other “public interest” objectives become an important part of the assessment procedures.

(iii) The country specific institutional context. Jurisdictions, in which there is no tradition in the application of economic analysis and evidence in legal proceedings and, specifically, in competition law enforcement, especially when the latter surpasses a certain amount of sophistication and complexity or in which judges lack any formal training in economics and the necessary relevant experience in assessing economic arguments will tend to rely less on what evolving economic theory and evidence suggests about the potential effects of different conducts.

28 See for details Katsoulacos and Ulph (2009)
30 See Katsoulacos (2017). As explained ……. If the Court does not use an welfarist SS – e.g. its SS is the “preservation of competition”, the maximum e that it will consider in its assessment will be lower than for CSS…. further a non-welfarist SS will imply that the likelihood of the Court using lower legal standards is higher…….
31 See, for example, Katsoulacos, Avasheva and Golovaneva (2016).
32 While these will certainly tend to hold in the relatively newer jurisdictions like those of for example the BRICS and other developing countries they may well hold too, at least to some extent, in the more mature jurisdictions (e.g. of the EU) in which the legal tradition is not one that is receptive to economic arguments in substantive evaluations of CL cases (see for a good discussion, Blair and Sokol, 2017, p. 2513 – 2516). It is worth stressing that there is significant variation even between countries within each of these two categories. Thus, in the jurisdictions in which enforcement of competition law is quite new the above argument is likely to hold less in a country like South Africa where the legal institutions and traditions have been under Anglo-Saxon influence for a
The above considerations determine the choice of legal standards by the Courts and hence what they would consider as appropriate levels of economic analysis and evidence in the assessment of specific conducts\textsuperscript{33}.

Let $LS^C_{k,j}$ be the Legal Standard i adopted by Courts (C) in country / jurisdiction j for conduct k. From the discussion above:

$$LS^C_{k,j} = f(E_k, SS^{C,j}, I^j)$$

(1)

where $E_k$ measures what the economic, theoretical and empirical, literature suggest is the appropriate legal standard for any given SS adopted by Courts, $SS^{C,j}$ is the SS adopted by Courts in jurisdiction j and $I^j$ captures the institutional and cultural / historical context in jurisdiction j.

Let us, in the discussion below, assume that the choice of the optimal LS that Courts can adopt to be among one of three potential standards, specifically, Modified Per Se (MPS), Truncated Effects-based (TEB) or Full Effects-based (FEB), that is:

$$\widehat{LS}^C_{k,j} = \{MPS, TEB, FEB\}$$

(2)

The MPS standard can be considered as a Per Se Illegality rule subject to a SMP requirement or as supplementing Per Se by undertaking some analysis of market characteristics in, for example, an information exchange agreement or in a concerted practice for which there is no strong hard evidence of collusion. Truncated Effects Based is an intermediate standard), in which, as noted above, decisions about whether or not there is liability in the case of a specific conduct are reached on the basis of a presumption about the effects of a class of conducts of this type and of market characteristics that distort the competitive process by disadvantaging rivals (i.e. through exclusionary effects, widely defined), so assessment just requires a showing that in the specific investigation the conduct and market characteristics belong to this class. Finally, while FEB represents the case where the CA expects that the Courts will adopt a full EB legal standard. Conducts which could be assessed by these standards include potentially abusive dominant firm practices, vertical restraints and concerted practices.

Given $\widehat{LS}^C_{k,j}, i = MPS, TEB, FEB$ it is then possible to determine the extent of economic analysis and evidence that is associated with the LS chosen by the CA. Let:

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\textsuperscript{33} As Geradin and Petit (2010) note (p. 20) “the EU Courts have developed legal standards both with respect to the procedural and substantive aspects of competition law..... (with regard to the latter) the EU Courts have developed in their case law a variety of legal standards that should be relied upon to determine the compatibility with EU CL of a wide range of commercial practices susceptible of creating anticompetitive effects, including horizontal agreements, vertical agreements, exclusive dealing, rebates, predatory pricing, selective price cuts, tying and bundling, refusal to supply, margin squeeze..... An important observation with respect to these legal tests is that they are intensely “economic” in nature.....”.
$e_{k,j}^{CA}$ = indicator of the (average) extent of economic analysis and evidence used by the CA in investigations of a conduct of type k when legal standard i, $LS_{i,j}^{CA}$, is adopted. And, let $\frac{e_{k,j}}{E}^{C,j}$ be the amount of economic analysis and evidence that Courts in jurisdiction j will consider as optimal under $LS_{i,j}^{C,j}$. Thus, we have:

$$
\frac{e_{k,j}}{E}^{C,j} = \{e_{k,MPS,j}, e_{k,TEB,j}, e_{k,FEB,j}\}
$$

According to (3) if a Court adopts FEB as the appropriate LS for a conduct then it will consider that the optimal economic analysis and evidence associated with this is greater than it would be if TEB was considered the appropriate LS, with the optimal economic analysis and evidence associated with TEB being greater than it would be if MPS was considered the appropriate LS.

We assume that a CA anticipating the LS that Courts will adopt for a specific conduct will choose an amount of economic analysis such that the following holds: 

Assumption 1:

$$
e_{k,j}^{CA} \leq \frac{e_{k,j}}{E}^{C,j} \text{, } i=MPS,TEB,FEB
$$

which in effect means that CAs anticipate that Courts will not take into account economic analysis and evidence beyond $\frac{e_{k,j}}{E}^{C,j}$ for any given $LS_{i}^{35}$.

A final observation here is that CAs will also be constrained from setting e below a minimum level ($e$) set by laws, guidelines and case-law (setting e below this level would essentially imply that its decision will be annulled with certainty). This level is of course lower than the optimal level associated with the MPS LS. That is:

$$
e_{k,j}^{CA} \geq e
$$

Below we will take it that, when shifting from a lower to a higher legal standards, e.g. from a strict PS to MPS or from MPS to TEB) the CA will have to undertake a series of additional distinct steps of economic analysis and economic tests that require potentially additional evidence, each of which is necessary in order to

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34 For an approach to constructing these indicators for undertaking empirical work, see Katsoulacos et al (2016). Clearly, if the CA decided to use, for example, a strict Per Se legal standard when faced with a price-fixing conduct the amount of economic analysis that it will apply (e) in its investigation of the specific case and reaching a decision will be very small (if there is hard-evidence that price-fixing did occur). This is so notwithstanding the fact that the CA’s decision to use a strict Per Se is based on a very strong presumption of illegality of price-fixing that in turn relies on a very robust and long established body of economic theory that shows that price fixing agreements will have detrimental effects.

35 Saying that the CA knows the values of e associated with a specific legal standard that the CA expects to be used by the Courts, we mean that the CA will know the type of tests, evidence and economic analysis (e.g. models for showing foreclosure or consumer harm or economic arguments that can be used to show the presence of efficiencies), that the Court is likely to associate with assessment under this legal standard.

36 For which we can take the amount of economic evidence to be negligible or zero as assessment relies on just the form of the conduct. We do not consider strict Per Se Legal Standards here. When a strict Per Se LS is considered appropriate this implies that no application of economic analysis is required for assessing a specific conduct.
achieve the higher optimal e associated with the higher standard. The Figure below illustrates this increase in the value of e associated with a higher legal standard.

Figure 1

2.2 The utility and reputation functions

Reputation is determined by the Reputational Success of Enforcement (S) of the CA. Assuming that the CA’s enforcement efforts are directed to K potentially anticompetitive business conduct types, S is a function of enforcement success in investigations of these different conducts:

\[ S = S(S_1, S_2, ..., S_K) \] (6)

and reputation is given by:

\[ R = R(S), R_{S_i}(S) > 0, R_{S_i}'(S) < 0 \] (7)

That is, reputation increases (at a diminishing rate) as \( S_k \) increases. We allow for the increase in reputation to depend on \( k \) (the type of conduct) to capture the fact that investigations regarding different conduct types may affect differently the CA’s public image – e.g. because investigations of conduct \( k \) are more likely to involve high-profile cases than investigations of other conducts (DO NOT USE THIS LATER ON).

Generally, the CA’s utility from enforcement related to conduct \( k = 1, ..., K \) can be expressed as:

\[ U_k = U_k(R_k(S_k(D_k, e_k(LS_k))), \bar{w}_k(e_k(LS_k))), \partial U_k / \partial R_k, \partial U_k / \partial \bar{w}_k > 0, k = 1, ..., K \] (8)

37 For the simple cases where there is no danger of confusion, we will use subscripts to indicate derivatives, otherwise we will write them explicitly.
Specific versions of the U and R functions will be specified later on. We will take $S_k$ to be determined by:

$$S_k(D_k, e_k(\text{LS}_k)) = D_k(1 - \Phi_k(e_k(\text{LS}_k))), k = 1, ..., K$$

(9)

where $D_k = \text{infringement}$ decisions reached on conduct $k$.

$\Phi_k(e_k(\text{LS}_k)) = \text{probability that an infringement decision is reversed by Courts of Appeal given the Legal Standard (LS}_k) \text{ adopted.}$

Reversed decisions harm the reputation of the CA and its public image. This has the implication that the CA will prefer to adopt legal standards that lower the risk of having its infringement decisions reversed.

$\bar{w}_k = \text{CA’s estimate of the size of the average identifiable welfare impact (or gain in welfare) from non-reversed infringement decisions}^{38}$ on conduct $k$, which depends on the quality of enforcement as defined above.

The link of the reputational success of enforcement to the number of non-reversed infringement decisions reached by the CA needs some clarification. It is true that there will also be acquittal decisions that are appealed, by the parties affected by the allegedly anticompetitive conduct and some of these appealed decisions will also be reversed by the Appeal Courts. There are, however, a number of important reasons why focusing on just infringement decisions seems reasonable. One is that public image or reputation-building is likely to rely mainly on non-reversed appealed infringement decisions rather than on non-reversed appealed acquittals. CAs are seen by the wider public and their political superiors as institutions established in order to stop firms undertaking genuinely anticompetitive actions with negative impact on large sections of consumers rather than as institutions which manage to rightly acquit conduct that does not cause any harm. The latter is unlikely to capture the attention of the public and those (like the media) influencing public opinion and to enhance the public image of the agency. Next, while performance criteria that CAs have to satisfy and on which their reputation depends, often push for maximizing the total number of non-reversed decisions, a number of factors indicate that reputation building must rely on non-reversed infringement decisions. Thus, political superiors would prefer that CAs consider mainly presumptively illegal (rather than presumptively legal) conducts, that is conducts that, on average, are expected to be socially harmful. This means that CAs in their ex-officio or market investigations will focus on such conducts and also their prioritization procedures will put much higher weight to investigating such conducts. Another factor is that, ceteris paribus, reaching infringement decisions that are not reversed in courts of appeal will be seen as a much safer predictor of the CA’s ability to deal successfully with «hard» cases given that, often, acquitting a firm from an alleged violation is heavily

$^{38}$ Or, average harm avoided.
discounted as being the anticipated outcome of excessive accusations made by rivals motivated by purely selfish objectives and also given that a much larger fraction of decisions in which violation is found is likely to be appealed (as violators have the incentive to try to avoid the monetary and other sanctions as well as the reputational costs associated with such decisions)\textsuperscript{39}. This is confirmed by empirical evidence which shows that by far the largest number of appeals are against infringement decisions by the alleged violators of the law\textsuperscript{40}.

Below we will assume that the reputational success of enforcement (S) is influenced by two factors. The Infringement Decisions (D) on conduct k, that the CA expects to reach on cases opened and investigated and the probability that these are reversed in Courts of Appeal. Decisions are reached on the basis of some variant of Per Se (PS, or object-based) or effects-based legal standards (EB) and they concern conduct that is not deterred, by firms anticipating the enforcement procedure and sanctions that they will face if investigated and convicted. Parties found to violate the law can appeal against the CA’s decisions. If they do, the CA will have to defend its decisions in the Courts of Appeal.

As noted above, expected reversals for infringement decisions reached on conduct k given the Legal Standard (LS\textsubscript{k}) adopted, depend on the probability that a conviction will be appealed against and the probability that an appealed decision will be reversed by an appeal court\textsuperscript{41}. Thus:

\[ \Phi_k(e_k(LS_k)) = \varphi_k^*(e_k(LS_k)) \varphi_k^r(e_k(LS_k)), \quad k = 1, \ldots, K \]

(10)

where:

\[ \varphi_k^*(e_k(LS_k)) = \text{probability that an infringement decision reached on conduct k given LS}_k, \text{ that is appealed} \]

is finally reversed in Courts of Appeal.

\[ \varphi_k^r(e_k(LS_k)) = \text{probability that an infringement decision of conduct k given LS}_k, \text{ leads to an appeal.} \]

The objective of the CA is to undertake investigations (and reach decisions, D) and to adopt legal standards (LS) that maximize its utility taking into account a cost constraint and the constraints imposed by the anticipated choices of legal and substantive standards by Courts of Appeal.

\subsection*{2.3 The cost constraint}

\textsuperscript{39} For example, in Russia, one of the many countries in which non-reversed decisions reached is the most important performance criterion used to assess FAS, only non-reversed infringement decisions enter into the performance assessment. In Schinkel et.al. (2014), reputation is derived from the decision of high-profiled but, at the same time, difficult tasks.

\textsuperscript{40} To give a few examples: in France between 2000 – 2015, 63% of infringement decisions are appealed as against only 16.3% of acquittal decisions that are appealed. In Greece between 1996 – 2015, over 78% of infringement decisions were appealed while less than 14% of acquittals were appealed. In Russia during 2008 – 2012 a negligible fraction of acquittals were appealed as against a very large fraction of infringement decisions that were appealed.......(see,/////).

\textsuperscript{41} We return to a discussion of the determinants of these probabilities below.
Coming to the CA’s cost constraint, we assume that the CA utilizes its resources to detect and investigate cases and reach decisions and to defend its decisions in the Courts of Appeal. In practice the authority will use resources for a number of other activities, such as advocacy and preventing recidivism, but we will not model these other activities here and we will also assume for simplicity that the CA will always be able to implement the optimal number of decisions and utilize the optimal amount of economic evidence per case, as determined below, and just allocate the rest of its resources to these other activities.42

The CA’s cost constraint can be written as:

$$\sum_{k=1}^{K} C_k + C_{other} \leq \bar{C}$$  \hspace{1cm} (11)

where

- \(C_{other}\) = cost of all “other” activities
- \(\bar{C}\) = total resources available to the CA
- \(C_k\) = total cost of reaching infringement decisions on conduct \(k\) given the LS adopted. This is given by:

$$C_k = c_k^D(e_k(LS_k))D_k + \phi_k^A(e_k(LS_k),x)c_k^A(e_k(LS_k))D_k$$  \hspace{1cm} (12)

where

- \(c_k^D(e_k(LS_k))\) = cost per investigation on conduct \(k\) given the Legal Standard adopted.
- \(c_k^A(e_k(LS_k))\) = cost per appeal against decisions reached on conduct \(k\) given the Legal Standard adopted.
- \(x\) = all other factors that influence the probability of appealing an infringement decision.

We will take it that:

$$\left(\frac{\partial c_k^D}{\partial LS_k}, \frac{\partial c_k^A}{\partial LS_k}\right) > 0, k = 1, \ldots, K$$  \hspace{1cm} (13)

that is, the cost per investigation and the cost per appeal increase when a higher LS (i.e. one closer to Effect-Based) is adopted (since this will require additional resources for extended economic analysis and evidence to be used.

From (7), the marginal cost (MC) of decisions of type \(k\) are equal to the average cost of decisions (AC) of type \(k\), or:

$$AC_k = MC_k = \frac{C_k}{D_k} = c_k^D(e_k(LS_k)) + \phi_k^A(e_k(LS_k),x)c_k^A(e_k(LS_k))$$  \hspace{1cm} (14)

Since an increase in \(LS_k\) implies an increase in the average amount of economic analysis and evidence utilized we assume that

---

42 This is essentially the same assumption as that made by Harrington (2011, p. 2), who considers the number of cartels successfully prosecuted by a CA, neglecting the issue of the allocation of resources to this relative to other activities that the CA undertakes. See his footnote 2 for a justification of not endogenising the amount of resources allocated to different activities.
\[
\frac{dMC_k^D(LS_k)}{dLS_k} = \frac{dAC_k^D(LS_k)}{dLS_k} > 0
\] (15)

### 2.4 The effects of different legal standards, the extent of economic analysis and the judicial review on the \( \Phi \) and \( w_k \) functions

**The effect of LS and \( e \) on \( w_k \)**

As noted above, when shifting from a lower to a higher legal standard, e.g. from a strict PS to MPS or from MPS to TEB) the CA will have to undertake a series of additional distinct steps of economic analysis and economic tests requiring potentially additional evidence, each of which is necessary in order to achieve the higher optimal \( e \) associated with the higher standard. We will assume that the application of these additional blocks of economic analysis and evidence improves the quality of assessment and improves the welfare impact of enforcement. This implies that:

\[
\begin{align*}
\bar{w}_k(e_k^CA < e) &< \bar{w}_k(e) < \bar{w}_k(\hat{e}_k^{CPS}) < \bar{w}_k(\hat{e}_k^{TEB}) < \bar{w}_k(\hat{e}_k^{FEB}) \\
\bar{w}_k(e \leq e_k^CA < \hat{e}_k^{CPS}) &< \bar{w}_k(\hat{e}_k^{CPS}) \\
\bar{w}_k(\hat{e}_k^{CPS} \leq e_k^CA < \hat{e}_k^{TEB}) &< \bar{w}_k(\hat{e}_k^{TEB}) \\
\bar{w}_k(\hat{e}_k^{TEB} \leq e_k^CA < \hat{e}_k^{FEB}) &< \bar{w}_k(\hat{e}_k^{FEB})
\end{align*}
\] (16)

Figure 2 below illustrates the case where the increase in \( \bar{w}_k \) occurs at a diminishing rate.

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43 This assumes that the probability of appealing does not fall \( LS_k \) or if it does the fall is not significant enough to outweigh the effect on \( c_k^D \) .
Thus:

\[
\Phi_k(0 \leq e_k^{CA} < e) = \Phi = 1, i = MPS, TEB, FEB \quad (17a)
\]

\[
\Phi_k(MPS(e \leq e_k^{C} < e_{k, MPS}) < \Phi_k(TEB(e \leq e_k^{CA} < e_{k, MPS})) = \Phi_k(FEB(e \leq e_k^{CA} < e_{k, MPS})) = \Phi \quad (17b)
\]

\[
\Phi_k(MPS(e_k^{CA} \geq e_{k, MPS}) < \Phi_k(TEB(e_k^{CA} \geq e_{k, MPS})) < \Phi_k(FEB(e_k^{CA} \geq e_{k, MPS})) \quad (17c)
\]

\[
\begin{cases}
\Phi_k(MPS(e_k^{CA} < e_{k, MPS}) > \Phi_k(MPS(e_k^{C})) \\
\Phi_k(TEB(e_k^{CA} < e_{k, TEB}) > \Phi_k(MPS(e_k^{C})) \\
\Phi_k(FEB(e_k^{CA} < e_{k, FEB}) > \Phi_k(MPS(e_k^{C}))
\end{cases} \quad (17d)
\]

\[
\Phi_k(e_k^{CA} \geq e_{k, i}) = \Phi_k(e_k^{C}), i = MPS, TEB, FEB \quad (17e)
\]

Thus:

(i) There is maximum probability of annulment \( \Phi \) which is the probability with which infringement decisions will be annulled if economic analysis used is lower than \( e \). Below we will assume that this is simply unity.

(ii) We assume that \( \Phi \) will also be the probability of annulment under a TEB or FEB LS when the amount of economic analysis is even less than the optimal \( e \) with the (lower) MPS standard, i.e. when \( e_k^{CA} \leq e_{k, MPS}, i = TEB, FEB \). That is, when Courts adopt a TEB or FEB and CA utilizes economic analysis even less than \( e_{k, MPS} \) the probability of annulment will be \( \Phi \).
(iii) According to (17b) and (17c) for all \( e_{k,j}^{CA} \geq \varepsilon \) the probability of annulment is lower for the MPS LS than for the TEB LS and for the TEB LS lower than for the FEB LS. We provide a detailed justification of this important assumption, according to which for \( e \) above its minimum level the probability of annulment is higher the higher the LS adopted by Courts below.

(iv) According to (17d), for any given LS, the probability of annulment with that LS diminishes with additional blocks of \( e \) for \( e_{k,j}^{CA} \leq \hat{e}_{k,j}^{C}, \ i = MPS, TEB, FEB \) as indicated in Figure 3. In Fig.3 we assume that the decline is at a diminishing rate.

(v) (17e) re-expresses Assumption 1 above: given the legal standard adopted, Courts neglect economic evidence that is greater than what they consider as the optimal evidence associated with that LS.

Figure 3 below illustrates expressions (17). We should stress that this Figure shows the probability of annulment perceived by the CA when the Court is known to use a given legal standard.

The most important features of the \( \Phi_{k,j} \) function depicted in Fig. 3 are that the function is non-increasing (constant or decreasing) with \( e_{k}^{CA} \) up to \( \hat{e}_{k,j}^{C} \) for any given \( LS_{k,j}, i = MPS, TEB, FEB \). And that, as we move to a higher \( LS_{k} \) the function shifts up for \( e_{k} \geq \varepsilon \) so the probability of annulment increases for any \( e_{k} \geq \varepsilon \) as the \( LS_{k} \) increases. The plausibility of the first feature is easy to understand. Given the \( LS_{k} \), as the CA reduces the extent of \( e_{k}^{CA} \) away from the optimal level we expect that Courts will reverse the CA’s decisions with greater the probability.
The plausibility of the second feature can be explained by the following arguments. First, we note that, given the legal standards adopted by Courts, any amount of economic analysis and evidence utilized by the CA beyond what the Courts would consider as the appropriate level of economic analysis and evidence \( e_{k} \), can and will be neglected by Courts and will not affect the probability of decision annulment (as shown by (17e)). Secondly, while the CA knows the methodologies, tests and potential models that have to be used under, for example, a truncated EB, it may not undertake them in the best / most appropriate / most satisfactory way as judged by the Court – something that would not arise if the economics used were minimal and simpler as under Modified Per Se, and something that would occur with an even greater probability if the courts used the more complex economic analysis associated with full EB\(^{44}\). Essentially, increasing economic analysis and moving towards EB increases the disputability by Courts of the assessments made by the CA.

The point is that when the legal standard is relatively low and the application of economics limited both CA and Courts can reach decisions on the basis of presumptions about the conduct for fairly general populations of this conduct type, that is by using Per Se standards. Shifting the legal standard towards more effects-based\(^{45}\) in investigations of conduct of some type \( k \), will require increasing the amount and, usually, the complexity and sophistication of economic analysis and evidence used by the CA. This can increase the probability of annulment by Courts, because it may well imply that it is not possible then to devise decision rules for assessing the conduct that are based on a succinctly defined *pre-specified set of easily identifiable and, more or less, unanimously accepted criteria or conditions and tests* on the basis of which the assessment leads to conclusions that are very difficult to dispute. Thus, there is an increase in the disputability of the assessment conclusions – as the Courts can, when evaluating the CA’s decision, consider additional or different criteria, tests, models and interpretations to those used by the CA, or, at least, it is more likely for the Courts to enquire whether the CA’s analysis “is capable of substantiating the conclusions drawn from it”\(^{46}\). Note that this is in no sense contradicted by the fact that historically Courts have sometimes asked

\(^{44}\) Requiring the application of specific theoretical modeling and/or econometric testing for which there is often far from unanimous acceptance in relation to their reliability or robustness.

\(^{45}\) It is useful to be reminded that, as noted in the Introduction, we refer by an “increase” in the standard or moving to a “higher” standard” to a shift in legal standard towards full effects-based.

\(^{46}\) Hellstrom (2009), ab.cit. p.7. While this may be more common under the standard of judicial review applied in, for example, USA, it is also important in EU. Thus, as noted by Hellstrom (2009), the CFI in JFE Engineering stated that “the Commission must produce sufficiently precise and consistent evidence to support the firm conviction that the alleged infringement took place”. Also, as CFI stated in the more recent Microsoft judgment: “The Community Courts must not only establish whether the evidence put forward is factually accurate, reliable and consistent but must also determine whether that evidence contains all the relevant data that must be taken into consideration in appraising a complex situation and whether it is capable of substantiating the conclusions drawn from it” (ab.cit. p. 6 – 7, our italics).
for a higher legal standard in assessing specific conducts\textsuperscript{47}. Requiring a move towards
an effects-based standard as a prerequisite for establishing that the required
standard of proof is reached, does not mean that the increased economic evidence
associated with the higher legal standard will not be challenged with a higher
probability than the evidence associated with a lower standard\textsuperscript{48}.

3. Optimal economic evidence and optimal choice of decisions

3.1 Optimal economic evidence

3.1.1 The Reputation Effect (RE) and the Welfare Effect (WE) of Economic
Evidence

To determine the optimal economic evidence we use the following version of the
utility function (8):

\[
U_k = U_k(R_k(S_k(D_k, LS_k)) + \tilde{w}_k(LS_k), k = 1, ..., K)
\]  

(8')

Further, we simplify by assuming that:

\[
R_k(S_k(D_k, LS_k)) = f(D_k)S_k(D_k, LS_k) = f(D_k)D_k(1 - \Phi_k(LS_k)), k = 1, ..., K
\]  

(18)

In this section and, since this is not in any way going to affect the optimal choice of e,
and until we come to examine the optimal choice of D we will continue by writing:

\[
f(D_k)D_k = D_k
\]  

(19)

So:

\[
U_k = D_k[(1 - \Phi_k(LS_k)) + \tilde{w}_k(LS_k)], k = 1, ..., K
\]  

(20)

The CA will adopt the LS and the amount of economic analysis and evidence that
maximize the difference between $U_k$ and $C_k$ taking as given the Courts’ choice of LS
and, given this, the value of $e^\ast_{k,i}$, i.e. the optimal value of e associated by Courts with
that LS. From (20) we see that CA’s choice of LS and amount of economic analysis
will affect its utility through a Reputation Effect (effect on \Phi) and through an Welfare
Effect (effect on $\tilde{w}_k$). The shapes of the \Phi and $\tilde{w}_k$ functions determine these effects.

\textsuperscript{47} A famous recent example is that concerning RPM in the Leegin case in which the US Supreme Court decided that a Per Se assessment cannot be accepted and a more effects-based approach should be applied.

\textsuperscript{48} The above remarks are expected to apply with even greater force in jurisdictions, in which there is no tradition in the application of economic analysis and evidence in legal proceedings and, specifically, in competition law enforcement, especially when the latter surpasses a certain amount of sophistication and complexity. Also in jurisdictions or legal traditions in which judges lack any formal training in economics and the necessary relevant experience in assessing economic arguments. These will certainly tend to hold in the relatively newer jurisdictions like those of for example the BRICS and other developing countries but may well hold too, at least to some extent, in more mature jurisdictions (e.g. of the EU) in which the legal tradition is not one that is receptive to economic arguments in substantive evaluations of CL cases. It is worth stressing that there is significant variation even between countries within each of these two categories. Thus, in the jurisdictions in which enforcement of competition law is quite new the above argument is likely to hold less in a country like South Africa where the legal institutions and traditions have been under Anglo-Saxon influence for a long time and, among mature jurisdictions, it is much more likely to hold in European continental countries than in the USA, UK or Canada.
Given the assumed form of (20) and the discrete nature of the variables LS and e, the Welfare Effect per decision is described by (16) and illustrated in Figure 2 above. Consider now the Reputation Effect (RE):

\[ RE_k = D_k (1 - \Phi_k (LS_k)) \]  \hspace{1cm} (21)

Taking into account the \( \Phi \) functions under alternative Legal Standards, as given by (17) and illustrated in Figure 3, we have, assuming that \( \Phi_i = 1 \), the following Lemma in relation to the shape of the RE:

**Lemma 1:**

\[ RE_{k,j} (0 \leq e^CA_k < \bar{e}_j) = 0, i = MPS, TEB, FEB \]

\[ RE_{k,\text{MPS}} (\underline{e} \leq e^CA_k < \hat{e}^C_{k,\text{MPS}}) > RE_{k,\text{TEB}} (\underline{e} \leq e^CA_k < \hat{e}^C_{k,\text{TEB}}) = RE_{k,\text{FEB}} (\underline{e} \leq e^CA_k < \hat{e}^C_{k,\text{FEB}}) = 0 \]

\[ RE_{k,\text{MPS}} (e^CA_k \geq \hat{e}^C_{k,\text{MPS}}) > RE_{k,\text{TEB}} (e^CA_k \geq \hat{e}^C_{k,\text{TEB}}) > RE_{k,\text{FEB}} (e^CA_k \geq \hat{e}^C_{k,\text{FEB}}) \]  \hspace{1cm} (22)

\[ RE_{k,j} (e^CA_k \geq \bar{e}_j) = RE_{k,j} (e_k), i = MPS, TEB, FEB \]

Figure 4 illustrates the value of \( ARE_k \) where

\[ ARE_k = \left( RE_k / D_k \right) \]  \hspace{1cm} (23)

Since \( ARE_k \) from (21) is

\[ ARE_k = (1 - \Phi_k) \]  \hspace{1cm} (23')

Figure 4’s relation to Figure 3 is obvious.
A pure reputation maximizing CA (that neglects the influence of its choices on welfare) will choose the value of e that maximizes the difference between the Reputation Effect and the Cost or, equivalently, between the Average Reputation Effect \((\text{ARE}_k)\) and the Average Cost \((C_k / D_k) = AC_k^D\) given the legal standard adopted by the Courts. Now, given (13), and assuming that the probability of appealing is not decreasing when a higher LS is adopted, or, if it is, the decrease is small, we can conclude that, from (14) the AC per decision satisfies:

\[
AC_k^{D,\text{MPS}}(e_k^{\text{CA}}) < AC_k^{D,\text{TMB}}(e_k^{\text{CA}}) < AC_k^{D,\text{FEB}}(e_k^{\text{CA}})
\]  

(24)

where it is important to remember in (24) that \(e_k^{\text{CA}}\) is the average \(e\) that has to be used when \(LS_i, i = \text{MPS, TEB, FEB}\) is adopted. More generally, \(AC_k^D(e_k^{\text{CA}})\) will increase as the CA increases the amount of economic analysis and evidence in investigations of conduct \(k\), so for example:

\[
AC_k^D(e_k^{\text{CA}}) < AC_k^D(e_{k,\text{MPS}})
\]

(25)

Finally, in order to be able to obtain optimal choices for a mixed objectives CA, influenced both by the reputation and welfare effects of its choices, we must add to the Average Reputation Effect in Figure 4, the Average Welfare Effect for any given level of economic analysis where:

\[
AWE_k = (WE_k / D_k) = \overline{W_k}
\]

(26)

Then we have the following results.

**Proposition 1:**

(i) A mixed objective CA (CA-M) will undertake the same or more economic analysis in its investigations than a pure reputation max CA (CA-R) or, to put it otherwise, a pure reputation max. CA may well utilize less economic evidence than will be utilized by a CA with mixed objectives for any given \(LS_i\) anticipated to be used by Courts in assessing conduct \(k\). This is more likely the greater the increase in \(AC_k^D(e_k^{\text{CA}})\) as \(e_k^{\text{CA}}\) is increased.

(ii) The amount of economic evidence utilized by the CA in assessments of conduct \(k\) may well be lower than the optimal amount \(e_k^{\text{C}}\) corresponding to the LS adopted by Courts and this is more likely when the CA is reputation maximizing. For a mixed objectives CA it is more likely that the CA will utilize the optimal \(e_k^{\text{CA}} = e_k^{\text{C}}\).

Proof:

The optimal \(e\) for a CA-R, \(e_k^{\text{CA-R}}\) is given by

\[
e_k^{\text{CA-R}} = \max_{e_k^{\text{CA}}} \{\text{ARE}_k - AC_k^D\}
\]

(27)

while the optimal \(e\) for a CA-M, \(e_k^{\text{CA-M}}\) is given by
Proposition 2:

(i) Comparing for example the choice of \( e_k \) with that of \( \hat{e}^C_{k, MPS} \), given that 

\[
AC^D_k(e_k) < AC^D_k(\hat{e}^C_{k, MPS}) \quad \text{and that} \quad \text{AWE}(e_k) < \text{AWE}(\hat{e}^C_{k, MPS}).
\]

If 

\[
\text{ARE}(e_k) - AC^D_k(e_k) > \text{ARE}(\hat{e}^C_{k, MPS}) - AC^D_k(\hat{e}^C_{k, MPS})
\]

then \( e_k = e_{k, MPS} \), while with 

\[
\text{ARE}(e_k) + \text{AWE}(e_k) - AC^D_k(e_k) < \text{ARE}(\hat{e}^C_{k, MPS}) + \text{AWE}(\hat{e}^C_{k, MPS}) - AC^D_k(\hat{e}^C_{k, MPS})
\]

(ii) Comparing for example the choice of \( e_{k, 3}^{CA-R} \) with that of \( \hat{e}^C_{k, TEB} \), in Figure 3, 

where the latter is the optimal amount corresponding to the choice of \( \hat{L}_{STEB} \) 

by Courts, we note that 

\[
\hat{e}^C_k = e_{k, 3}^{CA-R} \quad \text{if} \quad \text{ARE}(e_{k, 3}) - AC^D_k(e_{k, 3}) > \text{ARE}(\hat{e}^C_{k, TEB}) - AC^D_k(\hat{e}^C_{k, TEB})
\]

so the amount of economic analysis utilized by the CA is sub-optimal. This is unlikely 

to hold for CA-M given that \( \text{AWE}(e_{k, 3}) < \text{AWE}(\hat{e}^C_{k, TEB}) \) and hence 

\[
\text{ARE}(e_{k, 3}) + \text{AWE}(e_{k, 3}) - AC^D_k(e_{k, 3}) < \text{ARE}(\hat{e}^C_{k, TEB}) + \text{AWE}(\hat{e}^C_{k, TEB}) - AC^D_k(\hat{e}^C_{k, TEB})
\]

Proposition 2:

(i) From (27), for a CA-R, or from (28) for a CA-M, as the CA becomes more 

productive over time and this reduces \( AC^D_k \) this will be associated with 
an increase in the optimal \( e_k^{CA} \) and, for given legal standard, this will be 

associated with a reduction in the probability of annulment (Figure 3). 

Thus, assuming that legal standards adopted by Courts change only slowly 

over time we expect that over time the probability of annulment will be 

reduced in investigations of the same conducts.

(ii) More data intensive or specialized analysis intensive conduct 

investigations will have a higher impact on \( AC^D_k \) as e increases. From (27) 
or (28), for these conducts the optimal e will be lower for any given LS 

adopted by Courts.

(iii) A reputation max CA will derive higher utility from investigating conducts 

which are assessed with lower LS. This is because the \( ARE_k \) will be higher 

the lower the \( LS_k \) and the lower the \( LS_k \) the lower the \( AC^D_k \) per 

decision. As we show below, this will make the optimal number of 
decisions of conduct types assessed with lower LS higher than the optimal 

number of other conducts.
Proof:
Evident from inspection of Figure 4.

Proposition 3:

(i) An increase in the LS adopted by Courts may not always increase the amount of economic analysis and evidence used by a CA-R. For example, shifting from a TEB LS with, say, \( \hat{e}_{k}^{CA-R} = \hat{e}_{k,TEB}^{C} \), to a FEB LS does not imply that the CA will increase e) but this will tend to be the case for a CA-M.

(ii) For a CA-R, increasing the amount of e utilized may lower and then increase the probability of annulment. For example, a CA-R can find it optimal to utilize \( e_{k} \) under a MPS LS for conduct k and \( \hat{e}_{k,MPS}^{C} \) under a MPS LS for another conduct, k’. This could well be true if, at \( e_{k}^{CA} = \hat{e}_{k,MPS}^{C} = \hat{e}_{k,MPS}^{C} \), it is true that \( AC_{k}^{D} > AC_{k}^{D} \). In this case, the increase in e from \( e_{k} \) to \( \hat{e}_{k,MPS}^{C} \) will be associated with a reduction in the probability of annulment. On the other hand, if shifting to a TEB LS by Courts, that will increase the optimal amount of economic analysis to \( \hat{e}_{k,TEB}^{C} \), induces the CA increase e to \( e_{k}^{CA} > e_{k}^{MPS} \), this will certainly increase the probability of annulment as the LS increases (from Figure 3).

Proof:
For (ii) the proof is evident from Figures 3 and 4. For (i), note that if a FEB LS is adopted then, at \( e_{k}^{CA} = \hat{e}_{k,TEB}^{C} \) the \( ARE_{k,TEB}(\hat{e}_{k,TEB}^{C}) > ARE_{k,FEB}(\hat{e}_{k,TEB}^{C}) \) and the \( AC_{k,FEB}^{D} > AC_{k,TEB}^{D} \). There is a fall in \( ARE_{k} \) from point E to point G in Figure 4. The CA can adopt a FEB LS and by increasing \( e_{k}^{CA} \) to \( e_{k}^{D} \) or \( e_{k,FEB}^{C} \) it can increase \( ARE_{k} \) to points J or K, respectively. But this move will not be optimal if \( AC_{k}^{D} \) increases substantially due to the move to the FEB LS. It should be clear, from inspection of Figure 4, that this is much less likely to be the case, for given \( AC_{k}^{D} \) values, for a CA-M (for which the effect on utility of an increase in LS must include the AWE).

Proposition 4:
Comparing jurisdictions in which Courts have non-welfarist Substantive Standards with jurisdictions in which Courts have welfarist SS, in the former CAs will tend to adopt lower legal standards and less economic analysis. This is important for explaining the difference in the legal standards applied between US (welfarist Courts) and EU (non-welfarist Courts)\(^{49} \) for a large range of conducts concerning vertical restraints and abuse of dominance.

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\(^{49}\) See Katsoulacos (2017) for a discussion of the differences.
Proof:
If Courts use a non-welfarist SS they will tend to adopt a lower LS. Then, according to the analysis above, CAs will utilize low standards and low levels of economic analysis and economic evidence in order to avoid the adverse reputation effects of higher standards and their higher enforcement costs. When Courts use welfarist SS then they tend to adopt higher LS. This will induce CAs with mixed objectives to also adopt higher LS, though reputation maximizing CAs will not increase the LS and extent of economic analysis and economic evidence to the same extent.

Our model can be used to explain the evidence presented by Geradin and Petit (2010), specifically in relation to DGCOMP decisions under Art. 102, which shows that DGCOMP employs low LS (MPS LS in terms of our terminology) in abuse of dominance decisions that are then upheld by the Courts. According to our model this can be explained by the fact that Courts in EU use a non-welfarist SS that lead them to consider low (Per Se type) LS as most appropriate for art. 102 cases. DGCOMP, anticipating this, find it optimal to use low LSs.

3.2 Optimal choice of decisions in investigations of type k

3.2.1 Optimality conditions

To examine the optimal choice of investigations of, or decisions on, conduct k by the CA, when a given LS is adopted in these investigations, we start by noting that optimality requires that:

\[
\frac{\partial U_{k,i}}{\partial D_{k,i}} = \frac{\partial C_{k,i}}{\partial D_{k,i}} = MC_{k,i}^D(e_{k,i}) = AC_{k,i}^P(e_{k,i}), k = 1,\ldots,K; i = MPS,TEB,FEB \quad (28)
\]

that is, at the optimum, the marginal cost of investigations / decisions reached on conduct k under LS i must equal the marginal impact of the decision on the utility of the CA. From (8’) and (18), assuming now that:

\[
f(D_{k,i}) = \left(\frac{1}{\alpha}\right)D_{k,i}^{\alpha-1}, \alpha < 1
\]

We have (suppressing the dependence of Φ and w on LS/e):

\[
U_{k,i} = \left(\frac{1}{\alpha}\right)(D_{k,i})^\alpha (1 - \Phi_{k,i}) + \overline{w}_{k,i}D_{k,i}, \alpha < 1, k = 1,\ldots,K; i = MPS,TEB,FEB \quad (30)
\]

So:

\[50\] See Katsoulacos (2017).
\[
\frac{\partial U_{k,i}}{\partial D_{k,i}} = (D_{k,i})^{\alpha-1}(1 - \Phi_{k,i}) + \bar{w}_{k,i} > 0, \alpha < 1, k = 1, ..., K
\]
\[
\frac{\partial^2 U_{k,i}}{\partial(D_{k,i})^2} < 0; i = MPS, TEB, FEB
\]

Thus, additional decisions always increase the CA’s utility but at a diminishing rate.

Figure 5 below illustrates the optimal (unconstrained) number of decisions reached on conducts of type k (\(\tilde{D}_{k,i}\)).

Figure 5: Optimal number of investigations / decisions

**Proposition 5:**

The optimal number of investigations on conducts of type k will be greater:

(i) The smaller the probability (\(\Phi\)) that decisions on these investigations will be reversed in Courts of Appeal and hence the larger the ARE of these decisions.

(ii) For the same reason, the greater the quality of enforcement and hence \(\bar{w}_k\).

(iii) The lower the AC of decisions and appealing, as determined by \((c_{k,i}^D, c_{k,i}^A)\).

(iv) The lower the probability (\(\varphi_{k,i}^A\)) that infringement decisions of conduct k lead to appeals.

**Proof:** Obvious from condition (28) and (31) which imply that:

\[
D_{k,i}^{\alpha-1} (1 - \Phi_{k,i}) + \bar{w}_{k,i} = AC_{k,i}^D
\]

All parts of Proposition 5 follow immediately from (32) taking into account (14). We also have:

**Corollary to Proposition 5:**
Consider a CA that in the assessment of conduct $k$ uses the LS adopted by Courts and the optimal amount of economic evidence associated with that LS. Then:

(i) The higher the LS used for conduct $k$ the smaller the optimal number of investigations / decisions on this conduct that will be undertaken by a CA-R. The CA’s optimal number of decisions on conducts assessed by higher legal standards will be smaller than the optimal number of decisions on conducts assessed by lower legal standards.

Proof: For a CA behaving as mentioned, higher LS unambiguously increase $\Phi$ and reduce the ARE (the only factor that affects the utility of a CA-R) and increase the AC of decisions, so from (32), reduce the optimal number of decisions.

(ii) The effect on the optimal number of decisions of higher LS is ambiguous for a CA-M.

Proof: for a CA-M, with a higher LS, while the ARE falls, the AWE increases so the effect in the CA’s utility is ambiguous. Though the AC of decisions increases it is not possible to say unambiguously from (32) that the optimal number of decisions will be reduced.

4. Concluding remarks, recommendations and future research

The model presented in this article can be used to explain the choice of legal standards when CAs choices are influenced by both the quality of enforcement (the welfare impact of these choices) and by its reputational success. Concern with reputation implies that CAs will take into account the judicial review process, specifically the Courts’ choice of legal standards and the implications of their choices on the probability that Courts will annul their infringement decisions. As a result they may apply sub-optimal economic evidence in antitrust investigations\textsuperscript{51} and to favor legal standards closer to \textit{Per Se} than to full effects-based. This, reconciles evidence indicating the unpopularity of standards with significant economic analysis content, with the fact that such standards seem likely to be superior on the basis of traditional error-cost minimization or welfare-maximization arguments.

It is important to note here that, often, explicit performance assessment of competition authorities relies on indicators related to reputational success, such as those measured by the ratio of non-reversed decisions to the overall number of decisions made\textsuperscript{52}.

Institutional adjustments and other measures could facilitate the expansion in the use of modern economic and econometric analysis and techniques in competition law enforcement. Among these we would put priority on the following:

\textsuperscript{51} Even though they are well-staffed with trained scientific personnel.

\textsuperscript{52} See for a review of performance indicators of different agencies Avdasheva et al. (2017).
(i) Explicitly incorporating into Competition Law provisions, substantive standards that are related to consumer welfare and efficiency.

(ii) Providing incentives to CAs through appropriate performance criteria, related to the welfare effects of enforcement activities, to make assessments of the welfare effects of their decisions on the basis of the state-of-the-art theories of harm proposed by the recent economic literature and to provide empirical substantiation of the predicted effects. The criteria should incorporate considerations related to error-cost minimization and deterrence/incentive effects when the CAs are making choices between different legal standards.

(iii) Setting up specialized tribunals for dealing in the first instance with competition infringement appeals, some of the members of which should be, ideally, economists. The Competition Appeals Tribunals of UK or of South Africa provide good examples of such tribunals.

(iv) Even when specialized tribunals are not set-up, taking measures to improve the expertise of judges in handling economic evidence through training programs (similar to the programs that have been advocated for EU countries by the European Commission recently). Also and most importantly, these programs should aim to develop commonly recognized and accepted procedures for taking into account economic analysis and evidence in substantive conduct assessments by Court judges and the Competition Authority.

While the main objective of the paper is to offer a conceptual framework for thinking about the choice of legal standards and the extent to which economic analysis is applied in investigations, by utility maximizing Competition Authorities, some of our main predictions can be empirically tested using information on decisions made by Competition Authorities that went through the appeal process. This information allows the testing of how increasing economic analysis and evidence affects the probability that appealed decisions are reversed by Courts of Appeal. Indeed, a statistical analysis of this condition is being undertaken using a large data set of Russian decisions made by the Russian CA (FAS) between 2008 – 2015. The conclusion of the statistical analysis is that there is a statistically significant strong impact of economic analysis on the probability of reversals which is initially negative and then positive. Available data sets of appealed decisions of DGCOMP,

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53 At least in cases where the perceived anticipated welfare impact of pursuing such investigations is likely to compensate for the extra enforcement costs.
54 See for example, Katsoulacos, Motchenkova and Ulph (2016).
55 This would reduce the degree to which decisions are reversed on appeal because the judges are unable to discriminate, in terms of their quality, between sophisticated economic or econometric arguments.
56 See also Baye and Wright (2011) and Avdasheva et.al. (2015).
57 See Avdasheva et.al (2015) and Katsoulacos, Avdasheva and Golovanova (2016). The level of economic analysis applied is measured by a number of different indicators constructed on the basis of the information contained in the decisions.
other EU countries and of other BRICS can be utilized in the future to test whether the Russian results can be generalized.

References


43. OECD, 2011 report on “Information Exchanges Between Competitors under Competition Law”.