

# The role of economics and the type of legal standards in antitrust enforcement by the EC: an empirical investigation<sup>1</sup>

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## Abstract

In this paper we apply, for the first time to the best of our knowledge, the idea that there is “an analytical continuum” of legal standards (LSs) between strict Per Se and rule-of-reason, “connected by a range of intermediate (economic) tests” (Jones and Kovacic, 2017), to the empirical measurement of the extent of economic analysis and of the LSs adopted in competition law enforcement by the European Competition Authority (DGCOMP). The idea of a continuum is operationalized in the bottom-up methodology, proposed in Katsoulacos et al. (2019), and the empirical measurement relies on the information extracted from an in-depth examination of all the antitrust decisions reached by DGCOMP between 1992 – 2016.

Having identified the extent and type of economic analysis in the decisions and mapped this to the corresponding LSs adopted in assessing different conducts, we then compare the LSs to their theoretically optimal level and examine their evolution over time. So, we capture the *quality of enforcement* for each conduct type by the extent of deviation from the optimum, the consistency in the application of LSs, and the overall level of quality of enforcement of DGCOMP. We show that, *on average*, over the whole period, economic analysis plays a relatively modest role in investigations, with little analysis to substantiate a theory of consumer harm or to take into account potential efficiencies, for conducts for which effects-based (rule-of-reason) would be the appropriate LS (vertical restraints and abuse of dominance). However, there is a consistent and very significant *improvement in the quality of enforcement* in abuse of dominance cases, with LSs reaching their theoretically optimal level (of full effects-based), in recent years. This finding certainly reverses earlier ones reported by Neven (2006) and Geradin and Petit (2010) and questions the more recent views put forward by Sokol (2017).

We also investigate the relationship between the LSs adopted and the outcome of the judicial review of the decisions appealed, i.e. the rate of decision annulment. Interestingly, we find no support, for the DGCOMP antitrust decisions, for Neven’s (2006) conjecture that the annulment rate will be higher with effects-based as “the scope for disagreement is greater when economic theory and evidence are important”. We offer potential explanations for this finding.

Key words: antitrust, economic analysis, legal standards, Per Se, effect-based enforcement.

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## 1. Introduction, literature review and discussion of the main results

The last 25 or so years are widely considered as witnessing in many jurisdictions throughout the world a substantial increase in the role of economists and, though this view has not rested on much formal empirical backing, even in the extent and sophistication of economic analysis and empirical evidence in the assessment of cases in competition law enforcement. A few countries such as the US and Canada are generally thought of as leading the way in this regard. But while this view, or, better, hypothesis, can be thought of as uncontroversial for merger control, it is far from uncontroversial for antitrust in many jurisdictions other than the US and Canada<sup>4</sup>. This paper contributes to the empirical investigation of the role of economics in European Commission's DG Competition (abbreviated below to EC DGCOMP) antitrust enforcement.

The extent to which the assessment of conducts in specific antitrust cases relies on economic analysis depends on the legal standard (or decision rule) adopted to make the assessment. The theoretical economic analysis of the choice of legal standards (abbreviated, henceforth, to LSs) by Competition Authorities (abbreviated, henceforth, to CAs) and Courts has been to a large extent normative analysis looking at the determination of optimal LSs, either from the point of view of error-cost minimisation (Easterbrook, 1984; Beckner and Salop, 1999) or welfare maximisation (Katsoulacos and Ulph, 2009, 2016, 2017). More recently, there have been also contributions in the positive analysis of utility maximising CAs making LS choices that reflect their reputational and operational cost-minimisation concerns (Katsoulacos, 2019a).

The theoretical treatments concerning the choice of LSs, have not however been accompanied by an equally significant effort to analyse, through detailed empirical research, what LSs are adopted in practice. International organisations, like the OECD and others, have been recording the rise of economists in CAs throughout the world<sup>5</sup> trying to measure the role of economics from the input side. The much more important task of measuring the role of economics from the "output" side i.e. looking at the extent to which and how economics is used in the decisions reached by CAs has not been sufficiently explored. It is easy to understand one reason: the latter requires a very large investment in the construction of data bases of the decisions reached by CAs over time and the examination of each one of these decisions to identify the exact role, extent and type of economic analysis utilised in reaching each decision. On the other hand, having undertaken this investment, allows one, on the basis of an appropriate methodology, such as the one described below<sup>6</sup>, to map the extent and the type of economic analysis to the LS associated with this analysis

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<sup>4</sup> And a few other jurisdictions in which an economics-based approach has been established and is dominant for some years now, like the UK. For useful discussions concerning the role of economics in competition law enforcement see, among others, Baker (2003), Gavil (2008), Gavil et al. (2008), Neven (2006), Schinkel (2008), articles in Drexel et al. (2009), Lianos (2012) and Gerber (2014).

<sup>5</sup> The greater role for economists in CAs is reflected in the number of economists with advanced training employed by CAs. The EC has actively promoted the use of more economists. In the staff structure of DGCOMP, the share of economists has increased substantially during the past 10 to 15 years. For example, in 2017 the DGCOMP employed 190 economists; its Chief Competition Economist leads a team of 27 economists; the US Federal Trade Commission employed about 70 Ph.D. economists (*The Handbook of Competition Economics 2018*, GCR 2018). The importance of economic analysis has been emphasized by organizations like the OECD and the UNCTAD. See e.g. Background Paper, OECD Policy Roundtable on Economic Evidence in Merger Analysis (2011); UNCTAD, The use of economic analysis in competition cases, Trade and Development Commission; OECD (2008), Presenting Complex Economic Theories to Judges. DAF/COMP(2008)3; also, the Speeches by Commissioner Kroes "Effective Competition Policy – a key Tool for Delivering the Lisbon Strategy", Brussels, 3rd February 2005, and "Building a Competitive Europe – Competition Policy and the Relaunch of the Lisbon Strategy", Milan, 7th February, 2005.

<sup>6</sup> This is the methodology proposed in Katsoulacos, Avdasheva and Golovaneva. (2019).

and, hence, to identify the type and evolution of the LSs adopted and the extent to which the LSs adopted diverge from the theoretically optimal LSs. Hence, to determine the quality of enforcement.

In this paper we report empirical work measuring the role of economics from the “output” side and identifying from this the type of LS adopted, based on a database that we constructed of antitrust infringement decisions made by EC’s DGCOMP. The database contains 170 such decisions reached between 1992 – 2016<sup>7</sup>. It also contains information about the decisions appealed and, most importantly, on the outcome of the appeal process following judicial review – i.e. about whether or not the decisions were finally annulled by the European Courts of Appeal.

Applying the bottom-up methodology of Katsoulacos, Avdasheva & Golovanova (2019), explained in summary below, the database has been used to identify the analytical blocks utilised in the assessment of each decision, which are then mapped to the LS associated with each decision. This approach is consistent with the idea that LSs can be thought of as forming a *continuum* at the extremes of which are the *Per Se* (or object based<sup>8</sup>) and the (“full”) *Effects-Based* (or rule-of-reason<sup>9</sup>) standards. As noted by Jones and Kovacic (2017), in relation to LSs, there is now a “recognition of an *analytical continuum* whose boundaries are set, respectively, by categorical rules of condemnation (per se illegality) or acquittal (per se legality) and an elaborate, fact-intensive assessment of reasonableness (Rule-of-Reason). *These poles are connected by a range of intermediate tests that seek to combine some of the clarity and economy of bright-line rules with the greater analytical accuracy that a fuller examination of evidence can produce*”<sup>10</sup>.

Our main objectives have been to:

- (i) Examine the LSs adopted in the assessment of different conduct categories (and the extent and type of economic analysis utilised to reach decisions), their evolution over time, and the extent to which they diverge from their optimal level (see below).
- (ii) Propose and then measure, indicators of the “quality of enforcement of competition law” (meaning the *quality of assessment* of the antitrust decisions reached) by DGCOMP.
- (iii) Identify the consistency with which LSs for specific conduct types are adopted and hence the extent to which DGCOMP’s choices contribute to legal certainty.
- (iv) Analyse the relationship between the LSs adopted and the outcome of the judicial review of decisions appealed, i.e. the rate of decision annulment.

We take the optimal LSs to be the social welfare maximising LSs, taking into account a number of factors: decision errors, deterrence effects, administrability and legal uncertainty. What

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<sup>7</sup> The conduct types or conduct groups associated with these decisions will be described in detail below.

<sup>8</sup> Below we will sometimes use the terms *Per Se* (used in North America) and *object-based* (used in the EU) interchangeably, though we do recognize that there are differences in these legal rules. Specifically, in the EU, a by object restriction is rebuttable (while this is not the case for a *Per Se* restriction in the US). Further, in the EU, contextualizing the conduct is important even for by object restrictions something that is not required for *Per Se* prohibited conduct in the US. We would like to thank Pablo Ibanez Colomo for clarifying discussions on this point.

<sup>9</sup> Again, we will use these terms interchangeably though, it has been pointed out that under rule-of-reason there is greater discretion afforded to the CA than under what in the EU is referred to as effects-based; Vickers (2007).

<sup>10</sup> Alexander Italianer (2013, p. 2), refers to Justice Stevens as probably the first to point out that one should think of LSs as forming a *continuum* with *Per Se* and rule of reason being at the opposite ends of this *continuum*. He notes, that 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*””. The term *continuum* is not used here in a mathematical sense but just to indicate that one can identify some distinct LSs between *Per Se* and Full *Effects-Based*. See also Leary (2003) and Calkins (2000) for other contributors that espouse this view. In some cases, whether or not the additional tests (to which Jones and Kovavic (2017) refer), will be undertaken depends on the outcome of prior tests, as for example, under the “safe harbor” rule in the treatment of vertical restraints in the EU.

are these LSs? 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) LS<sup>11</sup> and hence, indirectly, about the appropriate role and extent of economic analysis in antitrust enforcement. These analyses justify the use of a Per Se illegality standard to treat hard-core horizontal agreements but also point quite strongly to the view that for a range of conducts, which now, following advances in the theory of industrial organization, are understood not to be strongly presumptively illegal (that include vertical restraints and single firm exclusionary behavior)<sup>12,13</sup>, and for which the developments in theory and modeling in the last 25 or so years also improved significantly the discriminating quality of the assessment<sup>14</sup>, moving to effects-based legal standards will improve welfare due to a reduction in the costs of decision errors and an improvement in deterrence effects<sup>15</sup>. Our empirical results shed light on whether the role assigned to economics and the LSs actually adopted by DGCOMP are close or diverge significantly from their socially optimal level and on whether they differ over time and between the EC and North America jurisdictions.

Views that there is a divergence have mainly focused on enforcement in the area of abuse of dominance and were put forward, for example, by Geradin and Petit (2010, p. 31) who suggested, for EC abuse of dominance decisions, that the assessment has relied on «old, formalistic legal appraisal standards, and (has shown) a reluctance to endorse a modern economic approach». Indeed, the authors criticize the Courts for not using (higher) LSs, given the latest developments in economic theory and evidence and suggest that Courts should be annulling the decisions of DGCOMP<sup>16</sup> under Art. 102, given the latter's persistent adoption of Per Se legal standards. A similar view about EC's formalistic approach to abuse of dominance cases was also expressed earlier by Neven (2006). Gerber (2015, p. 1436) notes that though EC leaders welcomed the introduction of more economics based analysis, “the impact of these changes has been less clear in this area of competition law (relative to mergers and vertical restraints)”. More recently, the book “The Atlantic Divide in Antitrust”<sup>17</sup> argues that the greatest difference between European and North American enforcement in the last couple of decades, that remains relevant today, and probably the greatest challenge for European antitrust enforcement, is the continued use of object-based LSs in Europe, especially in Art. 102 cases. Sokol (2017), reviewing the book, notes that “In Europe .....economic analysis has not permeated ... competition law cases as it has in the

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<sup>11</sup> Extensive references and reviews of the literature related to these issues are contained in these papers. See also J Padilla (2011), p. 435.

<sup>12</sup> But which up to the 1990s were widely considered as strongly presumptively illegal. See for more details Katsoulacos, Avdasheva and Golovanova (2017).

<sup>13</sup> Relying on the predictions of sound economic analysis has been stressed by the OECD not just in the context of developed countries but equally in developing ones. In its recent evaluation of the Russian CA, that has in the last few years become the largest in the world, the OECD (2013) makes as its top recommendation that it must “improve the quality of economic analysis and its application to competition enforcement decisions”. See also Gerber (2015).

<sup>14</sup> That is, the ability of the assessment to discriminate accurately between harmful and benign conducts.

<sup>15</sup> Which are likely to more than compensate for 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 se 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 the US, vertical restraints, mergers and single-firm exclusionary behavior are not assessed by per se. To quote another author, in the period from the 1970s to the 1990s, “Economists and legal scholars in the USA created a powerful literature that demonstrated how form-based (Per Se) rules .... could lead to competition law decisions that harmed rather than protected competition” (Gerber, 2014). Also Blair and Sokol (2012) and Hovenkamp (2017 and 2018).

<sup>16</sup> See page 6 and page 35. See also Kovacic (2009), articles in Ezrachi (2009) and in Ehlermann et al. (2008).

<sup>17</sup> Gifford Daniel J. and Robert T. Kudrle (2015). See also review of book by Sokol D. (2017).

United States, *even if* the language used by the EC’s Competition Commissioner and DGCOMP is that of consumer welfare..... (and) the area of greatest cross-Atlantic discord (is that) involving single firm conduct, especially in markets characterized by high technology and innovation”.

If there is a divergence in LSs, this may be the result of the different jurisdictions adopting different *substantive standards*. In academic discussions of economists these are usually assumed to be welfarist (liability requiring a showing of adverse effects on welfare<sup>18</sup>). But 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<sup>19</sup>, irrespective of the ultimate consequences of the conduct for welfare<sup>20</sup>. The link between substantive standards and the choice of LSs has been examined recently and it has been demonstrated (Katsoulacos, 2019b) that adopting non-welfarist substantive standards increases the likelihood that, along the *continuum*, Per Se LSs are applied<sup>21</sup> and a limited amount of economic analysis is utilized, in investigations of specific conducts.

With respect to the influence of the substantive standard, interestingly, some scholars have pointed to this as a main factor behind the divergence between Europe and North America. In Europe, as Korah (2010) noted, the tradition of the Ordo Liberal School had a deep influence on the Commission and the thinking in many National Competition Authorities (CAs) in the early years of enforcement (1960s), as a result of which more emphasis was placed on any restrictions of conduct that disadvantaged rivals, restricted the freedom of the parties or increased market concentration.<sup>22</sup> As Sokol (2017) points out “Path dependency based on multiple overarching goals remains a fundamental characteristic of European antitrust (enforcement)...These goals include fairness, European integration, and the protection of rivals. Even if DGCOMP states that its sole goal is consumer welfare, Europe remains a far more favorable jurisdiction for a finding of a competition law infringement than the United States, where the shift to a singular goal of antitrust and the primacy of economic analysis has led to more rule-of-reason analysis and less intervention...too much European case law is subject to too many practices that are categorized by “object”<sup>23</sup>.

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<sup>18</sup> Consumer or total welfare – see also below.

<sup>19</sup> The meaning of “preserving undistorted competition” was actually made clear by the EU General Court which, upholding the Commission’s 2014 Decision on *Intel*, argued that making it more difficult for a rival to compete “in itself *suffices* for a finding of infringement” (our emphasis).

<sup>20</sup> 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). Some economists have been arguing for a total welfare standard, e.g. D. Carlton (2007). For a recent review of the debate see Katsoulacos, Metsiou and Ulph (2016). Also, CAs often take into account the presence of “public interest concerns” as additional liability criteria.

<sup>21</sup> Though, non-welfarist substantive standards are consistent with the use of effects-based LSs (Katsoulacos, 2019b).

<sup>22</sup> The authorities seemed to consider that always several inefficient firms were more competitive than fewer more efficient firms and they were more interested in static than dynamic competition – Korah (2010). The socio-economic and political theory emanating from Austria and Germany (the Freiburg School) known as Ordoliberalism is much richer, though here we associate it just with one of its tenets which concerned the importance of protecting the “competitive process” and preventing the rise of dominant firms / monopolies in market economies.

<sup>23</sup> See also discussion in Jones and Kovacic (2017, p. 28) and reference there to Peepercorn (2015). Also, Blair and Sokol (2012 and 2012a), Coniglio (2017) and Sokol (2017) for the multi-objective character of EU CL. It is important to note here that *our findings do not support the position that DGCOMP does not view consumer welfare as the primary criterion for assessing whether or not there is liability* (at least for the latter part of the period we examine). However, even if this is true for DGCOMP, this does not mean that the European Courts (or the Commission’s Legal

This paper examines whether these views can be supported by detailed empirical evidence identifying the extent and type of economic analysis used in antitrust decisions reached by DGCOMP from 1992 onwards and, most importantly, whether there has been an evolution towards more effects-based LSs in more recent years. Also, as noted, we examine whether the outcome of the judicial review process in Europe is affected by the LSs adopted, specifically, by whether assessment is closer to effects-based. That is, we test Neven's (2006) conjecture that "the scope for disagreement is greater when economic theory and evidence are important", so adopting more effects-based LSs should, *ceteris paribus*, increase the annulment rate<sup>24</sup>. Writing even earlier, Leary (2003) also pointed out, for the US, that "...the method of analysis is often outcome-determinative; plaintiffs tend to win per se cases and defendants tend to win rule-of-reason cases"<sup>25</sup>.

We proceed as follows. First, our antitrust decisions database is used to construct LS indicators (LSI) associated with each decision. We distinguish between six LSI (between strict Per Se and Full Effects Based) depending on the extent and type of economic analysis utilised, as explained in the next section. Decisions are categorised into four main conduct types or groups (G): hard-core horizontal agreements (G1), other horizontal agreements and concerted practices (G2), vertical agreements and restraints (G3) and abuse of dominance practices (G4). Next, we develop a number of indices. We measure the Weighted Average Legal Standard (WALS) adopted for each conduct group (the weights been the share of each LS used in assessing decisions for each conduct), and the degree of concentration (CONC) of the LSI of each conduct. The higher is CONC the greater the concentration on specific LSs when assessing specific conducts and hence the greater the certainty with which it can be anticipated that a specific LS will be used in the future for a conduct. The standard deviation of LSI is another measure of the uncertainty that surrounds the anticipated LS for a conduct.

We also present *indices of the quality of enforcement* measuring the extent of deviation of WALS from its optimal level for each conduct group relative to the maximum theoretical deviation, as well as an overall index of quality of enforcement by DGCOMP across all conduct groups. To measure quality, we assume that that the optimal LS for G1 is strict Per Se, or, more accurately for EC, a by-object restriction, while the optimal LS for G3 and G4 is full effects-based (or rule-of-reason). For G2 (concerted practices), for which all decisions are information exchange agreements, the optimal LS is considered to be a by-object restriction for information exchanges involving future prices and full effects-based otherwise.

We then provide evidence about how the probability of annulment of appealed decisions is related to the LS adopted in reaching these decisions.

We show that *on average*, economic analysis plays a relatively modest role in DGCOMP antitrust decisions reached from 1992 - 2016, with little analysis to substantiate a theory of consumer harm or to take into account potential efficiencies, for conducts for which effects-based would be the appropriate LS (vertical restraints and abuse of dominance). Efficiency analyses are

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Service) adopt the same liability (or substantive) criterion. For the importance of distinguishing and recognizing the differences between the European institutions that apply competition law see Gerber (2015).

<sup>24</sup> We should stress that we consider as annulled only decisions that are the Courts reject on substantive, not on procedural, grounds. See also Avdasheva et al (2015), Benetatou (2019) and Benetatou et al. (2020) for other attempts to examine this conjecture using data from enforcement in Russia, Greece and France. Also, for useful background, Baye et al. (2011).

<sup>25</sup> So, according to Leary (2003, p.2), with Per Se (rule-of-reason) we tend to get less (more) annulments or rejections of the decisions proposed by the CAs. He sites Stephen Calkins (2000) for this – who also supports "the application of a sliding scale in antitrust analysis" (p.497). Our empirical findings do not support the position in appealed DGCOMP decisions reached by rule-of-reason the rate of annulment is higher.

concentrated, almost exclusively, on cases of restrictive agreements which are rebuttable under Art. 101(3) in EU Competition Law. This modest role of economic analysis seems at first sight to confirm the views expressed on this, mentioned above, focusing on abuse of dominance conducts. However, there is a consistent and very significant *improvement in the quality of enforcement* in abuse of dominance cases, with LSs reaching, in more recent years, their theoretically optimal level (of full effects-based). This result reverses earlier findings reported by Neven (2006) and Geradin and Petit (2010) and questions the more recent views put forward by Sokol (2017). Further, these findings do not support the position that DGCOMP does not view consumer welfare as the primary liability criterion (at least for the latter part of the period we examine).

Thus the hypothesis that the EC and North America enforcement diverge, with the EU assigning a smaller role to economics and adopting more formalistic LSs, is certainly not supported for abuse of dominance cases given the evolution of the role of economics and of the LSs applied by DGCOMP. What one could claim is that while DGCOMP applies an effects-based LS under a strong presumption of illegality driven by the high weight assigned to false acquittals, in North America the standard applied is either one of Per Se Legality or is effects-based under a presumption of legality driven by the high weight assigned to false convictions. This explains why, as Sokol (2017), notes “Europe remains a far more favorable jurisdiction for a finding of a competition law infringement than the United States” but this has nothing to do with using less economics in antitrust assessment<sup>26</sup>.

In contrast, we do not find a movement towards more effect-based LSs in vertical restraint cases. Thus, our bottom-up approach of identifying economic analysis components in decisions and mapping these to LSs shows that even though the first regulation that signaled a switch to more economics-based assessment analysis concerned vertical restraints, in practice LSs adopted until 2006, that DGCOMP remained relatively active in this area, were close to Per Se – we provide some explanations of this seemingly unexpected result below<sup>27</sup>.

The value of the *overall quality of enforcement* indicator by DGCOMP, measuring divergence from the socially optimal standards can be considered as “high” (0,774 - with a maximum of 1 indicating zero divergence), assuming that the optimal LS for G1 is not strict Per Se (as in North America) but a restriction by-object (as in the EU)<sup>28</sup> and assuming that the substantive standard is that of total welfare. The overall quality is higher (0,80) if we assume that the substantive standard is that of consumer welfare. The overall quality is certainly even higher in more recent years in which there is a significant increase in quality for conduct group G4 (abuse of dominance). Finally, overall quality is considerably higher in the EC than in other countries in which the same methodology has been applied<sup>29</sup>. Also, overall, we can say that the degree of legal uncertainty created as a result of inconsistencies in the choice of LSs by DGCOMP is quite low.

Our investigation of the relationship between LSs adopted and the outcome of the judicial review of the decisions appealed, i.e. the rate of decision annulment provides no support, for DGCOMP decisions, for Neven’s (2006) conjecture – indeed we show that the annulment rate is

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<sup>26</sup> See also Katsoulacos (2019c) for a detailed discussion of this point. As Evans and Padilla (2005) point out with regard to LSs, from the end of the 1970s, in the US there have been two competing schools: the Chicago School arguing that the appropriate LS is that of Modified Per Se Legality (i.e. presuming legality even when significant extant market power has been established and allowing the conduct) and the Post-Chicago School arguing for full effects-based (or Rule-of-Reason (RoR)) (see, e.g. Evans and Padilla, 2005). Kovacic (2019) discusses the influence of the Chicago and Harvard Schools in the shaping of substantive rule and competition policy in the US.

<sup>27</sup> And the LSs in this area remain formalistic in the Member States since 2006.

<sup>28</sup> See footnote 8 above and also below for further explanation of the difference between these.

<sup>29</sup> See for details, section 4 below.

lowest exactly for those (abuse of dominance) cases in which more economic analysis is applied, or LSs adopted are closest to effects-based. Of course, our findings on this do not question the point that “the scope for disagreement is greater when economic theory and evidence are important” and that this creates a force that would, *ceteris paribus*, increase the annulment rate when adopting more effects-based LSs. It does indicate, however, that the relationship is much more complex. Specifically, there are important features of EU competition law enforcement that need to be accounted for and which help to explain our finding. One is that by-object restrictions under EU competition law (unlike Per Se restrictions in the US) are rebuttable and this gives the opportunity to the defendants to advance economic arguments about why the ultimate impact of their conducts on welfare is not adverse, arguments that raise the disputability of appealed decisions on by-object restricted conducts. Also, when DGCOMP treats a conduct as a by-object restriction it *has to demonstrate with contextual analysis that the presumption of illegality is sufficiently strong*, in order to justify the use of this specific LS (again unlike Per Se restrictions in the US), its assessment of the strength of the presumption being something that the defendants (and ultimately the Courts) may well dispute<sup>30</sup>.

Specifically, two important factors must be taken into account, which help to explain our finding. One is that by-object restrictions under EU competition law (unlike Per Se restrictions in the US) are rebuttable and this gives the opportunity to the defendants to advance economic arguments about why the ultimate impact of their conducts on welfare is not adverse, arguments that raise the disputability of appealed decisions on by-object restricted conducts.

## **2. A methodology for identifying the extent of economic analysis and legal standards in antitrust enforcement**

The methodology, first proposed in Katsoulacos et al. (2019), begins with the premise that there are variations in the LSs adopted in competition law enforcement, encapsulating the idea that it is best to think of LSs as forming a *continuum* at the extremes of which are the *strict Per Se* (or object based) and the (“full”) *Effects-Based* (or full rule-of-reason) standards. The progression towards LSs closer to full effects-based requires that additional “blocks” or components of economic analysis are applied. These are associated with the definition of the relevant market, the assessment of market power, the assessment of whether market power raising or exclusionary effects are present, the articulation of a theory of consumer harm, the assessment of efficiency effects and the assessment of what is, ultimately, the welfare impact of the conduct. These analytical components can be identified by analyzing the documents on particular decisions made by a Competition Authority (CA). Specifically, all the information could be extracted from the texts of the decisions and can be categorized by assigning to the variable corresponding to a component of economic analysis a value of “1=Yes” (in case the analysis has been undertaken) or “0=No” (otherwise).

The methodology identifies four broad components or categories of economic analysis (A, B, C and D in Table M1) that must be performed for the investigation of the Authority to constitute a full effects-based (or rule-of-reason) analysis (of all, other than exploitative, conduct). One or more sub-components make up every one of these main components of economic analysis (e.g.

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<sup>30</sup> See Section 4.4 below for more detailed discussion of the evidence and intuition behind the results. An extremely useful account of presumptions in EU competition law, containing a discussion of the nature and treatment of the by-object restrictions in this law, with extensive references to case law, is given in Ritter (2018).



sub-components C.1, C.2, C.3 make up analysis component C). If the CA does not adopt a full effects-based LS then some of the sub-components will not be part of the assessment.

**Table M1: Types of economic analysis taken into account in the construction of the indicators of the extent of economic analysis**

<b>Block or component of analysis</b>	<b>Description</b>	<b>Comment</b>	<b>Score</b>
<b>A</b>	<b>Discussion of the nature and characteristics of the conduct</b>	Since in all cases there must be some discussion of the nature and characteristics of the conduct, we should not get a score of “0” here – in this sense this category is not needed. It is included for purely formal reasons, to remind ourselves that an overall score of “1” is a strict <i>Per Se</i> approach to the assessment, meaning that the CA only considered the nature and characteristics of the conduct.	0/1
<b>B</b>	<b>Market Analysis</b>	<b>Comment</b>	
B.1	Basic analysis of market characteristics based on available information and market statistics	This is economic analysis that is necessary in order for a CA to contextualise a conduct. This typically involves information about industry structure, the firms, the structure of demand and the technology, determination of market shares (without formal analysis of market definition).	0/1
or B.2.	Formal market delineation and market share determination	Market definition based on more sophisticated economic tests (e.g. SSNIP test, Price correlation and Critical loss analysis).	
<b>C</b>	<b>Evidence on restrictions of competition/ harm imposed</b>	<b>Comment</b>	
C.1.	Analysis undertaken to identify if the conduct has market power enhancing (e.g. through agreements) or exclusionary (e.g. in monopolization practices) effects	This need not include the construction of a formal model (e.g. examination of incentive compatibility constraints in a concerted practice case, or examination of how exclusive contracts could lead to exclusion or prevent entry in the specific context, or “equally efficient competitor test”). But must indicate a serious effort to demonstrate the presence of such effects.	0/1

<b>Block or component of analysis</b>	<b>Description</b>	<b>Comment</b>	<b>Score</b>
C.2.	Articulation of theory of harm to consumer welfare (without taking into account of efficiencies)	When “scoring” CAs decisions this need not be a full-blown formal analysis; one could also score an effort towards determining whether exclusionary effects can be expected to create a negative impact on consumers (through a price increase or a reduction in quality or diversity).	0/1
C.3.	Analysis of potential efficiency effects expected to benefit consumers	Analysis should be based on efficiencies that are expected to result from the conduct, <i>that will create benefits to consumers</i> (again, this need not be very sophisticated but must indicate a serious effort to take efficiencies into account). Analysis of potential Efficiency Defense relating to factors that tend to prevent a price rise or other harm to consumers. NOTE: Counterfactual analysis <sup>31</sup> may be undertaken under any of the C components – though this is not strictly necessary for considering the effect as established.	0/1
<b>D</b>	<b>More effects-based analysis</b>	<b>Comment</b>	
D	Balancing of potential anticompetitive effects of conduct with <i>all</i> the potential efficiencies and determination of the final impact on <i>total</i> welfare.	This is any analysis “over and above” the analysis that may have been included under “efficiencies” above (taking into account efficiencies that need not impact consumers, especially in the short-term). By “balancing” here we mean any formal economic analysis that attempts to measure the net effect of the conduct, that may or may not be related to efficiencies - e.g. balancing the short-term and long-term implications of refusal to license (or of compulsory licensing) an innovative activity.	0/1
<b>Maximum Total Score</b>		<b>6 (when the Substantive Standard is that of total welfare)<sup>32</sup></b> <b>5 (when the Substantive Standard is that of consumer welfare)<sup>33</sup></b>	

Source: Revised from Katsoulacos et al. (2019)

Note that the value (1 or 0) of an analysis variable (e.g. of B.2 or C.2 etc) is based on a judgment whether the relevant analysis has been undertaken or not and it says nothing about the correctness or “quality” of the analysis or of the data used. In other words, the value of an analysis

<sup>31</sup> I.e. analysis proposing that the theory of harm is not valid and demonstrating the absence of foreclosure effects and consumer harm of an exclusionary conduct.

<sup>32</sup> That is, when the criterion for liability is whether or not there is an adverse effect on total welfare.

<sup>33</sup> That is, when the criterion for liability is whether or not there is an adverse effect on consumer welfare. Analysis component D need not be undertaken if the substantive standard is that of consumer welfare.

variable indicates *whether the competition authority, in the particular case, has tried to address the specific question associated with that analysis variable.*

#### *Effects-based scores and types of legal standards*

On the basis of the above methodology, one can construct *effects based scores* (EBS), for each decision, using the sum of scores for each block/component of economic analysis above – with a minimum of 1<sup>34</sup> and a maximum of 6. The question is: Is it reasonable for undertaking empirical analysis to use data that *aggregate scores over many different conducts?*

The answer is that a straight aggregation of scores across different conduct types will not provide indicators which can be used to undertake meaningful empirical analysis of the extent of economic analysis and type of LSs adopted. Such aggregate indicators cannot be used to measure meaningfully whether economic analysis is used “optimally” – since optimal LSs can only be defined at the level of each conduct and for conducts that should be assessed under Per Se the “optimal” level of economic analysis is small while for conducts that should be assessed under Effects-based the optimal level of economic analysis is large. Further, such aggregate indicators cannot be used to make comparisons over time and between different countries– since the level of the aggregate indicator will depend on the composition of conduct types that will be different for different countries and will change over time, so, for example, an EBS indicator score of, say, 2.91 for both Greece and France certainly does not mean that the extent of economic analysis relative to some optimal level is the same in Greece and France given that the composition of conduct types may well be completely different between the two countries<sup>35</sup>. Moreover, such aggregate indicators cannot be used to examine how changes in the economic analysis, if measured by changes in the value of the aggregate indicator, affect the annulment rate of the CA’s decisions, since the latter is expected to be influenced by what “type” of economic analysis<sup>36</sup> is utilized and how this changes, while a given value of the aggregate indicator cannot reflect what “types” of analysis are utilized and, when the value of the indicator changes, what “type” of economic analysis is responsible for the change in the indicator’s value.

To avoid these problems and to make sure that we can interpret meaningfully changes in the value of the indicators, we construct Legal Standard Indicators (LSI) for specific conduct groups from the information on the scores received on each sub-component of economic analysis in Table M1 for each decision, as follows. For the set of decisions (say, S1) in which only block of analysis A is undertaken we say that the LSI is equal to 1. For the set of decisions (S2) in which blocks of analysis A and B is undertaken we say that the LSI is equal to 2. For the set of decisions (S3) in which blocks of analysis A and B and C.1 is undertaken we say that the LSI is equal to 3, and so on. Now, by comparing the different sets of decisions we can identify the effects of *additional* economic analysis. For example, by comparing decisions in S2 with decisions in S3 we can identify the effect of adding the block of analysis C.1; by comparing decisions in S3 with decisions in S4 we can identify the effect of adding the block of analysis C.2. We are also able to identify the frequency with which the CA applies the analysis associated with each one of the sets

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<sup>34</sup> There must always be some discussion at least of the nature and the characteristics of the conduct so the minimum value of EBS is 1.

<sup>35</sup> E.g. in France there may be proportionally many more decisions on conduct types for which the appropriate LS is Per Se or close to Per Se.

<sup>36</sup> For example, different types of economic analysis can lead to a score 3 and different ways of increasing economic analysis can increase the score from 3 to 4 but the implications of each case for the rate of annulment may not be the same.

in assessing different conduct types and, hence, infer the extent to which the CA favors a certain legal standard for the different conduct types.

Katsoulacos et al. (2019) distinguish a number of distinct legal standards (LSs) between strict Per Se and Full Effects-Based, corresponding to the above mentioned (sets) and LSIs. These are described in Table M2 below<sup>37</sup>. A brief description of the LSs follows.

Under the *strict Per Se (SPS)* LS the CA makes decisions on the basis only of the purely formal characteristics of the conduct under investigation, relying on strong presumptions about the implications of the general class of conducts to which the specific conduct belongs for welfare (assuming a welfarist substantive standard). Alternatively, one can say that under a SPS LS the CA makes inferences about effects on welfare from the formal characteristics of the conduct.

The *Modified Per Se (MPS)* LS can be considered as a Per Se rule *subject to* a Significant Market Power requirement or, more generally, as supplementing Per Se by undertaking contextual analysis of market characteristics, for example, when assessing conducts under abuse of dominance or in an information exchange agreement or in a vertical agreement. Alternatively, one can say that under MPS LS the CA makes inferences about effects on welfare from the formal characteristics of the conduct, detailed analysis of market characteristics and, depending on the type of conduct, the implications of these on incentives for achieving sustainable collusion or on the size of the extant market power. EU's by-object restrictions can be thought of as MPS LSs<sup>38</sup>.

*Truncated Effects Based (TEB)* is a higher LS, under which decisions about whether or not there is liability in the case of a specific conduct are reached by establishing that the characteristics of the specific conduct and of the market in which it is undertaken are such that it belongs to a class of conducts that distort the competitive process by *disadvantaging rivals* (i.e. through exclusionary effects, widely defined) or by *enhancing market power* (as in a concerted practice case) and by establishing that the conditions present are such that a strong presumption can be made of adverse welfare effects. In other words, under a TEB LS the CA decides that there is liability by inferring adverse welfare effects from the potential of the conduct to distort the competitive process by disadvantaging rivals (i.e. through exclusionary effects, widely defined) or by enhancing market power raising effects (as in a concerted practice case).

Finally, *Full Effects Based (FEB)* represents the LS under which a finding of liability relies on establishing a theory of harm (analysis component C2), taking into account all potential anticompetitive (exclusionary or market power enhancing) effects, and also assessing all potential pro-competitive effects of the specific conduct (analysis components C3 and D). Here, we distinguish between 3 LSs: an Intermediate LS between the Truncated and the Full Effects Based LS (ITFEB in Table M2) in which the CA undertakes analysis component C2 from which it then presumes adverse effect on welfare (without assessing efficiency effects); a Full Effects-Based (FEB) LS under a Consumer Surplus substantive standard, in which the CA undertakes analysis of efficiencies that improve consumer welfare (analysis component C3) – but does not take into account of D; and a Full Effects-Based (FEB) LS under a Total Welfare substantive standard, in which the CA undertakes analysis of all welfare enhancing efficiencies (i.e. its assessment includes analysis component D).

A more detailed characterization of the various LSs is given in the Table below.

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<sup>37</sup> Our terminology has been used in many other papers. For an early very useful contribution that also adopts the idea of a continuum of LSs and refers to truncated effects-based and also to court decisions in which the alternative LSs were adopted, see Leary (2003).

<sup>38</sup> See footnote 8 above.

**Table M2: Identifying legal standards**

<i>Components of economic analysis applied in assessment</i>	<i>Set of Decisions</i>	<i>Legal Standards / Value of LSI indicator</i>
<b>A</b>	<b>S1</b>	<b>Strict Per Se (SPS) LS: LSI = 1</b>
<b>A and B</b>	<b>S2</b>	<b>Modified Per Se (MPS) LS: LSI = 2</b>
<b>A and B and C.1</b>	<b>S3</b>	<b>Truncated Effects Based (TEB) LS: LSI = 3</b>
<b>A and B and C1 and C2</b>	<b>S4</b>	<b>LSI = 4, Intermediate between Truncated and Full Effects Based (FEB) LS (ITFEB)</b>
<b>A and B and C1 and C2 and C3</b>	<b>S5</b>	<b>LSI = 5, FEB LS under a Consumer Welfare Substantive Standard</b>
<b>A and B and C1 and C2 and C3 and D</b>	<b>S6</b>	<b>LSI = 6, FEB LS under a Total Welfare Substantive Standard</b>

*Source:* Revised from *Katsoulacos et al. (2019)*

### 3. Description of the dataset and of the conduct groups

Our dataset consists of all the antitrust infringement decisions by DGCOMP, for the period 1992 – 2016 – that is, all the decisions on investigations under Art. 101 TFEU (on agreements) and Art. 102 TFEU (on abuse of dominance) - 170 antitrust infringement decisions<sup>39</sup> (excluding a small number - 4 decisions - on exploitative abuses<sup>40</sup>). As noted above, one of our objectives is to examine how the LS adopted in assessing these cases is related to the annulment rate – the probability that a decision is reversed by the Appeal Courts. To be able to do that, we have also collected data allowing us to identify which decisions were appealed and which of the decisions appealed were finally<sup>41</sup> annulled. Table 1 below presents the decisions broken down by conduct groups (or, categories) for the total number of infringement decisions as well as for those that we appealed and for those that were annulled following appeal.

#### *Conduct groups*

In the analysis below, we classify conducts into four conduct groups. These are:

- conduct group G1: this consists of violations of EU article 101, which have strong market power-enhancing effects. They include price fixing, bid rigging, boycotts, market sharing and exclusive territories (or a mixture of these);

<sup>39</sup> These are the final published infringement decisions reached by DGCOMP. For a full description of the data set that involves 475 decisions, including also acquittal, commitment and settlement decisions see Katsoulacos, Makri and Metsiou (2019).

<sup>40</sup> In order to not include another conduct category the assessment of which has distinct characteristics (so would require an important revision of our methodology described in the previous section) and which involves a very small number of cases.

<sup>41</sup> Decisions can be appealed to the General Court and, following that, to the European Court of Justice. Our “annulled decisions” are the decisions annulled by the GC that were not re-appealed to the higher court, or decisions annulled by the ECJ.

- conduct group G2: this group is meant to cover concerted practices – all the decisions that were included here involved information exchange cases;
- conduct group G3: this consists of vertical restraints that, according to conventional wisdom, can have both anticompetitive and welfare-enhancing effects; such as various types of resale price maintenance and other vertical agreements such as exclusive dealing or exclusive territories.
- conduct group G4: this consists of practices by dominant firms that may have exclusionary effects and hence considered abusive under Art. 102, though again economic theory suggests that generally most of these practices can also be motivated by efficiencies that have welfare-enhancing effects (such practices include predation, margin squeeze, price discriminations, loyalty rebates, exclusive contracts, tying and bundling and refusals to deal).

**Table 1: Number of all decisions, appeals and annulments (by conduct group)**

G1	G2	G3	G4	Total
Total number of decisions (shares)				
99 (0,582)	6 (0,035)	32 (0,188)	33 (0,194)	170
Number of appealed decisions (shares)				
80 <sup>42</sup> (0,81)	2 <sup>43</sup> (0,33)	19 <sup>44</sup> (0,59)	19 <sup>45</sup> (0,58)	120 (0,71)
Number of annulled decisions (shares <sup>46</sup> )				
38 (0,48)	0 (0,00)	8 (0,42)	6 (0,32)	52 (0,43)

As has been noted in other studies<sup>47</sup> the greatest percentage of antitrust infringement decisions in EC consists of decisions on hard-core horizontal agreements (group G1, that in our sample takes up just over 58% of the total decisions). The number of decisions on concerted practices (G2) is negligible (3,5%), while decisions on vertical restraints and abuse of dominance take up, respectively, about 18,8% and 19,4% of the total infringement decisions. We also see that a very high percentage of infringement decisions is appealed (71%) and a high fraction of these is finally reversed by the Courts of Appeal (43%). Appeal rates are particularly high for group G1 (81%), but a high proportion of decisions on vertical restraints (59%) and abuse of dominance (58%) are also appealed.

An observation that we can make already from the Table 1 above, is that among the 3 main conduct groups, G1, G3 and G4, conducts in group G4 (abuse of dominant position) are the ones associated with the lowest rate of annulment (32%). This corroborates the findings of Petit and Geradin (2010) and Neven (2006) (see also Katsoulacos et al. 2019). However, while they attributed this to what they considered to be the “formalistic legal appraisal standards” of DGCOMP towards abuse of dominance cases, what we show below is that these cases are actually associated with by far the highest LSs, i.e. with LSs closest to effects-based.

<sup>42</sup> There are 85 appealed decisions but 5 appealed decisions are still in progress so are not included here.

<sup>43</sup> There are 3 appealed decisions but 1 appealed decision is still in progress so is not included here.

<sup>44</sup> There are 20 appealed decisions but 1 appealed decision is still in progress so is not included here.

<sup>45</sup> There are 21 appealed decisions but 2 appealed decisions are still in progress so are not included here.

<sup>46</sup> Shares of annulled in appealed decisions. The shares of annulled out of the total number of decisions in each group is 38,4% (for G1), 0% (for G2), 25% (for G3) and 18,2% (for G4), confirming the observation above.

<sup>47</sup> See for example Pablo Ibanez Colomo (2019).

*Dataset of decisions with and without “gaps” in economic analysis: a first measure of enforcement quality*

As mentioned in the methodological section above, in order for the value of the LS indicator to reflect unambiguously the extent and the type of economic analysis that is utilized we must concentrate on decisions without “gaps” in economic analysis. Specifically, for constructing legal standard indicators (LSIs), the antitrust decisions in our sample are allocated into (6) sets,  $S_i, i = 1, \dots, 6$ , each of which contains only decisions assessed under a specific LS, from the strict Per Se (*set*  $S_1$ ) to full effects-based (*set*  $S_6$ ) – as shown in Table M2 above. The decisions in each consecutive set contain the economic analysis of the previous set plus one more additional step of economic analysis – these steps (or components of economic analysis) being described in Table M1. Thus, each set contains only decisions in which there are “no gaps” (or, “no missing steps”) in economic analysis. Of course, in our sample there are also decisions in which there are gaps (or, missing steps) in economic analysis. Gaps in economic analysis indicate that the CA puts forward arguments or claims to have reached a conclusion without having undertaken the analysis required in order to support this conclusion (e.g. putting forward arguments that consumers are harmed without having established first market-power enhancing or exclusionary effects). It is the sub-sample of *decisions without gaps* that we will be using for the construction of and in our analysis of LSIs below, though for the analysis of the types of economic analysis used in the various conduct groups and their evolution we use the sample with the total number of decisions.

Tables 2 (2a and 2b) below show the total number of decisions with and without gaps. We note that the number of decisions in the sample drops when we concentrate on decisions without gaps: from 170 to 140 (18% drop in decisions) in Table 2a and from 170 to 160 (just a 5% loss in decisions) in Table 2b. Tables 3 (3a and 3b) break up these decisions into the four conduct categories mentioned above and indicate the corresponding proportion of decisions without gaps that are appealed and annulled.

The difference between Tables 2a/3a and 2b/3b is that the former include *all* the decisions in our sample in which analysis of efficiencies is undertaken – irrespectively of whether or not these invoke Art. 101(3). The decisions in Tables 2b/3b do not include, when considering whether or not analysis of efficiencies is undertaken, analyses that invoke Art. 101(3). So, the difference between Tables 2a/3a and 2b/3b is that in 2b/3b we identify the extent to which analyses of efficiencies are present in decisions *when we exclude cases in which such analyses invoke Art. 101(3)* - the explicit provision in the EU competition law relating specifically to potential efficiencies from agreements. We remind the reader that the analysis of efficiencies comes under steps C3 and D in our methodology for measuring the extent of economic analysis applied. The sub-sample in 2a and 3a has the advantage of taking into account, when considering analysis components C3 and D, efficiency defense analysis under 101(3), but at the cost of ending up with a smaller sample of decisions without gaps. In the sub-sample in 2b and 3b we do not take into account, when considering analysis components C3 and D, efficiency defense analysis under 101(3), but we end up with a larger sample of decisions without gaps.

Thus, taking into account efficiency analysis under Art. 101(3) increases considerably the number of decisions with gaps (30 in 2a), relative to the number of decisions with gaps when analysis under Art. 101(3) is not taken into account (10 in 2b). The reason is that when we take into account analysis under Art. 101(3) (Table 2a) there are more decisions in which we have

positive scoring for efficiency analysis components C3 and D (24 more in total) and in these there are many decisions in which there are gaps (26 rather than 6)<sup>48</sup>.

It is important to note here that there is an important difference between steps of analysis C3 and D and steps of analysis A, B, C1, C2. The burden of proof for A, B, C1 and C2 is on the CA. The burden of proof for providing analyses of efficiencies falls on the defendants. While the CA may on its own accord investigate whether or not efficiencies are present, it is only to the extent that the defendants provide such efficiency analyses that the CA will consider that it is necessary to examine and assess these analyses and, potentially, provide its own views. Thus, an important distinction that should be made is between the:

- Extent of economic analysis applied in decisions by the CA *for which the CA itself is responsible* – the measurement of these must rely on identifying whether steps of analysis A – C2 are undertaken; and, the
- Extent of economic analysis applied in decisions *by all the parties* (the CA and defendants) – that must also include identifying whether steps of analysis C3 and D are undertaken.

Of course, generally, lack of steps C3 and D, in cases of conducts for which it has been shown by economic theory that there are substantial potential efficiencies, signifies that effects-based have not permeated the assessment procedures in Competition Law enforcement.

**Tables 2a and 2b: “Missing steps” or “gaps” in the economic analysis contained in decisions**

Table 2a: Scoring taking into account analysis under 101(3) (140 decisions)

	The highest level of economic analysis present in the decision						Total
	A	B	C1	C2	C3	D	
Total number of decisions	5	86	33	11	2	33	170
Number of decisions without gaps	5	86	32	8	0	9	140
Number of decisions with gaps	0	0	1	3	2	24	30
% of decisions with gaps	0,0%	0,0%	3,0%	27,3%	100,0%	72,7%	17,6%

Table 2b: Scoring without taking into account analysis under 101(3) (160 decisions)

	The highest level of economic analysis present in the decision						Total
	A	B	C1	C2	C3	D	
Total number of decisions	6	96	41	16	1	10	170
Number of decisions without gaps	6	96	40	13	1	4	160
Number of decisions with gaps	0	0	1	3	0	6	10
% of decisions with gaps	0,0%	0,0%	2,4%	18,8%	0,0%	60,0%	5,9%

<sup>48</sup> The increased number of gaps when efficiency analysis under 101(3) is taken into account results because the EC in the relevant decisions, involving agreements, presumes harm to consumers, without undertaking analysis C1, C2 while efficiency analysis C3 and D is presented by the defendants – see also discussion below.



Another interesting reading from Table 2b is the very small fraction of decisions in which gaps are present (only 5,9%). So, when we ignore efficiencies' defence by defendants under 101(3), the *picture that emerges is that of a very coherent approach to assessment by DGCOMP, building up its economic arguments by always incorporating all the necessary prerequisite elements of economic analysis in order to support its contentions.* Confirmation of this conclusion is provided by looking at gaps up to the level of economic analysis C2, i.e. by looking at the economic analysis for which DGCOMP is responsible (bears the burden of proof): the total number of decisions is 159 and there are gaps in only 4 of them – a fraction of just 2,5%. This finding provides a preliminary measure of the “enforcement quality” by DGCOMP, indicating that it is high. However, a more satisfactory indicator of enforcement quality is a measure of how far are the LSs adopted by DGCOMP from their theoretically optimal levels. Below we will be presenting such measures of the quality of enforcement.

The gaps in decisions in which defendants make an efficiency defence under Art. 101(3) (Table 2a) suggests that DGCOMP does not try to counter the defendants' claims by building up arguments that anticompetitive effects (based on levels C1 and C2 of economic analysis) outweigh efficiencies, but by trying directly to minimize the importance of the claimed efficiencies. This can be justified for G1 conducts (hard core agreements), for which, as strict Per Se restrictions, there is a very strong presumption of significant anti-competitive effects (and hence no need to undertake analyses C1 and C2), but it is more difficult to justify for G2 (which as we mentioned above, involves information sharing agreements) and for G3 (vertical restraints). Tables 4 below confirm the very limited attempts by DGCOMP in G2 and G3 to provide a theory of consumer harm (analysis component C2) and the conclusion that for G2 and G3, the DGCOMP has been adopting LSs close to Per Se. As we will see below, a partial explanation, though not justification, for this is that for most of the information sharing agreements in G2 there is exchange of information about future prices and a significant number of cases in G3 involve parallel trade restrictions – that are treated by the EC as Per Se illegal<sup>49</sup>.

Comparing Tables 3a to 3b below, we see that there are no differences regarding conduct group G4. The increase in the number of decisions with gaps when we take into account analysis under 101(3) – Table 3a – comes purely from the increase in decisions with gaps in G1 (13 rather than 3), in G2 (3 rather than 0) and in G3 (9 rather than 2), all of which involve agreements for which 101(3) can be invoked. We also notice from Table 3a that gaps in analysis mainly appear in groups G2 (50%) and G3 (28%) and to much smaller degree in G1 (13%) and G4 (15%). Information about the number of appealed and annulled decisions in Tables 3a and 3b will be used below when we investigate the relation between LSI and the annulment rate (Tables 9a and 9b).

**Table 3: Number of decisions without and with gaps (and number of decisions appealed and annulled) per conduct group**

Table 3a – Scoring taking into account analysis under 101(3) (140 decisions)

G1	G2	G3	G4	Total
Number of decisions without gaps (shares <sup>50</sup> ) [shares <sup>51</sup> ]				
86 (0,61)	3 (0,02)	23 (0,16)	28 (0,20)	140

<sup>49</sup> The latter, as a result of the public interest (non-welfarist) objective of competition law in the EU to protect trade.

<sup>50</sup> Shares out of total number of decisions without gaps.

<sup>51</sup> Shares out of total number of decisions in the corresponding group (e.g. for G1 86 decisions out of 99).

[0,869]	[0,500]	[0,719]	[0,848]	
Number of decisions with gaps (shares <sup>52</sup> )[shares <sup>53</sup> ]				
13 (0,433) [0,131]	3 (0,100) [0,500]	9 (0,300) [0,281]	5 (0,167) [0,152]	30
Number of appealed decisions (share of total)				
72 (0,837)	0 (0,000)	14 (0,609)	17 (0,607)	103 (0,736)
Number of annulled decisions (share of appealed)				
34 (0,472)	0 (0,000)	6 (0,429)	6 (0,353)	46 (0,447)

Table 3b – Scoring without taking into account analysis under 101(3) (160 decisions)

G1	G2	G3	G4	Total
Number of decisions without gaps (shares <sup>54</sup> ) [shares <sup>55</sup> ]				
96 (0,60) [0,970]	6 (0,04) [1,000]	30 (0,19) [0,938]	28 (0,18) [0,848]	160
Number of decisions with gaps (shares <sup>56</sup> )[shares <sup>57</sup> ]				
3 (0,30) [0,030]	0 (0,00) [0,000]	2 (0,20) [0,063]	5 (0,50) [0,152]	10
Number of appealed decisions (share of total)				
77 (0,802)	2 (0,333)	18 (0,600)	17 (0,607)	114 (0,713)
Number of annulled decisions (share of appealed)				
36 (0,468)	0 (0,000)	8 (0,444)	6 (0,353)	50 (0,439)

## 4. Economic analysis and legal standards in DGCOMP's antitrust enforcement: results of the empirical analysis

### 4.1 The role and type of economic analysis applied

Tables 4a and 4b describe the extent to which economic analysis has been applied by DGCOMP in reaching its decisions, per conduct group, and by type of economic analysis. The last two rows also provide information about the extent and type of economic analysis used for the two conduct groups (G3 and G4) for which, in theory, we would expect that effects-based assessment should be used.

Apart from characterizing the conduct (analysis component A) which is present in all decisions, a contextual market analysis (B) also characterises essentially all decisions (95,3%). This is consistent with the remark mentioned above that in the EU even in by-object restrictions

<sup>52</sup> Shares out of total number of decisions with gaps

<sup>53</sup> Shares out of total number of decisions in the corresponding group (e.g. for G1 13 decisions out of 99).

<sup>54</sup> Shares out of total number of decisions without gaps.

<sup>55</sup> Shares out of total number of decisions in the corresponding group (e.g. for G1 96 decisions out of 99).

<sup>56</sup> Shares out of total number of decisions with gaps.

<sup>57</sup> Shares out of total number of decisions in the corresponding group (e.g. for G1 3 decisions out of 99).

the Authority must contextualise the conduct taking into account the situation in the market(s) in which it is undertaken. We note, however that only in an extremely small fraction (1,8%) of decisions there is formal market delineation based on the SSNIP test and critical loss analysis (B2). This is revealing, indicating that DGCOMP uses this type of analysis only in undertaking its assessments under merger control<sup>58</sup>.

**Table 4. The role and type of economic analysis applied per conduct group (all decisions<sup>59</sup>)**

Table 4a: Scoring taking into account analysis under 101(3) (140 decisions)

Type of analysis applied / Conduct group	A=1	B=1	B2=1	C1=1	C2=1	C3=1	D=1
G1	99	94	0	15	9	8	13
% within group	100,0%	94,9%	0,0%	15,2%	9,1%	8,1%	13,1%
G2	6	6	0	1	0	1	3
% within group	100,0%	100,0%	0,0%	16,7%	0,0%	16,7%	50,0%
G3	32	29	1	22	5	6	9
% within group	100,0%	90,6%	3,1%	68,8%	15,6%	18,8%	28,1%
G4	33	33	2	30	14	4	8
% within group	100,0%	100,0%	6,1%	90,9%	42,4%	12,1%	24,2%
Total	170	162	3	68	28	19	33
% of Total	100,0%	95,3%	1,8%	40,0%	16,5%	11,2%	19,4%
G3 + G4 (64 decisions)	65	62	3	52	19	10	17
% of Total (G3+G4)	100,0%	95,4%	4,6%	80,0%	29,2%	15,4%	26,2%

Table 4b: Scoring without taking into account analysis under 101(3) (160 decisions)

Type of analysis applied / Conduct group	A=1	B=1	B2=1	C1=1	C2=1	C3=1	D=1
G1	99	94	0	15	7	0	1
% within group	100,0%	94,9%	0,0%	15,2%	7,1%	0,0%	1,0%
G2	6	6	0	1	0	0	0
% within group	100,0%	100,0%	0,0%	16,7%	0,0%	0,0%	0,0%
G3	32	29	1	20	3	1	1
% within group	100,0%	90,6%	3,1%	62,5%	9,4%	3,1%	3,1%
G4	33	33	2	30	14	4	8
% within group	100,0%	100,0%	6,1%	90,9%	42,4%	12,1%	24,2%
Total	170	162	3	66	24	5	10
% of Total	100,0%	95,3%	1,8%	38,8%	14,1%	2,9%	5,9%
G3 + G4 (64 decisions)	65	62	3	50	17	5	9

<sup>58</sup> It is well known that market definition based on the Hypothetical Monopolist methodology is considered unreliable in abuse of dominance cases because of the Cellophane Fallacy. As OECD notes in [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP\(2012\)13&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP(2012)13&docLanguage=En) «The problem of the cellophane fallacy is explicitly acknowledged for example by the EU and the UK in their respective guidance documents. The recognition of the problem also stopped the Commission from applying the SSNIP test in the Article 101 MasterCard case. See COMP/C.34.579, MasterCard, 19 December 2007. See also <https://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf>, pages 6-9.

<sup>59</sup> That is, these Tables concern all 170 decisions (irrespective of whether or not there are gaps).

<i>% of Total</i>	100%	95,4%	4,6%	76,9%	26,2%	7,7%	13,8%
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Tables 4a and 4b give rise to a number of very interesting observations related to the use of economic analysis components C1, C2, C3 and D.

- Analysis showing a market power enhancing or exclusionary effect (C1). This is present in only 40% of the total number of decisions (in 4a, and 38,8% in 4b), however this small fraction is due to the large number of G1 cases (hard core horizontal agreements) in which, rightly, no such analysis needs to be used. The fraction is significant for conduct group G3 (68,8%) and very significant, as it should be, for conduct group G4 (90,9%).
- Analysis showing consumer harm (C2). The performance of DGCOMP here, for the overall period of time depicted in Tables 4a and 4b above, is quite disappointing. Overall, such analysis is present in only 16,5% (in 4a) or 14,1% (in 4b) of the decisions. What is really disappointing is that the fractions are small for G3 and for G4, where we would expect this to be an important feature of effects-based analysis: only in 15,6% (9,4% in 4b) of the G3 (vertical restraints) cases there is C2 analysis and for G4 the relevant fraction is just 42,4%. The picture improves considerably when we examine the evolution of the use of different types of economic analysis below – which shows a consistent and very substantial increase in C2 (associated with an increase in the LS adopted) for G4, over time. However, the picture does *not* show any significant improvement for the application of C2 in G3 decisions (vertical restraints) over time. Thus, DGCOMP continues to take the view that a low MPS LS (or at most TEB LS) is appropriate for finding liability for G3 cases – see for additional discussion below.
- Efficiency defence analysis C3 (affecting consumers) and D (other efficiencies). This is also disappointing, though the examination of the evolution of the use of different types of economic analysis below shows again quite a significant improvement for G4. Comparing 4a and 4b we see that efficiency defence is concentrated on invoking Art. 101(3) for agreements: without taking these into account, in 4b, the presence of efficiency analysis is from negligible to very small: only in 12,1% of the G4 (abuse of dominance) cases there is an efficiency defence for consumers (C3) and in 24,2% of the G4 cases there is any other efficiency defence (D). Overall, C3 is present in only 2,9% of the cases and D in only 5,9% (in Table 4b), and these are raised to 11,2% and 19,4% when account is taken of efficiency defence under Art. 101(3) (Table 4a).

*Additional remarks on the treatment of vertical restraints / agreements*

In 1999 the Commission adopted Regulation 2790/1999 on the application of Art. 101(3)<sup>60</sup> of the Treaty to vertical agreements and concerted practices<sup>61</sup> – exempting most vertical distribution agreements from the prohibition of Art. 101(1). This was widely acclaimed for spelling out the different types of harm that such agreements could produce and for spelling out dynamic justifications based on the prevention of free riding of various kinds. Regulation 2790/1999 did not include a white list of provisions, only definitions of what was exempted and a black list of hardcore restraints that were not covered by the block exemption.

Regulation 2790/1999 and the relevant Guidelines signaled a direct change in EU Competition Policy. Just a few months later the Commission adopted two block exemptions on horizontal

<sup>60</sup> Article 81 at that time.

<sup>61</sup> OJ 1999, L336/21, [2000] 4 CMLR 398.

agreements, following the same structure as the regulation on vertical agreements, Regulation 2658/2000<sup>62</sup> on *specialization agreements* and 2659/2000<sup>63</sup> on *R&D agreements*, that were latter replaced by Regulations 1218/2010<sup>64</sup> and 1217/2010<sup>65</sup> respectively. The group exemption 772/2004<sup>66</sup> regarding categories of *technology transfer agreements* was more important. Again the Commission adopted the same structure of group exemptions but regulation 772/2004 was wider and more complex. The definition of technology transfer agreements was broad. It included a very wide range of intellectual property rights and for the first time licenses of software copyright. This block exemption was later replaced by Regulation 316/2014<sup>67</sup>.

Regulation 2790/1999 was replaced by 330/2010<sup>68</sup> which basically confirmed the structure of its predecessor and adapted it taking into account whether or not there was a considerable increase in on-line sales and an increase in the market and bargaining power of distributors<sup>69</sup>. The application of all these group exemptions can be seen as evidence that the EC did take into account the lessons coming from developments in economic theory (and, specifically, industrial organization) that pointed out that many vertical agreements were not likely to be motivated by anti-competitive market power enhancing or exclusionary considerations and that often generated significant efficiency benefits. Block exemptions can be regarded as successful in setting out categories of agreements, which on the basis of the economic analysis of their likely effects can be regarded as not infringing competition law.

What the empirical analysis above shows and it is worth stressing, however, is that *the way in which enforcement practice evolved following these reforms, does not testify to an enhanced use of an economics- or effects-based approach in the decisions reached*. Thus, those cases covered by the Block exemptions – conducts not in the “black list” of “hardcore restrictions”<sup>70</sup> - involving firms with market shares not higher than 30% were treated as Per Se Legal. The thing is that, the same conducts involving firms with more than 30% market share, as well as conducts in the “black list”, were in practice treated as Per Se illegal (or, by-object restrictions, this been certainly true for the latter “black-listed” group of conducts) or under a TEB approach in which illegality is presumed by a showing that the conduct disrupted the competitive process without an attempt to establish negative impact on consumer welfare or to examine potential efficiencies. As noted already above, a partial explanation for the very low fraction of vertical restraint (G3) cases in which a theory of consumer harm (C2) is presented has to do with the fact that a significant fraction of these cases involve *parallel trade restrictions* (14 out of the 33 cases, or 42,4%). These are treated as Per Se illegal as a result of the public interest (non-welfarist) objective of competition law in the EU to protect trade / European integration and despite many theoretical and empirical analyses that from a welfare point of view the assessment of such restrictions should be made

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<sup>62</sup> OJ 2000, L304/3, [2001] 4 CMLR 800.

<sup>63</sup> OJ 2000, L304/7, [2001] 4 CMLR 808.

<sup>64</sup> OJ 2010, L335/43.

<sup>65</sup> OJ 2010, L335/36.

<sup>66</sup> OJ 2004, L123/11.

<sup>67</sup> OJ 2014 L 93/17.

<sup>68</sup> OJ 2010, L 102/1.

<sup>69</sup> The application of Regulation 2790/1999 depended only on the supplier’s market share not exceeding 30% (only in cases of vertical agreements containing exclusive supply obligations it was the market share of the buyer that had to be calculated). According to latest regulation 330/2010 the 30% safe harbor is based on the market shares of both the supplier and the buyer.

<sup>70</sup> These are listed in paragraph 4 of the regulation 330/2010 – they include restrictions on the buyer’s ability to determine its sale price and restrictions of the territory into which it may sell.

under full effects-based<sup>71</sup>. However, this still cannot justify the very low fraction of cases in which C2 appears in G3 cases (just 15,6% in Table 4a).

Concluding this section, it is worth pointing out that, following the reforms mentioned above, the EC more or less stopped its enforcement activities in relation to vertical activities – this is evident from the evolution of decisions by conduct type (Table 7) below – as a result of Council Regulation (EC) no. 1/2003 of 16 December 2002<sup>72</sup> on the implementation of rules on competition laid down in Articles 101 and 102<sup>73</sup>. This Regulation allows for competition rules previously applied by the EC to be enforced on a decentralized basis by EU countries' CAs. This enhanced the role of national CAs and Courts in implementing EU competition law<sup>74</sup>. Thus the EC has not addressed, for example, cases of Resale Price Maintenance since regulation 330/2010 (and there were extremely few cases since the beginning of the previous decade). However, Member States have addressed a significant number of cases during this period treating it as a Per Se illegal conduct, as it belongs to the “*black list*” of vertical agreements – even though this conduct is treated under the rule-of-reason in the US at least since the 2007 *Leegin* case<sup>75</sup>.

Below, while we will maintain the distinction between taking and not taking into account the analysis under 101(3), in order to not overburden the main text with Tables we will present in the main text the Tables in which analysis under 101(3) is taken into account and we will present the Tables in which analysis under 101(3) is not taken into account in the Appendix.

#### **4.2 Identifying the LSs adopted, measuring the Weighted Average Legal Standards per conduct group and indicators of legal certainty and of the quality of enforcement**

Table 5 provides information about the number and the share of the decisions without gaps (a total of 140 decisions) that correspond to each value of LSI,  $1 \leq LSI \leq 6$ , for our four main conduct groups. Two things stand out from a perusal of the Table 5. The first, that confirms findings in Table 4 reported above, is the low LS (closer to Per Se than full effects-based) adopted in the assessments of most G3 (vertical restraints) and G4 (abuse of dominance) conduct group cases, for which, we would expect on the basis of the economic theory of optimal LSs that LSI would be on average higher (closer to effects-based), and the second is that variations in the LSI are large for these groups. For example, in group G3, in about 48% of the cases LSI = 3 (i.e. the TEB LS is applied), while in another 30,4% of the cases LSI = 2 (i.e. a MPS LS is applied). In group G4, in 53,6% of the cases LSI = 3 (i.e. the TEB LS is applied), while in another 25% of the cases LSI = 4 (i.e. a ITFEB LS is applied). Thus, the LS adopted is unambiguously higher in abuse of dominance than in vertical restraint cases. The variation in LSs adopted for each conduct group suggests that, from the point of view of firms, there is some legal uncertainty in the enforcement of competition law for these conduct groups, though not significant given that in the vast number of cases two neighbouring LSs are adopted - we return to the issue of legal uncertainty in Tables 6.

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<sup>71</sup> See, for example, for an extensive review and a model that shows that in many circumstances parallel import restrictions will not affect consumers adversely, Katsoulacos and Benetatou (2020).

<sup>72</sup> OJ 2003, L 1/1.

<sup>73</sup> Articles 81 and 82 at that time.

<sup>74</sup> The rationale was to allow the Commission to focus its resources on enforcing the most serious competition infringements with a cross-border dimension. Another important innovation of regulation 1/2003 was to remove the obligation of notification of agreements that firms implement considering them justified under Art. 101 (3) – the article that sets out the conditions for agreements not to be anticompetitive.

<sup>75</sup> *Idem*, note 11.

However, another interpretation of the low LSs applied is that because the period covered by our data is large (1992 – 2016), and at least in the first decade of this period the effects-based approach did not have as strong theoretical support, and Per Se was still quite dominant, the averages shown in Table 5 conceal important differences in the LSs adopted over time. We present evidence below (Table 7) that this interpretation is certainly correct for group G4 for which there is a consistent and remarkable increase of the LS over time.

**Table 5: Number and share of decisions without gaps that correspond to each LSI**

Table 5a: Scoring taking into account analysis under 101(3) (140 decisions)

Conduct group		LSI						Total No
		1	2	3	4	5	6	
G1	No of decisions (without gaps)	3	74	6	0	0	3	86
	Share of decisions for each LSI	0,035	0,860	0,070	0,000	0,000	0,035	
G2	No of decisions (without gaps)	0	3	0	0	0	0	3
	Share of decisions for each LSI	0,000	1,000	0,000	0,000	0,000	0,000	
G3	No of decisions (without gaps)	2	7	11	1	0	2	23
	Share of decisions for each LSI	0,087	0,304	0,478	0,043	0,000	0,087	
G4	No of decisions (without gaps)	0	2	15	7	0	4	28
	Share of decisions for each LSI	0,000	0,071	0,536	0,250	0,000	0,143	

Table 5b, including decisions taking into account analysis under 101(3), does not alter the above conclusions and is presented in the Appendix.

In Tables 6 (6a and 6b) we present estimates of the Weighted Average Legal Standard (WALS) adopted, as well as measures of both the quality of enforcement and of the extent to which there is consistency in the use of LSs creating legal certainty. WALS is calculated using Table 5: it is the sum of the values of LSI, each value weighted by its respective share in a given conduct group<sup>76</sup>. The higher the WALS the closer is the LS to effects-based (with full effects-based, when the SS is total welfare, requiring a value of LSI = 6). With a Total Welfare (TW) substantive standard  $1 \leq WALS \leq 6$  while with a Consumer Surplus substantive standard  $1 \leq WALS \leq 5$ .

The first observation is that, for the conduct group (G1) that is traditionally illegal Per Se (price fixing and market sharing), the weighted average legal standard is, as expected, low. In North American antitrust we would expect the values of WALS for G1 cases to be very close to 1 (the optimal value of LSI along our continuum with Per Se illegality). For DGCOMP, its value (in Table 6a) is closer to 2: this is consistent with how EU Competition Law interprets the appropriate use of economic analysis in by-object restrictions – as noted above according to this interpretation, contextualizing the conduct (economic analysis B) is considered important even for by-object

<sup>76</sup> For example the value of WALS for G1 in Table 6a is 2,17. This is obtained, using Table 5 as:  $0,035*1+0,86*2+0,07*3+0,035*6 = 2,17$ .

restrictions<sup>77</sup>. For this reason, when constructing the indicator of quality of enforcement for each specific conduct group below we are going to assume that the “optimal” LS for by-object restrictions like those in G1 is given by a value of WAL = 2.

The second observation is that cases in group G2 (concerted practices), with WAL = 2, are treated with what we have termed a MPS LS even though the cases under G2, involve as noted above information exchange agreements which should be treated, in by far most cases, under full effects-based. However, in 4 out of the 6 G2 cases there is exchange in information about future prices, conduct which should be arguably treated as a horizontal hard-core restriction (cartel)<sup>78</sup>. For this reason we will assume that, on average, the “optimal” LS for the G2 DGCOMP cases is given by a value of WAL = 3.

Thirdly, and even more contrary to theoretical predictions, group G3 (vertical restraints) with a WAL = 2,83 is treated with a TEB LS (without that is, establishing harm to consumers, something about which we commented in detail above).

Finally, group G4 (abuse of dominance), with WAL = 3,61 is the closest to effects-based, being treated by a LS intermediate to TEB and ITFEB, which implies that analysis establishing consumer harm is undertaken in some cases, but, from Table 4a, not the majority of cases (42,4%). Thus the overall picture emerging for G2, G3 and G4 is of DGCOMP choosing LSs that are closer to (or, for G4, at about the same distance from) Per Se than to effects-based. Again we need to stress that this picture changes for G4, as we will see below, when we consider more recent years.

Two indicators in Table 6 measure the extent to which there is consistency in the use of LSs creating legal certainty. The first is the index of the concentration of legal standards (the HHI concentration index calculated as the sum of the squared shares); the Concentration index is calculated as  $HHI = \sum_i s_i^2$  - where  $s_i$  is a share of the particular legal standard  $i$  in the investigation of the particular conduct group,  $\frac{1}{6} < Concentration\ index < 1$ . The second is the standard deviation of LSI, the *index of legal uncertainty*, calculated as the standard deviation of of LSI applied in the assessment of a particular conduct group.

The concentration of LSI is high for G1 and G2 but quite low for G3 and G4 indicating that DGCOMP’s approach to assessment in any given period for G3 and G4 is not predictable, or, that it has been shifting over time. As shown below, there is indeed a considerable shift over the years for group G4 towards effects-based LSs – the degree of concentration been much higher within specific time periods. Also, for G3 and G4 we find a quite large standard deviation of LSI. This fact indicates that, although most decisions are made using standards that are on average

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<sup>77</sup> Analysis under B can also be taken into account by the EC in considering the implications of various aggravating and mitigating circumstances for setting fines – e.g. the market shares of the undertakings and the geographic scope of the infringement.

<sup>78</sup> See Padilla (2011). He considers that all information exchanges should be treated by rule-of-reason unless they are part of a cartel (p.441). Other prominent commentators take a similar view, excluding from full effects-based treatment, only information exchanges related to future prices. Thus, Whish (2006), notes “that (private) exchanges of information about *future prices* will be considered to restrict competition by object.....as these are usually indistinguishable from explicit collusion”. But this is not true for other forms of information exchanges. In these latter cases, Whish (2006) suggests that it “seems much more appropriate that effects analysis should be carried out. As ... (has been) demonstrated, it is by no means easy to determine when the exchange in information is pro-or anti-competitive and where doubts of this kind exist, effects analysis, in principle, is called for”. The same view is expressed essentially by Kuhn (2006, 2010) and by Vives (2006). In the US, courts have “ruled out a per se approach to the assessment of information exchanges in favour of a rule-of-reason approach” (OECD, 2011).



closer to Per Se (for G3) and intermediate between Per Se and effects-based (for G4), for some decisions DGCOMP oscillates between very low (SPS) and very high (FEB) LSs. Thus for G3 with  $WALS = 2,83$ , DGCOMP oscillates to  $LSI = 1$  in 8,7% of the cases and to  $LSI = 6$  also in 8,7% of the cases. For G4, with higher  $WALS = 3,61$ , the EC oscillates to  $LSI = 2$  in 7,1% of the cases and to  $LSI = 6$  in 14,3% of the cases. Overall, taking into account all conduct types, we can say that the degree of legal uncertainty created as a result of inconsistency in the choice of LSs by DGCOMP in any given period is quite low.

In Tables 6, two indicators measure the quality of enforcement. One (Q) measures quality in assessing specific conduct groups. This is a measure of the divergence of WALS from the theoretically “optimal” legal standard. In Tables 6 we assume that the “optimal” LS is given by a value of  $WALS = 2$  for group G1<sup>79</sup> i.e., object-restriction and 6 (5) or full effects-based, for groups G3 and G4 when the substantive standard is that of TW (when the substantive standard is that of CS). For G2, involving information exchanges, we assume that, on average, for the types of cases examined and as noted above, the optimal LS is 3<sup>80</sup>. Since the “optimal” LS can be higher or lower than the standards actually used, we estimate Q as the difference between the maximum possible deviation and the (absolute value of the) actual deviation of WALS from the theoretically optimal LS. If the difference is equal to the maximum deviation (which implies a zero actual deviation) then Q is at its maximum. If the difference is zero (which implies that actual is equal to maximum deviation) then Q is at its minimum. We also express this difference *relative* to the maximum deviation so its value lies between 0 (minimum quality) and 1 (maximum quality). Note that the maximum deviation depends on the substantive standard. With a total welfare substantive standard the maximum deviation is 5, since the maximum LS is 6 and the minimum actual LS is 1. With a consumer welfare substantive standard the maximum deviation is 4, since the maximum LS is 5. Thus, with a total welfare substantive standard  $Q$  is  $0 \leq Q \leq 5$  while with a consumer welfare substantive standard  $Q$  is  $0 \leq Q \leq 4$ . Tables 6 also gives the value of  $Q$  *relative* to the maximum deviation, which lies between 0 and 1.

To summarize the above discussion, the value of  $Q_j$ , the quality of enforcement for conduct group  $j$ ,  $j = 1,2,3,4$ , in Tables 6 is calculated using the following two equations:

For a total welfare substantive standard:  $Q_j = 5 - ABS(WALS_j - \widehat{LS}_{G_j})$

For a consumer welfare substantive standard:  $Q_j = 4 - ABS(WALS_j - \widehat{LS}_{G_j})$

where  $\widehat{LS}_{G_j}$  is the optimal LS for conduct group  $j$  and ABS is “the absolute value of”.

Also, in Tables 6, we calculate an indicator of the *overall quality of enforcement*, across conduct groups by the CA. This is the Weighted Average Enforcement Quality (WAEQ) index estimated by weighting the value of the quality indicator  $Q$  of each conduct group by the share of that group in the total number of decisions in the sample. With a total welfare standard,  $0 \leq WAEQ \leq 5$  while with a consumer welfare standard,  $0 \leq WAEQ \leq 4$ .

We notice that the quality of enforcement is low for conduct G3, for which  $Q$ , relative to the maximum deviation, is 0,37. It is very high, as would be expected, for G1 (especially) and for G2. For G4 the overall quality is medium (0,52) when the substantive standard is that of TW, though higher (0,65) when the substantive standard is that of CS, but this just reflects the use of

<sup>79</sup> As noted above: in EU, the LS corresponding to strict Per Se is the by-object restriction LS but, for this, it is more appropriate to consider as the optimal LS been given by  $LSI$  (or  $WALS$ ) = 2.

<sup>80</sup> As noted above, 4 out of the 6 cases involved information exchange about future prices, this not been the case in the remaining 2 cases. For the former we consider the optimal LS to be strict Per Se ( $LSI = 1$ ). For the latter we consider the optimal LS to be FEB ( $LSI = 6$ , or  $LSI = 5$ , depending on the substantive standard assumed).

very low LSs applied to G4 conducts in the earlier part of the period under consideration – as we will see when we examine the evolution of the LSI below (Tables 7).

The overall WAEQ of DGCOMP can be characterized as “high”, at about 0,77 in Table 6a (and in Table 6b), assuming that the substantive standard is that of total welfare. The overall quality is higher (0,80) if we assume that the substantive standard is that of consumer welfare. In either case WAEQ is certainly even higher in more recent years in which there is a significant increase of Q for conduct group G4. Finally, WAEQ is also higher or significantly higher than other countries that have been examined using the same methodology (Avdasheva et.al., 2020; Benetatou, 2019; Benetatou and Katsoulacos, 2020): the value of WAEQ using LSI = 2 as the optimal LS for G1, is 0,75 in France, 0,61 in Greece and 0,54 in Russia.

**Table 6: The WALS and indicators of the quality of enforcement and of legal certainty by conduct group**

Table 6a: Scoring taking into account analysis under 101(3) (140 decisions)

Conduct group (share in decisions without gaps, 140)	WALS	LSI with highest share (two neighboring LSI with highest shares)	Index of legal uncertainty	Concentration index: Max. 1	Quality (Q) of enforcement with TW SS, $0 \leq Q \leq 5$ (value of Q relative to max.dev.of 5)	Quality (Q) of enforcement with CC SS, $0 \leq Q \leq 4$ (value of Q relative to max.dev.of 4)
G1 (0,61)	2,17	2 (2&3)	0,80	0,75	4,83 (0,97)	3,83 (0,97)
G2 (0,02)	2,00	2 (2)	0,00	1,00	4,00 (0,80)	3,00 (0,75)
G3 (0,16)	2,83	3 (2&3)	1,23	0,34	1,83 (0,37)	1,83 (0,46)
G4 (0,20)	3,61	3 (3&4)	1,13	0,38	2,61 (0,52)	2,61 (0,65)
WAEQ with TW SS, $0 \leq \text{WAEQ} \leq 5$ (relative to maximum)					3,87 (0,774)	
WAEQ with CS SS, $0 \leq \text{WAEQ} \leq 4$ (relative to maximum)					3,24 (0,809)	

Table 6b, without taking into account analysis under 101(3), i.e. 160 decisions without gaps, does not alter the basic conclusions above and is included in the Appendix.

### 4.3 The evolution of the LSI scores over time

During the period 1992 – 2016 covered by our sample, the views emerging from the theoretical economic literature regarding which LSs to apply for assessing different conducts has been changing. In the early 1990s, for most conducts that were found to infringe antitrust law, liability was established by adopting a Per Se or MPS LS. As reported in the Introduction, this view changed in the course of the 1990s and the new views suggested by economic theory first influenced enforcement in North America, for which Per Se was abandoned for the assessment of more or less all potential antitrust violations other than hard core horizontal agreements by 2007 (Jones and Kovacic, 2017; Blair and Sokol, 2012; Sokol, 2017), when the Supreme Court decided

that the last conduct other than hard-core horizontal agreements to be treated as Per Se illegal (that of RPM vertical agreements) should be treated by rule-of-reason in the *Leegin* case. In the EU, these views influenced first the attitude towards vertical restraints discussed above, though, as we argued, this led to an approach, based on a Block Exemption, in which some cases are treated as Per Se legal and the other cases are treated as Per Se illegal.

The EC's changing attitude towards abuse of dominance practices was first reflected in the report by a group of economists (many members of the Chief Economist Team) in 2005<sup>81</sup>. And then in the Commission's Guidance Paper (2008). However, in the EU the extent to which an economic-based approach was actually adopted has been questioned by a number of authors as discussed in the Introduction (Neven, 2006; Geradin and Petit, 2010; Korah, 2010; Blair and Sokol, 2012, 2012a).

This section presents intertemporal descriptive statistics of the LSI in the investigation of particular conduct groups for 5 consecutive periods of 5 years each, between 1992 - 2016. Tables 7 show the weighted average value of LSI (WALS) for each conduct group in each of the 5 periods while Tables 8 show the evolution in the application of economic analysis components C2, C3 and D that are considered necessary under effects-based, in conduct groups G3 and G4 for which the appropriate LS is considered to be that of full effects-based. Tables 8a and 8b present this evolution for decisions without gaps, while Tables 8c and 8d in the Appendix present the evolution for all the decisions in our sample.

**Table 7: Evolution of WALS by conduct group (decisions without gaps, 140)**

Table 7a: Scoring taking into account analysis under 101(3) (140 decisions)

Conduct group	1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
G1: WALS	2,10	2,00	2,00	2,43	2,50
No of decisions, 99 (without gaps, 86)	16 (10)	16 (16)	30 (29)	26 (23)	11 (8)
G2: WALS	2,00	n/a	n/a	n/a	2,00
No of decisions, 6 (without gaps, 3)	3 (2)	1 (0)	0 (0)	1 (0)	1 (1)
G3: WALS	2,89	3,25	2,40	n/a	1,00
No of decisions, 32 (without gaps, 23)	13 (9)	10 (8)	7 (5)	1 (0)	1 (1)
G4: WALS	2,75	3,23	3,80	4,75	5,00
No of decisions, 33 (without gaps, 28)	4 (4)	14 (13)	7 (5)	4 (4)	4 (2)

Source: calculated by authors using dataset; n/a: not applicable – zero number of decisions.

We can make a number of important observations. To start with, we observe in Table 7a that there is a, seemingly paradoxical increase in LSI of group G1 (hard-core horizontal agreements) from 2 to 2,43 and then 2,5 in the most recent decade (periods 2007 – 2011 and 2012 – 2016). This increase can be explained by referring to Tables 5 and 8. From Table 5a we see that for G1 there are 3 (out of 86) decisions that were assessed using a very high LS (LSI = 6). From 8a, we see that these 3 cases were examined in the last two periods (2007 – 2016) and they were all associated with efficiency analysis (D = 1), i.e. under Art. 101(3). Table 7b (in Appendix) also shows an increase in the LSI for G1 in 2007 – 2016; this is associated with the fact that there are

<sup>81</sup> EAGCP Report (2005).

4 (1+3) out of 35 (= 24+11) G1 decisions in 2007 – 2016 (see Table 8b below) in which C2 is present, while there was no C2 analysis for G1 in previous periods.

Next, we observe that group G3 (vertical constraints) is treated more or less with the same relatively low LS over time, during the periods in which there were quite a few such cases (1992 – 2006) with a LS between MPS (LSI = 2) and TEB (LSI = 3). Indeed there is a definite reduction in the value of LSI in the more recent period (2002 – 2006). There is then a collapse in cases between 2007 – 2016 as explained already above. The overall picture that emerges for G3 is that we cannot confirm any movement towards effect-based LSs in vertical restraint cases.

Finally, we note that there is a consistent and very remarkable increase in the LS adopted for G4 decisions (abuse of dominance) – LSI rising over the period from just 2,75 to 5 (representing FEB with a CS substantive standard). This finding reverses earlier findings reported by Neven (2006) and Geradin and Petit (2010) and questions the more recent views put forward by Blair and Sokol (2012) and Sokol (2017). Tables 8a and 8b (for decisions without gaps) also confirm the very significant increase in the main effects-based analysis components C2, C3 and D over time in the assessment of group G4. And, this is confirmed in Tables 8c and 8d in Appendix which consider all the decisions in our sample. Further, these findings do not support the views<sup>82</sup> that DGCOMP does not view consumer welfare as the primary liability criterion (at least for the latter part of the period we examine): as Katsoulacos (2019b), reviewed in Introduction, shows the use of effects-based LSs in abuse of dominance cases would be inconsistent with the use primarily of a non-welfarist liability criterion.

**Table 8: Evolution in the application of effects-based analysis components C2, C3, and D in conducts groups G1,G2, G3 and G4 (decisions without gaps)**

Table 8a: Scoring taking into account analysis under 101(3) (140 decisions)

		1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
No of decisions	G1	10	16	29	23	8
	G2	2	0	0	0	1
	G3	9	8	5	0	1
	G4	4	13	5	4	2
C2=1	G1	0	0	0	2	1
	Share	0,0%	0,0%	0,0%	8,7%	12,5%
	G2	0	0	0	0	0
	Share	0,0%	n/a	n/a	n/a	0,0%
	G3	1	1	1	0	0
	Share	11,1%	12,5%	20,0%	n/a	0,0%
	G4	0	4	2	3	2
Share	0,0%	30,8%	40,0%	75,0%	100,0%	
C3=1	G1	0	0	0	2	1
	Share	0,0%	0,0%	0,0%	8,7%	12,5%
	G2	0	0	0	0	0
	Share	0,0%	n/a	n/a	n/a	0,0%
	G3	1	1	0	0	0
	Share	11,1%	12,5%	0,0%	n/a	0,0%

<sup>82</sup> Reviewed in Introduction above.

	<i>G4</i>	0	0	1	2	1
	<i>Share</i>	0,0%	0,0%	20,0%	50,0%	50,0%
D=1	G1	0	0	0	2	1
	<i>Share</i>	0,0%	0,0%	0,0%	8,7%	12,5%
	G2	0	0	0	0	0
	<i>Share</i>	0,0%	n/a	n/a	n/a	0,0%
	G3	1	1	0	0	0
	<i>Share</i>	11,1%	12,5%	0,0%	n/a	0,0%
	G4	0	0	1	2	1
	<i>Share</i>	0,0%	0,0%	20,0%	50,0%	50,0%

Table 8b: Scoring without taking into account analysis under 101(3) (160 decisions)

		1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
No of decisions	G1	15	16	30	24	11
	G2	3	1	0	1	1
	G3	12	10	7	0	1
	G4	4	13	5	4	2
C2=1	G1	0	0	0	1	3
	<i>Share</i>	0,0%	0,0%	0,0%	4,2%	27,3%
	G2	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	n/a	0,0%	0,0%
	G3	1	1	1	0	0
	<i>Share</i>	8,3%	10,0%	14,3%	n/a	0,0%
	<i>Share</i>	0,0%	30,8%	40,0%	75,0%	100,0%
C3=1	G1	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	0,0%	0,0%	0,0%
	G2	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	n/a	0,0%	0,0%
	G3	0	1	0	0	0
	<i>Share</i>	0,0%	10,0%	0,0%	n/a	0,0%
	<i>Share</i>	0,0%	0,0%	20,0%	50,0%	50,0%
D=1	G1	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	0,0%	0,0%	0,0%
	G2	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	n/a	0,0%	0,0%
	G3	0	0	0	0	0
	<i>Share</i>	0,0%	0,0%	0,0%	n/a	0,0%
	G4	0	0	1	2	1
	<i>Share</i>	0,0%	0,0%	20,0%	50,0%	50,0%

#### 4.4 Legal Standards and the annulment rate of appealed decisions

As already mentioned, in this paper we are also interested to examine whether additional economic analysis, and hence higher LSI, are associated with higher annulment rates of appealed decisions. That is, to test the hypothesis that, because with effects-based LSI the *disputability* of the CA's decisions increases, this is expected to increase the probability of annulment – see, for example Neven (2006), who is probably the first to put forward this conjecture<sup>83</sup>. This would be a factor influencing the choices of utility maximizing CAs, the reputation of which is affected adversely when their decisions are reversed by Appeal Courts (Katsoulacos, 2019a).

Below, in Table 9a (and 9b, in the Appendix), we present various indicators of the annulment rate (AR). To start with, we present the AR of decisions corresponding to each LSI value for each conduct group, that is:

$AR_{i,j}$  = annulment rate of decisions in conduct groups  $j, j=1,2,3,4$ , for each  $LSI_i, i=1,2,\dots,6$ .

Then, we present the Weighted Average Annulment Rate (WAAR) for each one of the LSI across the different conduct groups (last row of the Tables). This WAAR is calculated as follows. Let:

$N_{i,j}$  = number of appealed decisions in conduct groups  $j, j=1,2,3,4$  for each  $LSI_i, i=1,2,\dots,6$ .

$T_i$  = total number of appealed decisions for each  $LSI_i, i=1,2,\dots,6$ , in all conduct groups.

Then:

$$WAAR_i = \sum_{j=1}^4 \frac{N_{i,j}AR_{i,j}}{T_i}$$

In Tables 9 we also present the WAAR for each conduct group across all the LSI values,  $WAAR_j =$

$$\sum_{i=1}^6 \frac{N_{i,j}AR_{i,j}}{T_j} - \text{i.e. by the total number of annulled decisions in this conduct group divided by the}$$

total number of appealed decisions in the conduct group (these WAARs are presented in the last column of Tables 9).

The findings, depicted in Tables 9, do not corroborate the hypothesis that when DGCOMP adopts a more effects-based approach there is an increase in the AR (or WAAR) of appealed decisions – indeed, the opposite seems to be the case. To see this we note the following:

- (i) Considering first each conduct type in isolation, the AR of appealed decisions do not show a clear pattern. For G1 the AR falls significantly when LSI increases from LSI = 2 to LSI = 3 – for the other LSI values there are very few observations with 0 annulment rate. Though there are only 4 appealed decisions with LSI = 3 (in Table 9a, and 7 in Table 9b), this confirms that the presence of economic analysis component C1 to show a market power raising effect, *lowered* the AR. For G2 we have very few decisions and just 2 appeals (Table 9b) without annulments. For G3 the AR increases when LSI increases from LSI = 2 to LSI = 3 and it is zero for the very small number of observations with higher LSI. For G4 the AR increases when LSI increases from LSI = 3 to LSI = 4 but it is then reduced considerably for LSI = 6 (these results are confirmed by Table 9b).
- (ii) Considering next the WAAR for each value of LSI across all the conduct groups (which is given by the last row of Tables 9), we see that *as LSI is increasing WAAR is not increasing, indeed, it is continuously decreasing*, indicating that increasing the economic analysis

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<sup>83</sup> See also the discussion in Introduction and in Katsoulacos et al. (2017) and Avdasheva et al. (2018). A similar point for US was made by Leary (2003; see Introduction) – though we need to be careful in not presuming that our findings for EC may also hold in US, given the differences in the strict Per Se (US) and by-object restrictions (EC/EU) LSI (see footnote 8 and also explanations of our findings below).

content of decisions on average reduces the likelihood that these decisions will be annulled if appealed.

- (iii) Considering, finally, the WAAR for each conduct group (which is given by the last column in Tables 9), we see that this WAAR is lower for conduct group G4 than it is for conduct groups G1 and G3, even though, as we have seen from Tables 6, the WALs is highest for G4 (i.e. the LS adopted for G4 cases is closer to effects-based than for any other conduct group).

As already noted in the Introduction, our findings on this do not question the point that “the scope for disagreement is greater when economic theory and evidence are important” (Neven, 2006; Katsoulacos, 2019a) and that this creates a force that would, *ceteris paribus*, increase the AR when adopting more effects-based LSs. It does indicate, however, that the relationship is much more complex and hence predictions cannot rely on this intuition alone. Specifically, two important factors must be taken into account, which help to explain our finding. One is that by-object restrictions under EU competition law (unlike Per Se restrictions in the US) are rebuttable and this gives the opportunity to the defendants to advance economic arguments about why the ultimate impact of their conducts on welfare is not adverse, arguments that raise the disputability of appealed decisions on by-object restricted conducts. Thus, while adopting more effects-based LSs increases the economic content of decisions, in the EU economic argumentation<sup>84</sup> may be high even when effects-based LSs are not adopted for the conducts that are restricted by-object.

Another factor is that when DGCOMP treats a conduct as a by-object restriction it *has to justify the use of this rule by demonstrating with contextual analysis that the presumption of illegality is sufficiently strong*, its assessment of the strength of the presumption been something that the defendants (and ultimately the Courts) may well dispute<sup>85</sup>. Confirmation that this is indeed the case is provided in Tables 9: in Table 9a (and similarly in Table 9b in the Appendix) below, we see that for the vast majority of G1 decisions (86%), which are treated as by-object restrictions with a value of the LSI that is given by  $LSI = 2$ , more or less all are appealed (87,5%) and the annulment rate of appealed decisions is very high (52%). Of course, were conducts in group G1 been treated under a strict Per Se, as would be the case in the US, we expect that the annulment rate would be much lower, since strict Per Se restricted conducts are not rebuttable in the US and contextualization of the conduct is not required in order to establish Per Se liability for conducts in group G1: these features remove much of the scope for disputability of the decisions on these conducts that are proposed by the US CAs<sup>86</sup>.

### **Table 9: Appeal and annulment rates and Weighted Average Annulment Rates (WAAR) for each LSI and conduct group**

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<sup>84</sup> Of the type associated with analysis components C3 and D.

<sup>85</sup> It may be useful to expand a bit further on this point. Under effects-based the assessment does not rely on presumptions and what can be disputed is the correctness or the completeness of the analysis used to establish a specific effect for the conduct under investigation. With by-object restrictions, on the other hand, there is no scope for defendants disputing e.g. an economic analysis seeking to establish the effect of consumer harm, since the CA does not need to undertake such analysis in order to decide that there is liability for a specific conduct that falls in this conduct category. But, what can be disputed is the correctness in the assessment of the strength of the presumption of illegality for the specific conduct, which is used to justify this conduct being treated with such a legal rule. This is particularly important in the EU/EC where contextual analysis is an important ingredient of establishing the strength of the presumption (in contrast to the US where contextualization is not required under strict Per Se).

<sup>86</sup> That is, we think that Leary’s (2003) assessment of the relationship between annulment and rule-of-reason vs. Per Se in the US is valid (see footnote 25 above).

Table 9a: Scoring taking into account analysis under 101(3) (140 decisions)

Conduct group		LSI						Total No	WAAR for each conduct group <sup>87</sup>
		1	2	3	4	5	6		
G1	No of decisions (without gaps)	3	74	6	0	0	3	86	0,472
	Share of particular LSI in G1	0,035	0,860	0,070	0,000	0,000	0,035		
	No of appealed decisions	3	63 <sup>88</sup>	4 <sup>89</sup>	0	0	2 <sup>90</sup>	72	
	Appeal rate across all LSI for G1 <sup>91</sup>	0,042	0,875	0,056	0,000	0,000	0,028		
	Appeal rate for each LSI across all groups <sup>92</sup>	0,750	0,926	0,200	0,000	n/a	0,333		
	No of annulled decisions	0	33	1	n/a	n/a	0	34	
	Annulment rate	0,00	0,52	0,25	n/a	n/a	0,00	0,47	
G2	No of decisions (without gaps)	0	3	0	0	0	0	3	n/a
	Share of particular LSI in G2	0,000	1,000	0,000	0,000	0,000	0,000		
	No of appealed decisions	n/a	0 <sup>93</sup>	n/a	n/a	n/a	n/a	0	
	Appeal rate across all LSI for G2	n/a	n/a	n/a	n/a	n/a	n/a		
	Appeal rate for each LSI across all groups	n/a	0,000	n/a	n/a	n/a	n/a		
	No of annulled decisions	n/a	n/a	n/a	n/a	n/a	n/a		
	Annulment rate	n/a	n/a	n/a	n/a	n/a	n/a		
G3	No of decisions (without gaps)	2	7	11	1	0	2	23	0,429
	Share of particular LSI in G3	0,087	0,304	0,478	0,043	0,000	0,087		
	No of appealed decisions	1 <sup>94</sup>	4	7	1	n/a	1	14	

<sup>87</sup>E.g. for G1, this is given by the sum across LSI of the (Appeal rate across all LSI for G1)\*(annulment rate), or equivalently, by dividing the total number of annulled G1 decisions (34) by the total number of appealed G1 decisions (72).

<sup>88</sup> There are 65 appealed decisions but 2 appealed decisions are still in progress - didn't include them.

<sup>89</sup> There are 5 appealed decisions but 1 appealed decision is still in progress - didn't include it.

<sup>90</sup> There are 3 appealed decisions but 1 appealed decision is still in progress - didn't include it.

<sup>91</sup> For example for LSI = 1, this is  $(3/72) = 0,042$ .

<sup>92</sup> For example for LSI = 1, this is  $(3/4) = 0,75$  (where 4 is the total number of appealed decisions across all groups with LSI = 1).

<sup>93</sup> There is 1 appealed decision but it is still in progress - didn't include it.

<sup>94</sup> There are 2 appealed decisions but 1 appealed decision is still in progress - didn't include it.



	Appeal rate across all LSI for G3	0,071	0,286	0,500	0,071	n/a	0,071	
	Appeal rate for each LSI across all groups	0,250	0,059	0,350	0,200	n/a	0,167	
	No of annulled decisions	0	1	5	0	n/a	0	6
	Annulment rate	0,00	0,25	0,71	0,00	n/a	0,00	0,43
G4	No of decisions (without gaps)	0	2	15	7	0	4	28
	Share of particular LSI in G4	0,000	0,071	0,536	0,250	0,000	0,143	
	No of appealed decisions	n/a	1	9	4 <sup>95</sup>	n/a	3 <sup>96</sup>	17
	Appeal rate across all LSI for G4	n/a	0,059	0,529	0,235	n/a	0,176	
	Appeal rate for each LSI across all groups	n/a	0,015	0,450	0,800	n/a	0,500	
	No of annulled decisions	n/a	0	3	2	n/a	1	6
	Annulment rate	n/a	0,00	0,33	0,50	n/a	0,33	0,35
Total No of decisions (shares) corresponding to each LSI		5 (0,036)	86 (0,614)	32 (0,229)	8 (0,057)	0 (0,000)	9 (0,064)	140
Total No of appealed decisions (shares) corresponding to each LSI		4 (0,039)	68 (0,660)	20 (0,194)	5 (0,049)	0 (0,000)	6 (0,058)	103
WAAR for each value of LSI		0,000	0,500	0,450	0,400	n/a	0,167	

## 5. Conclusions

It is widely recognized that the “more economic approach has played a central role in the discussions concerning the enforcement of competition law since the mid-1990s” in the EC<sup>97</sup>. In this article we have tried to identify the extent to which this approach has actually permeated enforcement in practice. To do this we collected and analysed a unique dataset of all the (non-exploitative) antitrust infringement decisions reached by DGCOMP in the period 1992 – 2016, identifying the economic analysis components present in each of these decisions. We also traced the outcome, for all the decisions that were appealed, of the judicial review process – up to the final decision of the Appeal Courts.

Our analysis contributes to the development of tools for the empirical measurement of the extent of economic analysis and LSs in competition law enforcement. Our second contribution consists in a detailed empirical examination of the role of and type of economic analysis in antitrust enforcement by DGCOMP. We have shown that, on average, in the period under investigation, economic analysis has played a modest role in DGCOMP’s investigations. However, there is a

<sup>95</sup> There are 5 appealed decisions but 1 appealed decision is still in progress - didn’t include it.

<sup>96</sup> There are 4 appealed decisions but 1 appealed decision is still in progress - didn’t include it.

<sup>97</sup> Gerber (2015), p. 1433. He considers this “substantive modernization” the second most important pillar of EC’s modernization efforts – the other one been the institutional modernization embedded in Council regulation 1/2003/EC (2003) O.J.L 1/1.

clear evolution towards the full effect-based (or rule-of-reason) LS (and a significant increase in the extent and role of economics in decisions), for the abuse of dominance conduct group of cases, for which this would be the appropriate LS. Thus, the hypothesis that the EC and North America enforcement diverge in the use of economics is certainly not supported for abuse of dominance cases in the second half of the period investigated. What one could claim is that while DGCOMP applies an effects-based LS under a strong presumption of illegality, in North America the standard applied is either one of Per Se Legality or is effects-based under a presumption of legality.

However, for vertical restraints, for which a full effect-based LS would also be the appropriate LS, we cannot confirm a movement towards this LS: these were treated more or less with the same low (close to Per Se) LS over time, during the periods in which DGCOMP was active with such cases (1992 – 2006), with our LSI taking values between 2 and 3. Indeed, there is a definite reduction in the value of LSI in the more recent period (2002 – 2006) - there is then a collapse in cases examined by DGCOMP between 2007 – 2016. A partial explanation for the low LS in these cases has to do with the fact that a significant fraction involves *parallel trade restrictions*, which are treated as Per Se illegal as a result of the public interest (non-welfarist) objective of competition law in the EU to protect trade / European integration.

The *overall quality of enforcement* by DGCOMP, measuring divergence from the socially optimal legal standards can be considered as “high” (0,774 assuming that the substantive standard is that of total welfare. The overall quality is even higher (0,80) if we assume that the substantive standard is that of consumer welfare (and it is still higher in more recent years).

Our empirical investigation of the relation between LSs adopted and the outcome of the judicial review of decisions appealed, i.e. the rate of decision annulment, shows that there is no support for Neven’s (2006) conjecture that the rate of annulment will be higher with effects-based assessment as “the scope for disagreement is greater when economic theory and evidence are important”. For the antitrust cases that we examine, when the economic content of decisions and hence the value of our LS indicators increases, the annulment rate of appealed decisions does not increase. Indeed the rate of annulment is lowest for abuse of dominance cases for which the economic content of decisions is highest. To explain this, we noted that by-object restrictions in EU are rebuttable and when DGCOMP treats a conduct as a by-object restriction it has to demonstrate with contextual analysis that the presumption of illegality is sufficiently strong, in order to justify the use of this specific LS. These features, that do not exist for Per Se restrictions in the US, can increase significantly the disputability of decisions on by-object restricted conducts and hence their annulment rate. Our empirical results confirm that this is indeed the case.

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## Appendix

**Table 5: Share of decisions without gaps that correspond to each LSI**

Table 5b: Scoring without taking into account analysis under 101(3) (160 decisions)

Conduct group		LSI						Total No
		1	2	3	4	5	6	
G1	No of decisions (without gaps)	4	79	9	4	0	0	96
	Share of decisions for each LSI	0,042	0,823	0,094	0,042	0,000	0,000	
G2	No of decisions (without gaps)	0	5	1	0	0	0	6
	Share of decisions for each LSI	0,000	0,833	0,167	0,000	0,000	0,000	
G3	No of decisions (without gaps)	2	10	15	2	1	0	30
	Share of decisions for each LSI	0,067	0,333	0,500	0,067	0,033	0,000	
G4	No of decisions (without gaps)	0	2	15	7	0	4	28
	Share of decisions for each LSI	0,000	0,071	0,536	0,250	0,000	0,143	

**Table 6: The WALs and indicators of quality of enforcement and legal certainty by conduct group**

Table 6b: Scoring without taking into account analysis under 101(3) (160 decisions)

Conduct group (share in decisions without gaps, 160)	WALS	LSI with highest share (two neighboring LSI with highest shares)	Index of legal uncertainty	Concentration index: Max. 1	Quality (Q) of enforcement with TW SS, $0 \leq Q \leq 5$ (value of Q relative to max.dev. = 5)	Quality (Q) of enforcement with CC SS, $0 \leq Q \leq 4$ (value of Q relative to max.dev. = 4)
G1 (0,60)	2,14	2 (2&3)	0,54	0,69	4,86 (0,97)	3,86 (0,97)
G2 (0,04)	2,17	2 (2&3)	0,41	0,72	4,17 (0,83)	3,17 (0,79)
G3 (0,19)	2,67	3 (2&3)	0,84	0,37	1,67 (0,33)	1,67 (0,42)
G4 (0,18)	3,61	3 (3&4)	1,13	0,38	2,61 (0,52)	2,61 (0,65)
WAEQ with TW SS, $0 \leq WAEQ \leq 5$ (relative to maximum)					3,84 (0,769)	
WAEQ with CS SS, $0 \leq WAEQ \leq 4$ (relative to maximum)					3,21 (0,802)	

**Table 7: Evolution of WALs by conduct group (decisions without gaps, 160)**

Table 7b: Scoring without taking into account analysis under 101(3) (160 decisions)

Conduct group	1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
G1: WAL5	2,20	2,00	1,97	2,21	2,55
No of decisions, 99 (without gaps, 96)	16 (15)	16 (16)	30 (30)	26 (24)	11 (11)
G2: WAL5	2,33	2,00	n/a	2,00	2,00
No of decisions, 6 (without gaps, 6)	3 (3)	1 (1)	0 (0)	1 (1)	1 (1)
G3: WAL5	2,58	3,10	2,43	n/a	1,00
No of decisions, 32 (without gaps, 30)	13 (12)	10 (10)	7 (7)	1 (0)	1 (1)
G4: WAL5	2,75	3,23	3,80	4,75	5,00
No of decisions, 33 (without gaps, 28)	4 (4)	14 (13)	7 (5)	4 (4)	4 (2)

**Table 8: Evolution in application of effects-based analysis components C2, C3, and D in conducts groups G1,G2, G3 and G4 (all decisions)**

Table 8c: taking into account analysis under 101(3) (140 decisions)

		1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
No of decisions	G1	16	16	30	26	11
	G2	3	1	0	1	1
	G3	13	10	7	1	1
	G4	4	14	7	4	4
C2=1	G1	3	0	0	3	3
	Share	18,8%	0,0%	0,0%	11,5%	27,3%
	G2	0	0	0	0	0
	Share	0,0%	0,0%	n/a	0,0%	0,0%
	G3	3	1	1	0	0
	Share	23,1%	10,0%	14,3%	0,0%	0,0%
	G4	0	5	2	3	4
Share	0,0%	35,7%	28,6%	75,0%	100,0%	
C3=1	G1	2	0	1	3	2
	Share	12,5%	0,0%	3,3%	11,5%	18,2%
	G2	0	1	0	0	0
	Share	0,0%	100,0%	n/a	0,0%	0,0%
	G3	2	3	1	0	0
	Share	15,4%	30,0%	14,3%	0,0%	0,0%
	G4	0	0	1	2	1
Share	0,0%	0,0%	14,3%	50,0%	25,0%	
D=1	G1	5	0	1	3	4
	Share	31,3%	0,0%	3,3%	11,5%	36,4%
	G2	1	1	0	1	0
	Share	33,3%	100,0%	n/a	100,0%	0,0%
	G3	3	3	2	1	0
	Share	23,1%	30,0%	28,6%	100,0%	0,0%
	G4	0	0	3	2	3
Share	0,0%	0,0%	42,9%	50,0%	75,0%	

Table 8d: without taking into account analysis under 101(3) (160 decisions)

		1992 - 1996	1997 - 2001	2002 - 2006	2007 - 2011	2012 - 2016
No of decisions	G1	16	16	30	26	11
	G2	3	1	0	1	1
	G3	13	10	7	1	1
	G4	4	14	7	4	4
C2=1	G1	1	0	0	3	3
	Share	6,3%	0,0%	0,0%	11,5%	27,3%
	G2	0	0	0	0	0
	Share	0,0%	0,0%	n/a	0,0%	0,0%
	G3	1	1	1	0	0
	Share	7,7%	10,0%	14,3%	0,0%	0,0%
	G4	0	5	2	3	4
Share	0,0%	35,7%	28,6%	75,0%	100,0%	
C3=1	G1	0	0	0	0	0
	Share	0,0%	0,0%	0,0%	0,0%	0,0%
	G2	0	0	0	0	0
	Share	0,0%	0,0%	n/a	0,0%	0,0%
	G3	0	1	0	0	0
	Share	0,0%	10,0%	0,0%	0,0%	0,0%
	G4	0	0	1	2	1
Share	0,0%	0,0%	14,3%	50,0%	25,0%	
D=1	G1	0	0	0	1	0
	Share	0,0%	0,0%	0,0%	3,8%	0,0%
	G2	0	0	0	0	0
	Share	0,0%	0,0%	n/a	0,0%	0,0%
	G3	0	0	0	1	0
	Share	0,0%	0,0%	0,0%	100,0%	0,0%
	G4	0	0	3	2	3
Share	0,0%	0,0%	42,9%	50,0%	75,0%	

**Table 9: Appeal and annulment rates and Weighted Average Annulment Rates (WAAR) for each LSI and conduct group**

Table 9b: Scoring without taking into account analysis under 101(3) (160 decisions)

Conduct group	LSI						Total No	WAAR for each conduct group
	1	2	3	4	5	6		



G1	No of decisions (without gaps)	4	79	9	4	0	0	96	0,468
	Share of particular LSI in G1	0,042	0,823	0,094	0,042	0,000	0,000		
	No of appealed decisions	3	66 <sup>98</sup>	7 <sup>99</sup>	1 <sup>100</sup>	n/a	n/a	77	
	Appeal rate across all LSI for G1	0,039	0,857	0,091	0,013	n/a	n/a		
	Appeal rate for each LSI across all groups	0,750	0,892	0,269	0,167	n/a	n/a		
	No of annulled decisions	0	34	2	0	n/a	n/a	36	
	Annulment rate	0,00	0,52	0,29	0,00	n/a	n/a	0,47	
G2	No of decisions (without gaps)	0	5	1	0	0	0	6	0,000
	Share of particular LSI in G2	0,000	0,833	0,167	0,000	0,000	0,000		
	No of appealed decisions	n/a	1 <sup>101</sup>	1	n/a	n/a	n/a	2	
	Appeal rate across all LSI for G2	n/a	0,500	0,500	n/a	n/a	n/a		
	Appeal rate for each LSI across all groups	n/a	0,014	0,038	n/a	n/a	n/a		
	No of annulled decisions	n/a	0	0	n/a	n/a	n/a	0	
	Annulment rate	n/a	0,00	0,00	n/a	n/a	n/a	0,00	
G3	No of decisions (without gaps)	2	10	15	2	1	0	30	0,444
	Share of particular LSI in G3	0,067	0,333	0,500	0,067	0,033	0,000		
	No of appealed decisions	1 <sup>102</sup>	6	9	1	1	n/a	18	
	Appeal rate across all LSI for G3	0,056	0,333	0,500	0,056	0,056	n/a		
	Appeal rate for each LSI across all groups	0,250	0,081	0,346	0,167	1,000	n/a		
	No of annulled decisions	0	1	7	0	0	n/a	8	
	Annulment rate	0,00	0,17	0,78	0,00	0,00	n/a	0,44	
G4	No of decisions (without gaps)	0	2	15	7	0	4	28	0,353
	Share of particular LSI in G4	0,000	0,071	0,536	0,250	0,000	0,143		

<sup>98</sup> There are 68 appealed decisions but 2 appealed decisions are still in progress - didn't include them.

<sup>99</sup> There are 8 appealed decisions but 1 appealed decision is still in progress - didn't include it.

<sup>100</sup> There are 3 appealed decisions but 2 appealed decisions are still in progress - didn't include them.

<sup>101</sup> There are 2 appealed decisions but 1 appealed decision is still in progress - didn't include it.

<sup>102</sup> There are 2 appealed decisions but 1 appealed decision is still in progress - didn't include it.

No of appealed decisions	n/a	1	9	4 <sup>103</sup>	n/a	3 <sup>104</sup>	17	
Appeal rate across all LSI for G4	n/a	0,059	0,529	0,235	n/a	0,176		
Appeal rate for each LSI across all groups	n/a	0,014	0,346	0,667	n/a	1,000		
No of annulled decisions	n/a	0	3	2	n/a	1	6	
Annulment rate	n/a	0,00	0,33	0,50	n/a	0,33	0,35	
Total No of decisions (shares) corresponding to each LSI	6 (0,038)	96 (0,600)	40 (0,250)	13 (0,081)	1 (0,006)	4 (0,025)	160	
Total No of appealed decisions (shares) corresponding to each LSI	4 (0,035)	74 (0,649)	26 (0,228)	6 (0,053)	1 (0,009)	3 (0,026)	114	
WAAR for each value of LSI	0,000	0,473	0,462	0,333	0,000	0,333		

<sup>103</sup> There are 5 appealed decisions but 1 appealed decision is still in progress - didn't include it.

<sup>104</sup> There are 4 appealed decisions but 1 appealed decision is still in progress - didn't include it.