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"Judging" Economists. Economic Expertise in Competition Law Litigation. A European View

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Abstract

The study focuses on the admissibility and assessment of economic expertise in EC competition law litigation. I start by exploring the broader issues raised by the integration of economic expertise in litigation: in particular the risk of moral hazard and adverse selection because of the epistemic asymmetry between judges and experts and expert bias. The analysis of these problems will bring me to the question of the conception of science and of the relations between science and law that underpins the concept of scientific expertise and, more specifically, economic expertise. I will then identify the extent of the problem of epistemic asymmetry and expert bias by looking to the degree and the *locus* of the intrusion of economic analysis in competition cases. I will explore the instruments, procedural and substantive, employed by the legal system, in order to mitigate the risks flowing from the epistemic asymmetry and expert bias claims. First, I will highlight the different institutional and procedural frameworks that were adopted at the European Union level and in some selected member states in order to integrate economic expertise in litigation. My objective will be to understand how these institutional solutions may address each of the identified problems. Second, I will look to "substantive" law approaches in the adjudication of expertise, such as the development of specific standards for the admissibility and the sufficiency of economic expertise in courts, as an alternative or as an additional option to deal with the challenges raised by economic expertise. The paper will conclude that the possible adverse effects of the epistemic asymmetry and expert bias between judges and experts are important concerns, but the current procedural/institutional and substantive legal framework governing economic expertise does not take sufficiently into account important concerns that are specific to economics and other social sciences, such as the preservation of the scientific "competition" in the supply of economic theory and consequently, methodological or assumptions-related pluralism in economic thought. In particular, I will argue against adopting specific standards of admissibility of economic expertise in Europe. This is a US context-specific solution which does not necessarily fit with the specific characteristics of the European legal system. It is also an approach that represents an outdated and partial view of the scientific as well as the judicial adjudication process.

1. Introduction

"An Indian born economist once explained his personal theory of reincarnation to his graduate economic class: 'if you are a good economist, a virtuous economist' he said "you are reborn as a physicist. But if you are an evil, wicked economist, you are reborn as a sociologist"[1].

Jokes about economists abound lately.[2] It is well known that political satire aims the great and the powerful. For the economists have become powerful and great in the world of competition law. The rise of economists as one of the main (some will advance the most important) actors of the antitrust law process during the last three decades, is well documented[3]. This is not only the case in United States antitrust law, where this phenomenon did first appear. Economists have also played a key role in EC competition law, in particular at the legislative level, by contributing to the design and the drafting of the new model of block exemption regulations reflecting economic thinking, following the adoption of the block exemption on vertical restraints in 1999[4], and the publication of numerous policy guidelines[5]. Likewise, their influence has been considerable in the administrative law enforcement of competition law. The European Commission and the national competition authorities increasingly employ economists[6] and make extensive use of economic analysis in their decisions[7], following in that the path of the US federal antitrust agencies. The influence of economists and economics in court proceedings has nevertheless been more limited[8].

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[1] Paul Krugman, *Peddling Prosperity: Economic Sense and Nonsense in the Age of Diminished Expectations* (W. W. Norton & Company, 1994) at xi.

[2] For some good specimens see, Gunnar Niels, "The Economist in Court: Guilty of Theories that don't fit the facts", (2007) *Comp L Rev* 358; Frederic Jenny, "Economic Experts Before Authorities and Courts Roundtable", Chapter 26 in *Fordham Corporate Law Institute*, 615, at 617-619;

[3] E.g., Franklin Fisher, "Economic Analysis and 'Bright-Line' Tests", (2007) *Journal of Competition Law and Economics* 129.

[4] Commission Regulation (EC) 2790/99 on the application of Article 81(3) of the Treaty to vertical agreements and concerted practices, [1999] OJ L148/1 (currently under revision).

[5] Starting with the Commission Notice on Guidelines on Vertical Restraints (hereinafter Vertical Restraints Guidelines) [2000] OJ C 291/1 (currently under revision).

[6] Almost all national competition authorities in Europe have recruited economists in their different departments or have appointed a chief economist that reviews the economic soundness of their decisions.

[7] See, e.g. Case COMP/38.784- *Wanadoo España vs. Telefónica* [2007] available at http://ec.europa.eu/comm/competition/antitrust/cases/decisions/38784/dec_en.pdf , Part VIE, where the Commission examined empirical evidence in order to substantiate the anticompetitive effects of the alleged margin squeeze (although it an concluded that Telefónica's conduct has led to "significant consumer harm" (para 618), before qualifying the practice as being an abuse of a dominant position

[8] Economic arguments have been examined by the Courts in recent cases, however, in the merger field (e.g. Case T-464/04, *Impala v. Commission* [2006] ECR II-2289; Case T-209/01, *Honeywell International Inc v. Commission* [2005] ECR II-5575; Case C-12/03 *Commission v. Tetra Laval* [2005] ECR I-987) as well as in antitrust (e.g. Case T-201/04 *Microsoft v. Commission* [2007] 5 CMLR 846; T-168/01, *GlaxoSmithKline Unlimited v Commission* [2006]

Economics and economists may influence decision making by courts in competition law cases in two different ways. First, indirectly: economic analysis is incorporated in 'hard law' (block exemption regulations), but most frequently in 'soft law', such as guidelines interpreting the competition law provisions for the use of courts. It is well known that, according to Article 220 of the EC Treaty, the European Court of Justice and the Court of First Instance are the authoritative interpreters of the Treaty's competition law provisions. The European Commission has nevertheless adopted a plethora of interpretative non-binding guidelines. These guidelines do not only have the objective to describe current decisional practice and the existing case law but they also provide detailed and extensive analysis of the interpretative methodology to be used in enforcing the competition law provisions (the economic muscle of the law)[9]. These texts have been largely the work of economists or economic and legal experts. As Eleanor Fox once noted, the moment of guidelines is when "economists are kings".[10] The influence of guidelines in the judicial enforcement of competition law is an empirical question: Hillary Greene has recently provided statistical evidence of the impact of the different versions of US Merger Guidelines in framing antitrust discourse[11]. Greene notes *á propos* of the merger guidelines, that they have progressively gained "special status in the antitrust debate" and that they had an important influence in refining, revising and rejecting existing case law (the process of "guideline institutionalization").[12]

The second form of influence of economics and economists in courts is direct and relates to the provision of economic expertise in litigation. Economists are frequently called to testify as experts, either invited by the parties or appointed by the courts. This form of influence of economists and economic thinking has risen considerably recently, in part as a consequence

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ECR II-2969). The Court relies, however, in these cases mostly on the economic assessment of the Commission or the economic arguments advanced by the parties and rarely, if ever, performs an independent economic analysis of its own.

[9] The Commission cannot, however, adopt guidelines contrary to the rulings of the European courts [see the most recent reminder by Case C-8/08, *T-Mobile Netherlands BV and Others* [2009] ECR nyr, Opinion of AG Kokkott, para 29].

[10] Eleanor Fox, "The 1982 Merger Guidelines: When Economists are Kings?", (1983) 71 *California L Rev* 281.

[11] Hillary Greene, "Guideline Institutionalization: The Role of Merger Guidelines in Antitrust Discourse", (2006) 48 *William & Mary L Rev* 771.

[12] Ibid, at 828-830. The process of "institutionalization of the guidelines provides an explanation for their increasing influence in antitrust law discourse: "… the guidelines became increasingly influential in reframing the terms of proper antitrust merger analysis and by anchoring important inquiries … Over time, the 'legitimacy' of the guidelines increased, and even when that legitimacy had not even fully established, the statistics above revealed an increased tendency among decision makers to explain or reconcile rulings with the guidelines …The history is not merely the result of the acceptance of superior ideas … nor does the increase (of their influence) seem consistent with a simple story of (possible unwarranted) judicial deference to agency promulgations. …(S)omething more is needed to explain the history. The guidelines themselves became legitimized and valued beyond the content of their ideas … In short, the antitrust guidelines had become a strong institution".

of the first form of influence: judges need the assistance of economic experts to comprehend and implement the economic concepts and reasoning that now permeate the EC competition law legal discourse. This demand for more economic reasoning is particularly significant in the area of merger control.

Competition cases are initiated in courts in Europe, either by private litigants (e.g. private litigation, preliminary references from national courts at the European Court of Justice) or as a follow-up of public enforcement of competition law (judicial review and actions for annulment at the European level or decisions of national competition authorities or regulators in the national context). One could distinguish the situation of the judicial review of a decision of a competition authority from that of private enforcement, as traditionally the role of the judge is limited, in the first case, to the control of a manifest error of appreciation and there is generally deference to the economic assessment performed by the competition authority[13]. The European Courts have usually been reluctant to re-assess the economic analysis of the European Commission, although the situation has recently evolved towards a more intrusive judicial review, in particular in EC merger control cases[14].

The growing importance of private enforcement of antitrust law in Europe may also lead to an increase in the demand for economic expertise; this time at the level of national courts, as a result of the decentralization process of EC competition law enforcement after Regulation 1/2003[15]. Andrew Gavil notes the important challenges of economic proof in the decentralized and privatized European competition law system[16]: The absence of a common European framework providing procedural rules concerning the discovery, development and presentation of economic proof and the important differences between the national legal systems governing evidence and expertise are important matters of concern[17].

If the indirect influence of economics and economists in EC competition law has already been examined in depth[18], the direct influence of economists

[13] Bo Vestendorf, "Standard of Proof in Merger Cases: Reflections in the Light of Recent Case Law of the Community Courts", (2005) *European Competition Journal* 3; Bo Vesterdorf, "Economics in Court: reflections on the role of judges in assessing economic theories and evidence in the modernised competition regime", in Martin Johansson, Nils Wahl & Ulf Bernitz (eds.), *Liber amicorum in honour of Sven Norberg – A European for all seasons* (Bruylant, 2006), at 511.

[14] Matteo Bay & Javier Luis Calzado, "Tetra Laval II: The Coming of Age of the Judicial review of Merger Decisions", (2005) 28(4) *World Competition* 433.

[15] Regulation 1/2003

[16] Andrew Gavil, "The Challenges of Economic Proof in a Decentralized and Privatized European Competition Policy System: Lessons from the American Experience", (2008) 4(1) *Journal of Competition Law and Economics* 177.

[17] For a brief analysis of some national experiences on the judicial assessment of expertise see the excellent work of Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (Cambridge Univ. Pres, 2008), pp. 180-197.

[18] See, most recently, Ioannis Lianos, *La Transformation du droit de la concurrence par le recours á l'analyse économique* (Bruylant, Brussels, 2007).

through the provision of expertise in litigation is a less studied phenomenon. An important difference with the indirect influence of economics in antitrust is that judges are not deciding "in isolation" on the introduction of economic analysis in their effort to resolve the specific competition law dispute they are trying to deal with[19], but that their decision-making is constrained by the social meaning and context of "expertise". Scott Brewer wonderfully summarizes this point with the formula of "epistemic deference"[20]: in deciding to call or listen to an economic "expert" judges admit limitations to their knowledge for the purposes of legal decision-making, which is an essential dimension of their legitimacy and authority. Judges are supposed to know the law; but in this case the law has also an economic content which judges are discovering/assessing with the active assistance of the economic "expert". In other words, there is a situation of epistemic un-equality between the judge and the expert. The specificities of economic expertise may lead to a number of problems, linked essentially, but no exclusively, to the epistemic asymmetry between the judge and the economic expert with regard to the economic content/dimension of the law.

Epistemic asymmetry is not, however, the only source of difficulty for the judge. The diversity and evolving character of economic theory put the judicial decision-maker and the legal system in front of difficult choices, in general, when they devise general rules guiding the assessment of economic evidence. These choices, as this study will argue, have not only implications on the evolution of competition law (its enforcement in the actual fact-pattern or in future analogous fact-patterns through the operation of the rule of precedent) but have also implications on the direction of economic theory and future research in economics.

The study focuses on the assessment of economic expertise in EC competition law litigation. It will first explore the challenges of integrating economic expertise in litigation: in particular the epistemic asymmetry between judges and experts. Epistemic asymmetry becomes an issue as soon as economics becomes a necessary tool to interpret the law and we are confronted to the possibility of expert bias. The requirement of objectivity, which is important for the legitimacy and social acceptability of the judicial decision-making process, will, in this case, be profoundly interlinked with the development of objective knowledge. Economic science will be the source of objective knowledge in the antitrust field. However, this study will argue that, notwithstanding the problem of expert bias, the conception of economics as a source of objective knowledge does not hold and that the judicial decision-makers should be aware of this possibility when they evaluate economic

[19] In the sense that they do not employ a legal self-referential interpretative method, by only referring to other legal authorities, such as regulations or instruments of soft law, such as guidelines.

[20] Scott Brewer, "Scientific Expert testimony and Intellectual Due Process", (1998) 107 *Yale L J* 1535, 1586.

expertise. The study will identify the extent of the problem of epistemic asymmetry by looking to the degree and the *locus* of the intrusion of economic analysis in competition cases.

The last two parts will explore the instruments, procedural and substantive, employed by the legal system in order to mitigate the risks flowing from the epistemic asymmetry between judges and experts and the problem of expert bias.

First, I will highlight the different institutional and procedural frameworks that were adopted at the European level and in some selected member states in order to integrate economic expertise in litigation. My objective will be to understand how these institutional solutions may address each of these problems. Second, I will look to "substantive" law approaches, such as the development of specific standards for the admissibility and the sufficiency of economic expertise in courts, as an alternative or an additional option to deal with the challenges raised by economic expertise in courts. The paper will conclude that, although the possible adverse effects of the information and epistemic asymmetry between judges and experts is certainly an important issue, the current procedural/institutional and substantive legal framework governing economic expertise does not take sufficiently into account important concerns that are specific to economics and other social sciences, such as the preservation of the scientific "competition" in the supply of economic theory and consequently, methodological or assumptions-related pluralism in economic thought. In particular, I will argue against the adoption of specific standards of admissibility of economic expertise in Europe. This is a US context-specific solution which does not necessarily fit with the specific characteristics of the European legal system. It is also an approach that represents an outdated and partial view of the scientific as well as the legal process.

2. Expert evidence in the courtroom: origins and problems

In the increasingly complex litigation world of competition law, courts need the assistance of economic "experts" in order to acquire specialised information, which is otherwise unavailable to them. The need for expertise is essentially the consequence of a perceived epistemic asymmetry between the judicial decision-makers (judges and/or jury in the US system) and the "experts".

The existence of an epistemic asymmetry should not, however, lead to the conclusion that the role of the judge or jury is to conform to the expert's opinion. First, there is a risk that the expert takes a specific position in order to please one of the litigants, in particular if the latter employs him as an expert witness. Second, there is always the possibility for conflicting expert opinions and testimony. This is particularly true in economics, where disagreement

between economists has been a frequent subject of satire. The possibility of an objective economic truth could be questioned. Criticisms to economic theory and methodology may put into question the hard scientific status of economics and thus lead to a re-consideration of the role of the judge in assessing economic expertise. Third, one could establish a relation between the market for economic expertise in litigation and academic research in economics perceived as a scientific endeavour. If the rules that apply to economic expertise in courts may influence the way economic thought may evolve in the future, that should be taken into account in designing the legal rules on expertise. This could be an important, yet unexplored, implication of the rules governing economic expertise.

2.1. The origins of expertise: informational asymmetry and epistemic competence

The need for expert evidence arises essentially from the need to integrate scientific knowledge in legal proceedings. The phenomenon finds its origins in the emergence of modern science and the need for specialized knowledge, as a result of the differentiation of society[21]. However, it has not been until the end of the 18th century that, for the first time, expert witnesses were employed as "a distinct and well-defined legal entity"[22]. As this was explained by Learned Hand in his seminal article on expert testimony, expert witnesses came progressively to replace two other methods of integrating specialist expertise in the courtroom: the selection of jurymen that "were by experience fitted to know the class of facts which were before them" and the tradition to "call to the aid of the court skilled persons whose opinion it might adopt or not as it pleased".[23] Following the "adversarial revolution" of the English legal system during the 18th century, the litigation process was transformed in order to take into account the emergence of new actors, in particular the expanding presence of lawyers/advocates. This led to the establishment of distinct roles for the judge, the lawyers and the other actors of the litigation process, which affected the way evidence was produced and presented in courts. The term "expert" appears to have been adopted in the 1850s or 1860s[24]. There is debate over which form of expertise, court-appointed or expert witnesses first appeared, Tal Golan claiming that prior to the adversarial revolution, the judge was the main actor of the judicial process and the experts were directly commissioned by the judge, while Déirdre

[21] Niklas Luhmann, *Differentiation of Society* (Columbia Univ. Press, New York, 1982).
[22] Tal Golan, 'The History of Scientific Expert testimony in the English Courtroom' (1999) 12 *Science in Context* 7, 8.
[23] Learned Hand, "Historical and Practical Considerations Regarding Expert Testimony", (1901) 15 *Harvard L Rev* 40.
[24] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (Cambridge Univ. Pres, 2008), at 279.

Dwyer argues that court-appointed experts was an innovation of the 19th century, following the increasing concerns raised about the effects of expert partisanship during that period[25].

The role of experts is however, different from all other witnesses brought in by the parties. Their position is "peculiar" because the expert witness is allowed to testify not only on matters of facts for which he had personally witnessed but on inferences from facts or classes of facts that others may have reported.[26] Expert evidence can be on questions of fact as well as on questions of opinion: any distinction between the two being arbitrary[27]. An additional characteristic of expert witnesses: in contrast to other witnesses, is that they represent "persistent communities of practice outside the legal domain"[28].

The existence of scientific expert witnesses has thus a different justification. Other witnesses intervene only because they have a "space-time advantage" compared to the judge or the jury: they were someplace the judge or jury were not and had a direct experience of the "facts".[29] In contrast, the principal role of the expert is to become an "educator" or "translator" for the judge or the jury: summarizing knowledge that it would be difficult, long and costly for the judge or the jury to acquire by their own; translating signs/meaning from the language of economics to a language/discourse which is understandable by the judge and/or the jury, in other words 'common (shared) sens'.

His knowledge advantage derives from a variety of sources. The expert may have direct experience on the factual situation. His expertise may find basis in a data base, his observations for a long period of time, secondary sources, such as academic research and training in particular research methods and disciplines. This may be information acquired prior and independent of the litigation or after being involved in the litigation.

Consequently, we can define the term "expert" in relational terms, as a function of "epistemic authority", or better put, "epistemic deference" of one agent to another[30]. A more general definition is also possible:

> "an expert is a person who has or is regarded as having specialized training that yields sufficient epistemic competence to understand the aims, methods, and results of an expert discipline. An expert discipline

[25] Ibid., at 269-272.
[26] Learned Hand, "Historical and Practical Considerations Regarding Expert Testimony", above, at 44.
[27] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at 87-97
[28] Ibid, at 6.
[29] Michael Risinger, "Preliminary thoughts on a functional taxonomy of expertise for the post-Kumho World", (2000) 31 *Seton Hall L Rev* 508, 510
[30] Scottt Brewer, above, at 1588: "For A to be an epistemic authority for B on some subject matter, B must judge that A has some sufficient knowledge, intelligence, or wisdom which makes it reasonable to believe either that what A says on that subject is more likely to be true than the results reached by B through B's independent investigations, or is no less likely to be true than the results that would be reached by B through B's independent investigations".

is a discipline that in fact requires specialised training in order for a person to attain sufficient epistemic competence to understand its aims and methods, and to be able critically to deploy those methods, in service of these aims, to produce judgments that issue from its distinctive point of view. A non-expert is a person who does not in fact have the specialized training required to yield sufficient epistemic competence to understand the aims, methods, and judgments of an expert discipline, or to be able critically to deploy those methods, in service of the discipline's aims, to produce the judgments that issue from the discipline's distinctive point of view"[31].

The scientific expert therefore assumes the role of translator. His translational function relates to the representation of encoded information in a language un-accessible or accessible with a significant cost to a non-expert..[32] Translational systems are by essence subjective and "systemically imperfect[33]" in the sense that there is a degree of uncertainty with regard to the interpretative values and outcomes that different individuals may derive from the translational process. Indeed, as Umberto Eco showed in *Experiences in Translation*, the aim of the translator is not to establish a perfect identity between the source language A to a target language B, which would be impossible, as the definitive insight and generalization of the way in which the translated language relates word to object would require a complete access to it from the translator[34]. The aim is rather to establish some sort of equivalence of meaning. The translator should therefore decide what is the fundamental content conveyed, the deep story, and then reproduce it in the target language. It follows that translation involves a constant negotiation between different meanings.This can lead to expert disagreement[35]. Risinger mentions two manifestations of this systemic imperfection of the translational system:

"(t)he first problem typically encountered is an imperfection in their underlying descriptive or taxonomic system, such that the categories in the system are not based on data empirically unmistakable by all properly trained (and therefore normed) practitioners… The success of the norming process at the descriptive level is measured by how much agreement there is among practitioners in giving the same classification to the same observed phenomenon. High levels of

[31] Ibid.
[32] Michael Risinger, "Preliminary thoughts on a functional taxonomy of expertise for the post-Kumho World", in David Faigman, David Kaye, Michael Saks & Joseph Sanders (ed.), *Modern Scientific Evidence: The Law and Science of Expert Testimony*, Volume 3, (West, 2nd ed., 2002), at 83.
[33] Idid, at 82.
[34] Umberto Eco, *Experiences in Translation*, (University of Toronto Press, 2001), 16-17.
[35] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (CUP, 2008), at 7: expert disagreement exists "when expert evidence offers more than one interpretation".

agreement result in 'reliable' taxonomies. The less agreement among practitioners, the less reliable the system".[36]

The second problem relates to the inherent subjectivity of the

> "translational system itself", which "may be highly objective and determinate, utilizing quantifiable aspects of the data present and mathematically describable relationships, or it may be more subjective and indeterminate, ranging from attempts to formally describe and combine parameters of incommensurate factors through such tools as 'fuzzy logic'", thus making the translation dependent on "subjective judgments of unquantified and often incommensurate variables".[37]

It is not always the case that a process of common principles and education of the "experts" will lead, in this case, to the same outcome.

The expert's function is to provide insights that would help the judge to understand in their right dimension the facts of the case and the possible implications of their interpretative choices. The expert's role is not to provide any interpretation over the content of the law, which is solely a judicial function[38], or any normative or value-judgment expertise, which is a task that the law usually ascribes to the judge or the jury (in the US). There are certainly circumstances where the interpretation of the facts involves normative judgment but these instances are exceptions to the rule that experts should "not testify to mere opinion or conclusion".[39] Furthermore, although the judge has knowledge of the legal framework, the economic expert detains specialized knowledge that could be useful for the interpretation of the law (normative judgment) in situations where reference to a meta-legal principle is necessary for the coherent application of the legal rule[40]. The degree of the epistemic asymmetry depends on the nature of the proceedings (administrative or court proceedings), the degree of specialization of the authorities (the asymmetric information problems between the competition authority/specialist court and economic experts are less daunting than in the case of non-specialized authorities/generalist judges), the distribution of the powers of investigation, prosecution and

[36] Michael Risinger, "Preliminary thoughts on a functional taxonomy of expertise for the post-Kumho World", above, at 83.

[37] Ibid., at 84.

[38] See, for example, Case T-15/89, *Chemie Linz v. Commission*, [1991] ECR II-867, 957, "the findings of economic experts cannot take the place of legal assessment and adjudication…. It is for the Court to consider what is prohibited under Article 85(1) and the evidence for the commitment of prohibited acts, and not for economic theorists".

[39] Learned Hand, above, at 44; For example, defining a situation of insanity, as it is usually done by members of various psychological disciplines, involves a normative judgment over normality of behaviour, a judgment which is, in certain circumstances, influenced by social norms and other value considerations. See Michel Foucault, *Folie et déraison-Histoire de la folie à l'âge classique* (Paris, 1961).

[40] Richard A. Posner, 'The Law and Economics of the Economic Expert Witness', (1999) 13(2) *Journal of Economic Perspectives* pp. 91-99, at 91 observes circumstances where "the law adopts an explicitly economic criterion of legality".

adjudication (prosecutorial bias risk, which may make the Commission disregard economic expertise presented by the parties), the adversarial or inquisitorial character of the proceedings (if the judge is confronted to two contradicting opinions, he may decide to disregard the economic expertise)[41].

The relation between the judge and the expert could be examined as a typical principal-agent problem, where the judge operates as the principal and the expert as the agent[42]. Following this model the principal's objective is to align her interests with those of the agent, in order to avoid a situation of moral hazard. The later may occur because of the inherent difficulty of a non-specialist judge to monitor the performance and reliability of the expert. The adversarial process tends to emphasize differences between experts rather than to produce a consensus view, which is what judges and jury are eventually seeking. The risk of moral hazard is greatly reduced in circumstances where the judge commissioned the expert witness or in situations where the expertise/information gathering function is integrated to that of the adjudication function (e.g. the expert is an assessor or the judge has developed expert knowledge in the field). In other words, if there is a situation of hierarchy (because of an employment contract between the judge and the expert), the alignment of the objectives of each party is almost complete. Even in these circumstances, one should nevertheless not exclude the possibility that expert witnesses may have previously consulted one of the parties or that they may have a vested interest, if they operate as independent consultants, to collaborate with one of the parties in the future.

Déirdre Dwyer mentions three categories of interest that may cause some form of expert bias and therefore may give rise to expert disagreement: personal interest, financial interest and intellectual interest. These may exist "externally to the instant litigation", what she calls "predisposition" or arise in direct relation to the litigation, which she calls "involvement"[43]. Personal bias may arise because of moral opinions or personal relations, when the expert is associated with one of the parties (family, member of a professional organization). Financial interest originates when "the expert is employed by the party on an ongoing basis, beyond the scope of immediate litigation"[44]. Intellectual predisposition or involvement results from the fact that the expert shares a particular theory or participates to a specific school of thought, which

[41] Juan D. R. Gutiérrez, Expert Economic Testimony, Economic Evidence and Asymmetry of Information in Antitrust Cases, (October 2007): Available at SSRN: http://ssrn.com/abstract=1023494 , point 4.3.

[42] For a conceptualization of the relation between judge and expert as that of principal-agent, see Juan D. Gutiérrez, Expert Economic Testimony, Economic Evidence and Asymmetry of Information in Antitrust Cases, above, points 4.1 & 4.2. Although this approach may present the risk of ignoring the role of the legislator in the process, as the judge is essentially enforcing a statute, it is adequate in the case of competition law, which relies essentially on broad and evolving standards and provides the judge with a considerable discretion in framing competition law doctrine.

[43] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at 163.

[44] Ibid., at 167.

will influence her expertise. Expert bias may be "conscious", "where the expert chooses to adapt her opinion in order to favour one of the parties" or "unconscious", where the expert's opinion is trapped to a specific heuristic or schema, that of a specific theory or scientific discipline, for example. Déirdre Dwyer concludes that "to remove competing expert evidence does not of itself remove the problems of expert disagreement and bias", but simply "removes the issue from the sight of the tribunal"[45]. For example, the adversarial process may exarcebate the risk of expert bias because of financial interest defended by each party expert although it could be useful in order to reduce the risk of intellectual bias.

Recent statutes imposed to expert witnesses an explicit overriding duty to the court to provide unbiased expertise.[46] The principle is that the function of the expert is to "provide independent assistance to the Court by way of objective unbiased opinion in relation to matters within his expertise".[47] The exact nature of the expert's duty to the court is a matter of theoretical speculation[48]. Notwithstanding, in practice, it is difficult to monitor this duty, as this supposes that the judge or the jury is able to identify instances where the expert did not provide unbiased information. This is extremely difficult to spot out in most cases without any previous knowledge of the field. It should also be noted that it is rare that experts are sanctioned for violation of this duty to the court.[49]

Reputation effects may also dissuade the expert from behaving opportunistically and from providing biased information, in particular if the expert is a repeat player. Credibility is an important asset that the expert has interest to preserve in order to operate in the market of legal expertise and maintain the value of her services. The market for experts may in this case have a disciplining effect in ensuring that the expertise has the required quality. Nevertheless, it is possible that the disciplining effect of the market will not have any effect. The expert might adopt a strategy of signaling an intellectual interest in order to secure continuous employment by a certain category of experts. For example, an expert may adopt a theoretical starting point which is generally positive to defendants or plaintiffs in a particular industry or area of law. It is often the case that parties shop around in order to

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[45] Ibid., at 178.

[46] According to Part 33.2 Civil Procedure Rules, "An expert must help the court to achieve the overriding objective by giving objective, unbiased opinion on matters within his expertise". Part 35.3 Civil Procedure Rules: "This duty overrides any obligation to the person from whom he has received instructions or by whom he is paid".

[47] *National Justice Compania Naviera SA v Prudential Assurance Co Ltd. The Ikarian Reefer* [1993] 2 Lloyd's Rep. 68 per Cresswell J, at 69; *Ancho v. Pentek Corp*. 157 F.3d 512, 519 (7th Cir. 1998), "[A]n expert... must testify to something more than what is 'obvious to the layperson' in order to be of any particular assistance to the jury".

[48] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at 348-250.

[49] Michael J. Saks, "Ethical standards of and concerning expert witnesses", in David Faigman, David Kaye, Michael Saks & Joseph Sanders (ed.), *Modern Scientific Evidence: The Law and Science of Expert Testimony*, (West, 2nd ed., 2002).

identify the experts that will be the most favourable to their cause. The prospect of a continuous flow of cases from clients with a high risk of repeated litigation (e.g. dominant firms) may well motivate experts to specialize in a specific kind of argument as a signal to potential clients in order to attract employment. The market for expertise will not in this case operate as a disciplining mechanism but rather as an inducement to intellectual interest and expert bias.

The existence of an epistemic asymmetry and the risk of moral hazard that follows from a situation of expert bias are not, however, the only reasons for the relation of distrust that judges and experts have progressively established between them. This evolution "resulted largely from the overwhelming success" of the scientific method during the Victorian era, which viewed science as "the yardstick for truth, or, at least of certainty and the impartial man of science as the best keeper of this truth".[50] "Once one believed these claims, then the zealous opposition among the scientific witnesses could only be interpreted as a sign of moral corruption".[51] The adversarial process and the partisan spirit displayed in litigation by some experts was, indeed, not compatible with the dominant conception of science as an instrument to discover objective reality or truth. The growing professionalization of science during that same period increased the sentiment of suspicion of judges towards expert testimony.[52] The professional independence of the experts became a key consideration: experts that earn a substantial part of their income from the provision of expertise in litigation (forensic scientists) are more likely to face scepticism from judges and juries than academic experts who do not appear regularly in court. In other words, the relation of distrust may be justified by the existence of a perception gap between the conception of science as a desinterested quest for objective truth, which was predominant in the 19th century, and the emergence of the practice of professionalized science as an essential input for litigation.

The growing scepticism over the role of expert witnesses and more generally expertise in litigation backclashed with the emergence of the expression "junk science" or pseudo-science. The term was used by Peter Huber in order to refer to "the science of things that aren't so"[53], science that is based on bad data and spurious inferences. According to the promoters of this concept, "junk science" has affected judicial decision-making in a number of areas and is responsible for a range of problems with considerable social and economic implications. The concept is an essential part of the rhetoric, developed by a number of interest groups, as a reaction to the litigation

[50] Tal Golan, 'The History of Scientific Expert testimony in the English Courtroom', above, at 21.
[51] Ibid.
[52] Ibid., at 21-22.
[53] Peter W. Huber, *Galileo's Revenge: Junk Science in the Courtroom* (Basic Books, 1991), at 24.

explosion that occurred in the United States during the 1980s in a number of areas, most notably civil liability.[54]. It was widely believed that reliance on questionable scientific expertise may have provoked this litigation explosion, thus increasing considerably the costs for business and affecting negatively the economy.

One could, however, question the empirical validity as well as the utility of the concept. Although Huber provides a number of examples where the courts apparently based their decisions on contestable scientific results, other authors contest its magnitude.[55] The definition of the boundaries of "junk science" as opposed to "good science" is also ambiguous. At which side of the boundary would idiosyncratic or minority views fall? What are the criteria that apply in setting the boundaries at the first place? A remarkable shortcoming of the concept of "junk science" is also that it totally ignores the broader social context in which scientific research is produced and is based on an idealistic conception of science. Recent theories of philosophy of science as well as empirical observations emphasize the role of the social context and socialisation as an instrument of consensus formation in scientific communities.[56] Scientists work in the context of paradigms or research programmes, which may operate under different assumptions or prior beliefs[57]. The concept of "junk science" does not take into account the plurality of scientific discourse and the possibility that opinions which are now at the fringe may become part of the mainstream among the scientists of the specific group. The selection of the community of scientists that will serve as a reference group is also critical. All natural scientists will not necessarily agree in the scientific status of a number of social science disciplines. Although the adversarial process may accentuate scientific disagreement, it is also clear that this is an important and necessary feature of the scientific process. The rhetoric of "junk science" does not finally encourage the development of continuous dialogue and cooperation between jurists and scientists but creates an atmosphere of distrust and "witch-hunting", "which is not conducive to mutual understanding and cooperation".[58]

The distrust between judges and experts, which is a consequence of moral hazard, may also create an adverse selection problem. Parties are

[54] As it is explained by Gary Edmond & David Mercer, "Trashing "Junk Science", (2008) *Stanford Technology L Rev* 3, 6, "(t)he term 'junk science' seems to have emerged in the late 1980s and early 1990s. It received its initial impetus and articulation in the polemical works of Peter Huber of the Manhatan Institute, a conservative think-tank supported by various industry and insurance groups".

[55] Gary Edmond, "After Objectivity: Expert Evidence and Procedural Reform", (2003) 25(2) *Sydney L Rev* 8 (noting "the extremely limited empirical evidence supporting the prevalence of charlatans and junk science").

[56] Gary Edmond & David Mercer, "Trashing "Junk Science", above, at 30.

[57] For an example of the sociological turn in the philosophy of science see, Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Univ. Chicago Press, 1970). See also my analysis at Section 1.2.

[58] Gary Edmond & David Mercer, "Trashing "Junk Science", above, at 31.

interested in bringing forward experts that would be favourable to their cause. This is a decisive element in the selection of the experts by the parties. Judges and juries are aware of this strategic objective and may eventually ignore the expert's testimony. The side effect may be that good quality scientists are dissuaded from participating as experts in legal proceedings in order to avoid tarnishing their public image by appearing in court.[59]

This issue is related to one of the strongest manifestations of conscious financial interest of the expert leading to expert bias: the risk that expert witnesses become "hired guns" for the parties that employ them. "Hired guns" are driven in their testimony by the successful outcome of the case (for their employers) rather than by the loyalty and independent judgment they owe to their science/field. Their motivations can be diverse: ensure a continuous working relation with one of the parties, in particular if this party is involved in a great number of litigations or any other personal benefit by defending views that are not the result of independent (in motives) study and research.

The problem of "hired guns" illustrates the paradox of the position of scientific expert witnesses in modern litigation. As it was previously explained, the dominant conceptualization of expert witnesses' role relies on a principal/agent model, with the judge being the principal. The expert has a duty to the court to act as the honest representative of her field. Her role as educator and translator assumes that she would place herself outside the actual controversy. Nonetheless, at the same time, the expert witness is hired by one of the parties and she participates to an adversarial procedure. One could therefore oppose to the dominant conception of the scientific expert witness as the representative of his field that of the expert as an advocate. The development of the field of forensic expertise and the professionalization of the role of expert witnesses, with the establishment of multinational corporations specialising in economic expertise, underlines the ongoing transformation of the role of economic expert witnesses. The duty of the expert to her employer will overstep the duty she owes to the court.

One could certainly advance that by being loyal to the court the expert serves at the same time the interests of her employer. This is probably true in certain circumstances but one cannot exclude the possibility that these interests will at some point diverge. One could also argue that the adversarial process, and in particular the experts of the opposing party, will serve in this case as a checks and balances mechanism to the risk of misrepresentation and partisan expertise. However, this issue also raises the question of the objectivity of the expert's testimony. The qualification of "hired gun"

[59] See for example the excellent account of the debates in the microscopists community in the 19th century in Tal Golan, *Laws of Men and Laws of Nature – The History of Scientific Expert testimony in England and America* (Harvard Univ. Press, 2004) 176 seq. See also, Juan D. Gutiérrez, "Expert Economic Testimony, Economic Evidence and Asymmetry of Information in Antitrust Cases", above, at 25.

underscores the received view that the main function of the economic expert is to act as a representative of her field. The following section will show that this conception of economic expertise is flawed, in particular as it is linked to an outdated and contested philosophy of science.

2.2. Science, objectivity and the specific nature of economic expertise

The "hired gun" problem has been particularly influential in framing the debate over the role of scientific expert witnesses in litigation: there have been many calls for a reform of the adversarial framework and a greater recourse to court appointed experts as a way to guarantee the objectivity of scientific expertise.[60] A number of procedural and substantive law reforms were introduced in order to limit the risk of partisanship, including the development of hybrid mid-adversarial, mid-consultative expert witness procedures, admissibility standards for expertise, greater involvement of "neutral" or impartial (judge-appointed) experts in the process. These reforms are all based on the assumption that expertise can be "objective". After all, in theory, experts are invited to comment on "facts". In the received view, expertise cannot be normative or involve value-judgments[61]. It is however less than clear what is meant by "objective". Does it mean "true"? If that's the case, is "objective" an ontological or an epistemological statement? What are the properties of "objective expertise"? Is expert bias the only impediment to objectivity? Or is the risk of non-"objective" expertise wider than the perceived problem of expert bias?

In my view, all these questions raise the issue of the possibility of objective scientific/expert knowledge. According to the received view of expertise, objectivity is a value and a quality in itself. Objective expertise is the aim of the legal system, the optimum that decision makers should aim to. If one takes a functional approach, it is possible to argue that the claim of objectivity aims to ensure the legitimacy of the judicial authority, but also more generally of the scientific process. As is rightly explained by Gary Edmond,

> "(t)ypically, objectivity is equated with qualities such as independence, impartiality and neutrality. Good science, so this story goes, derives its authority from being evidence-based, efficacious, communal, critical and driven by a powerful method. These characteristics, which are often seen as dimensions of scientific (or mechanical) objectivity, purportedly function to liberate science from a range of contaminants,

[60] See, Louis Blom-Cooper (ed.), *Experts in the Civil Courts* (OUP, 2006), para. 1.11-1.15.

[61] As it is explained by Dorothy Nelkin, "The Political Impact of Technical Expertise", 5 (1975) *Social Studies of Science* 35-54, at 36, "(t)he authority of expertise rests on assumptions about scientific rationality; interpretations and predictions made by scientists are judged to be rational because they are based on 'objective' data gathered through rational procedures, and evaluated by the scientific community through a rigorous control process. Science, therefore, is widely regarded as a means by which to de-politicize public issues. The increasing use of expertise is often associated with the 'end of ideology'; politics, it is claimed, will become less important as scientists are able to define constraints and provide rational policy choices".

such as subjectivity, personal interests, partisanship, fraud, speculation, bias, gratuitous assumptions and so forth".[62]

According to this view, "the technical correctness of judicial decisions complements their procedural legitimacy"[63].

The link between objectivity and authority is apparent. Objectivity guarantees authority as it provides greater legitimacy to judicial decision-making. Objectivity ensures that the court's decisions will be perceived as epistemologically true [some sort of justified (true) belief] and persuasive. The accent is however put on the process of decision making, rather than on the outcome. What matters for a legal system's legitimacy is that those subject to the judicial decisions believe that their arguments were appropriately heard and assessed by the court, which adequately explained the ruling in such a way that the losing party can recognize it as a valid, yet unfavorable, exercise of judicial authority. Put differently,

> "what centrally concerns lawyers, scholars, and judges with regard to the cogency of scientific expert testimony is not whether the expert has – or can transmit to the nonexpert – knowledge in the strong philosophical sense, but rather whether the expert has and is in a position to be able to transmit to the nonexpert a belief that is supported by good reasons…what concerns these jurists is not the epistemic concept of knowledge, but rather that of justified belief"[64].

The search for "truth" is perceived by some as an important aim of the scientific process[65]. The "quest for truth" has nevertheless a different purpose in science than it has in the courtroom[66].

First, as it is explained by David Kaye,

> "a functional inquiry, rather than a review of the philosophical literature, the encyclopedia, or the dictionary is required. The rules of evidence, whether derived from the common law or a code, are designed to perform certain functions, and the raison d'être of a special hurdle for scientific evidence is that this particular evidence poses special problems. When these problems are not present, heightened scrutiny is not justified and may well be counterproductive, unnecessarily

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[62] Gary Edmond, "After Objectivity: Expert Evidence and Procedural Reform", (2003) 25(2) *Sydney L Rev* 8.

[63] Eric Barbier de la Serre & Anne-Lise Sibony, "Expert Evidence Before the EC Courts", (2008) *Common Market L Rev* 941, 969.

[64] Scott Brewer, at 1600. Emphasis added.

[65] This is the classic positivist argument that may be criticized. See, Rochelle Cooper Dreyfuss, 'Is Science a Special case? The Admissibility of Scientific Evidence After Daubert v. Merrell Dow', (1995) 73 *Texas L Rev* 1779, 1789-1797 and my analysis *infra.*.

[66] As the US Supreme Court noted in *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 597 (1993), "there are important differences between the quest for truth in the courtroom and the quest for truth in the laboratory".

consuming resources and possibly resulting in unwarranted exclusion of probative evidence"[67].

Second, scientific truth is not directly linked to the exercise of authority. It is thought that the objective of the scientific method is not to legitimate the power of scientists but to increase the stock of "objective knowledge", in other words to discover more about the world.[68] In contrast, the quest for "truth" in the courtroom is to arrive to an ultimate, in the sense of persuasive, explanation, in terms of legitimate exercise of authority[69]. Ultimate explanations exist in the sense that they are defined by the courts.[70] This is not the case in the process of scientific discovery, as "every explanation may be further explained", in the sense that a known state of affairs may always be explained by an unknown state of affairs[71]. In other words, "objectivity" and "truth" may be the aim of both the scientific and the legal process but the nature of "objectivity" or "truth" that they aim is of a different kind[72]. Taking a functional approach, this study accepts that "objectivity" and/or "truth" in legal discourse is partly context-dependent[73].

The quest for "objectivity" is particularly complex in disciplines such as economics. There are some interrelated elements that complicate the task of a judicial decision-maker, eager to distinguish "true" from "untrue" statements.

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[67] David H. Kaye, "The Dynamics of Daubert: Methodology, Conclusions and Fit in Statistical and Econometric studies", (2001) 87 Vanderbilt L Rev 1933, 1966 (2001).

[68] In the expression of Karl Popper, *Objective Knowledge* (rev ed. Oxford, 1979).

[69] As it is also recognized by the US Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals*, at 597, "(s)cientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly… We recognize that in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes".

[70] Richard B. Katskee, "Science, Intersubjective Validity, and Judicial Legitimacy", (2008) *Brooklyn L Rev* 857, 861.

[71] Nicholas Rescher, *The Limits of Science* (Univ of Pittsburgh Press, 1999), at 136 citing Karl Popper.

[72] Sheila Jasanoff, *Science at the Bar* (Harvard Univ. Press, 1997) perceptively remarks that "'science' emerges as unswervingly committed to the truth, while the law is shown as intent on winning adversarial games at any cost".

[73] This is one of the main lessons, which can be drawn by "new evidence scholarship". By introducing probability theory, statistics and mathematical proof, new evidence scholarship "shifted the focus of attention… towards the process of proof" and brought, therefore, to attention the procedural context of the process, thus abandoning the simplistic rationalist view: John D. Jackson, 'Analysing the New Evidence Scholarship: Towards a New Conception of the law of Evidence', (1996) *Oxford Journal of Legal Studies* 309, 328. The rationalist tradition of evidence was based on a number of epistemological assumptions, such as the correspondence theory of truth, that is that "events and states of affairs occur and have an existence independently of human observation" and that "true statements are statements which correspond with facts; i.e. real events and states of affairs in the external world": William Twining, *Rethinking Evidence: Exploratory Essays* (CUP, 3d ed., 2006). This approach heavily relies on a positivist view of science, which finished by transforming evidence law to a "narrow-minded" quest for accurate verdicts. Other authors have advanced a "post-rationalist" approach that draws attention to practical reason and conversation as the means to provide persuasive solutions to disputes: Michael L. Seigel, 'A Pragmatic Critique of Modern Evidence Scholarship', (1994) 88 *Northwestern University Law Review* 995.

It is usually argued that much of economic theory is not based on empirical research but on "a fairly abstract, sometimes unverifiable, and largely mathematically derived conclusions about human behavior".[74] This criticism of economic analysis carries a particular conception of what is the right scientific method. According to the received view, a method is scientific if it relies on "facts" empirically observed. This standard view of science, closely associated to the work of Sir Francis Bacon, assumes that scientific investigations begin in the observation of facts, proceed by inductive inference to the formulation of universal laws about these facts and finally arrive by further induction at statements of still wider generality known as theories[75]. Both laws and theories are ultimately checked for their truth content by comparing their empirical consequences with all the observed facts. This inductive method of proof assumes that unbiased individuals will come to the same conclusions given the same data, the principle of "universal cognitive competence"[76].

The "meta-narrative" of this standard view of science has, however, been challenged and provisional, contingent, relative "mini-narratives" were instead offered as an alternative[77]. A profound transformation of the way we conceive the scientific inquiry followed: this has important implications on the relations between law and science, in general, and the role of economic expertise in litigation, in particular.

2.2.1. The evolution of acceptable methods of observation as a limit to the demarcation criterion of empiricism

First, there has been a considerable evolution over the acceptable methods of observation in economic analysis. Introspection was an acceptable method of observation of facts during the 19th century, period where economics took shape as a distinct area of research. Following the tradition of Greek philosophers, for whom introspection was the unique method employed, Jeremy Bentham's and John Stuart Mill's utilitarianism was based on the idea that motives are strictly discoverable by introspection.[78] Particular emphasis was given to internal, subjective, feelings of the individuals in question. This introspectively gained self-knowledge could be

[74] Herbert Hovenkamp, "Economic Experts in Antitrust cases", Chapter 14 in Faigman, Kaye, Saks & Sanders, at 723.
[75] John Pheby, *Methodology and Economics*, (Macmillan press, 1988), at 3.
[76] Jonathan Cohen, 'Freedom of Proof', in William Twining (ed.), *Facts in Law* (Steiner, Wiesbaden, 1983), 1, at 10-11.
[77] See, François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Univ. of Minnesota Press, 1984).
[78] Wade D. Hands, "Introspection, Revealed Preference and Neoclassical Economics: A Critical Response to Don Ross on the Robbins-Samuelson Argument Pattern", (2008) *Journal of the History of Economic Thought*, (forth.). Available at SSRN: http://ssrn.com/abstract=1129005

used in order to understand individual and collective action observable in the world. This "understanding from within by means of intuition and empathy" was opposed to "knowledge from without by means of observation and calculation".[79] The acceptance of introspection as a valid method of scientific investigation was connected to the doctrine of *Verstehen.* The doctrine claimed that "to understand human beings and action, we much put ourselves in their position", "to understand others in analogy with ourselves": the doctrine was part of the theory that social and natural sciences differ fundamentally and that they may employ different scientific methodologies.[80]

For example, utilitarianism and marginal utility-based choice theory were employing a hedonistic notion of utility, "as the levels of utility were associated with the amount of pleasurable (or painful) psychic feeling" the consumer received from the bundle of goods in question, which was also cardinal "in the sense that differences in the variations of various bundles of goods took on numerical values".[81] Interpersonal comparisons of utility were made possible by the aggregation of the sum of the pleasurable feelings of all agents. The use of introspection meant that economics was thought of as a cognitive science. The emergence of positivism in the beginning of the 20th century largely questioned the recourse to introspection as a valid (objective) method of observation. Positivism brought a greater degree of empiricism in economics: "feelings and the associated mental states were not empirically observable and thus a properly scientific economics would need to find alternative, more adequate, foundations… inner observations, no longer counted as scientific observations".[82] One of the aims of the ordinalist revolution was indeed to clear economics from any reference to psychological assumptions: the concept of cardinal utility was abandoned and replaced by the concept of a scale of preferences.[83] This was linked to a shift in the acceptable methods of observation. As Lionel Robbins observed,

> "valuation is a subjective process. We cannot *observe* valuation. It is therefore out of place in a scientific explanation. Our theoretical constructions must assume observable data".[84]

The rejection of cardinal utility led also to the extrusion from economic analysis of behaviourist psychology, a "queer cult", according to Robbins.[85] The question that economics should attempt to answer was, according to Robbins, "choice under scarcity", scarcity being "the scarcity of given means

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[79] Mark Blaug, *The Methodology of Economics* (2nd ed. Cambridge, 1992), 43.
[80] Jane Roland Martin, "Another Look at the Doctrine of Verstehen", in Michael Martin & Lee C. McIntyre (ed.) *Readings in the Philosophy of Social Science* (MIT, 1994).
[81] Wade D. Hands, "Economics, Psychology, and the History of Consumer Choice Theory", available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=988125, at 4.
[82] Ibid, at 5.
[83] Patrick Baert, *Philosophy of the Social Sciences* (Polity, 2005), 150.
[84] Lionel Robbins, *An Essay on the Nature and Significance of Economic Science* (2nd ed., London, 1945, first published 1932), at 87
[85] Ibid.

for the attainment of given ends".[86] The agent's preferences are a "given" which economists have to identify in order to analyze consumer choice. The paradox is that this does not leave any place to introspection, albeit at the most abstract level: "the main postulates of the theory of value is the fact that individuals can arrange their preferences in an order, and in fact do so", this is derived by everyday inner experience (introspection).[87] This introspective foundation of the theory of choice leads Robbins and the ordinalists to reject interpersonal comparisons of utility. The justification is rather simple:

> "(i)ntrospection does not enable A to measure what is going on in B's mind, nor B to measure what is going on in A's. There is no way of comparing the satisfactions of different people".[88]

The concept of revealed preferences further attempted to ground the theory of consumer behavior on observable concepts and to suppress any reference to psychology and introspection.[89].

One could, however, note a new trend, in particular since the seminal work of Daniel Kahneman and Amos Tversky to attach greater attention to psychology in contemporary economic theory.[90] The psychological trend, that is witnessed in many recent economic movements, such as behavioral law and economics, experimental economics, neuro-economics, transforms economics to a sort of cognitive science, where economic behavior is reconceived on the basis of "psychological facts" discovered with the method of experimental introspection. Introspection becomes again a valid (scientific) method of observation for modern economics[91]. One could also add older schools of economic analysis that questioned the exclusion of subjective mental states from economic theory. The Austrian school of economics has consistently supported introspection and methodological individualism as an acceptable scientific method and considered verification or empiricism as an improper foundation for economics.[92] In conclusion, it is difficult to define scientific statements from non-scientific statements by the simple fact that they rely on observations, as the term may take different meanings and may refer to a number of methods.

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[86] Ibid, at 46. Emphasis added.
[87] Ibid, at 78-79
[88] Ibid, at 140.
[89] Paul Samuelson, 'A Note on the Pure Theory of Consumer Behavior', (1938) 5 *Economica* 61; Paul Samuelson, 'Consumption Theory in Terms of Revealed Preference', (1948) 15 *Economica* 243; Paul Samuelson, 'The Problem of Integrability in Utility Theory', (1950) 17 *Economica* 355. For a criticism, see Stanley Wong, *The Foundations of Paul Samuelson's Revealed Preference Theory: a study by the method of rational reconstruction* (Routledge, 1978).
[90] For an overview see, Daniel Kahneman, "A Psychological Perspective on Economics", (2003) 93 *American Economic Review* 162.
[91] See, George A. Akerlof, 'The Missing Motivation in Macroeconomics', (2007) 97(1) *American Economic Review* 5. One could observe the same trend in microeconomics.
[92] See, the strong position of Ludwig von Mises, *Human Action – A Treatise in Economics* (4th revised ed. 1963), at 862-863 against any form of verification and for apriorism.

2.2.2. The possibility of deductive science as a criticism to the demarcation criterion of induction

Second, the inductive model that seems to be the foundation of the scientific method has been challenged by a more deductivist approach. Carl Hempel and Peter Oppenheim argued that all truly scientific explanations have a common logical structure: they involve at least one universal law plus a statement of relevant initial or boundary conditions that together constitute the *explanans* or premises from which the explanation, a statement about some event whose explanation we are seeking, is deduced with the aid of the rules of deductive logic.[93] According to them, the logical validity of deductive reasoning does not ultimately depend on the material truth of either the major premise (if A is true, then B is true) or the minor premise (A is true). The operation called explanation involves the same rules of logical inference as the operation called prediction, the only difference being that explanations come after events and predictions before events. As it is explained by Mark Blaug, "explanation is simply prediction written backwards".[94] This perfect symmetry between explanation and prediction (the symmetry thesis) is the core of the hypothetico-deductive system. The universal laws that are involved in explanations are not derived by inductive generalization from individual instances: "they are merely hypothesis, inspired conjectures that may be tested by using them to make predictions about particular events but which are not themselves reducible to observations about events"[95].

The reliance on a deductivist methodology is a crucial component of neoclassical price theory, the economic mainstream today. Neoclassical economists also adhere to the theory of operationalism (linked with the logical positivist school in Vienna at the beginning of the century). Logical positivists rejected any form of *a priori* reasoning as metaphysical rubbish[96] Scientific statements may be of two sorts: analytical propositions that relate to facts and empirical propositions. Analytic propositions are tautologies as they lack factual content: they are not susceptible to proof or invalidation through factual inquiry. On the contrary, empirical propositions/statements can be empirically verified. All other statements are "ethical utterances", which can arouse feelings but fall outside the domain of scientific investigation. They do not constitute logical (analytic) propositions or empirical propositions (given that their true validity is not capable of empirical investigation).

This approach had considerable implications on welfare economics. Based on positivistic methodology, neoclassical economists dismissed

[93] Carl G. Hempel & Paul Oppenheim, "Studies in the Logic of Explanation", (1948) 15 *Philosophy of Science* 135.
[94] Mark Blaug, *The Methodology of Economics* (Cambridge, 1992), at 5
[95] Ibid.
[96] Alfred Jules Ayer, *Language, Truth and Logic* (1952).

cardinal utility and hedonism as unscientific.[97] They regarded the sort of utilitarian analysis associated with Jeremy Bentham and John Stuart Mill as an exercise in moral philosophy, not scientific investigation[98]. Since individual "utility" is non-observable, it is impossible (as a scientific matter) to make interpersonal comparisons between individual's "utility" levels[99]. For example, Robbins's work defined distributional issues as not falling within the category of the analyzable.[100] We cannot measure whether a sum taken from Person B will benefit Person A more than its confiscation will displease Person B. There is no basis therefore from which to measure overall social welfare post redistribution. Any attempt to make such a measurement falls outside the scope of any positive science and is essentially normative. Such analysis is outside the ambit of economic science.

The role of assumptions is, however, particularly important for economic reasoning. This led some logical positivists to criticize neoclassical economic analysis, as being tautological. Hutchison considered that following the positivistic analysis, most economic propositions are tautologies and prescribed that scientific economic inquiries should be confined to empirically testable statements.[101] All assumptions through data should be verified: empirical testability is indispensable.

Neoclassical economists responded to this criticism by two ways. According to Frank Knight, it is not possible to verify any proposition about economic behavior by any empirical procedure because economic behavior is goal-oriented and therefore depends for its meaning on our intuitive knowledge of its purposive character.[102] Milton Friedman went even further: the only relevant test of the validity of a hypothesis is comparison of it predictions with experience but not necessarily of its assumptions with reality.[103] According to Friedman,

> "a theory cannot be tested by comparing its "assumptions" directly with "reality." Indeed, there is no meaningful way in which this can be done. Complete "realism" is clearly unattainable, and the question whether a theory is realistic "enough" can be settled only by seeing whether it

[97] Mark Blaug, 'The Fundamental Theorems of Modern Welfare Economics, Historically Contemplated', (2007) 39(2) *History of Political Economy* 185, 187 (speculating over Pareto's positivist philosophical otulook).
[98] James Hackney, *Under cover of science: American legal-economic theory and the quest for objectivity* (Duke University Press, 2007).
[99] This relates to Lionel Robbins view of interpersonnal comparisons of utility as a normative rather than as a descriptive question: Mark Fleurbaey & Peter J. Hammond, 'Interpersonal Comparable Utility', in Salvador Barberá, Peter J. Hammond, Christian Seidl (ed.), *Handbook of Utility Theory* (Springer, 2004), 1179, at 1218.
[100] Lionel Robbins, *Essay on the Nature and Significance of Economic Science*, above, at 134-142.
[101] Terence W. Hutchison, *The Significance and Basic Postulates of Economic Theory* (Macmillan, 1938).
[102] Frank Knight, "What is truth' in economics?", (1940) 48 *Journal of Political Economy* 1.
[103] Milton Friedman, *Essays in Positive Economics* (Univ. Chicago Press, 1953), 3-43.

> yields predictions that are good enough for the purpose in hand or that are better than predictions from alternative theories. Yet the belief that a theory can be tested by the realism of its assumptions independently of the accuracy of its predictions is widespread and the source of much of the perennial criticism of economic theory as unrealistic. Such criticism is largely irrelevant, and, in consequence, most attempts to reform economic theory that it has stimulated have been unsuccessful".[104]

Friedman defends a methodological position which is close to instrumentalism: the realism of a theory's assumptions does not matter, what counts is the theory's predictive adequacy and simplicity[105]. Put differently, Friedman's concern is not if the theory is testable but if the theory works given a specific problem. The predictive adequacy of the theory is measured by how accurate the predictions of this theory were in the past compared to other theories. The continued use and acceptance of the hypothesis and assumptions of neoclassical economic theory over a long period, and the failure of any coherent, self-consistent alternative to be developed and widely accepted, may also be a strong indirect testimony to the worth of the theory.

This echoes the view defended by Karl Popper who established a demarcation criterion between scientific and non-scientific statements.[106] This was based on the intuition that there is a fundamental asymmetry between induction and deduction, or between verification and falsification, between asserting something and disproving it.[107] As Mark Blaug explains,

> "no universal statement can be logically derived from, or conclusively established by, singular statements however many, singular statements. However, any universal statement can be logically contradicted or refuted with the aid of deductive logic by only one singular statement".[108]

Popper exploits this asymmetry in formulating his demarcation criterion: science is that body of propositions about the real world that can, at least in principle, be falsified by empirical observations.[109] Science is characterized by its method of formulating and testing propositions, as it is based on logic of disproof: "testability is the same as refutability, and can therefore likewise be taken as a criterion of demarcation".[110]

However, the falsification of a theory is not an easy task, for the simple reason that it is difficult to test the entire *explanans* (original hypothesis plus auxiliary statements and background knowledge). According to the Duhem-

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[104] Ibid, at 40.
[105] John Pheby, *Methodology and Economics*, (Macmillan Press, 1988), at 84-88.
[106] Karl Popper, *The Logic of Scientific Discovery* (Routledge, 2002, [1959]).
[107] Ibid, at 4-6.
[108] Mark Blaug, *The Methodology of Economics*, at 13.
[109] Karl Popper, *The Logic of Scientific Discovery*, at 17-26.
[110] Karl Popper, *Conjectures and Refutations*, (Routledge, 2002, [1963]), at 345.

Quine thesis the empirical valuation of a theory is a composite test of several interconnected hypothesis: although evidence may show falsity within the theoretical framework, anomalous evidence will not necessarily indicate the individual element inside the theoretical framework responsible for a false prediction.[111] Theoretical statements cannot therefore be singly disconfirmed: empirical data and their interpretation require instruments that themselves rely upon other theories as well (the idea of non-separability between theory and evidence).[112] It is because no conclusive disproof of a theory can ever be produced that there is a need for methodological limits on the stratagems that may be adopted by scientists to safeguard their theories against refutation: these are "ad hoc theory adjustments designed to save theories from refutations".[113]. These methodological limits –that Popper calls immunizing stratagems- are essential in his theory.[114] A scientific theory is really testable when a scientist specifies in advance the observable conditions that would falsify the theory. If a theory succeeds repeatedly in resisting falsification and, if in addition it successfully predicts results that do not follow from competing theoretical explanations, it is judged to be highly confirmed or well corroborated.[115]

Falsificationism has been influential, in different degrees, in the methodology of economics[116], and as I am going to develop in the last part of this study, has directly inspired the standards on the admissibility of expert (scientific) evidence in courts in US law. If one applies, however, Popper's methodology in economics, it is difficult to understand why the continuous refutation of the theory of rational action by behavioral or experimental economics has not led to a profound questioning of modern neoclassical price theory.[117] If one takes Popper's methodology seriously, the rationality postulate could be conceived of as an immunizing stratagem. There were two ways to get out of this problem.

First, the strict character of Popper's test led economic methodologists to rely on the theory of Popper's successor at LSE, Imre Lakatos, in order to establish the scientific nature of economics.[118] According to Lakatos, Popper's theory of demarcation relies on a strong corroboration test, based on the

[111] Rodney Cross, "The Duhem-Quine thesis", in John Brian Davis, Wade Hands & Uskali Mäki, *The Handbook of Economic Methodology* (Edward Elgar, 1998), 107.
[112] Pierre Duhem, *The Aim and Structure of Physical Theory* (1st ed. 1954, Princeton Univ. Press 1991).
[113] Bruce Caldwell, "Clarifying Popper", (1991) 29(1) *Journal of Economic Literature* 1, 27.
[114] Mark Blaug, *The Methodology of Economics*, above, at 19.
[115] Karl Popper, *The Logic of Scientific Discovery*, above, at Chapter 10.
[116] E.g. Mark Blaug, *The Methodology of Economics*, at 241-248; See, more generally, Johannes Klant, *The Rules of the Game: The Logical Structure of Economic Theories* (Cambridge Univ. Press, 1984).
[117] Bruce Caldwell, "Clarifying Popper", above, at 6-7.
[118] For further analysis, see Mark Blaug, "Kuhn versus Lakatos or Paradigms versus research Programmes in the History of Economics", in Spiro Latsis (ed.) *Methods and Appraisal in Economics* (CUP, 1976), 149, at 155.

assumption that there are such things as critical tests, which either falsify a theory, or give it a strong measure of corroboration. For Lakatos, falsification of a high-level scientific theory is never brought about by an isolated set of observations.[119] Scientific theories are, instead, composed by different research programs, which are series of theories evolving over time. These theories have fundamental assumptions (called hard cores) and statements on the empirical implications of the program (called protective belt). Hard cores are irrefutable, in the sense that they are not challenged by those working within the specific research program. Lakatos thus de-emphasizes the importance of refutation. In addition, by referring to research programs, he introduced in the analysis the context of the specific scientific discovery or in other words scientific practice, which is, as I will develop further, a significant shift in the way we perceive the process of scientific discovery.

Second, economic theorists employed a less known feature of Popper's theory: "situational analysis" to justify their reliance on the rationality principle. Popper thought that the application of situational analysis to social sciences constitutes the most important difference from the methods of natural sciences.[120]. This principle may be false, but the principle "does not play the role of an empirical explanatory theory, of a testable hypothesis".[121] It is thus "a sound methodological policy to decide not to make the rationality principle accountable but the rest of the theory, that is, the model", accountable.[122] Popper justifies this approach as following:

> "The main argument in favor of this policy is that our model is far more interesting and informative, and far better testable, than the principle of the adequacy of our actions. We do not learn much in learning that this is not strictly true: we know this already. Moreover, in spite of being false, it is a rule sufficiently near the truth… Another point is this: the attempt to replace the rationality principle by another one seems to lead to complete arbitrariness in our model building. And we must not forget that we can test a theory only as a whole, and that the test consists in finding the better of two competing theories which may have much in common; and most of them have the rationality principle in common".[123]

The rationality principle is content-empty as it "is merely the assumption that a person will act adequately or sensibly, given his or her goals and the

[119] Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes", in Imre Lakatos & Alan Musgrave (ed.), *Criticism and the growth of knowledge* (CUP, 1970), at 91.
[120] Bruce Caldwell, "Clarifying Popper", above, at 14. See also, William A. Gorton, *Karl Popper and the Social Sciences*, (State University of New York Press, 2006), chapter 1-2.
[121] Karl Popper, "The Rationality Principle" in David Miller (ed.), *Popper Selections* (Princeton Univ. Press, 1985), 357, 360.
[122] Ibid., at 362.
[123] Ibid, at 362.

situation"[124]. In other words, "the rationality principle produces its general explanatory power by turning persons in the situational model into abstractions; they behave how 'anybody' would behave in the situation"[125], thus making irrelevant any particular psychological underpinnings of the human action (in the sense of laws of human psychology) or actor's beliefs, values and the effect of social institutions.

As Latsis observed, neoclassical economic theory, from the perfect competition to the monopolistic competition paradigm, is entirely based on the principle of situational determinism and its correlative, the principle of rationality:

> "1. The approach is individualistic: phenomena of market behaviour are explained in terms of individual human agents acting in a social situation.
>
> 2. The rational choices of the individual agents are so constrained by their situation that only minimal psychological assumptions are required to explain their actions.
>
> 3. Behaviour is animated by the principle that rational agents act appropriately to the 'logic of the situation".[126]

The rationality principle does not integrate psychological or physiological criteria. Situational determinism invokes only the constraining nature of the decision making agent's situation. The application of this approach led to the development of the hard core of the neoclassical theory of the firm, which further assumed that the end followed by all rational actors is utility maximization. This is not necessarily compatible with Popper's theory of situational analysis as the latter envisions the possibility of different goals, according to the situation, for example fairness could be such an aim. However, in neoclassical economics, "business behavior has been characterized by the fundamental regulative assumption that decision making agents or agencies optimize under severe objective constraints".[127]

The strong version of the principle of rationality has been challenged by behavioral law and economics, which advanced its own version of the principle, the idea of bounded rationality or "quasi-rationality".[128] This theory has important implications on the theory of the consumer that could serve as a foundation for competition law intervention[129]. Furthermore, the predictive

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[124] William A. Gorton, *Karl Popper and the Social Sciences*, above, at 8.
[125] Ibid., at 9.
[126] Spiro Latsis, "Situational Determinism in Economics", (1972) 23 *The British Journal for the Philosophy of Science* 207, 209.
[127] Ibid, at 222. This is not limited to economics: one could also argue that the rational choice principle "plays the role of a central organizing metaphor for a variety of social sciences": Bruce Caldwell, "Clarifying Popper", above, at 15.
[128] Daniel Kahneman & Amos Trevsky, "Prospect Theory: An Analysis of Decision Under Risk", (1979) 47(2) *Econometrica* 263.
[129] See, the seminal work of Richard H. Thaler, 'Towards a Positive Theory of Consumer Choice", (1980) *Journal of Economic Behavior & Organization* 39; Thomas Russel & Richard

limitations of the rationality principle in certain circumstances on the behavior of agents have also been explained by the development of the theory of social norms and institutional economics.[130]

In conclusion, both instrumentalism and falsificationism reject induction as a proper method for (economic) science. Popper repudiates induction by substituting *falsifiability* in its place. It is easy, he argues, to obtain evidence in favor of virtually any theory. He consequently holds that such 'corroboration' should count scientifically only if it is the positive result of a genuinely 'risky' prediction, which might conceivably have been false. His position is, in some respects, supportive of the neoclassical school: there are no pure or theory-free observations, which challenges the traditional view that science can be distinguished from non-science on the basis of its inductive methodology.[131] In other words, Popper's (and Friedman's), view of the scientific process in methodology does not attach a great importance to induction as a demarcation criterion between science and non-science.

2.2.3. The elusive demarcation criterion of facts-based reasoning versus theory/abstract reasoning

Third, positivism perceives facts as the manifestation of the external world: "facts in the concrete" should be distinguished from abstract reasoning, the latter involving opinion, thus human volition.[132] Describing facts involves a selection and interpretation process. After all, we do not work on facts but on observations of facts (data) and inferences from these observations of facts. The values of the observant or the interpreter will inevitably introduce a certain degree of subjective judgment and abstract reasoning.

Statistics appeared in the 17th-18th century (at least in the Western World), which corresponds to the period that marked the rise of economics as an autonomous discipline, a result of the growing importance of quantification

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H. Thaler, "The Relevance of Quasi-rationality in Competitive Markets", (1985) 75 *American Economic Rev*iew1071.

[130] Jon Elster, "Social Norms and Economic Theory", (1989) 3(4) *Journal of Economic Perspectives* 99.

[131] See, in particular the criticisms by the old-institutional school, which defended induction as the adequate method for economics: Yuval P. Yonay, *The Struggle over the Soul of Economics*, (Princeton Univ. Press, 1998), at 80-81. The debate was not, however, only a methodological dispute but also extended to the values and objectives of economics (and consequently the authority and role of economists in society). James R. Hackney, *Under Cover of Science*, above, at 96, observes that "…neoclassical economists argued that economic analysis must, to be a science, exclude any discussion of values. Institutionalists countered that any economic analysis worth doing had to be geared toward the betterment of society and thence must explicitly consider its values. Moreover, the neoclassical criterion of efficiency (or maximization of wealth) was itself a value choice. By contrast, institutionalists were concerned with the maldistribution of wealth and the continuation of poverty and economic insecurity".

[132] Neil de Marchi, "Putting evidence in its place: John Mill's early struggles with 'facts in the concrete", in Uskali Mäki (ed.), *Fact and Fiction in Economics – Models, realism and Social Construction* (CUP, 2002), at 304.

and measuring in social sciences during that period[133]. The problem of statistical analysis and inference, a technique thought to analyze pure facts, may illustrate the impossibility of separating completely values from facts. One should bear in mind that statistics constitute the foundation of many modern technical tools used in economics, such as econometrics, so this criticism applies to econometrics.

As Mark Blaug explains,

> "…statistical inference involves the use of sample observations to infer something about the unknown characteristics of an entire population, and in making that inference we can either be too stringent or too lax"[134].

In order to infer the existence of a relation between two variables, statisticians examine the validity of the research hypothesis (that there is a relation between the two variables) by disproving the null hypothesis (that there is no relationship between the two variables). The process of statistical analysis always runs the risk of, what is called, Type I errors (false positives), the decision to reject a correct null hypothesis, but also simultaneously the risk of Type II errors (false negatives), the error of not rejecting a false null hypothesis. Consequently, the evidence cannot be evaluated unless one decides whether the risk of Type I error is smaller or greater than the risk of Type II error. This operation involves a value judgment over the weight to be given to each risk of error. This implies that the decision-maker needs also to evaluate the costs that a Type I or Type II error will produce. As Daniel Rubinfeld rightly observes, "courts … ought to acknowledge explicitly that setting standards for statistical proof involves just such an assessment of comparative social costs"[135].

More generally, there are various illustrations of the intervention of values in statistical analysis. I will focus here on the problems that are inherent in the particular method and will not examine the issue of the manipulation of data, which is certainly important but can be dealt with greater transparency over the methods, reasoning/assumptions and presentation of statistical analyses[136]. The selection of a representative sample which should be similar to the target population and which should take into account all the important variables constitutes the first step of a statistical analysis. The assumptions of the statistician play an important role in the sample selection. For example, the first step in sampling is to decide the unit of analysis and aggregation of the sample: this choice "may have consequences for the

[133] McCloskey, *The Secret Sins of Economics* (Prickly Paradigm Press, 2002).
[134] Mark Blaug, *The Methodology of Economics*, at
[135] Daniel Rubinfeld, "Econometrics in the Courtroom", (1985) *Columbia L Rev* 1048, 1052.
[136] See, David H. Kaye & David A. Freedman, "Reference Guide on Statistics", in *Reference Manual on Scientific Evidence*, (2nd ed., Federal Judicial Center, 2000), at 83, 88-90; Pablo Florian & Mike Walker, "The Correct Approach to the Use of Empirical Analysis in Competition Policy", (2005) *European Comp L Rev* 320.

statistical analysis that can be conducted and the conclusions that are drawn", in particular if the specific "phenomenon of interest can be studied by observing things at different levels of aggregation, different conclusions result from one using one unit of analysis rather than another"[137]. One cannot exclude the possibility of a selection bias in drawing a sample in a way that "makes it unrepresentative of the population to which inferences are to be made"[138]. The possibility of a selection bias highlights the need for abstract reasoning, either to determine the population to which inferences are to be made, or to select a "representative" sample of this population[139].

The problem of statistical significance constitutes a second example of the impossibility of value-free facts. The objective of statistical analysis is usually to establish the effect of one variable of interest to an outcome with the aim to identify how likely the result comes from the specific cause. In economics, for example, a possible question would be to establish the effect of prices on consumption. As indicated previously, statistical analysis is done on the basis of a representative sample to the population that is of interest. For the statistical results to carry weight, the researchers should estimate the likelihood that the results from the sample are representative of the results if the entire population was studied. The size of the sample may indicate a higher or lower (if the sample is small) likelihood that the observed effects in the sample are not the result of chance but that of systematic factors common to the studied population. Statistical significance answers to the question of how confident should the statistician be that the result is not the result of chance. In the extreme, one can avoid type I errors (the errors of rejecting the null hypothesis that there is no association between the variables) by accepting all null hypotheses.

With time, developed the convention that a 95 percent likelihood that the association between variables is not the result of chance is sufficient for the statistician to be confident on her inference (statistical significance)[140]. The lack of statistical significance means that the null hypothesis cannot be rejected. In other words, false positives (Type I errors) can only be less than 5%, regardless of the fact that as a result of this choice there could be more Type II errors (false negatives). This does not necessarily prove that there is no association between the variables[141]. The level of statistical significance is

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[137] David Faigman, David Kaye, Michael Saks, & Joseph Sanders, *Modern Scientific Evidence: The Law and Science of Expert Testimony, Vol. 1* (2nd ed., 2002, West Publishing) at 59.

[138] Ibid, at 61.

[139] See, Stephen E. Fienberg et al., "Understanding and Evaluating Statistical Evidence in Litigation", (1995) 36 Jurimetrics J 1.

[140] "This 95 percent confidence level is the criterion that study data must meet before rejecting the possibility that the results are due to chance": Erica Beecher-Monas, *Evaluating Scientific Evidence*, (CUP, 2007), at 65 footnote 30.

[141] As it is noted by Erica Beecher-Monas, *Evaluating Scientific Evidence* (CUP, 2007), at 66, footnote 31, "(i)f the test is not statistically significant, it may either be because the results were due to chance or because the test lacked the power to discern a difference between the

often set by the statistician in light of the acceptable rate of false positives. Statistical studies are thus marked by some degree of caution and conservatism, as the result will be deemed significant only if the statistician is confident (a confidence level of 95%) that the results are due to something other than chance.

Statistical significance may be affected by the choice of the alternative or null hypothesis that will be tested, as the "choice of alternatives to the null hypothesis will affect the statistical significance of the results"[142]. An additional error often committed by economists is that they confuse statistical significance with substantive significance[143]. As it is explained by McCloskey and Ziliak, "a difference can be permanent… without being 'significant' in other senses… and significant for science or policy … and yet be insignificant statistically"[144]. It is important to specify and examine the "loss function" (utility loss associated with an estimate being wrong as a function of the difference between the estimated value and the real value), then, by what scale a number is large or small for the specific policy purpose and, finally, to perform a cost benefit analysis which will include the cost of this loss function[145]. In other words, there is an important difference between statistical significance and economic significance.

Current practice of market definition in antitrust cases may provide an example of the risk of confusion of statistical significance with economic/policy significance. Antitrust market definition aims to resolve the question of the competitive constraints faced by the particular monopolist or competitors parties to a collusive scheme that would impede them from exercising market power and therefore affecting consumers. It is common in this case to apply the SSNIP test (a form of hypothesis testing – small but significant and non-transitory increase in price) in order to define the relevant market, estimate the existence of market power and therefore determine if antitrust intervention is justified. The test assumes that a dependent variable, the demand for the product, is a function of several independent variables (hypothetical market power of the undertaking): the impact of these independent variables on the dependent variable is isolated and then tested for its robustness with a statistical significance test. The SSNIP test seeks to identify the smallest

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null hypothesis and the proposed effect. Power increases with the size of the study and with the degree of difference from the null hypothesis".

[142] Daniel Rubinfeld, "Econometrics in the Courtroom", at 1056.

[143] Deirde Mc Closkey & Stephen Ziliak, "The Standard Error of Regressions", (1996) 34 *Journal of Economic Literature* 97. Most recently, Deirde Mc Closkey & Stephen Ziliak, *The Cult of Statistical Significance* (Univ. of Michigan Press, 2007).

[144] Deirde Mc Closkey & Stephen Ziliak, "The Standard Error of Regressions",, at 97.

[145] Deirde Mc Closkey & Stephen Ziliak, *The Cult of Statistical Significance*, at 15, "(a)ccepting or rejecting a test of significance without considering the potential losses from the available courses of action is buying a pig in a poke. It is not ethically or economically defensible".

relevant market within which a hypothetical monopolist or cartel would be able to profitably increase prices.

The starting point of the test is to observe whether a small increase in price would provoke that a significant number of consumers switch to another product, thus making the price increase unprofitably. The test relies more on total losses in sales after the price increase than just substitution to a particular competitor. If the price increase causes the sales of the affected products to fall sufficiently to render the increase in price unprofitable, the provisional market is expanded and the process is repeated. This aggregation process will eventually lead to the definition of a group of products (market) in which the SSNIP will be profitable. The US DOJ Merger Guidelines that first instituted this test in 1982 determined the hypothetical price increase to 5%: the SSNIP will be a price increase of 5% from current competitive prices[146]. The European Commission's Notice on Market Definition defines the SSNIP at the range of 5-10%[147]. Both guidelines adopt a statistical significance test in order to determine the economic significance of a hypothetical price increase when measuring losses in sales[148]. The hypothetical monopolist test will produce different consequences for marginal consumers than for infra-marginal consumers. If more than a "significant" part (95%) of the demand for the product is composed by marginal consumers, the relevant market will be defined more broadly in comparison to situations where a significant part of the demand is composed by infra-marginal consumers. Infra-marginal consumers will in this case finish by being charged higher prices than marginal consumers, as the market will be defined broadly and it would be more difficult to find the existence of a dominant position.

2.2.4. Scientific practice as a limit to the demarcation criterion of scientific consensus

Fourth, more recent studies on the process of scientific discovery insist on the role of scientific practice instead of philosophical principles in understanding the domain of science. Thomas Kuhn's theory of paradigms

[146] US DOJ & FTC, Horizontal Merger Guidelines (1992, last revised, 1997), available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/toc.html at 1.11, "(i)n attempting to determine objectively the effect of a "small but significant and nontransitory" increase in price, the Agency, in most contexts, will use a price increase of five percent lasting for the foreseeable future. However, what constitutes a "small but significant and nontransitory" increase in price will depend on the nature of the industry, and the Agency at times may use a price increase that is larger or smaller than five percent".

[147] Commission Notice on the definition of the relevant market fro the purposes of Community competition law [1997] OJ C 372/5.

[148] That is they will find a relation between consumer demand and hypothetical market power of the undertaking if there is a 95% confidence that consumers will continue to buy the product even after an hypothetical price increase of 5%.

encapsulates this sociological turn in the theory and philosophy of science.[149] Kuhn's main idea is that scientists in each field share the same paradigm (or "disciplinary matrix" as he called it). A paradigm is an exemplar of how to work in the field. It is usually based on a major success in the past and is acquired by practitioners during their professional socialization.[150]

The paradigm defines for practitioners what is worthwhile investigating, what methods are valid and what kinds of solutions are acceptable. Most of the time, Kuhn claims, scientists accumulate more knowledge and solve puzzles within the framework of such a paradigm, what he calls "normal science" or puzzle-solving.[151] But alongside the accumulation of knowledge, anomalies accumulate as well, which leads to a process of change. Scientists find more and more phenomena and problems which cannot be explained or solved by the theories and methods of the existing paradigm. With the accumulation of such problems, more and more scientists feel uneasy and this is where revolutions happen. A revolution means that a new paradigm is adopted which allows scientists to solve the most disturbing anomalies. This involves a profound shift of the focus of research in this area. Kuhn's framework has been applied and extended to economics by Johnson who identified four features of the concept of paradigm that, he thinks, may apply to economics: fundamental theoretical assumptions (e.g. the rationality principle), methods of analysis (e.g. econometric techniques), focal variables (e.g. the distinction between micro and macro-economics), basic issues referring to the puzzles of particular groups (e.g. growth for neoclassical economists, employment for Keynesianists).[152] Johnson adds the purposive function of the theory, "the goal towards which a strong research program directs its efforts", which underlies and directs theoretical formulations and empirical research. A shift of paradigm happens when series of anomalies lead to a new perception of the purpose of inquiry: the purposive function of the theory determines which anomalies are likely to be regarded as serious enough to precipitate a professional crisis.[153] Different paradigms have specific purposive functions: while the purposive function of classical economics was that of maximizing the society's social and economic welfare, ordinalist neoclassical economics's purposive function was narrower: the

[149] Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Univ Chicago Press, 2nd ed. 1970).
[150] Ibid., at 10-11, "The study of paradigms…is what mainly prepares the student for membership in the particular scientific community with which he will later practice. Because he then joins men who learned the bases of their field from the same concrete models, his subsequent practice will seldom invoke overt disagreement over fundamentals. Men whose research is based on shared paradigms are committed o the same rules and standards for scientific practice. That commitment and the apparent consensus are prerequisites fro normal science, i.e. for the genesis and continuation of a particular research tradition".
[151] Ibid., at 36.
[152] L.E. Johnson, "Economic Paradigms: A Missing Dimension", (1983) 17 (4) *Journal of Economic Issues* 1097.
[153] Ibid., at 1103.

maximization of subjective individual welfare, distributive concerns being totally ignored .[154]

One of the implications of this analysis for our purposes is that one should not elevate current scientific consensus to a demarcation criterion between science and pseudo-science. It is possible that different paradigms emerge and succeed in gradually shifting the current scientific consensus to another one. These "revolutionary" theories may rely on a contested, from the current scientific consensus' perspective, theoretical assumption or methodology. Their success depends on the capacity of the new paradigm to provide satisfactory explanations for the anomalies the previously dominant paradigm was unable to explain. But would providing satisfactory explanations and a more coherent theoretical framework than the previous paradigm be enough to ensure success?

Bruno Latour's Actor-Network Theory offers an interesting, and still controversial answer to this question.[155] Scientific knowledge, as any other knowledge is being shaped in a complex social process. It is therefore important to observe scientists at work and, in particular, examine how scientific knowledge is actually constructed[156], to listen to their conversations and to follow rigorously the historical development of theories[157]. Empirical findings are not valueless but their meaning is not given and has to be negotiated among competent scientists (persons who are regarded competent by their peers) who may hold different interpretations of the same "facts": "(t)he empirical findings are therefore contingent, without that meaning that they are unimportant"[158].

Empirical evidence is crucial, but its meaning is never objectively given. Empirical evidence can be interpreted in many different ways, but it may also limit the range of possible interpretations. "This does not necessarily mean that knowledge is determined by interests external to the scientific practice, such as political and ideological beliefs"[159]. The intent of the enterprise is to underline that scientific knowledge is the result of dialectical relations among social, institutional, conceptual and other elements of science in various combinations[160].

Constructivism opts for symmetric treatment for different theories. According to this symmetry principle, one should treat in the same fashion

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[154] Ibid., at 1106.
[155] See, Bruno Latour, *Science in Action* (Harvard Univ. Press, 1987); Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA, Harvard Univ. Press, 1999).
[156] John Law, "Theories and Methods in the Sociology of Science: An Interpretative Approach", (1976) 13 *Social Science Information* 163.
[157] See, Andrew Pickering (ed.), *Science as Practice and Culture* (Univ. of Chicago Press, 1992).
[158] Yuval P. Yonay, *The struggle over the Soul of Economics*, above, at 15.
[159] Ibid., at 16.
[160] Ibid., at 16.

scientific theories that have triumphed and those that have lost[161]. Saying that truth-claims are contingents, does not mean that everything goes however, not does it mean that any two views are equally plausible. Constructivism does not deny that some claims are true and others are false, but it highlights the fact at the frontier of science the known evidence usually gives rise to more than one reasonable theory, that is, a theory that competent practitioners deem reasonable in light of the known evidence[162]. So the decision of scientists that something is "true", is decided only by the negotiation, alliances, and rhetoric of the "philosopher stone's merchants", as this has been demonstrated by historical and empirical studies that show that "what scientists have perceived as the ideals of science have varied across disciplines, times and places"[163]. "Unlike other approaches, the constructivist approach calls attention to the fact that success and usefulness are not given by nature but constructed in a process of negotiation and conflict"[164]. So constructivism is compatible with all methods and approaches and "refuses to deprive the status of science from a given practice because some powerful gatekeepers feel that this method is improper"[165].

It is clear that the constructivist approach adopts a pluralist perspective on science. Nevertheless, this raises a new question. If scientists have the choice between different methodologies, how should we explain the option that was actually selected? Yonay is right when he notes that

> "traditionally, students of science implied that the development of scientific knowledge is determined by the quality of contending theories. But if the question is what kind of theories are considered adequate and what scientific methods are used we need a new kind of conceptual framework?

The Actor-Network approach has suggested an interesting one.

The Actor-Network theory (ANT) approach perceives scientists as involved in attempts to promote their own contributions and turn them into "black-boxes[166]", that is "into knowledge which is accepted and used on a regular basis as a matter of fact"[167]. Scientists are involved in what Bruno Latour calls "trials of strength", at which their claims about the validity of their findings and the usefulness of their research has to withstand challenges made by competing colleagues.[168] A successful trial means that the contribution "was incorporated into an institutional set of practices"[169].In other words, any theory can become a "black-box", once an agreement has been

[161] Ibid., at 17.
[162] Ibid., at 19.
[163] Ibid.
[164] Ibid., at 19.
[165] Ibid, at 20.
[166] Ibid., at 80.
[167] Ibid, at 21.
[168] Bruno Latour, *Science in Action* (Harvard Univ. Press, 1987), at 78-79.
[169] Yuval P. Yonay, *The struggle over the Soul of Economics*, above, at 20.

reached that transforms it to an obligatory passage point, that is, something that cannot be dispensed with.

In order to succeed in trials of strength, scientists who compete among themselves, have to attract various "allies" in order to support their cases and make them more defensible.[170] Allies can be "anything that bears upon the strength of the contribution in question, including of course other scientists or people who support the contribution, either financially, or by bestowing their authority upon it, or by simply using it".[171] That could be also the authority of respected practitioners in the field, examples from neighboring fields or from other prestigious disciplines, the views of philosophers and methodologists. "Facts" are the most important allies and in most disciplines they have a considerable weight[172]. But "facts rarely speak for themselves"[173]. They need scientists as "mouthpieces", and "the scientists who summon them must interpret them, convince others in their actuality and explain how they support their arguments"[174].

The point is not that scientists manipulate facts but that nobody knows what the Truth is before the trials of strength are provisionally concluded. Scientists must advance their theory with the aim to convince their colleagues of its merit to strengthen the impact of the specific network and therefore form part of its "black box". One cannot distinguish between substantive argument and rhetoric. In other words, there is no argument without rhetoric.

If one follows this view, economists may be perceived as participating in conversations. "They argue to persuade each other and occasionally to convince non-economists"[175]. They compete for credibility, which leads to the emergence of a specific market for credibility where "there is demand from investors for information… and there is supply of information from other investors"[176]. The credibility/persuasiveness of claims "does not only depend on arguments, metaphors, analogies, but also on financial resources, personal ties, organizational skills"[177]. "All allies – people, money, facts, methodological principles, theories, practices organizations and so forth constitute a network which upholds and ratifies each element of it.: it is difficult to undermine any single link of the network without undermining the others and therefore the ability to connect a new element (method, theory, etc) to a strong network is likely to ensure its success in ensuring trials of strength"[178].

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[170] Ibid., at 21.
[171] Ibid.
[172] Ibid.
[173] Ibid.
[174] Ibid.
[175] Ibid., at 22.
[176] Bruno Latour & Steve Woolgar, *Laboratory Life: the Construction of Scientific Facts* (Sage, 1990), at 206.
[177] Yuval P. Yonay, *The struggle over the Soul of Economics*, above, at 22.
[178] Ibid.

The concept of network overlaps in some degree with institutional bodies such as schools, disciplines, paradigms and research programs.[179] A network is wider and much more complex a unit than a school and constitutes a different concept than a paradigm. It is possible to include in the same network scientists that do not share the same views and do not necessarily cite the work of each other. We do not have to assume that all so-called neoclassical economists, for instance, share the same priors, which is not the case, as the existence of various schools illustrates. The claim that neoclassical economists often refer to similar allies is sufficient. It follows that it is not necessary to decide who is in and who is out. "It is absolutely conceivable that some scholars would make a more frequent use of the neoclassical allies that over time some elements of the neoclassical network would become more or less popular, or that some scholars will tie their works no more than one hard core"[180]. It is therefore fruitless to argue whether a certain actor really belongs to this or that school. The task of the historian or the sociologist is rather to "locate the various social and ideational connections and follow how the practitioners themselves have defined the various schools and approaches".[181]

The ANT framework has been applied in economics by Yval Yonay in his seminal study of the conflict between the old institutionalists and neoclassical economists in the Inter-War era[182]. The struggle between these two "networks" is of particular importance for my purposes, as each school has profoundly influenced competition law and policy in different periods of time. Institutionalists were attached to the empirical and inductive model of science. For them valid theory should be dynamic, evolutionary and relative, concerned broadly and objectively with processes rather than with precise implications of conceptual definitions, scientifically inductive rather than formalistically logical in method.[183] Neoclassicists counter-attacked by pointing out to those aspects of prestigious sciences that were more similar to the deductive methods of neoclassical economics, such as theoretical physics. In the absence of the possibility of laboratory experimentation (as neoclassical economists rejected introspection as a valid method of observation), economics was justified in being even more deductive in its nature than physics. Institutionalists' emphasis on the role of social institutions is a further source of disagreement. In contrast, neoclassical economists focused on a specific aspect of human volition and insisted that economics should focus on illuminating the rational aspect of human behavior, without

[179] Ibid., at 23.
[180] Ibid., at 23.
[181] Ibid., at 24.
[182] Ibid., at Chapters 4-7.
[183] Geoffrey M. Hodgson *The Evolution of Institutional economics*, (Routledge, 2004); Tony Lawson, "The Nature of Institutional Economics", (2005) 2(1) *Evolutionary and Institutional Economics Rev* 7.

integrating in the analysis exogenous factors, such as institutions. The trial of strength between institutionalists and neo-classical economists was finally won by the latter, because of the alliance of neoclassical economic theory with mathematical economics, in particular during the 1950s.[184] The power of attraction of mathematical economics was augmented by the development of econometrics as a new approach to quantitative research that differed from the way institutionalists practiced such research.[185] The alliance between neoclassical economics, mathematical economics and econometrics managed to turn quantitative research from an ally of institutionalists into an ally of neoclassical economics. The intense use of the language of mathematics or mathematical reasoning has indeed been considered by some authors as the demarcation point between orthodox (neoclassical) and heterodox economics.[186] Mathematical reasoning supports the deductive, "close-system" nature of neoclassical economic theory, which ensures greater simplicity, elegance and thus appeals to economists.[187]

As different networks engage in continuous trials of strength, one cannot exclude that the legal system may operate as an important strategic ally. The normative force of the legal system will ensure that the societal structure that a social science, such as economics, attempts to explain, will be profoundly influenced by the concepts and way of thinking of the mainstream economic theory of the moment. It is quite well accepted and documented that economic theory may be the conceptual *substratum* of many parts of the legal system. One may give the example of the *laissez-faire* doctrine of the classical school of economics as a main inspiration of the Western legal system until the emergence of the progressive movement in late 19th century. Soviet Union, where the entire legal system was built on the foundations of Marxism also provides a compelling example. It seems that the integration of economic learning by the legal system constitutes an assurance of success in the trials of strength that oppose different networks in economics and has stabilizing effects for the mainstream. It may also explain the considerable lag between the emergence of a new theory/network as mainstream in science and its adoption by the legal system. For example, although the Chicago school criticism to activist antitrust enforcement dates from the late 1950s/1960s, their influence at the courtroom has been felt much later (at the

[184] Yuval P. Yonay, *The Struggle over the Soul of Economics*, at 187-190.
[185] Ibid.
[186] Tony Lawson, "The Nature of Heterodox Economics", (2006) 30 *Cambridge Journal of Economics* 483, 488-490, what he calls "the mathematizing inclination": "the mathematical framework is usually only briefly noted at best; it is considered so essential that worries about its usefulness, or dispensability, if they are raised at all, tend to be summarily dismissed rather than seriously addressed. It is because mathematisation is understood as being so obviously desirable, indeed, that the project is rarely defined in such terms. Serious work, it seems to be supposed, could never be otherwise".
[187] Ibid.

end of 1970s). The particular characteristics of legal authority and precedent may explain lawyer's reticence to embrace new economic theories.

My point is that if one believes that economics matter for law, it is also easy to conclude that law matters for economics. It could be argued that one of the strategies of scientific "networks" is to influence, to take up the legal system. The legal system will bestow its authority on the theories defended by the members of the network. In other words, the legal system is a powerful ally. This point of view has important implications on the debate over scientific economic expertise in courts. The exclusion or marginalization of competing networks from the process of expertise, by presenting them as unscientific or unreliable, constitutes a rational strategy. This may be particularly attenuated by the development of an exclusionary ethos for certain types of economic expertise, based on methodological rather than substantive concerns, as the last part of this study will show.

2.2.5. Pragmatism as a limit to the demarcation criterion of objectivity

Fifth, the idea of scientific objectivity has been increasingly challenged by the re-emergence of pragmatism or neo-pragmatism and the discursive turn in social theory, among different movements claiming affiliations to post-modern theory. These new theories change the traditional perception of the process of scientific discovery and consequently the relation between law and science, which is fundamental for the understanding of the integration of scientific (and economic) expertise in litigation.

Although there are different versions of pragmatism, such as that of Peirce, James, Dewey, Rorty, a common trend that runs across the pragmatism movement is the opposition to foundationalism, the view that there is an objective Truth and that the scientific method provides a unique pathway to discover reality. However, pragmatists are not relativists; they simply adhere to an instrumental definition of reality/truth: truth is what works as the solution of concrete problems and enhances human knowledge.[188] This instrumental definition of reality leads pragmatists to question, what they call, the "spectator theory of knowledge"[189]. Rorty attacked this "mirror metaphor"

[188] Hilary Putnam, "Pragmatism and moral objectivity", in J. Conant (ed.) *Words and life*. (Harvard University Press), 151, at 154 summarizing the four characteristics of pragmatism, "(1) antiskepticism: pragmatists hold that doubt requires justification as much as belief [...]; (2) fallibilism: pragmatists hold that there is never a metaphysical guarantee to be had that such-and-such a belief will never need revision (that one can be both fallibilistic and antiskeptical is perhaps the unique insight of American pragmatism); (3) the thesis that there is no fundamental dichotomy between "facts" and "values"; and (4) the thesis that, in a certain sense, practice is primary in philosophy".

[189] John Dewey, *Reconstruction in Philosophy*, (Beacon Press, 1948) at 122-123: "(w)e tend to think of after the model of a spectator viewing a finished picture rather than after that of the artists producing a painting…For these all arise from a conception of the relation of mind and world, subject and object in knowing, which assumes that to know is to seize upon what is already in existence".

or representational theory of knowledge": knowledge amounts to "a special privileged class of representations"[190]. The research process is inevitably situated and contextual; truth is made, not discovered. It is therefore "pointless to isolate something called 'the scientific method"[191].

Rorty advanced a different conception of science, perceived more as a discourse, a conversation or rhetoric. Scientific discourse constitutes "a particular type of social conversation"[192]. There are no constraints on the object of the scientific inquiry, "save conversational ones"[193]. This has important implications on the conception of scientific knowledge:

> "…scientific knowledge is not the result of an attempt to mirror nature but rather the outcome of a particular type of social conversation: the scientific conversation. From here, it is but a short step to the explicit study of science as discource or rhetoric: the view that science is best understood as a type of of persuasion – a particular type of persuasion – but one that should be examined by employing the tools of rhetorical analysis"[194].

Deirde McCloskey conceptualized economics as a form of persuasive language, what she called "the rhetoric of economics".[195] McCloskey distinguishes between the official philosophy of economics, positivism, that economists employ in their interaction with the outsiders and the "conversation economists have among themselves for the purposes of persuading each other" of a specific thesis or model.[196] The point is, as Boylan and O'Gorman observe, that "economists are not working in a positivistic vacuum: rather they, like other scientist, are addressing audiences in historically situated contexts"[197]. In that sense, "mathematical models are literary figures of speech"[198]. McCloskey is highly critical of the "modernist" influence in economics, the idea that "science is understood in axiomatic terms with the focus on prediction, control and the observable world"[199]. This type of rule-bound methodology may work for physics and mathematics but these are not good models for economics[200]. As McCloseky notes,

> "In practice methodology serves chiefly to demarcate Us from Them, demarcating science from nonscience … Methodology and its corollary, the Demarcation Problem … are ways of stopping

[190] Richard Rorty, *Philosophy and the Mirror of Nature*, (Princeton Univ. Press, 1979), at 163.
[191] Richard Rorty, *Contingency, Irony and Solidarity* (CUP, 1989), at 52.
[192] Richard Rorty, *Consequences of Pragmatism*, (Univ. of Minessota Press, 1982), at 165.
[193] Ibid..
[194] D. Wade Hands, *Reflection without Rules – Economic methodology and Contemporary Science Theory* (CUP, 2001), at 249.
[195] Deirde McCloskey, *The Rhetoric of Economics*, (Univ. of Wisconsin Press, 1985).
[196] Ibid., at xviii.
[197] Thomas A. Boylan & Paschal E. O'Gorman, *Beyond Rhetoric and Realism in Economics* (Routledge, 1995), at 37.
[198] Ibid., at 38.
[199] Ibid..
[200] Ibid..

> conversation by limiting conversation to people on our side of the demarcation line".[201]

There is "no need for philosophical lawmaking or methodological regulation to keep the economy of intellect running just fine"[202].

McCloskey does not deny the utility of method "with a small m", but distinguishes it from the modernist Methodology, which may lead to fanaticism and intolerance[203]. This method "with a small m" constitutes the *Sprachethik* of economics, "the meta rules that we implicitly adopt by the mere fact of joining what our culture thinks of as conversation".[204] The analogy of economics as a form of conversation shows how insignificant is the issue of demarcation, the question of how we distinguish true science from pseudo-science, "since nothing important depends on the outcome"[205]. As Marc Perlman notes,

> "economists' self-perception is that of an expert. But economists are not experts; they are basically persuaders"[206].

The challenges of pragmatism to the received view of scientific objectivity and to Methodology may acquire greater force if one thinks of the contingency of the main object of economic thought: human affairs.

If economics is conceived as a form of discussion/communication whose objective is not to discover the external world but to promote the cognitive interest of the participants to this "dialogical encounter", in other words to achieve self-knowledge[207], then there is little point in having different rules for the assessment and integration of economics than for other forms of discourse. This is not to say that there are no scientific methods (with a small m) but that the legal system should recognize the importance of methodological pluralism in designing the interaction between legal and economic discourse.

Important practical implications follow from this approach. First, it is futile to raise demarcation barriers before assessing the practical utility of the specific point of view, in conjunction with a series of observations, theories or other points of view. Second, judicial decision makers should assess the economic discourse critically, as they would have done for any other type of

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[201] Deirde McCloskey, *The Rhetoric of Economics*, at 161.
[202] Deirde McCloskey, *Knowledge and Persuasion in Economics*, (CUP, 1994), at 28.
[203] Deirde McCloskey, *The Rhetoric of Economics*, at 4, "economists adopted a crusading faith, a set of philosophical doctrines, that makes them prone now to fanaticism and intolerance. The faith consists of scientism, behaviourism, operationalism, positive economics and other quantifying enthusiasms of the 1930s. In the way of crusading faiths, these doctrines have hardened into ceremony, and now support many nuns, bishops, and cathedrals".
[204] Thomas A. Boylan & Paschal E. O'Gorman, at 41. One could note a close relation between McCloskey's criticism of Methodology and the work of Paul Feyerabend, *Against Method* (New Left Books, 1975).
[205] Deirde McCloskey, *The Rhetoric of Economics*, at 41.
[206] Cited by Deirde McCloskey, *The Rhetoric of Economics*, at 167.
[207] Patrick Baert, *Philosophy of the Social Sciences* (Polity Press, 2005), at

discourse. This is not to deny the specific difficulty of non expert judges that need to understand and critically assess complex economic expertise. Different mechanisms could be developed to address this issue[208].

Courts should examine the various contexts of the specific economic discourse: historical (a sort of archeological approach *á* la Foucault, where the legal decision maker examines the genealogy and evolution of the specific economic concept)[209], social (the disciplinary function of the specific discourse, in other words the aim it was and is still supposed to achieve) and cultural (the relation between the economic discourse and other types of discourse, the perception of the specific discourse inside and outside the "economists' club"). More importantly, the judicial decision maker should acknowledge the different nature of her mission, in comparison to that of the economist or expert: her objective is not to develop self-understanding and self-knowledge but to give a legitimate (in the sense of persuasive) solution to a legal dispute. For example, the legal decision maker should find irrelevant the need for economists to define restrictively the object of their study in order to increase its epistemological accuracy (in terms of deductive reasoning) and therefore respectability towards other members of the scientific club (e.g. natural scientists). This quest for respectability and conceptual coherence was particularly influential in the decision to ignore any ethical, social or psychological dimensions in the progressive construction of the ideal model of *homo economicus*: economists were aware that their approach was by definition incomplete and essentially a purely methodological decision. In contrast, legal discourse is by definition holist: it should incorporate all the dimensions of human existence if it is to be persuasive to the much broader group of constituents that it is addressed to. But judicial decision makers should also be attentive to the conditions that make scientific discourse blossom: that is, its openness, dialogue and continuous critical self-assessment. Our focus should therefore shift to the impact of the legal system, in particular the rules of scientific expertise, on the evolution of economic discourse.

2.3. The development of an economic science for litigation: implications for the evolution of research in antitrust economics

Déirde Dwyer observes that "expert evidence is presented by witnesses who represent persistent communities of practice outside the legal domain" before concluding that the courts should recognize "a social aspect to the assessment of expert evidence that does not exist for non-expert evidence"[210]. One could indeed conceptualize the domains of law and

[208] See, Parts 4 and 5.
[209] Michel Foucault, *The Order of Things*, (*Les Mots et les Choses*, 1966).
[210] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (Cambridge Univ. Pres, 2008), at 76.

economics as two distinct self-contained and self-referential autopoietic social systems, employing a distinct discourse/language (style of talk/rhetoric)[211]. For example, the concept of rationality could take a different form in the context of economic discourse than in legal discourse[212]. A characteristic of autopoietic systems is that communications occur mainly within the system itself, not with the outside world[213]. One way to conceive it is to think of the existence of different conversations going on at the same time within different groups of participants (social actors). Once the conversations get started, they have their own script, which participants of other groups that could occasionally participate to the conversation cannot alter.

This does not mean that each sub-system ignores all others and that each discourse is incommensurable with one another. Autopoietic social systems are cognitively open to their environment, although they are normatively closed. How that happens? It is possible to argue that all of us participate at the same time to different conversations or games if we prefer this metaphor. The participants to these different conversations (an individual can belong to more than one disciplines) may bring to the conversation information acquired from other social sub-systems to which they also participate[214]. This is how facts, concepts, theories may spread from one sub-system over time into other specialist system or the society in general[215]. Put differently, one can be a strong value constructivist but a weak epistemological constructivist[216].

Legal and economic discourse can therefore mutually influence each other. The legal assessment of economic expertise may affect the evolution of economic discourse. The interaction between law and scientific discourse does not take only one direction: e.g. economics influence law. Legal discourse influences also the production and directions of economic discourse. Sheila Jasanoff has been correct to highlight how "the law today not only interprets the social impacts of science" but also "constructs" the very environment in which scientific discourse comes to have "meaning, utility, and force"[217]. Research is conducted and interpreted to answer legal questions

[211] See, Niklas Luhmann, *Law as a Social System* (OUP, 2004).
[212] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at 117-118 refers to Max Weber for the proposition that "social functions possess their own rationality".
[213] See, the studies included in Gunther Teubner (ed.), *Autopoietic Law: A New Approach to Law and Society* (de Gruyter, 1988).
[214] François Ost & Michel Van de Kerchove, *Le droit ou les paradoxes du jeu* (PUF, 1992).
[215] For a number of empirical studies documenting, among others, how facts and evidence claims travel between social sciences as well as over time, see the inter-disciplinary project "The Nature of Evidence: How Well Do 'Facts' Travel" at LSE : http://www.lse.ac.uk/collections/economicHistory/Research/facts/Default.htm
[216] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at 115, "this would mean that one believes that it is possible to agree on statements about the external world with people from another social group , but that statements about values cannot be directly translated".
[217] Sheila Jasanoff, Science at the Bar (Harvard Univ. Press, 1997), at 16.

and the content of scientific knowledge is shaped in a complex social process, which includes the legal sub-system as well as scientific discourse. Judicial decision-making exercises an important influence on the definitions of "good science", therefore affecting at the same time the content and direction of economic discourse.

An illustration of the profound interaction between legal and economic discourse is the emergence of economic "schools of thought" as a way to conceptualize and rationalize *ex post* legal doctrine and authority in the area of competition law. There is a lot of literature recently on the question of the dominant "school" of economic thought that is followed by the current Supreme Court of the United States.

Professor Einer Elhauge from Harvard University has recently published an article entitled "Harvard, not Chicago: Which Antitrust School Drives Recent Supreme Court Decisions?", implying that there is a dominant "school" of economic thought that provides its conceptual guidance to the antitrust jurisprudence of the US Supreme Court; After examining the 14 most recent cases of the Supreme Court in antitrust professor Elhauge argues that

> "the Supreme Court has sided with the Harvard School… It has also sided with sound economic analysis to resolve antitrust issues, rather than a resort to either the old formalisms that favored plaintiffs, or new formalisms that try to favor defendants"[218].

At the same Journal issue there was a second article by Professor Joshua Wright from George Mason University arguing exactly the opposite:

> "the Roberts Court decisions embrace the Chicago School of antitrust analysis and predict that the antitrust jurisprudence of this Court will increasingly reflect this influence"[219].

These are non-exhaustive examples of the growing antitrust law and economics schools-related literature in antitrust.[220] If explanatory features of economic discourse, such as schools of economic thought, become also explanatory features of legal discourse, there a point to make that there is a profound interaction and mutual influence between the two discourses. This

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[218] Einer Elhauge, "Harvard, not Chicago: Which Antitrust School Drives Recent Supreme Court Decisions?", (2007) 3(2) *Competition Policy International*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1010769, at 1.

[219] Joshua Wright, "The Robert Court and the Chicago School of Antitrust: The 2006 term and beyond", (2007) 3(2) *Competition Policy International,* available at http://www.globalcompetitionpolicy.org/index.php?&id=582&action=907

[220] The focus is almost on the same schools: Harvard, Chicago, post-Chicago, but also includes in Europe the ordo-liberal school (see for example the analysis of Alberto Pera, "Changing Views of Competition, Economic Analysis and EC Antitrust Law", (2008) *European Comp J* 127). One could also add studies exploring the influence of new-institutional and Austrian economics in competition law (see, for new institutional economics, Ioannis Lianos, Commercial Agency Agreements, Vertical restraints and the Limits of Article 81(1): Between Hierarchies and Networks [2007] 3(4) *Journal of Competition Law and Economics* 625-672; Dina Kallay, *The Law and Economics of Antitrust and Intellectual Property – An Austrian Approach*, (Edward Elgar, 2004).

approach of conceptualizing the evolution of competition law doctrine indicates that institutionalised "schools" or "networks" play an important role in antitrust discourse, if not always during the process of formation of competition law doctrine, at least at the stage of the *ex post* conceptual rationalization of the case law and therefore its subsequent interpretation. But how this process takes place?

A possible explanation is the existence of a hybrid competition law community formed by lawyers and economists that is in constant communication, either in the practical aspect of competition law enforcement or in the more theoretical aspect of competition law doctrine. However, this does not explain why only certain schools of economic thought seem to attract the interest of competition law doctrine and not others: Chicago, Harvard, post-Chicago, ordoliberal school are explanatory devices for a mixed (legal and economic) set of assumptions, values, policies: they are carriers of meaning for both economic concepts, such as barriers to entry, and legal implications, such as the definition of dominance or monopoly power. It is harder to see how Austrian, Institutional, Marxist, Evolutionist economics, to give some example, may be explanatory devices outside the realm of economic discourse and serve as conceptual categories within legal discourse.

One could argue that this is linked to the fact that only specific schools of economic thought have been attentive to the issue of competition. This is certainly not a satisfactory response: for example, there is a distinct Marxist theory of competition, which, for different reasons has never made it to the courtrooms and has never attracted the attention of competition law discourse[221]. An alternative explanation may be that some of the members of the economics community benefit from a privileged access to the legal community in competition law, therefore being able to pass their specific message on the relevant and adequate economic discourse that should underpin legal discourse. This hypothesis, which needs to be empirically verified, builds on the observation that economists that are in constant communication with competition lawyers in enforcing competition law influence the perception, by these lawyers, of the content of economic discourse. The increasing role of economic consultancies and forensic economics in competition law and policy illustrates the profound interaction between these different actors and the constitution of specific sub-communities.[222] The emergence of a market for economic experts in Europe illustrates the development of forensic economics or applied antitrust

[221] See, Anwar Shaikh, 'Competition and Industrial Rates of Return', in Philip Arestis & John Eatwell (ed.), *Issues in Finance and Industry – Essays in Honour of Ajit Singh* (Palgrave Macmillan, 2008) pp 167-194.

[222] Damien Neven, Competition economics and antitrust in Europe, *Economic Policy*, October 2006, pp. 741-791; Maarten Pieter Schinkel, "Forensic Economics in Competition Law Enforcement", (2008) 4 *Journal of Competition law & Economics* 1.

economics as a specific field of economic enquiry. Competition law experts are also highly specialised and are used to have recourse to economic reasoning, even in areas outside the close realm of competition law.

The hypothesis assumes that there are two distinct sub-communities in the economics profession: forensic economists and academic economists and that the respective influence of schools of economic thought may be different in each of these two communities. This distinction needs to be established empirically, for example by examining the representation of each school of economic thought, as identified by the fact that the members of this "school" or "network" share common beliefs, in the sub-communities of forensic economists and academic economists, as well as by identifying situations where there is a significant gap of representation for a school in each sub-community. In other words, the research will measure the distribution of specific beliefs within each community. The distinction between forensic and academic economists also assumes that the mode of operation of each sub-community is different. Drawing on the work of Robert Merton on the reward system of open science, based on priority, one could argue the specificity of the academic community of economists with regard to community of forensic economists, which is not marked by openness (there is an inherent bias that only the results that could be positive to the client are publicly shared)[223]. In essence, the reward system in science is managed by the scientific community itself. This does not exclude the intervention of the market mechanism at a second stage, after the social reward structure of collegiate science took place, "picking up" the disclosed knowledge or information brought in by the open science phase in order to develop new products and services[224]. Dasgupta and David have clearly shown that changes brought to the underlying reward system of science will have particular implications on the "autonomy" of the scientific process, "in the sense of the scientific community's self governance and control over the research agenda"[225]. Others, like Wible have developed a complements view of the organization of the scientific process, with market and nonmarket institutions being separate institutions but also fulfilling the "dual nature of the scientific enterprise": a unique non market structure and a "secondary science" relying on markets[226]. Wible emphasizes the need to preserve this institutional and epistemic diversity:

> "a variety of qualitatively differentiated organizations are essential for resolving epistemic scarcity. Humanity cannot depend on just one

[223] Robert Merton, *The Sociology of Science: Theoretical and Empirical Investigations* (University of Chicago Press, 1979), Chapter 4.
[224] D. Wade Hands, *Reflection without Rules* (CUP, 2001), at 377.
[225] Partha Dasgupta & Paul A. David, 'Towards a New Economics of Science', (1994) 23 *Research Policy* 487, at 505.
[226] James R. Wible, *The Economics of Science: Methodology and Epistemology as if Economics Really Mattered* (Routledge, London, 1998), at 172.

institution like the market or even the primacy of one institution among others. We cannot pull all our organizational 'eggs' into one institutional basket"[227].

Calls for epistemic diversity have also been recently made in competition law economics literature. Oliver Budzinski, among others, has highlighted the risks of "monoculture" in competition economics and proposed "theory pluralism" of competition policy paradigms as being an essential prescription for public policy in this area[228]. Budzinski's argument must be understood in the context of the debate over the need or not to harmonize competition law globally. His contribution attempts to demonstrate the benefits of a decentralised approach. However, his most recent formulation of the pluralism argument goes further than that. After exposing the basic tenets of different competition theories and policy programs (classic and neoclassic price theory, Harvard, Chicago and post-Chicago schools, German ordoliberalism, Austrian market process theory), Budzinski concludes from this pluralism that it is not possible to derive "an unequivocal, scientifically true antitrust policy"[229]. He is critical to the attempt to perform comparative evaluations of market performance in economies with different institutional and policy choices in order to decide which are the adequate competition policy programs (best practices), a procedure that is broadly used at the international level (OECD, ICN). These attempts underpin the idea that there is a superior, "objective", theory; however, as he immediately remarks, even within the Popperian framework, theories can be proved false but not true, therefore there cannot be any serious claim for an ultimate theory[230]. "Sustainable pluralism of competition theories" should thus serve as an imperative for science and public policy.

Budzinski's policy recommendations are nonetheless less clear. The main difficulty of his conceptualization lies with the different time frame and objectives of judicial decision-making, in comparison to those of the scientific process. For example, should the objective of theory pluralism lead the courts to choose a minority theory instead of a majority one, the two theories being equal from the point of view of explanatory power, for the simple reason that choosing a dominant theory will be reducing pluralism? On what practical basis should this choice for pluralism be made in this case? Would that require the artificial preservation of "degenerescent" research programs for the simple sake of pluralism? Budzinski's focus on pluralism (the end result to achieve) ignores an important aspect, which is mentioned in his study, the

[227] Ibid., at 174-175.
[228] Oliver Budzinski, 'Pluralism of Competition Policy Paradigms and the Call for Regulatory Diversity', N014/2003, Volkswirtschaftliche Beiträge, Marburg, 2003, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=452900 ; Oliver Budzinski, 'Monoculture versus diversity in competition economics', (2008) 32 *Cambridge Journal of Economics* 295.
[229] Oliver Budzinski, 'Monoculture versus diversity in competition economics', above, at 313.
[230] Ibid., at 316.

theory selection process. Any analysis of pluralism should depart from the consideration of the selection process and in particular the reasons that lead to its biased non pluralistic results, as demonstrated by the use of the terminology of "dominant" paradigm. It is certain that if the selection process, which can be conceived as applied practical reason, worked well, there would be no "dominant" theory, in the sense that the representatives of all "research programs" and "paradigms" will feel confident that their positions are equally taken into consideration in adjudicating each case.

The lack of trust in the selection process could be explained from the fact that there is the perception that actors ("research programs", "paradigms", "schools") behave strategically. Building on Actor-Network-Theory, this study assumes that the content of scientific knowledge is shaped in a complex social process. Social networks and relations of power have important implications on the directions of the future research agenda and on the emergence of dominant schools of thought in science. For example, legal mechanisms, such as specific standards for the admissibility and evaluation of expertise, may be used by the different actors of the system in order to gain a leading position for their "school" of economic theory. The social costs include the costs flowing from the monopoly of a particular school of economics in the marketplace of ideas. This is a significant concern, in view of the important economic consequences of competition law litigation and the benefits of scientific pluralism, the existence of different research programs, for the consideration of all important aspects of human behaviour, not necessarily taken into account by all schools (an example could be the concept of bounded rationality).

As it was previously indicated, competition law may be an important and valuable "ally" for competing networks, in particular because of the professionalization of economic expertise in this sector and the ability to attract new members to join the "schools" or "network", essentially because of the important "rents" to be shared. In other words, I assume that, as any other rational economic agent, economists are rational maximizers of wealth engaged in rent-seeing activities[231]. A public choice framework could then apply in order to conceptualize the members of an economic "school" or network as seeking to increase the relevance of their "school" of thought for legal analysis and exclude competing networks.

Proving the blurring of the distinction between academic economists, motivated by the reward process of open science, and forensic economists, motivated by a different reward market-based process, could be an important step in recognizing that radical changes in the reward structure of science leads to a biased selection process in terms of theory pluralism. The blurring of the distinction between forensic economics and academic economics

[231] See, Jesus P. Zamora Bonilla, "Economists: truth-seekers or rent-seekers?", in Uskali Mäki (ed.), *Fact and Fiction in Economics* CUP, 2002), at 356.

corresponds to actual practice: exchanges between expert witnesses are not confined to the courtroom but, in practice, extend to the broader academic debate, in journals, conferences, the SSRN etc. Preparing the public defence of a specific theory and position that is favourable to one of the parties in these academic circles is part of the strategy to establish the legitimacy and persuasiveness of the claim. Ironically, this is also one of the side-effects of the distrust of judges towards expert witnesses. When they refer to economic reasoning, judges tend to grant more weight to published economic commentary rather than to the expert witnesses' reports.

The existence of a market for economic experts may affect the scientific process of investigation in economics. Contrary to other disciplines, where forensic scientists and academic researchers form distinct scientific communities, the leading forensic competition economists are academics who actively participate in theoretical economic debates. Consequently, the emergence of a market for economic experts inevitably affects the research agenda of certain areas in economics (e.g. industrial organization, welfare economics) linked to competition policy. The hypothesis that the institutional framework of economic expertise, in particular the existence of rules and procedures governing the integration, admissibility and evaluation of economic expertise may not have a neutral effect on the evolution of scientific investigation, introduces a novel research question, which has to be examined empirically, through the analysis of the work of economic consultancies, their links with academic economists, the emergence of a specialisation of forensic economists to defendant or plaintiff-friendly in order to enhance their employability[232].

The analysis of the conceptual framework of expertise, the epistemic asymmetry problem between judges and experts, in conjunction with the issue of expert's bias, lead to a number of problems identified under the labels of moral hazard, adverse selection and economic science for litigation. However, these problems may occur in different degrees depending on the area of competition law enforcement and the respective role of judicial decision-makers and experts. It is therefore important to examine the scope and implications of economic expertise in competition law.

3. Economic expertise in competition law: scope and implications

3.1. The legal relevance of economic expertise in EC Competition law

The factual complexity and economic nature of competition law disputes requires the presentation of economic expert testimony in "all but a

[232] This work is part of a larger empirical research project on pluralism in economic thought and the influence of the legal system (competition law, intellectual property, public procurement law), currently investigated by the author.

few" cases[233]. Interpretation of facts through economic methods and in particular quantitative analysis is crucial in order to prove a competition law infringement or to calculate the damages caused by an anticompetitive practice[234]. Since the publication of the EC Merger Regulation in 1989, the role of economic analysis in EC competition law has been on the rise. For example, references to cross-price elasticity in the case law, the Commission's decisions and soft or hard law instruments may illustrate this trend. The following Table compiles the number of citations in Westlaw on cross-price elasticity and the SSNIP test (Table 1).

The existence of block exemption regulations containing hardcore restrictions, in the context of Article 81 EC, may limit the necessity for extensive economic analysis in a number of cases. It is, however, clear that the importance of self-assessment following the entry into force of Regulation 1/2003, the publication of a number of guidelines containing extensive economic analysis in the context of Article 81 and EC merger control and the recent decisional practice and guidance of the European Commission in Article 82 cases requires from firms and their counsel the consideration of the effects of business practices on consumers and consequently a fair amount of economic analysis. To this phenomenon, one could add the implications of the decentralization process in EC competition law. National courts and judges, as well as national competition authorities, are now among the primary actors of the European competition law enforcement system. They

[233] John E. Lopatka & William H. Page, "Economic Authority and the Limits of Expertise in Antitrust cases, (2005) 90 *Cornell L Rev* 617.
[234] Daniel Rubinfeld & Peter O. Steiner, "Quantitative Methods in Antitrust Litigation",(1983) 46 *Law and Contemporary Problems* 69.

have jurisdiction to apply Article 81, paragraph 3, which includes a careful balancing test of the anticompetitive effects of a business practice with the efficiency gains it is likely to bring and that could be passed on to the consumers. It seems that this type of cost benefit analysis, which has already been used in merger control, is currently expanding in the interpretation of Article 82 EC[235]. This increases the likelihood that judges will be confronted to economic analysis and will have to make use of economic expertise.

One could give the example of the concept of relevant market or the operation of market definition that is an essential step in finding the existence of a competition law infringement, except for hardcore practices which are anticompetitive by their object. Economists will find such a step redundant, as their analysis focuses directly on the existence of anticompetitive effects. Nonetheless, the integration of this step in assessing the existence of an infringement of competition indicates the important influence of economic thinking in EC competition law. Since the Commission's Guidelines on market definition in 1997[236], the SSNIP test (Small but Significant non Transitory Increase in Price test) has replaced the more functionalist and therefore "subjective" approach of market definition that the Court of Justice employed in the notorious *United Brands* case.[237] The next step in this continuous process of emulation of economic approaches and methods in competition law was the abandonment of the requirement of market definition in the application of Article 81 EC, when it is possible, through econometric methods, to evaluate directly the existence of market power and anticompetitive effects.[238]

The concept of market power also illustrates the importance of economic thinking in the definition of the scope of the provisions of EC competition law. Although the analysis followed under Article 81 is still based on presumptions and filters (it is not a full effects based approach), these presumptions are generally framed by economic thinking. The distinction between vertical and horizontal agreements constitutes an obvious example of the importance of economic thinking in the design of legal presumptions and categories.[239] The increasing role of efficiency gains analysis, in the context of Article 81, paragraph 3, in the EC merger control regulation as well as in article 82 EC also illustrates the point. The influence of economics is not only limited to the integration of economic concepts in law. Quantitative techniques may also be

[235] Ioannis Lianos, 'Categorical Thinking in Competition Law and the Effects-based Approach in Article 82 EC', Chapter 2 in Ariel Ezrachi (ed.), *Article 82 EC – Reflections on its recent evolution*, (Hart Pub., forthcoming 2009).
[236] Commission Notice on the definition of the relevant market for the purposes of Community competition law [1997] OJ C 372/5.
[237] Case 27/76, *United Brands Co. v. Commission* [1978] ECR 207.
[238] See, European Commission Guidelines on the application of Article 81(3) of the Treaty, [2004] OJ C 101/97, para. 24.
[239] See, Ioannis Lianos, "Some reflections on the vertical restraints antitrust category", (2008) 4 *Concurrences* 71.

used in order to render these concepts operational: the hypothetical monopolist test and residual demand analysis in market definition, concentrations indexes and price concentration studies in order to define the structure of the market, regression analysis and price correlation for the analysis of price behaviour, econometric forecasting and but for tests for the quantification of damages constitute some examples of techniques now employed in competition law.[240]

An illustration of this expansion of the economic approach is the emergence of a market for economic expertise in competition litigation. According to Damien Neven, the annual turnover of the main economic consultancy firms has increased by a factor of 20 since the early 1990s and currently exceeds 20 million £[241]. This is about 15% of the aggregate fees earned on antitrust cases. In the meantime, there has been a surge in recruiting economists in competition authorities. There are 83 professional economists out of 267 in total at the Directorate General of Competition at the European Commission that have a background in economics[242]. In 2003, the Commission established the position of the Chief economist with a team of 11 economists with the aim to provide the necessary economic input to the decisions of the European Commission and other legislative proposals. The institution of chief economist has expanded to national competition authorities, such as the Office of Fair Trading in the United Kingdom or the French Competition Authority. The surge in recruiting economists in competition authorities was partly the consequence and partly the reason of the introduction of economic analysis in EC competition law. However, the European Courts have usually been reluctant to re-assess the economic analysis of the European Commission, although the situation has recently evolved towards a more intensive judicial review, in particular in the area of EC merger control. The nature of the judicial process is one of the elements that determine the intensity of the interaction between the judge and the economic expert. Economic expertise may also take different forms, each leading to a different degree of epistemic asymmetry and consequently of judicial oversight.

3.2. The many faces of economic expertise in competition law

The incorporation of economic analysis in competition law may take different forms. It is possible to distinguish between four forms according to the principle of delegation of the translation task from legal to economic

[240] Jonathan B. Baker & Timothy F. Bresnahan, Economic evidence in Antitrust: Defining Markets and Measuring Market Power, in P. Buccirosi (ed.) *Handbook of Antitrust Economics* (MIT Press, 2008), 1-42.
[241] Damien Neven, Competition economics an antitrust in Europe, *Economic Policy*, October 2006, pp. 741-791
[242] Ibid.

discourse. The legal community may choose to delegate the translation task to an expert, someone who is well versed into the economic discourse: the expert will attempt to interpret its meaning to a common (shared) sens. One could in this case distinguish between situations where, in completing his adjudicative effort, the judge has to choose between different translation-versions (economic authority) from situations where there is a broad consensus in economic discourse and the judge has no choice but to adopt or reject the consensus view of "translation" (economic facts). In other circumstances, the legal system will internalize the effort of translation by incorporating the economic concept into legal discourse: this incorporation can be implicit and strong, when the legal system is enshrined by the specific economic discourse (economic laws), or can be explicit and soft, when the legal system occasionally refers to economic concepts that are defined and employed at the doctrinal stage[243].

3.2.1. Economic "facts"

The first category consists of statistical data (firms' sales, consumer preferences, current costs) or economic concepts widely used by the profession, such as opportunity costs, variable costs, fixed costs, average avoidable costs, incremental costs which define the economic context of the dispute (economic facts). These data are based on observations, which are ultimately theory laden[244]. There is however generally a broad consensus between economic experts on their meaning. This consensus does not include the inferences that are drawn from the data by the use of statistical methodology. In other words, one could distinguish two forms of statistics: descriptive statistics and inferential statistics[245]. It is only the former that belong to the category of economic facts. If the judge decides to take into account the economic context of the dispute, these economic facts will be established by experts empirically. The degree of epistemic asymmetry will reach its peak: the expert does not only have superior knowledge, in

[243] Ronald Dworkin, *Justice in Robes* (Harvard Univ. Press, 2006) distinguishes between 4 stages of thinking about the concept of law: the semantic stage (which relates to the general assumptions and practices people share over the concept of law- criterial, interpretive, natural kind)), the jurisprudential stage (the development of a theory of law that is appropriate given the theorist's answer at the semantic stage, in other words develop the values justifying a specific legal practice), the doctrinal stage (where we construct an account of the truth conditions of propositions of law in the light of the values identified in the jurisprudential stage) and the adjudicative stage (where judges or decision-makers adopt propositions of law based on the conclusions reached at the doctrinal stage).

[244] Observation is always informed by theory: Erica Beecher-Monas, *Evaluating Scientific Evidence* (CUP, 2007), 37-39 (noting the social construction of scientific "facts").

[245] Descriptive statistics describe the data (including concepts such as standard deviation, etc). Inferential statistics are used in drawing conclusions/inferences about the general population from a single study: Erica Beecher-Monas, *Evaluating Scientific Evidence*, above, at 60.

comparison with the judge, of the statistical methods that will be used to collect and to present the data but has also spent time in collecting and associating this specific data to the economic context of the particular dispute. As it is difficult and time consuming for the non-specialist judge to examine in detail the expert's observations, the risk of moral hazard will be exacerbated. This risk can be mitigated either by the adversarial process or by the involvement of court-appointed experts. It is well known that different approaches to data analysis may lead to different conclusions, depending on the researcher's underlying assumptions and strategies[246]. This is normal procedure in science, where assumptions are generally used to fill the informational gaps. It is therefore important for the courts to be able to identify these underlying assumptions in order to be able to assess the expert's theory or observations, in particular the compatibility of these assumptions with the inferential interest and objectives of the legal decision-maker[247].

3.2.2. Economic transplants

It is possible that the task of translating will not be delegated to an expert economist but will be accomplished by the legal decision-maker/judge. Non-delegation of the translation task constitutes therefore the first important characteristic of economic transplants. The second characteristic is that economic transplants convey the decision to integrate explicitly economic analysis, not only at the adjudicative stage (as was the case with economic facts and economic authority) but also at the doctrinal phase. They operate at the doctrinal stage as guiding principles for all decisions adopted at the adjudicative stage. Economic transplants are, in most cases, analytical concepts, such as market power, barriers to entry, consumer welfare, efficiency gains, which are essential intermediary steps before the qualification of the facts of the case as constituting, for example, a restriction of competition, under Article 81 EC, or an abuse of a dominant position, under Article 82 EC. Most frequently, these economic transplants have been introduced by soft law instruments, such as guidelines that have mainly integrated the economic approach in EC competition law[248].

This situation should be distinguished from those where expert economic evidence "crystallizes into legal standards that are applied in subsequent cases"[249]. Barbier de la Serre and Sibonny cite the example of the concept of

[246] Ibid., at 50.
[247] As this is highlighted in the recent Competition Commission, Suggested best practice for submissions of technical economic analysis from parties to the Competition Commission, available at http://www.competition-commission.org.uk/rep_pub/corporate_documents/corporate_policies/best_practice.pdf (point 5)
[248] Hard law instruments, such as regulations, use instead descriptive concepts, like market shares, the latter being proxies for the concept of market power.
[249] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 970.

collective dominant position, which was framed progressively by the case law, building on the theory of tacit collusion. It is important to observe that the Courts did not adopt the economic concept of tacit collusion but preferred instead to develop a new concept, collective dominant position, thus breaking any link between the new concept and its economic underpinning. This is not the case for economic transplants, where the choice of an equivalent denomination to that used in economic discourse emphasizes the economic origins and nature of the transplant. One could consider that this choice indicates a canon of interpretation addressed to the legal community, an indication that the interpretation should not ignore the dual, legal and economic, nature of the transplant.

An interesting feature of economic transplants is that their interpretation is not always function of the exact meaning of the concept in economics. A typical example of this asymmetry is the different conceptions of market power in competition law and in economics. The neoclassical definition of market power has always focused on the ability of a firm to raise prices profitably and reduce output, which essentially fits to the competition as an efficient outcome approach it advocates. The legal definition of market/monopoly power has, on the contrary, insisted on the ability of the firm to exclude competitors and to affect the competitive process, a definition that fits well with the conception of competition as a process of rivalry[250]. The concept of dominant position in EC competition law has been inspired by the second approach as it emphasizes behaviour rather than market outcomes. The classic definition of the concept of dominant position within the meaning of Article 82 is found in the ECJ's judgment in the *United Brands* case, where it was described as referring to

> "a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of consumers".[251]

The broad definition of dominant position as essentially an ability of independent behaviour made possible the consideration by the Court of a multitude of sources of market power, including the existence of a situation of economic dependence or that of an obligatory partner. The Court made certainly reference to a number of structural factors, such as market shares and barriers to entry, as indicators of the existence of a dominant position but the flexibility of the concept of relevant market offered the opportunity to the ECJ to keep the concept of dominant position tuned to its original interpretation. The situation has nevertheless evolved. Article 2 of the former

[250] For an interesting comparison of the different original definitions of market/monopoly power in law and in economics see, Edward Mason, "Monopoly in Law and Economics" (1937) 47 *Yale L.J.* 34.

[251] Case 27/76, *United Brands v Commission* [1978] ECR 207. See also, Cases 85/76, *Hoffmann-La Roche v. Commission* [1979] ECR 461.

EC Merger Regulation 4064/89 employed the concept of dominant position but linked it more directly than the previous case law on Article 82 to the concept of effective competition[252]. In order to define the existence of effective competition, one should look to indications of performance as well as of market structure. In other words, effects on the market count. Relying on this effects-based approach, subsequent case law broadened the concept of dominant position in order to cover situations of coordinated effects. The concept could not, however, be extended to cover unilateral effects. This led to the implementation of a new substantive test in EC merger control, the significant impediment of effective competition test. According to Regulation 139/2004, the criterion of dominant position serves now as a simple indication of a significant impediment of competition and therefore of the existence of a potential harm to consumers[253]. In its most recent documents, the Commission embraced this more economics-oriented definition of the concept in other areas than EC merger control. The staff discussion paper on Article 82 illustrates this subtle evolution:

> "the definition of dominance consists of three elements, two of which are closely linked: (a) there must be a position of economic strength on a market which (b) enables the undertaking(s) in question to prevent effective competition being maintained on that market by (c) affording it the power to behave independently to an appreciable extent"[254].

Of particular importance here are the last two elements, which, according to the staff discussion paper, are intrinsically linked. The discussion paper reveals the nature of the relationship between these two elements of the dominant position, that is, the idea of independent behaviour and the concept of effective competition and brings closer than ever this concept to the economic conception of monopoly:

> "The notion of independence, which is the special feature of dominance, is related to the level of competitive constraint facing the undertaking(s) in question. For dominance to exist the undertaking(s) concerned must not be subject to effective competitive constraints. In other words, it thus must have substantial market power"[255].

Market power, or substantial market power, is the missing thread that operates as the unifying concept for the application of Articles 81 and 82 EC and the introduction of a more economics-oriented approach in justifying antitrust intervention on the marketplace. A capacity of independent behaviour

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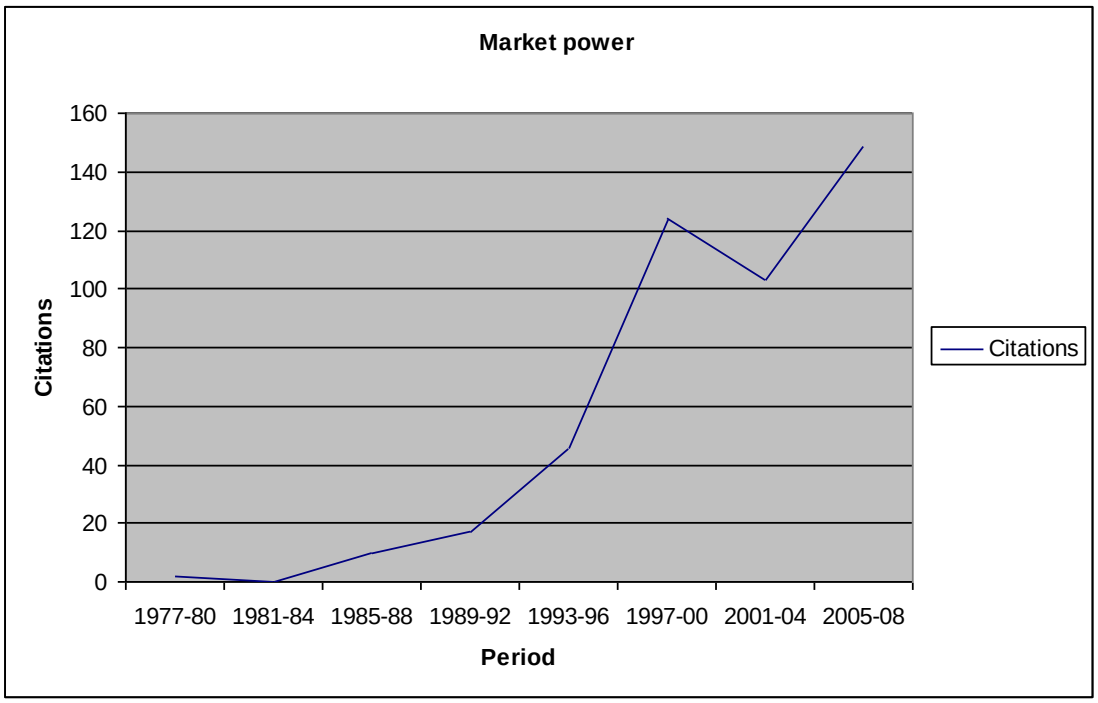
[252] Council Regulation (EEC) No 4064/89 on the control of concentrations between undertakings, [1989] L 395/1.

[253] Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the EC Merger Regulation), [2004] OJ L24/1, Article 2(2).

[254] DG Competition Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses (2005), available at http://ec.europa.eu/comm/competition/antitrust/art82/discpaper2005.pdf, para. 11.

[255] Ibid., para 23.

with regard to the competitors and consumers is not a sufficient criterion for the finding of a dominant position. The discussion paper adopts, instead, an approach which is closer to the definition of market power by neoclassical price theory (the ability to raise prices profitably and reduce output). The recent Commission Guidance on its Enforcement Priorities in Article 82 (Commission Guidance) adopts an equivalent formulation but further emphasizes the link with neoclassical price theory: "(t)he Commission considers that an undertaking which is capable of profitably increasing prices above the competitive level for a significant period of time does not face sufficiently effective competitive constraints and can thus generally be regarded as dominant"[256]. The following table indicates the increasing reliance to the economic concept of "market power" in all areas of EC Competition law enforcement, measured by references to market power in all cases at the European judiciary, decisions of the European Commission and soft law texts, such as guidelines (Table 2)



The convergence of the economic and the legal definition of monopoly power or dominant position is not, however, complete. While the definition of the concept of market power adopted by the Commission Guidance on Article 82, as well as the recent non-horizontal merger guidelines, presents similarities to the economic concept of market power, its scope is broader. In a similar formulation for Article 81, 82 and EC merger control purposes, the

[256] Communication from the Commission, Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, C(2009) 864 final, para 11.

Commission defined market power as "the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, diminish innovation, or otherwise negatively influence parameters of competition"[257]. This broad definition accommodates the emphasis of EC competition law on the protection of the competitive process and consumer sovereignty. Although the increase of prices stays the primary concern of competition law, in conformity with the neoclassical price theory approach, the content of the concept of market power epitomizes the broad definition of what constitutes a restriction of competition under EC competition law and the recognition of quality and variety investment competition. In contrast, US courts do not include, in their majority, as an equal consideration other parameters than price in the definition of market power and therefore in assessing the scope of intervention of antitrust law[258]. This example illustrates that, economic transplants are influenced by the legal environment to which they are integrated and by the specific objectives pursued by the legal system. The same economic concept, market power, may have a different content when it is transplanted in EC competition law than in US antitrust law. As Robert Bork has once perceptively remarked, "antitrust is necessarily a hybrid policy science, a cross between law and economics that produces a

[257] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings [2008] OJ C 265/6, para. 10; Guidelines on the application of Article 81(3) [2004] OJ C 101/97, para. 25; DG Competition Discussion paper on the application of Article 82, above, para 24; Commission Guidance, above, para 11.

[258] See, for a comparison, *Fortner Enterprises, Inc. v. United States Steel Corp*., 394 495, 503 (1986) [" market power is usually stated to be the ability of a single seller to raise price and restrict output "]; *Jefferson Parish Hosp. Dist No 2 v. Hyde*, 466 U.S. 2, 27 n. 46 (1984) [" as an economic matter, market power exists whenever prices can be raised above levels that would be charged in a competitive market "]; *NCAA v. Board of Regents of the Univ. of Oklahoma*, 468 U.S. 85, 109 n. 38 (1984) [" market power is the ability to raise prices above those that would be charged in a competitive market "] ; *Ball Memorial Hospital, Inc. v. Mutual Hospital Insurance, Inc*., 784 F.2d 1325 (7th Cir. 1986), 1335 [" market power comes from the ability to cut back the market's total output and so raise price "]; *Wilk v. American Med. Ass'n*, 895 F.2d 352, 359 (7th Cir. 1990) [" market power is the ability to raise prices above the competitive level by restricting output "]; *PSI repair Services, Inc v. Honeywell*, Inc., 104 F.3d 811, 817 (6th Cir. 1997) [" the ability of a single seller to raise price and restrict output "]; *Ryko Mfg. Co. v. Eden Services*., 823 F.2d 1215, 1232 (8th Cir. 1987) [" market power generally is defined as the power of a firm to restrict output and thereby increase the selling price of its goods in the market "]; *Rebel Oil Co. v. Atlantic Richfield Co*., 51 F.3d 1421, 1441 (9th Cir. 1995) [" the ability to control output and prices (is) the essence of market power "]; *U.S. v. Microsoft Corp*., 253 F.3d 34, 51 (D.C. Cir. 2001) [" a firm is a monopolist if it can profitably raise prices substantially above the competitive level. "]. See, however, U.S. Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual property, April 6, 1995, Section 2.2, available at http://www.usdoj.gov/atr/public/guidelines/0558.htm : [" Market power is the ability profitably to maintain prices above, or output below, competitive levels for a significant period of time. Market power can be exercised in other economic dimensions, such as quality, service, and the development of new or improved goods and processes. A buyer could also exercise market power (e.g., by maintaining the price below the competitive level, thereby depressing output. "]

mode of reasoning somewhat different from that of either discipline alone"[259]. The deference of the judge to the expert will in this case be less pronounced, as the economic concept is a legal concept, defined in the guidelines and other texts of soft law, from which the judge can be inspired and guided in his interpretation of the concept. In other words, because of the integration of economics into the legal system, the epistemic asymmetry between the judge and the expert is, in these circumstances, more limited and the role of the judge becomes more active[260].

3.2.3. Economic authority

A different situation occurs when economic concepts are not explicitly referred to in the text of the law but constitute an importance source of inspiration and authority for the judge in interpreting the law (economic authority). Following the evolution of competition law towards an economic approach, normative economic arguments and theories play an important role in the interpretation of what constitutes a restriction of competition or an abuse of a dominant position. The terms restriction of competition, abuse of dominant position or significant impediment of effective competition have no content of their own; their content is related to public policy considerations, such as market integration, protection of the competitive process, economic efficiency, distributive justice and consumer sovereignty, which define the scope and the limitations of competition law intervention. By introducing a legal exception regime, Regulation 1/2003 made possible the conduct of a balancing test in the context of Article 81, paragraph 3. The role of the judge is not any more only limited to the definition of the existence of an unreasonable, or disproportional, restriction of rivalry but also extends to the consideration of economic arguments and theories that may indicate, on balance, a restrictive effect of the conduct on "competition" and consumers. The judge needs therefore to have access to economic expertise, which will give to this body of law its muscle. Richard Posner is therefore misleading when he describes current practice as following:

> "…the expert will not be permitted to testify that antitrust law should not forbid price fixing, but will be permitted to testify that the defendant's pricing behaviour is inconsistent with their having agreed to fix prices or that it had no effect on the average price paid by the plaintiff"[261].

[259] Robert Bork, *The Antitrust Paradox: A Policy at War with Itself* (Simon & Schuster, 1993), at 8.
[260] *Genzyme Ltd v. OFT* [2004] CAT 4, para. 150, "…resolving the issues on the present case on such matters as relevant product market, dominance and abuse, may require a more or less complex assessment of numerous interlocking factors, including economic evidence. Such an exercise intrinsically involves an element of appreciation and the exercise of judgment".
[261] Richard A. Posner, 'The Law and Economics of the Economic Expert Witness', above, at 92.

It is clear that the judge will be influenced by economic authority as well as from legal precedent in enforcing the competition law provisions. This is particularly the case in situations where there is no consensus in the legal community over the adequate competition law standard for a business practice. The competition policy community is a hybrid one, composed by lawyers and economists and is generally familiar with economic theories. For example, Chicago theories about economic efficiency gains, the post-Chicago theories of anticompetitive harm for vertical mergers and foreclosure, such as raising rivals costs theory, theories about incentives to innovate are increasingly framing the debate over the adequate competition law standards for certain commercial practices. The Courts look implicitly or explicitly "to economic authority in order to establish antitrust authority as a matter of law"[262]. However, in contrast with US courts, the EC Courts do not rely explicitly on economic authority in their decisions[263].

The implicit reliance of the EC Courts on economic authority may have some shortcomings. Most often, these theories rest on first assumptions for which there is no consensus in economic theory itself. By not providing explicitly the economic source of its inspiration the EC Courts create a situation of legal uncertainty and do not offer any predictive tools to firms and consumers. For example, when the European Court of Justice defined the concept of dominant position, it also indicated a number of operational criteria that would help the decision makers to define the existence of a dominant position: among these criteria, the concept of barriers to entry is extremely important. The Court does not however give any definition to the concept of barriers to entry, for the simple reason that the Court decided not to rely on any economic authority, which leads to conceptual uncertainty, as there are many possible definitions of the concept of barriers to entry in economics. Legal commentators are therefore obliged to look at the specific facts and context of each case in order to understand and predict the EC Courts practice in this area[264]. One could even question the effort of finding the economic theory/authority on which the Court implicitly relies on in defining the existence of barriers to entry as a futile exercise. If the Court relied implicitly and ambiguously on a specific economic authority, nothing guarantees that the EC Courts will not be inspired by another economic authority in a slightly different factual context, when they do not risk any obvious incoherence with their previous case law.

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[262] Andrew Gavil, 'Competition Policy, Economics and Economists: Are We Expecting Too Much?', Chapter 24 in Barry Hawk (ed.), *1998 Fordham Corporate law Institute – International Antitrust Law and Policy*, (1999), 575, at 579.

[263] In my knowledge, EC Courts (including the opinions of the advocate generals) do not cite in their decisions/opinions any economic study that has not been included in the documents submitted by the parties, which is something that US courts (in particular the US Supreme Court) do.

[264] See, my analysis in Ioannis Lianos, *La Transformation du droit de la concurrence par le recours á l'analyse économique* (Bruylant, Brussels, 2007).

Furthermore, the empirical analysis on which these theoretical models are based is often poor and at best inconclusive. The judge is therefore confronted to the challenging task of selecting the economic arguments that would fit to the facts of the case based on poor empirical (and therefore less persuasive in terms of legitimacy) grounds.

The recent US Supreme Court case in *Leegin* on the continuous validity of the *per se* interdiction rule for resale price maintenance may illustrate the difficulty of the task[265]. During the oral hearing, an interesting dialogue occurred between Theodore Olson appearing for Leegin and Justice Breyer[266]. Olson claimed that it will only be in an economic context where retailers dispose of a strong market power that resale price maintenance will most likely lead to anticompetitive effects. He based his argument on the Chicago school's assumption that the interest of supplier and consumers are always aligned and on the necessity to preserve dealer's promotion efforts from free riding. This assumption has been questioned by a number of other economists who claim that vertical restraints and, in particular, resale price maintenance, may lead to anticompetitive effects and that the same objectives could be achieved by less restrictive means. Justice Breyer, a fine connoisseur of antitrust and regulatory economics was quick to observe:

> "Breyer: "Which economists? I know the Chicago school tends to want rule of reason and so forth. Professor Sherer is an economist, isn't he? Worked at the FTC for a long time? A good expert in the field…And his conclusion is, as in the uniform enforcement of resale price maintenance, the restraints can impose massive anti-consumer benefits. Massive…"
>
> Olson: "In the vast majority of the economist who have looked at this have come out to the opposite conclusion, Justice Breyer"
>
> Breyer: "We 're supposed to count economists?... Is that how we decide it? (Laughter)"[267].

One could understand the challenges of decision making on the basis of conflicting economic expertise that follows different assumptions and empirical evidence. Because of the information asymmetry problem, the judge is not able to assess, by his own, the veracity and plausibility of each of the economic theories and arguments presented. Absence of empirical evidence and consensus between economists may lead the judge to ignore economic expertise or base his choice of economic theory on extra-scientific grounds, such as the degree of compatibility of assumptions and first principles with the objectives and the context of the specific competition law system.

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[265] *Creative Leathers Products*, *Inc.* v. *PSKS*, *Inc.*, 127 S Ct 2705 (2007).

[266] Transcript of the oral argument available at http://www.supremecourtus.gov/oral_arguments/argument_transcripts/06-480.pdf

[267] Ibid., at 7-8.

3.2.4. Economic "laws"

One could object that economic theories often rely on assumptions that are universally accepted by an overwhelming majority of economists (economic laws), which form the fourth category of economic concepts[268]. The layman or non expert judge, in this circumstance, should take these economic laws as a given and an uncontested truth. For example the idea that market power may produce allocative inefficiency is based on the perfect competition model, which could be conceived as a specific expression of the law of supply and demand. This is not a natural law, like the Universal Law of Gravitation, which can be tested, but relies instead on hypothesis and assumptions such as the rationality postulate[269]. Economic laws may also be subject to questioning by contrary empirical evidence. For example, recent economic literature highlights that real consumers are sometimes guided by their perceptions of fairness rather than by marginal utility, when they make a decision to act on a transaction or, more specifically, to consume[270].

Despite these challenges, economic laws form part of general experience and can be accepted without the need to be established and explained by experts. Information asymmetry between the judge and the expert is in this case minimal, almost inexistent. These economic laws constitute the common frame of reference for judges and economists. One could certainly question the universal validity of these general "truths". In most cases, however, these economic laws are built in the legal system itself and form part of the legal and economic nexus. For example Marxist labour theories of value will have little chance to be accepted as valid economic authority. The judge will automatically exclude this type of economic

[268] The distinction between economic "facts" and "laws" follows the pattern of the traditional "fact"/""law" classification in legal thought: Clarence Morris, "Law and Fact", (1942) *Harvard Law Rev* 1303, 1315, "facts are transitory and particular", law is the opposite. This classification may be criticized, as facts relate to values and laws are not independent of facts (e.g. statistical laws). One should not thus consider that economic facts and laws are ultimately of a different kind. The expression "economic laws" is thus adopted for descriptive reasons.

[269] For example, the law does not seem to operate for Giffen goods, for which people consumer more as the price rises, which violates the axiom of downward-slopping demand curve. As Marc Blaug, *The Methodology of Economics*, above, at 140-141 observes, this axiom is based on the methodological decision to have a constant-real income interpretation of demand curves, "in which the prices of all closely related goods are varied inversely to the price of the good in question so as to 'compensate' the consumer for any change in real income caused by the price change…Alas, a compensated demand curve is never observed… The constant real-income formulation of demand curves is thus an evasion of issues: the income effect of a price change is as integral a part of real-world consumer behaviour as is the substitution effect and to leave it out is to adjust the world to fit our theories rather than the other way around".

[270] Matthew Rabin, 'Incorporating fairness into game theory and economics', (1993) 83(5) *American Economic Review* 1281; Irene Daskalopoulou, 'Fairness perceptions and observed consumer behavior: Results of a partial observability model', (2008) 37 *The Journal of Socio-economics* 31.

expertise, based on his experience of the tensions that would exist between this specific economic authority and the basic assumptions that lay the economic foundations of his legal system.

Distinguishing between these four forms of economic expertise illustrates the different degrees of epistemic asymmetry that may exist between the judge and the expert. The issue of the points of access of economic expertise in courts becomes therefore crucial.

4. Points of entry of economic expertise in the courtroom: a comparative institutional analysis

There are different institutional frameworks that could mitigate the information/epistemic asymmetry problem raised by economic expertise in courts. Common law jurisdictions (e.g. United Kingdom, United States) have traditionally used different mechanisms from civil law jurisdictions (e.g. France, Germany) in order to address the information asymmetry that exists between economic experts and judges and to ensure the objectivity of judicial decision-making[271]. They chose to emphasize the role of the adversarial process (expert witnesses) instead of the quest for a neutral arbiter (court appointed experts), mechanism traditionally chosen by civil law jurisdictions. The nature of the judicial system, inquisitorial or adversarial, could influence the institutional framework of expert evidence in courts. Adversarial systems generally accord an important role to expert witnesses, whereas inquisitorial systems emphasize the role of judge-appointed experts and in-house expertise in courts that could address the problem of impartiality and will fit perfectly with the investigation function of the judge in these systems.

Recent reforms in civil litigation have, nevertheless, taken different directions. They led to an integration of the function of the expert and that of adjudication by creating specialised tribunals, by the appointment of economists as judges as well as the appointment of assessors and by the systematic training of judges in the analytical methods of competition law economics. Others have emphasized the monitoring task of the judges in managing the experts by offering procedures such as the “hot tub” or the possibility to appoint joint experts. This section will highlight these approaches and will critically assess their implications in competition litigation.

[271] Déidre Dwyer, *The Judicial Assessment of Expert Evidence*, above, at Part 4.2. examines five different approaches to expert civil evidence. The UK Civil Procedure Rules perceive courts as active managers of cases (case management system), allow expert witnesses and have instituted the procedure of single joint expert, the US Federal Rules of Evidence which provides the opportunity for the appointment of court-appointed experts as well as the possibility of expert witnesses, the French Nouveau Code de procedure civile of 1975, which provides only for court-appointed experts (it is however possible for the parties to use shadow experts), the German Zivilprozessordnung 1933, which also provides only for court experts, as the parties’ experts, if appointed, are not able to testify, the Italian Codice di procedura civile 1940, which gives the opportunity to the Court and to the parties to appoint their own expert (or *consulenti*).

As it has been previously explained, these different institutional arrangements face two challenges. First, it is important to ensure the legitimacy (in terms of persuasiveness and epistemic competence) of the decision reached, which may require the intervention in the decision making process of an impartial and epistemically competent player. Second, keeping some degree of adversarial process will be compatible with a more pluralistic view of scientific discourse, as it will make possible to hear a variety of points of view, thus ensuring greater competition in the upstream marketplace of ideas. The selection of the adequate institutional framework largely depends on the priorities of the decision makers.

4.1. Expert witnesses

Expert witnesses have been the dominant method of providing expertise in Common law jurisdictions since the 16th century. It is also used, in some cases informally, in Continental jurisdictions (shadow experts) in conjunction with the appointment of neutral experts. There are two problems with this point of entry of economic expertise in courts: first, the absence of regulation and institutional support for this type of expertise at the European level and second, risks that arise from the partisan character of expert witnesses. The second problem has led to the development of specific instruments in order to mitigate that risk.

If we turn to the experience at the European Union (EU) level, as Barbier de la Serre and Sibony observe, the status of expert witnesses under EU law is "unclear" and "informal"[272]. This informality exists both at the level of EU courts and that of national courts. Although it is possible for parties to submit evidence based on expert reports, the Courts' Rules of procedure do not allow party experts to put forward explanations during the hearing[273]. Experts are not considered as "advisors" in the sense of Article 19 of the Statute of the European Court of Justice, although "in practice, the EC courts often allow non-lawyers to address the Court at the hearing 'in the presence and under the supervision of the lawyer"; however, it is rare that they will be cross-examined by the opposing party[274]. The input of expert witnesses has been considered in a number of competition law cases, with disparate results[275]. In

[272] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 965.
[273] Article 58 of the ECJ Rules of Procedure & Article 59 of the CFI Rules of Procedure.
[274] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 965.
[275] E.g. Joined Cases 6 & 7/73, *Istituto Chemioterapico Italiano S.p.A. & Commercial Solvents Corp. v. Commission*, [1974] ECR 223, para 11, 14 & 22 (definition of the existence of a dominant position, the divergence between Zoja's and Commercial Solvents' experts had no practical importance, the ECJ concluding that the Commission was right to refuse the request of the parties for an additional expert's report); Case 45/85, *Verband der Sachversicherer v. Commission* [1987] ECR 405, para 7 (noting the specificity of the insurance sector which should be taken into consideration by competition law); Case T-34/92, *Fiatagri UK Ltd and New Holland Ford Ltd v Commission* [1994] ECR II-905, para 82 (to determine if price parallelism is the result of collusion or oligopolistic interdependence); Case T-17/93, *Matra*

some cases, the EU Courts proceeded in undertaking their own appraisal of the reliability of the expert's report. Barbier de la Serre & Sibony note that there are many examples of cases "in which the conclusions of the expert's reports were not irrelevant but were questioned and/or judged unfounded (e.g. when the other party submitted an expert report that contradicted the findings of the other report, the report did not put forwards the 'slightest evidence' supporting its conclusions, the expert's conclusions were based on complex premises which in view of their number and complexity did not permit sufficiently definite conclusions, the expert's qualifications did not correspond to the factual issues at stake, and the report was based on incomplete knowledge of the facts" or simply "unreliable"[276].

An important problem of this unclear status of partisan expert evidence in EC law is that there are no Community rules that regulate expert witnesses in national courts, when the latter enforce EU law. It is important, for example, in order to ensure the effectiveness of private enforcement of EC competition law, in particular after the recent policy decision to increase the incentives for private enforcement in Europe, that plaintiffs in Continental jurisdictions are not put in a different position than plaintiffs in Common law jurisdiction with regard to the production of economic evidence. The principle of procedural autonomy may explain the lack of European procedural rules in the past. However, it is clear that, in some areas, procedural harmonization of national

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Hachette SA v Commission [1994] ECR II-595, para 59 & 112 (analysis of restrictive effects on competition and dynamic efficiency gains under article 81-3); Case T-395/94, *Atlantic Container Line AB and others v. Commission* [2002] ECR ECR II-875, para 251, 346-348 (theory of the contestable market, the Commission took into account the expert reports presented by the applicants and the Commission but ranged itself to the side of the Commission as it did not find a manifest error of assessment); Case T-25/99, *Roberts v. Commission* [2001] ECR II-1881, para 51, 69 (market definition); Case T-342/99, *Airtours v. Commission* [2002] ECR II-2585, para 212 (mergers); Joined Cases T-236, 239, 244-246, 251-252/01, *Tokai carbon Co. Ltd v. Commission* [2004] ECR II-1181, para 182 (setting of fines); Case T-210/01, *General Electric v. Commission* [2005] ECR II-5575 (mergers: the Commission relied on an economic model of mixed bundling before withdrawing it after a second expert report questioned its premises); Case T-168/01, *GlaxoSmithKline Services v. Commission* [2006] ECR para 246 (studies developed after the decision under review were disregarded as evidence, although these were "not established for the specific purpose of contesting or defending" (the contested decision). The Court took, however, into account the expertise referred to in the Commission's decision (which included submissions by party appointed experts). The reticence of the Court to examine economic arguments that were not included in the decision may be explained by the important margin of appreciation the case law of the EC Court recognizes to the European Commission in the context of complex economic assessments (actions for annulment); Joined Cases T-259-264 & 271/02, *Raiffeisen Zentralbank Österreich AG v. Commission* [2006] ECR II-5169, para 265 et seq. (impact of a cartel); Case T-271/03, *Deutsche Telekom v. Commission* [2008] not yet published, para 153 (on the abusive nature of margin squeeze);

[276] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 968. The authors refer to case T-464/04, *Impala v. Commission* [2006] ECR II-2289, para 345 ("the data prepared by the economic advisers to the parties to the concentration, quite apart from the fact that it is impossible to see how they might permit the conclusion which the Commission draws from them, are unclear and do not appear to be reliable"). More analysis of the substantive assessment by the EC Courts of the economic expertise presented infra Section 5.2.

law has already started, following the need for greater effectiveness in EC law enforcement, an important example being EC competition law[277]. Many proposals have been made as to the development of a European framework regarding disclosure and production of evidence, in general, and economic evidence in particular in competition law litigation. The *Green paper* adopted by the European Commission on action for damages raised the problem of expert witnesses but seemed to understate their importance and suggested instead the possibility for the parties to "agree on an expert to be appointed by the court rather than by themselves" (Option 35): The explanation given for such a reduced role for expert witnesses was the following:

> "Given the complexity of damages actions for infringement of antitrust law, use of expertise in court is particularly important to ensure efficient proceedings. If experts were appointed by the court, cost savings might result since fewer experts would be required. This would also reduce the multitude of experts giving conflicting evidence, depending on their client's standpoint"[278].

The recent European Commission's *White paper* on damages actions ignored, however, issue of expert witnesses versus court-appointed experts[279].

In essence, three problems may be identified: first, the issue of increasing the costs of litigation because of the appointment of experts (private costs), thus putting no deep-pockets plaintiffs in disadvantage in relation to corporate defendants; second, the issue of increasing the length of the litigation and thus the social costs of the litigation and third, the issue of the limited quality (in the sense of independence and reliability) of partisan expertise in relation to court-appointed experts. The first is a non-problem: parties will anyway be inclined to employ experts just in order to be able to prepare the case and eventually to scrutinize the court-appointed expert: the costs would be

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[277] The Ashurst Study on the conditions of claims for damages in case of infringement of EC competition rules notes as one of the main obstacles to damages actions in EC competition law commissioned by the European Commission (2004), available at http://ec.europa.eu/comm/competition/antitrust/actionsdamages/comparative_report_clean_en.pdf, at 2, noted "the fact that non-specialised courts, often without the necessary expertise, are competent to hear such claims", thus linking the question of expertise to that of effective enforcement of EC competition law. As the Report notes (at p. 10), "Greater recourse to greater expertise could improve predictability in the application of the law".

[278] European Commission, Green paper – Damages actions for breach of the EC antitrust rules, COM(2005) 672 final, at p. 11. See also, Ashurst Report, at 11, "this source of expertise (expert witnesses) may not bring with it the same guarantees of independence that can to a greater or lesser extent be associated with, for example, court appointed experts or opinions/decisions of national competition authorities. Moreover, the use of experts can significantly increase the costs of litigation, acting as a disincentive to private actions and where appointed by the parties could result in the economically stronger party being favoured. Finally, the use of court appointed experts in place of party appointed experts would help avoid duplication of costs". See also the discussion in Commission Staff working paper, SEC(2005) 1732, para 255-260.

[279] European Commission, White Paper on Damages Actions for Breach of the EC antitrust rules, COM(2008) 165.

incurred in all circumstances[280]. The second problem will also occur if the Court decides to appoint neutral experts. The third problem, the issue of impartiality, constitutes therefore the main reason that explains the distrust to expert witnesses.

Expert witnesses are paid by the respective parties and therefore are bound to be partisans "rather than being disinterested and hence presumptively truthful, or at least honest, witnesses".[281] This does not necessarily mean that expert witnesses are hired guns but that the experts are dependent on the parties in order to collect data, such as costs, output, sales prices, market shares that are not on the public domain. One could also add that parties have the incentive to present expert evidence that favours their case and that they will inevitably have a selection bias in favour of experts that represent a position which is close to them.

The collection and analysis of the data involves some degree of discretion, with regard to the relevant data and the methodology applied. "The selected and omitted data will determine the final results, and may be used in such way that the desired outcome, the one aligned with the parties discourse, is achieved"[282]. Mathematical modelling also requires the choice by the analyst of the relevant facts and of a limited number of variables[283]. Simplification always leads to the exclusion of a number of facts and there is a risk that the expert may eliminate these facts in order to obtain a predefined result that would be favourable to the party she represents. Richard Posner was right to observe that experts may hide behind "an impenetrable wall of esoteric knowledge" and therefore can easily mislead judges and juries[284].

Finally, opposing experts can cancel each other out, with the result that the judge will ignore their expertise and decide the case using a principles approach or on the basis of non-expert intuition. This is particularly true for economics, where because of the relative importance of the assumptions of the economist, her prior beliefs or the lack of considerable empirical research in the area of competition economics, it is possible that disagreement between experts may occur more frequently than in "harder" scientific disciplines.

There are certainly areas of economics where there is an overwhelming consensus over the anticompetitive character of certain business practices in a specific setting. However, as it is highlighted by Posner,

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[280] Andrew Gavil, 'The Challenges of Economic Proof in a Decentralized and Privatized European Competition Policy System: Lessons from the American Experience', above, at 203.
[281] Richard A. Posner, 'The Law and Economics of the Economic Expert Witness', above, at 93.
[282] Juan D. R. Gutiérrez, 'Expert Economic Testimony, Economic Evidence and Asymmetry of Information in Antitrust Cases', above, at 2.2.3.
[283] Ibid.
[284] Richard A. Posner, "The Law and Economics of the Economic Expert Witness", above, at 93.

"(w)here the use of economic experts is more problematic is in the areas of economics on which there is no professional consensus. This used to be and to some extent still is the situation with regards to antitrust economics. A perfectly respectable economist may be an antitrust "hawk", another equally respectable economist an antitrust dove. Each might have a long list of reputable academic publications fully consistent with systematically pro-plaintiff or pro-defendant testimony, and so a judge or a jury would have little basis for choosing between them"[285].

The partiality/partisan character of expert witnesses is one of the main problems identified with this model of expertise, if one adopts the traditional view of experts as educators or translators. The possible strategic/opportunistic behaviour of the parties (in selecting their experts) and of the economic experts (acting as "hired guns" for the parties and not representing a "neutral" scientific view point) is a related claim. The risk is perceived as particularly significant in the United States, where the important role of the jury in the process of judicial decision-making reduces the ability of judges to monitor the process of expertise. This criticism assumes that juries are less capable than non-expert judges to comprehend complex economic expertise. This assumption seems to be influential in the US, as the courts have established a complexity exception to the Seventh Amendment right to jury trial under the U.S. Constitution if that would impair the Fifth Amendment's due process right to have a rational and fair adjudication in certain circumstances (technically complex issues)[286].

Concerns about the impartiality of expertise have been the main justification for the reform of expert evidence in civil procedure in recent years. Lord Woolf noted in his Interim *Access to Justice* Report that

> "(m)ost of the problems with expert evidence arise because the expert is initially recruited as part of the team which investigates and advances a party's contentions and then has to change roles and seek to provide the independent expert evidence which the court is entitled to expect. As Lord Wilberforce, in *The Ikarian Reefer* (1993, 2 Lloyds Reports 68) stated, "It is necessary that expert evidence presented to the court should be and should be seen to be the independent product of the expert uninfluenced as to form or content by the exigencies of litigation." In many cases the expert, instead of playing the role identified by Lord Wilberforce, has become … 'a very effective weapon in the parties' arsenal of tactics".[287]

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[285] Ibid., at 96.

[286] See, for an application of this exception in antitrust, *In re Japanese Electronic products Antitrust Litigation*, 631 F.2d 1069 (3d Cir. 1980), discussed by Scott Brewer, at 1673.

[287] Lord Woolf, Access to Justice, Interim report to the Lord Chancellor on the civil justice system in England and Wales, June 1995, chapter 23, para 5, available at http://www.dca.gov.uk/civil/interim/woolf.htm .

In addition, Lord Woolf observed the fact that employing expert witnesses may lead to considerable delay and costs in litigation with the "shortage of experts" that are "sympathetic to particular causes" and the "tendency of solicitors to rely on the experts who are familiar to them".[288] The problem of impartiality and consequently of moral hazard that might exist between judges and expert witnesses, has been an important concern in the organization of judicial procedure and has led to proposals to reinforce the monitoring role of the judge in the process (the "case management" system) in the UK, an experience from which the EU may get inspiration.

The objective of the "case management" system is to increase the impartiality of the process of expertise by creating instruments that attempt to loosen the links that exist between the expert witness and the parties. This is done either by not putting the accent on the adversarial dimension of the process or by emphasizing the "scientific" dimension of the debate between the different experts (limitation of the "material" aspect of the dispute). I will analyze briefly two procedures: the hot tub (or the organization of pre-trial conferences between experts) and the possibility for the parties to appoint a single joint expert.

The "hot tub" procedure, developed by the Australian Competition Tribunal in the 1970s[289], aims to maintain the basic principles of the adversarial system while at the same time to orchestrate interaction among experts. Economists submit written statements prior to the oral proceedings but after they have received written non-expert evidence. Then at the conclusion of the oral evidence but prior to counsel's submissions, they may be called upon to participate in a short seminar or debate before the Tribunal. The procedure ensures that the experts called have an opportunity to deal with the case on the basis of the evidence adduced and the issues raised by both parties in a disconnected way. During these "concurrent evidence sessions", expert witnesses may make extended statements and comments on the evidence presented by the other experts. In this part of the procedure, the judge, and not the lawyers of the parties, has the control: there is no cross-examination by the lawyers. The second part of the procedure is the classic adversarial trial: lawyers take control and they may cross-examine the expert witnesses. The process attempts to emulate the environment of a scholarly scientific debate in a colloquium rather than that of the conventional adversarial proceedings. The "hot tub" procedure attempts to limit partisanship, enhance communication and analysis between the experts and

[288] Ibid., para 13.

[289] Gary Edmond, "Secrets of the 'Hot Tub': Expert Witnesses, Concurrent Evidence and Judge-led Law reform in Australia", (2008) 27 *Civil Justice Quartelry* 51, at 58; Maureen Brunt, "Antitrust in the Courts: The Role of Economics and of Economists", Chapter 20 in Barry Hawk (ed.), 1998 *Fordham Corporate Law Institute – International Antitrust Law and Policy* (1999), 357, at 364-366.

reduce the time of the trial by narrowing the debate to the real issues, as these are perceived by the experts.

One of the important innovations brought in the UK Civil Procedure Rules following the Lord Woof report has been the concept of the single joint expert. If the issue is not contentious, the parties are encouraged to use a single joint expert. Part 35.7 of the Civil Procedure Rules endorses the Woolf approach: "where two or more parties wish to submit expert evidence on a particular issue, the court may direct that the evidence on that issue is to given by one expert only"[290]. Where the instructing parties cannot agree who should be the expert, the court may either select the expert from a list prepared or identified by the instructing parties or devise a different procedure to select the expert[291]. The procedure makes possible the interaction between experts: "(t)he court may, at any stage, direct a discussion between experts for the purpose of requiring the experts to identify and discuss the expert issues in the proceedings and to where possible, reach an agreed opinion on those issues"[292]. The Court keeps a dominant role in the process: first, it specifies the issues the experts should discuss, second, it directs the discussion between experts who should complete a statement showing to the Court the issues they agree and the issues and reasons they disagree. However, the revision of the CPR did not go as far as ending the adversarial character of the proceedings. First, the content of the discussion between the experts cannot be referred to at the trial unless the parties agree. Second, "(w)here experts reach agreement on an issue during their discussions, the agreement shall not bind the parties unless the parties expressly agree to be bound by the agreement"[293].

4.2. Court-appointed experts

In the presence of conflicting expertise, the judge may decide to appoint a "neutral" expert. A neutral expert will mitigate the risk of impartiality that mines the option of expert witnesses. According to article 25 of the Statute of the Court of Justice, the Court may at any time entrust any individual, body, authority, committee, or other organisation it chooses with the task of giving an expert opinion. The ECJ may order, as a measure of inquiry and after hearing the Advocate general, the commissioning of an expert's report.[294] Similarly, according to article 65(d) of the Rules of procedure of the Court of First Instance, "the CFI may request the commissioning of an expert's report". Furthermore, according to Article 70 of the Rules of procedure of the CFI:

[290] Part 35.7 of the CPR (Civil Procedure Rules).
[291] Ibid.
[292] Part 35.12 of the CPR.
[293] Ibid.
[294] Article 45 of the ECJ Rules of procedure.

> "the CFI may order that an expert's report be obtained. The order appointing the expert shall define his task and set a time-limit within which he is to make his report. After the expert has made his report, the CFI may order that he be examined, the parties having been given notice to attend. Questions may be put to the expert by the representatives of the parties".

Either of the parties may request the appointment of a neutral expert. The appointed experts are not instructed by the parties (single joint experts) but by the judge[295]. The EC Courts may also commission an expert's report *ex officio*[296]. The expert operates under the supervision of the Judge Rapporteur[297]. The process is, to some degree, adversarial in the sense that the parties should be able to follow the neutral expert's work (e.g. be shown the documents he has taken into account) or should have the opportunity to make their views known during the preparation of the expert's report and put questions to the expert[298], in particular if the report is likely to have a "preponderant influence on the assessment of the facts by the court".[299].

The appointment of experts by courts mitigates the risks associated with the epistemic asymmetry between judges and experts, in particular the problem of biased expertise. Court-appointed experts have the incentive to present a balanced position that would rely on principles and views for which there is a broad consensus in the community of academic economists. The view of the neutral expert will acquire authority only if it is vested with "objectivity", in other words it has the support of the impartial, because not linked with the material interests of the case, community of academic economists. A legal system that favours court-appointed experts, instead of expert witnesses, thus favours the appointment of economists that represent the middle ground, not antitrust "hawks" or "doves".

On the contrary, a system based on party experts "favors the selection of experts with extreme views, rather than views that are representative of the scientific community", which may give the impression that "there is less consensus in a field than actually exists"[300]. This may explain why the idea that there are conflicting schools of antitrust analysis that influence

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[295] Compare with Rule 35.7 CPR.
[296] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 944.
[297] Art. 49(2) of the ECJ Rules of Procedure; Art. 70(2) of the CFI's Rules of procedure.
[298] Art. 49(5) of the ECJ Rules of Procedure. See also, Art. 46 of the ECJ Rules of Procedure.
[299] These procedural guarantees are necessary following the case law of the European Court of Human Rights on the interpretation of Article 6(1). According to the Court, there is an abstract principle that where an expert has been appointed by a court, parties must in all instances be able to attend interviews held by him or to be shown documents he has taken into account: European Court of Human Rights, Judgment of 18 March 1997, *Mantovanelli v. France*, Online. UNHCR Refworld, available at: http://www.unhcr.org/refworld/docid/3ae6b68820.html , para 36 [accessed 1 December 2008] quoted and examined by Eric Barbier de la Serre & Anne-Lise Sibony, above, at 947.
[300] Joseph Sanders, "The Merits of the Paternalistic Justifications for Restrictions on the Admissibility of Expert Evidence", (2003) 33 *Seton Hall L Rev* 881, 921.

periodically antitrust discourse has not been influential in framing the competition law debate in Europe, in comparison to the US, as almost all competition economists share the middle ground. This hypothesis needs to be empirically verified. However, if this hypothesis is proved to be correct, it may have important implications on the market for economic expertise. Academic economists will have the incentive to adopt middle ground views, in order to increase their chances to be appointed as court-appointed experts. The system of court-appointed experts will alter the incentives of antitrust economists and lead to a different kind of specialisation: some economists will specialise in providing expertise to courts or antitrust agencies, others in providing support to the litigants as shadow experts or part experts in common law jurisdictions. This strengthens the boundaries between the community of academic economists and that of professional forensic economists. Academic discourse will evolve independently, thus providing a useful check to the views advanced by forensic and antitrust economists. In other words, the institutional choice of a court-appointed experts system may have positive effects on the evolution of research in economics, as it dissociates the market for forensic/partisan economists from that of academic economists.

The system presents also, however important shortcomings.

First, it may reduce the adversarial character of the procedure. This could be problematic for two interrelated reasons: first, there is a higher risk of error if the judge is advised by one expert instead of being confronted to an array of expert opinions and in some cases the judge cannot be confident that the picked expert is "a genuine neutral"[301]. Second, the system assumes that there is an objective scientific knowledge/"truth" that the neutral expert will be able to discover and present. This does not take into account the pluralistic character of economic discourse. The expert may have particular assumptions and may defend the ideas of his "school" or "network". The system of court-appointed experts will tend to maintain the status quo, represented by mainstream and well accepted economic theories, and will reduce the opportunity for minority views to gain access to the courtroom.

The appointment of a panel- college of experts rather than one expert may avoid this problem, although it will most probably lead to higher litigation

[301] This risk may be addressed by directing the party-designated experts to agree upon a neutral expert whom the judge will appoint as the court's expert: see, Daniel L. Rubinfeld, "Econometrics in the Courtroom", (1985) 85 *Columbia L Rev* 1048, 1096. According to Judge Posner in *re High Fructose Corn Syrup Antitrust Litigation*, 295 F.3d 651, 665 (2002, 7th Cir.), "the judge and jury can repose a degree of confidence in his testimony that it could not repose in that of a party's witness. The judge and the jury may not understand the neutral expert perfectly but at least they will know that he has no axe to grinds, and so, to a degree anyway, they will be able to take his testimony on faith". This procedure has already been used at the European Court of Justice: see, Case 48/69, *ICI v. Commission* [1973] ECR 619, 726-727. In other circumstances, the parties may decide to pool the necessary information (statistical data) by common agreement, thus avoiding the appointment of an expert: Joined cases T-68, 77& 78/89, *Societa Italiana Vetro SpA v. Commission* [1992] ECR II-1403, para 43.

costs. This possibility exists and has already been used in the context of the WTO. Article 13 of the Dispute Settlement Understanding (DSU) provides that "each panel shall have the right to seek information and technical advice from any individual or body which it deems appropriate" (Art. 13.1) and that "with respect to a factual issue concerning a scientific or other technical matter raised by a party to a dispute, a panel may request an advisory report in writing from an expert review group" (Art. 13.2). The procedure for the appointment of expert review groups is set out in detail in Appendix 4: the expert review groups are under the WTO panel's authority and submit a final report to the panel after they have submitted a draft report to the parties to the dispute with a view to obtaining their comments, and taking them into account, as appropriate. The panels have employed the possibility offered by Article 13.2 in a number of cases, although it is interesting to note that the panel did not ask for a consensus report from the experts and preferred to obtain their opinions individually.[302] A possible explanation lies on the composition of the WTO panels that are usually formed by well-qualified governmental and/or non-governmental individuals with "a sufficiently diverse background and a wide spectrum of experience", chosen according to their specific expertise in "the sectors or subject matter of the covered agreements" (Art. 8.2. and 8.4. of the DSU).

In other words, the WTO panel can be compared to a specialised court: the members of the jurisdiction feel confident in their expertise to assess conflicting scientific evidence. The fact that this procedure has proven successful in the context of specialised courts does not necessarily mean that it will be adequate in the context of generalist courts. The EC Courts have appointed several experts but the experts were asked to produce a single report, "a means of narrowing down the scope of the dispute over facts"[303]. The aim is not to provide the judge with an array of competing explanations from which he has to make a choice, based on some normative principle or other instrumental objective, but to simplify the decision making process by offering to the judge an "objective" representation of the scientific knowledge of the field from which he can easily draw authoritative conclusions. In practice, the judge delegates her adjudicatory authority to the experts by adopting as such their findings.[304]

Second, there is also the difficulty of devising a procedure of appointment of really neutral experts. The judge may appoint an expert

[302] David Palmeter & Petros Mavroidis, *Dispute Settlement in the World Trade Organization* (Cambridge Univ. Press, 2004), at 121-123.

[303] See, Eric Barbier de la Serre & Anne-Lise Sibony, above, at 945, note 21. It should also be noted that Article 70 of the CFI Rules of procedure seems to exclude the possibility of appointing more than one experts: See, Anne-Lise Sibony, *Le juge et le raisonnement économique en droit de la concurrence* (LGDJ, 2008), at 562, footnote 259.

[304] Ibid., pp. 962-964 (noting that "once the EC Courts have decided to rely on an expert's report, they rarely question its conclusions. The experts are therefore used as actual assessors").

chosen from a list submitted by the parties[305]. However, in EU law, the neutral expert is not instructed by the parties but appointed by the judge. There is no indication in the Statute of the Court and the ECJ and CFI internal rules of procedure on the method of appointment of experts other than that the parties may object to the appointment on the ground that the expert is not competent or the proper person to act as an expert.[306] The procedure for the appointment of neutral expert(s) should ensure impartiality (independence from the material interests of the case) but also achieve the representation of different perspectives/positions that could be relevant for the adjudication of the specific case.

Some authors advance the view that the procedure used to select arbitrators could provide some important insights[307]: a common method of selecting arbitrators is for each party to choose an arbitrator and for the two arbitrators to then choose a neutral, who generally casts the deciding vote"[308]. Other possibilities include the appointment of experts from a list of experts registered in the EU and national courts[309] or from a list of experts of the specific field nominated/suggested by professional associations, such as the European Economic Association. However, it is unclear from the Statute of the Court or the regulation on procedure how the judge should proceed if the parties do not agree with the choice of the expert[310]. Furthermore, there is nothing that guarantees that the neutral expert will not be biased, in particular in situations where they frequently participate as partisan experts in antitrust litigation and have therefore the interest to ensure consistency between the views expressed when they act as a court-appointed expert and those when they acts as partisan experts. Intellectual interest bias may also be an important concern, if the expert favors a position for the simple reason that it reinforces his "school" or "network".

Third, the EC Courts have rarely appointed experts.[311] The European Courts have ordered an expertise in the *Dyestuffs* and the *Wood Pulp* cases. In *Dyestuffs*, the Court ordered an expert's report after it had appointed two

[305] This is the procedure mostly employed for the appointment of single joint experts in the UK. Rule 35.7 CPR.

[306] Art. 50 of the ECJ Rules of Procedure; Art. 73 of the CFI Rules of Procedure. Article 25 of the Statute of the ECJ, "The Court may at any time entrust any individual, body, authority, committee or other organisation it chooses with the task of giving an expert opinion".

[307] Daniel Rubinfeld, "Econometrics in the courtroom", above, at 1096.

[308] Richard A. Posner, "The Law and Economics of the Economic Expert Witness", above, at 96.

[309] See the proposals in Eric Barbier de la Serre & Anne-Lise Sibony, above, at 977-978.

[310] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 946, footnote 25 note that "in at least one instance, the Court took a preventive step and ensured that parties consented to the Court's choice for a court-appointed expert", referring to Opinion of A.G. Darmon in Joined Cases C-89, 104, 114, 116, 117 & 125-129/85, *Ahlström and Others v. Commission*, [1993] ECR I-1445, para 333, where "the Court also submitted the draft questions to the parties" (para. 339).

[311] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 949, document 25 cases only overall (not only in competition law).

experts following the common agreement between the parties on the names of the two experts[312]. The commissioning of a neutral expert's report was justified by the divergent opinions defended by the expert witnesses of the parties with regard to the plausibility of a concerted practice in the oligopolistic dyestuffs market[313]. In *Wood Pulp*[314], the Court had initially ordered an expert's report on the existence of a price parallelism in the market and then a second expert report on the presence, or not, of a causal link between the price parallelism and the alleged horizontal concertation[315]. The Court adopted the conclusions of the experts' reports[316], despite the substantial objections raised by the Commission (which were also based on an expert's report) and the extensively argued reticent opinion of AG Darmon to accept all the court-appointed experts' conclusions.[317]

Barbier de la Serre and Sibony explain the few instances the European courts appointed neutral experts by the conjunction of a number of factors: strict substantive requirements ("the EC Courts do not commission an expert report unless the evidence before it is deficient in some material respect or the requesting party provides prima facie evidence in favour of his argument"), the specificity of the EC courts function, the costs and length of the procedure, the margin of appreciation enjoyed by the European Commission in certain fields, or the EC courts reliance on their own expertise[318]. A consistent trend is also that the Courts generally adopt as such the conclusions of neutral experts[319].

Fourth, an additional difficulty with court-appointed experts in the European context exists in situations where the EU Courts intervene in the process of judicial review of a Commission's decision. Under Article 230 EC, when the appreciation of the facts involves complex economic assessments, the European Commission benefits from a considerable margin of appreciation. The Court observed in *Microsoft* that

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[312] Case 48/69, *ICI v. Commission* [1973] ECR 619, 726-727. The two neutral experts who were finally appointed by the Court (Horst Albach and Wilhelm Norbert Kloten) were different from the ones the parties had initially suggested in their submissions: Friederich A. von Hayek for the applicants and Erhard Kantzenbach for the European Commission!

[313] For a description of the conflicting views and/or expert reports, see Case 48/69, above, at 720-724.

[314] Joined Cases C-89, 104, 114, 116, 117 & 125-129/85, *Ahlström & Others v. Commission* [1993] ECR I-1445.

[315] Joined Cases C-89, 104, 114, 116, 117 & 125-129/85, *Ahlström & Others v. Commission* [1993] ECR I-1445., para 31-32

[316] Ibid., para 126-127 & 137

[317] Opinion of A.G. Darmon in Joined Cases C-89, 104, 114, 116, 117 & 125-129/85, above, at I-1525-1547 (para 331-333 for the conclusions). AG Darmon criticized the "economic models" used by the experts which did not seem coherent or comprehensive in explaining all the different facts of the case).

[318] Eric Barbier de la Serre & Anne-Lise Sibony, above, at 949.

[319] See, for instance, Joined cases 24/58 & 34/58, *Chambre syndicale de la sidérurgie de l'est de la France and others v. High Authority of teh European Coal and Steel Community* [1960, English special edition] ECR 281, at 293 ("on the basis of the findings of the expert's report which it adopts and accepts as its own…").

"…it follows from consistent case-law that, although as a general rule the Community Courts undertake a comprehensive review of the question as to whether or not the conditions for the application of the competition rules are met, their review of complex economic appraisals made by the Commission is necessarily limited to checking whether the relevant rules on procedure and on stating reasons have been complied with, whether the facts have been accurately stated and whether there has been any manifest error of assessment or a misuse of powers.

Likewise, in so far as the Commission's decision is the result of complex technical appraisals, those appraisals are in principle subject to only limited review by the Court, which means that the Community Courts cannot substitute their own assessment of matters of fact for the Commission's

However, while the Community Courts recognise that the Commission has a margin of appreciation in economic or technical matters, that does not mean that they must decline to review the Commission's interpretation of economic or technical data. The Community Courts must not only establish whether the evidence put forward is factually accurate, reliable and consistent but must also determine whether that evidence contains all the relevant data that must be taken into consideration in appraising a complex situation and whether it is capable of substantiating the conclusions drawn from it"[320].

The Courts usually rely on the Commission's economic appreciation, in particular if the latter based its decision on specially commissioned expert reports and they do not take the risk of appointing a neutral expert who will second-guess the Commission's expert analysis. In some recent merger control cases[321], however, the Court addressed directly the economic arguments advanced by the parties and, according to some authors, the judges have endorsed the role of economic expert for themselves[322]. This is certainly an improvement from previous case law where the judges of the

[320] Case T-201/04, *Microsoft v. Commission* [2007] ECR II-3601.

[321] Case T-342/99, *Airtours v. Commission* [2002] ECR II-2585 ; Case 310/01, *Schneider Electric / Commission* [2002] ECR II-4071; Case T-5/02, *Tetra Laval v. Commission* [2002] II-4381; Case T-210/01, *General Electric / Commission* [2005] ECR II-5575*;* Case T-464/04, *Impala v. Commission* [2006] ECR II-2289; Case T-87/05, *EDP / Commission* [2005] ECR II-3745; Case C-13/03P, *Commission v. Tetra Laval* [2005] ECR I-1113; Case C-413/06, *Bertelsmann AG and Sony Corporation of America v Independent Music Publishers and Labels Association (Impala)* [2008] not yet published.

[322] See David Gerber, 'Courts as Ecoomic Experts in European Merger law', in Barry E, Hawk (ed*.), Annual Proceedings of the Thirtieth Fordham Corporate Law Institute Conference on International Antitrust Law & Policy* 2003, New York, pp. 475-494.

Court had relied on their own analysis of the issue, which was not based on sound economics[323].

4.3. Hybrid options

The greater recourse to economic analysis in competition has led to the development of additional options to the two main models of integration of economic expertise in courts. Particular emphasis is now given to the development of sources of internal economic expertise, in particular because of the important costs of contracting out (judge appointed expert) and the risks of relying on expert witnesses (moral hazard) in conjunction with the more intensive use of economic expertise after the modernization of European competition law. Déirdre Dwyer cites a number of variables that are taken into account in deciding the allocation of tasks in judicial decision-making. These can be whether the court should be unicameral deciding questions of law and fact, or bicameral, consisting of separate tribunals of law and fact, as it seems to be the case in the US with the allocation of tasks between judges and juries; whether those composing the court should be lawyers or non-lawyers; whether they are specialist in the factual subject matter in the case or not[324]. Depending on the emphasis put on each of these variables, it is possible to identify different hybrid options that address the issue of epistemic asymmetry and expert bias.

4.3.1. Assessors and special juries

The practice of assessors or special juries attempts to "incorporate the community of practice directly into the tribunal of fact", thus adopting a bicameral approach in judicial decision-making[325]. In the UK, the Court may decide to appoint assessors, a judge's or magistrate's assistant. Following the recommendations of Lord Woolf[326], Rule 35.15 CPR gives the courts authority to appoint an assessor, with the aim to assist the court in dealing with the matter of her expertise and to "educate the judge". Assessors (or technical advisors, as they are called in the US) are only appointed to assist the court to fulfil its obligations. Contrary to court-appointed experts, they are not strictly subject to the adversarial process, which may present some risks, in terms of

[323] e.g. Case C-27/76, *United Brands Company and United Brands Continentaal BV v Commission* [1978] 207 and the "functional", mostly introspective, definition of the relevant market of bananas…
[324] Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (Cambridge Univ. Pres, 2008), at 34.
[325] Ibid., at 112.
[326] Lord Woolf, *Access to Justice: Interim Report to the Lord Chancellor on the civil justice system in England and Wales* (June 1995) available at http://www.dca.gov.uk/civil/interim/woolf.htm, Chapter 23, point 24.

methodological and substantive theory pluralism[327], as well as from the point of view of a possible infringement of article 6(1) of the European Convention on Human Rights[328]. One could also envision "special juries" involving specialists in the tribunal of facts[329].

4.3.2. Amicus curiae or advice from the competition authorities

According to Art. 15 of Regulation 1/2003,

> "in proceedings for the application of Article 81 or Article 82 of the Treaty, courts of the Member states may ask the Commission to transmit to them information in its possession or its opinion on questions concerning the application of Community competition rules"

In addition, according to Article 15(3) of Regulation 1/2004,

> "Competition authorities of the Member States, acting on their own initiative, may submit written observations to the national courts of their Member State on issues relating to the application of Articles 81 and 82. With the permission of the court in question, they may also submit oral observations to the national courts of the member State".

When the coherent application of Article 81 or 82 so requires, the Commission, acting on its own initiative, may submit written observations to courts of the Member States and with the permission of these courts may make oral observations.

However, there is no possibility, at least with the current procedural rules for economists, antitrust or economic associations (e.g, the Association of Competition Economists) to act as amicus curiae.

4.3.3. Internal economic expertise (clerks, research and documentation units in courts formed by economists)

A further option could be to recruit economists as judicial clerks. This may be an option to explore at the EU Courts level but they are very few judicial clerks working at the Court of First Instance and the European Court of Justice with some form of economic background. It is also possible to recruit economists at the Research and Documentation Unit of the EU Courts. The Judge-Rapporteur could ask the Research and Documentation unit to prepare a research note on economic authority issues that could be used by the Court. The systematic training of judges in competition law and economics may

[327] The US Federal rules on procedure distinguish between the situation of a judge appointed expert, subject to cross-examination (Rule 706 Federal Rules) and technical advisors (Rule 104a).

[328] See the analysis in Déirdre Dwyer, *The Judicial Assessment of Expert Evidence* (Cambridge Univ. Pres, 2008), at 323-332.

[329] For an historical perspective see, Déirdre Dwyer, *The Judicial Assessment of Expert Evidence,* above, at 261-263.

provide an additional option, although the outcomes of these training programmes do not seem to make an important difference, if one measures their effect with regard to the number of cases that were appealed successfully[330]. Finally, it is possible for economists to be members of the EU and national jurisdictions enforcing competition law. Historical examples are not lacking: French economist Jacques Rueff was a judge at the European Court of Justice from 1958 to 1962, unfortunately some years before the main competition law cases brought to the Court. In 2004, economist Frédéric Jenny was appointed a judge at the French Supreme Court (Cour de Cassation).

4.3.4. Specialised or trans-disciplinary courts

One could also imagine a system in which competition disputes will be brought only to specific courts with judges trained in competition law and economics[331]. It would be possible to constitute a specific competition law section at the generalist court or proceed by "opinion specialization", that is select the judges that will sit in competition law cases only from those judges experienced in competition law cases, which is what apparently happens in practice[332]. A specialised court, such as the Competition Appeal Tribunal in the UK could be another option. There have been some proposals for the constitution of a specialised European court in competition law[333]. The Court will be composed by distinguished academics, practitioners with experience in the field of competition law and economics. I would be in favour of such a proposal. I consider that the risks that are usually linked with this type of specialist courts (e.g. the DC Federal Circuit as an IP court in the US; IP courts favour IP owners and interpret IP statutes extensively) are less likely to materialise in the case of competition law. It is also highly desirable to reduce the epistemic asymmetry between experts and judges, without at the same time reduce the adversarial dimension of the procedure. Finally this option fits and works better with the discursive substantive approach to economic evidence that this study will suggest in Section *5.2.*

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[330] Michael R. Baye & Joshua D. Wright, 'Is Antitrust Too Complicated for Generalist Judges? The Impact of Economic Complexity & Judicial Training on Appeals' (January 27, 2009). George Mason Law & Economics Research Paper No. 09-07. Available at SSRN: http://ssrn.com/abstract=1319888

[331] This is the case in France, where the appeals to the decisions of the Conseil de la concurrence are brought in front of the Court of appeal of Paris. In addition, there is a specific number of Court of appeals hearing competition cases and the judges of these specialized chambers receive training in competition law and economics (Discussion with Judge Frédéric Jenny, May 2008).

[332] For an analysis of 'opinion specialization" see the empirical research of Edward K. Cheng, 'The Myth of the Generalist Judge', (2008) 61 *Stanford L Rev* 519.

[333] See, Confederation of British Industry (CBI) proposal for the creation of an EU Competition Court, CBI Report, 15 June 2006. The suggestion has been examined by the House of Lords, European Union Select Committee, 15th report of Session 2006-07, *An EU Competition Court*, HL Paper 75, 23 April 2007. For a further discussion see, Christopher Bellamy, 'An EU Competition Court: the continuing debate', this volume.

5. Substantive assessment of economic expertise

It is possible to distinguish two steps in the substantive assessment of economic evidence. First, there is the issue of the admissibility of economic expertise (which is linked to reliability of the expert's methodology). Second, an additional issue is the weight to be attached to the economic expertise that was found reliable. The two stages are clearly separated in US law, which recognizes a gatekeeper function to the judge: the later has to exclude problematic expertise, such as "junk science", "hired guns" etc from being heard by the jury. This is mainly the result of the specificities of the US legal system, in particular the right to be judged by a jury, and the risk that this entails if a jury of non-specialists hears problematic expertise, without being capable of distinguishing "scientific" from "un-scientific" statements.

Adopting specific rules on the admissibility of expertise was justified in the US by the numerous tort liability claims that relied on questionable expertise. The issue is not therefore specifically related to antitrust. The structural problem is, however, the same in both situations: the existence of a number of incentives that favour excessive (rent-seeking) private litigation. This problem is not as acute in EU competition law, where private enforcement of competition law is still nascent. Therefore, there is no specific policy-based reason to adopt two different steps of assessing economic evidence in Europe.

Establishing rules regulating the admissibility of economic evidence could also be subject to the same criticism than the "objectivist" view of social sciences that I criticized in the first part of this study. Clearly distinguishing between the two different steps may lead to the exclusion of important evidence that may rely on minority views in science but which could, at the same time, provide a more adequate explanation of the facts of the case and therefore a more plausible narrative. I would therefore oppose the exclusionary ethos, of clearly distinguishing between the two steps, with the discursive (but not necessarily inclusive) ethos of assessing evidence by defining the standard of proof (which could also be expressed as the standard of persuasion) to be reached in each circumstance. The exclusionary approach followed in the US mainly asks from the judge to compare the methodologies used with what is acceptable in the discipline. The discursive approach forces the judge to engage with the expert's discipline itself and in particular with the substance of economic authority before reaching her decision.

5.1. Admissibility of economic expertise: the exclusionary ethos

5.1.1. The emergence of the gate-keeping role of the judge

Following common law precedent, the US courts have long recognized that expert testimony must be subject to a strong and careful judicial gatekeeper function. The idea is that although recourse to expertise and economic authority involves some form of delegation of the translation task to be performed to the expert, the judge should keep some form of control of the process of translation[334].

The DC Circuit laid down a test to determine the admissibility of pure opinion expert testimony (opinion not based on own experience, observation or research) in *Frye v. United States*[335]. Under the *Frye* standard expert testimony was admissible only if the methodology was generally accepted (consensus has been reached) in the relevant scientific community[336]. The traditional common law test accorded a considerable importance to the marketplace in order to delimit the boundaries of admissible scientific knowledge: the admissibility of expertise was dependent on the expert's success in a profession/community that embraced that knowledge (commercial marketplace test)[337]. The validity of the expert's opinion was tested by cross-examination of the expert witnesses, in essence by the adversarial process. The *Frye* test integrated means of recognition, which are external to the trial, by developing the concept of "general acceptance" in the particular field/scientific community: the commercial's marketplace acceptance or the adversarial system is not essential, one should also look to the marketplace of ideas (intellectual marketplace test)[338]. The key issue is the diffusion of this specific method or knowledge in the relevant scientific discipline or opinion. Contrary to the previous common law standard that focused on demand, the acceptance of expertise by the market, and the adversarial process, the *Frye* test was offer-oriented and, at the same time, a form of out-sourcing of the assessment of the expertise: it is the scientific community that produces knowledge that is the final arbiter of the admissibility of the specific expertise. The Federal Rules of Evidence (FRE), enacted in 1975, included Rule 702, which created a statutory standard of "factual assistance" that seemed to be in conflict with *Frye*. Rule 702 of the Federal Rules of Evidence (FRE 702), which governs all proceedings in the U.S.

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[334] As it is noted by Rochelle Cooper Dreyfuss, 'Is Science a Special case? The Admissibility of Scientific Evidence After Daubert v. Merrell Dow', above, at 1786, "the problem … is that scientists mainly evaluate the research involved in their own pursuit of knowledge; they do not necessarily pay attention to research that is conducted at the behest of other people, such as litigants".

[335] *Frye v. United States,* 293 F. 1013 (D.C. Cir. 1923).

[336] Ibid, at 1014, "a novel scientific technique "must be sufficiently established to have gained general acceptance in the particular field in which it belongs".

[337] David L. Faigman, Michael J. Saks, Joseph Sanders & Edward K. Cheng, *Modern Scientific Evidence*, Vol. 1 (2008-2009 Edition), at 6-7.

[338] Ibid., at 9.

federal court system and imposes restrictions on the admissibility of expert testimony:

> "if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualifies as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise".

Rule 702 requires therefore a showing that (1) the proposed witness possesses an acceptable degree of expertise on a scientific technical or specialized matter and (2), that the evidence will facilitate the resolution of a purely factual dispute, thus ignoring the general acceptance criterion of *Frye*.

Concerning the first element of the test, Rule 702 provides that the expert witness is deemed to have the requisite degree of expertise if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case. However, Rule 702 does not suggest any standard to appreciate these factors, either individually or collectively. The tension between the *Frye* test and the Federal Rules of Evidence was manifest in a number of low courts decisions that followed the enactment of the FRE. This led to a divergent interpretation of the Rules by different circuits, eventually pushing the Supreme Court to intervene in order to establish the definitive standard for assessing the admissibility of expert evidence.

In *Daubert*, the Supreme Court held that the "rigid" *Frye* standard did not survive the enactment of the "liberal" Federal Rules of Evidence that relaxed "traditional barriers to opinion testimony"[339], but also interpreted Rule 702 FRE as requiring that scientific expert testimony be grounded in the methodology and reasoning of science[340]. The Court embraced reliability as the primary criterion for admitting expert evidence as it collapsed the scientific standard of reliability (does the principle support what it aims to show?) and validity (does application of the principle produce consistent results?) into a legal standard of reliability: evidentiary reliability[341]. However, in order to qualify as scientific knowledge, "an inference or assertion must be derived by the scientific method"[342]. The evidence must be more than "subjective belief or unsupported speculation"[343].

The judge should also examine the "fit" of the expert testimony. Expert testimony should relate to the issues in the case. It should be "sufficiently tied to the facts of the case that will aid the jury in resolving the legal dispute"[344].

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[339] *Daubert v. Merrell Dow Pharm, Inc,* 509 U.S. 579, 588-589 (1993)
[340] Ibid., at 590.
[341] Ibid, at 590 & n. 9, "(i)n a case involving scientific evidence, evidentiary reliability will be based upo scientific validity".
[342] Ibid.
[343] Ibid., at 590.
[344] Ibid., at 591.

This condition is primarily linked to relevance: "(e)xpert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful"[345]. The expert\testimony is admissible only if it is based upon sufficient facts or data (which excludes excessive speculation) and sound knowledge of the industry. The relevance requirement is interpreted restrictively so as to constitute a bias (presumption) for exclusion of scientific evidence. As the Ninth circuit explained on remand in *Daubert,*

> "scientific expert testimony carries special dangers to the fact-finding process because it can be both powerful and quite misleading because of the difficulty in evaluating it. Federal judges must therefore exclude proffered scientific evidence under Rules 702 and 403 unless they are convinced that it speaks clearly and directly to an issue in dispute in the case and that it will not mislead the jury"[346].

The standard for analyzing the fit of an expert's testimony is "higher than bare relevance" but "lower than the standard of correctness"[347]. The fit requirement is important when economists rely on theoretical models. The justification should be fact-based. *Daubert* requires a thorough analysis of the expert's economic model, which should not be admitted if it does not apply to the specific facts of the case.

Finally, the Courts examine the qualifications of the experts[348]. In *Berlyn, Inc v. Gazette*, the district court excluded the testimony of the plaintiff's expert, who was an experienced newspaper executive, on the relevant market in question, for the simple reason that he was not an economist or an attorney and had never published anything related to economics or antitrust: "general business experience unrelated to antitrust economics does not render a witness qualified to offer an opinion on complicated antitrust issues such as defining relevant markets"[349]. In some cases the analysis of the expert's qualifications leads the courts to the perilous exercise of characterizing the expert's profile… In *Casper v. SMG*, the district court excluded the testimony of an expert detaining a J.D. (law degree) and a Ph.D in Economics. The Court looked to the expert's resume and extensive list of publications and found that "he is most accurately characterized as a lawyer who also holds a doctorate in economics rather

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[345] Ibid.
[346] *Daubert v. Merell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1321 (9th Cir. 1995); See also, *re Linerboard Antitrust Litigation*, 497 F.Supp.2d 666, 673 (E.D.Pa 2007); *United States v. Ford,* 481 F.3d 215, 220 n. 6 (3d Cir. 2007).
[347] *re Linerboard Antitrust Litigation*, at 673; *United States v. Williams,* 2007 WL 1643197, 3 (3d Cir. Jun.7, 2007).
[348] *In re Paoli R.R. Yard PCB Litig.,* 35 F.3d 717 (3d Cir. 1994); *Raskin v. Wyatt Co.,* 125 F.3d 55, 66 (2d Cir. 1997), the courts make an initial determination as to whether the proposed witness qualifies as an expert before inquiring into whether the scientific testimony is both relevant and reliable.
[349] *Berlyn Inc. v. Gazette Newspapers, Inc.,* 214 F. Supp. 2d 530, 536 (D. Md. 2002).

than an economist who also holds a law degree"![350] The court found that the part of the expert's report was an impermissible legal opinion, as the expert's testimony relied on case law and statutes and the testimony given was speculative, the expert's inferences being based on subjective belief rather than a specific methodology[351].

In *Kumho Tire Company, Ltd & al. v. Patrick Carmichael*, the Supreme Court extended the "general gatekeeping obligation" of the judges not only to testimony based on scientific knowledge, but also to testimony based on technical and other specialised knowledge (therefore economic expertise)[352]. An expert, whether basing testimony upon professional studies or personal experience, should employ in the courtroom "the same level of intellectual rigor that characterizes the practices of an expert in the relevant field"[353]. As a result of *Kumho*, *Daubert's* criteria apply to all forms of technical expert testimony, including economic expertise in antitrust cases[354]. In conclusion, the Supreme Court loosened the application of the *Daubert* test by indicating that not all the factors used to ascertain scientific validity might apply, or that they might apply differently to other areas of expertise.

The application of *Daubert* requires from the judge to assess "whether the reasoning or methodology underlying the testimony is scientifically valid" and "whether that reasoning or methodology properly can be applied to the facts at issue"[355]. It is not clear which party has generally the burden to establish by a preponderance of the evidence standard that the expert testimony meets or does not meet the requirements of FRE 702[356]. The

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[350] *Casper v. SMG,* 389 F. Supp 2d 618, 620 (D.N.J. 2006).
[351] Ibid., at 623.
[352] *Kumho Tire* Co. *v. Carmichael*, 526 U.S. 137 (1999).
[353] Ibid, at 152.
[354] Previously to *Kumho*, some lower courts distinguished explicitly between natural and social sciences. See, *State of Ohio Ex Rel. Montgomery v. Trauth Dairy,* 925 F.Supp. 1247, 1252 (S.D.Ohio 1996), "neither economic or statistics seems to completely qualify as scientific knowledge […] Although the proffered experts' testimony may not qualify as scientific knowledge, the reasoning of Daubert still applies". The district court observes, however, that

> "the Daubert analysis should be modified in the case of social science or other non-scientific expertise. In this case the inquiry is whether the experts are testifying to economic, statistical or econometric knowledge that will assist the trier of fact to understand a fact in issue"

The focus is on the relevance of the advanced evidence rather than on its reliability. The Court indeed found that "econometric and regression analyses are generally considered reliable disciplines" (ibid.). Since *Kumho Tire*, however, social science is subject to the same standards of reliability than natural sciences. The courts have certainly a margin of discretion, as the test is flexible to take into account the particular standards of the field, but according to the reliability standard, the evidence should at least always be testable.
[355] *Daubert v. Merrell Dow Pharm, Inc.,* at 593.
[356] Compare *In re Scrap Metal Antitrust Litig.*, 2006 U.S. Dist. LEXIS 75873, at 49 (Daubert does not require that a party who proffers expert testimony carry the burden of proving to the judge that the expert's assessment of the situation is correct… (t)hus under Daubert, the rejection of expert testimony is the exception rather than the rule") with *Aventis Environmental Science USA LP v. Scotts Co.*, 383 F. Supp. 2d 488, 513 (S.D.N.Y. 2005); *Mcintosh v. Monsanto Co.*, 462 F. Supp. 2d 1025, 1032 (E.D. Mo., 2006), "(t)o satisfy the reliability requirement, the proponent of the expert testimony must show by a preponderance of the

Courts take into account a certain number of factors, such as the qualifications of the expert, although this requirement may seem redundant as the parties have the incentive to signal that the expert hired is very competent and that his testimony will have a high quality. An expert's testimony must also "be grounded in an accepted body of learning or experience in the expert's field, and the expert must explain how the conclusion is so grounded"[357]. The Court mentioned in *Daubert* four non-exclusive factors that could be taken into account for the purpose of this inquiry:

First, it is important to determine whether a theory or technique is "scientific knowledge". According to the Court (which cited Hempel), "scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified; indeed, this methodology is what distinguishes science from other fields of human inquiry"[358] According to the Court (citing this time Popper), "(t)he criterion of the scientific status of a theory is its falsifiability, or refutability, or testability"[359]. In other words, the statements constituting a scientific explanation must be capable of empirical testing (which is compatible with the verificationism of Hempel and the falsificationism of Popper). However, the Court explicitly embraced the Popperian concept of falsifiability, or refutability, in order to define "scientific knowledge". The importance the majority opinion in *Daubert* gave to the criterion of "falsifiability" was questioned by the dissenting opinion of the then Chief Justice Renquist and Justice Stevens, who found this concept "mysterious" enough for federal judges to define.[360] An additional complication with this condition of *Daubert* is the amalgam that the Court seemed to make between Popper's theory, which equates falsifiability to testability (ability to be tested), and the Court's focus on falsification and the requirement that the theory "has been tested", not just that it can be tested[361]. It is finally ironic that the Court made the choice to cite philosophical authorities for propositions which have not been tested and some would even argue that they cannot be tested.

Second, an additional consideration is whether the theory or technique has been subjected to peer review and publication. The Court noted that

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evidence both that the expert is qualified to render the opinion by a preponderance of the evidence and that the methodology underlying his conclusions is scientifically valid… Courts should resolve doubts regarding the usefulness of an expert's testimony in favor of admissibility"; *United States v. Williams*, 506 F.3d 151, 160 (2d Cir. 2007); *Discover Financial Serv.v. VISA USA Inc.,* 2008 WL 4615788 (S.D.N.Y. 2008), at 2;

[357] Federal Rules of Evidence 702 (2000) Advisory Committee Notes.

[358] *Daubert v. Merrell Dow Pharm, Inc.,* at 593.

[359] *Ibid*., at 593.

[360] Ibid, at 600.

[361] Ibid., at 593. This is the interpretation one could give to the Notes of Advisory Committee on Rule FRE 702, available at http://www.law.cornell.edu/rules/fre/ACRule702.htm , according to which, "an expert's testimony must be grounded in an accepted body of learning or experience in the expert's field, and the expert must explain how the conclusion is so grounded". See also the discussion in D.H. Kaye, "On 'Falsification' and 'Falsifiability': the First Daubert factor and the Philosophy of Science", (2005) 45 *Jurimetrics* 473, 478-480.

"submission to the scrutiny of the scientific community is a component of good science in part because it increases the likelihood that substantive flaws in methodology will be detected[362].

Third, "in the case of a particular scientific technique, the court ordinarily should consider the known or potential rate of error"[363].

Fourth, "general" or "widespread" acceptance in the relevant scientific community (which introduces the previous *Frye* test as an additional factor of the analysis) has still a bearing on the inquiry. According to the Court, "a known technique which has been able to attract only minimal support within the community may properly be viewed with scepticism"[364].

The inquiry is flexible enough and it focuses on principles and methodology, not on the conclusions of the expert[365]. Some authors have analyzed this dichotomy as a matter of distinguishing between "general causation", which "refers to the proposition that one factor (or more) can produce certain results, and thus the finding transcends any one case" and "specific causation", which "considers whether those factors had those results in the specific case at bar"[366]. In other words, methodology is trans-case and should be subject to an admissibility control while the conclusions reached by the expert in applying the particular methodology to the case in hand is a matter that should be examined by the jury in the stage of evaluating/weighing the evidence. The Court's approach seems more liberal, in comparison to the *Frye* general acceptance standard, as it includes a richer set of criteria to scrutinize methodology but still recognizes a gatekeeper role to the judge, which could eventually allow for the exclusion of invalid evidence. Although falsifiability is only one relevant factor of the inquiry, it underpins at least the second one: obviously, a non testable hypothesis cannot have an error rate. Testability may be treated as a prerequisite rather than just another factor. As the Supreme Court itself recognized, this approach may sanction "a stifling and repressive scientific orthodoxy" and be "inimical to the search for truth"[367]. *Daubert* did not address the appellate review standard for evidentiary rulings but only indicated the important latitude of the trial judge to declare admissible or non-admissible expert evidence. In subsequent decisions the Court noted that the admissibility of expert testimony is not reviewable *de novo*, but it is reviewable under an abuse of discretion standard[368].

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[362] *Daubert v. Merrell Dow Pharm, Inc.,* at 593.
[363] Ibid., at 594.
[364] Ibid.
[365] Ibid.
[366] David L . Faigman, David H. Kaye, Michael J. Saks & Joseph Sanders, *Modern Scientific Evidence: The Law and Science of Expert Testimony, Vol. 1* (2nd ed., 2002, West Publishing), at 32.
[367] *Daubert v. Merrell Dow Pharm, Inc.,* at 596.
[368] *General Electric Company v. Robert Joiner*, 522 U.S. 136 (1997); *Kumho Tire Co. v. Patrick Carmichael*, 526 U.S. 137 (1999).

5.1.2. The application of the Daubert rules in competition law litigation

Although the Supreme Court has not applied *Daubert* yet to an antitrust case, lower courts have considered *Daubert* motions in a number of cases. Lower courts have a broad discretion in deciding to admit or to exclude expert testimony as they are subject to an abuse of discretion control by higher courts[369].

In general, speculative/conjectural evidence as well as evidence based on assumptions "so unrealistic and contradictory as to suggest bad faith" should be excluded[370]. In *SMS,* the first Circuit court of appeals found that the economic expert testimony on the existence of monopoly power was highly suspect and failed *Daubert*'s standard because the expert did not include any explanation on the customer data he was relying on to demonstrate monopoly power[371]. In *Concord Boat Corp*, the court of appeals reversed the trial's court finding for plaintiffs in a Section 1 and 2 Sherman Act case, which should have been excluded from consideration[372]. The Court found that the expert's testimony, which was based on a Cournot model in order to support that the defendant's high market shares resulted from anticompetitive contracts and rebates with certain customers, did not take into account the conditions of the real market, in particular the fact that both firms were making differentiated products, in which cases a Bertrand model would be more appropriate. In addition, the expert argued that any deviation from the Cournot model should be considered anticompetitive, which was a normative rather than a descriptive issue, for which the economic expert was not competent to testify[373].

In a number of cases, the courts excluded economic evidence for lack of empirical grounding: In *American Booksellers Association v. Barnes & Noble, Inc.*, the court found that the expert testimony was inadmissible as it was entirely speculative and contained too many assumptions and

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[369] *El Aguila Food Prods. Inc. v. Gruma Gorp*.,131 Fed. Appx. 450 (5th Cir. 2005). The standard of review for the admissibility of evidence decision is abuse of discretion.

[370] See, *Boucher v. U.S. Suzuki Motor Corp.*, 73 F.3d 18, 21 (2d Cir. 1996).

[371] *SMS Systems Maintenance Services, Inc. v. Digital Equipment Corp.*, 188 F.3d 11 (1st Cir. 1999), *cert.* denied, 528 U.S. 1188 (2000). In *El-Aguila Food Prods v. Gruma Corp.,* 301 F. Supp. 2d 612, 620-624 (S.D. Tex. 2003) the district court excluded the expert's testimony because his opinions amounted to abstract conclusions not adequately grounded in the facts of the case.

[372] *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039 (8th Cir.), *cert. denied*, 531 U.S. 979 (2000).

[373] See also, *Aventis Environmental Science USA LP v. Scotts Co.,* 383 F. Supp. 2d 488 (S.D.N.Y. 2005) [the economic expert cannot testify as to the appropriate legal framework for evaluating the defendant's conduct). See also the limitations imposed on economic exper testimony on the existence of an antitrust agreement (which is a legal issue): Robert A. Milne & Jack E. Pace III, "Conspiratologists at the gate: The Scope of Expert Testimony on the Subject of Conspiracy in a Sherman Act case", (2003) 17(2) *Antitrust* 36.

simplifications that were not supported by real-world evidence[374]. In *Craftsmen Limousine, Inc. v. Ford Motor*, the eighth circuit court of appeals, acting or remand, affirmed the district court's decision which had excluded the admissibility of the testimony of the plaintiff's expert for not having considered the effect of alleged conspiracy at issue on the relevant market as a whole and did not provide any empirical support for the definition of the relevant market[375]. The courts also attach importance to the consideration of alternative hypothesis and explanatory factors when the parties present regression analyses with the objective to demonstrate a causal link between the alleged anticompetitive conduct and consumer harm[376]. There is a risk that this type of analysis might blur the distinction established between admissibility and sufficiency of evidence[377].

Economic expertise has also been excluded from consideration in circumstances where the expert's testimony runs counter to applicable law and usurps the role of the judge in instructing the jury as to the appropriate legal framework or bypasses the role of the jury in establishing the facts of the case[378]. In *PSKS, Inc v. Leegin* the court of appeals of the fifth circuit affirmed the exclusion by the district court of the admissibility of Leegin's economic expert who criticized in his testimony the application of the *per se* rule for resale price maintenance (RPM) and argued that Leegin's pricing practices were procompetitive under the rule of reason; according to the court, "with the per se rule, expert testimony regarding economic conditions and the pricing policy's pro-competitive effects is not relevant"[379].

In addition, the issue of "hired guns" constitutes an important reason for declaring economic expertise inadmissible. In *Lantec*, the court of appeals affirmed the ruling of the district court that had declared inadmissible the evidence provided by the plaintiff's expert, for lack of understanding of the relevant market, for employing unreliable data and for his failure to use

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[374] *American Booksellers Association Inc. v. Barnes & Noble, Inc*, 135 F. Supp. 2d 1031 (N.D. Cal. 2001).

[375] *Craftsmen Limousine, Inc. v. Ford Motor Co.,* 491 F.3d 380, 389-93 (8th Cir. 2007). See also, *Craftsmen Limousine, Inc. v. Ford Motor Co.*, 363 F.3d 761, 776-77 (8th Cir. 2004), reversing the district court's admission of the plaintiff's expert testimony for failing to take into account a number of possible factors that would have explained the growth of the defendant's profits during the period of the alleged collusion.

[376] *In re Wireless Tel. Services Antitrust Litigation*, 385 F. Supp 403 (S.D.N.Y. 2005).

[377] For example, how many alternative explanations should an expert economist test in order for a regression to pass the admissibility requirement? The case law is particularly unclear at this respect. See, for instance, the blatant confusion of admissibility and sufficiency of evidence considerations in *In re Wireless Tel. Services Antitrust Litigation*, above, at 67 and 72-78. See *contra Bazemore v. Friday,* 478 U.S. 385, 400 (1986); in antitrust law see, *P&G Co. v. Stone Container Corp.*497 F. Supp. 2d 666, 678 (E.D. Pa. 2007), "failure to include variables will affect the analysis' probativeness, not its admissibility".

[378] *Aventis Environmental Science USA LP v. Scotts Co.,* above, at 516-517.

[379] *PSKS, Inc v. Leegin*, 171 F. App'x 464, 467 (5th Cir. 2006); *PSKS, Inc et al. v. Leegin Creative Leather Products, Inc*., 2004 U.S. Dist LEXIS 30414. The arguments of professor Elzinga have nevertheless influenced the Supreme Court in *Leegin Creative Leather Products, Inc. v. PSKS, Inc*, 127 S. Ct. 2705 (2007), which reversed the *per se* rule for RPM.

consumer studies and to perform cross-elasticity of demand analyses to determine the existence of substitutes for the product at issue[380]. In *re Aluminium Phosphide Antitrust Litigation*, the district court went even further and, despite the general acceptance of the methodology used, declared the testimony inadmissible as the expert was a professional "for hire", who "has devoted his career to partisan adjudicatory purposes" and whose analyses presented a number of shortcomings, such as the fact that he failed to perform a regression analysis to explain the cause of price differences before and after the alleged conduct of price-fixing[381].

The hired gun issue is not, however, the main reason for rejecting the admissibility of expertise. In the most important part of the cases of exclusion of evidence under the Daubert rule identified by the author, the exclusion was linked to the fact that the expert's testimony contained internal contradictions, the expert ignored inconvenient facts or he did not explain sufficiently his inferences from the data or he has developed a model that was irrelevant for the purposes of the case[382].

The courts have increasingly looked into the details of the expert testimony, sometimes ignoring the distinction between methodology and conclusions[383]. As the Supreme Court noted in *Joiner*,

> "(c)onclusions and methodology are not entirely different from one another. Trained experts commonly extrapolate from existing data. But nothing in either Daubert or the federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion offered"[384].

The Supreme Court accentuated that trend in *Kumho Tire Co. v. Carmichael*, where it observed that "(t)he objective of (Daubert) is to […] make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field",[385] thus subjecting expertise to a "quasi malpractice standard", according to which the Court

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[380] *Lantec, Inc. v. Novell, Inc.,* 306 F.3d 1003 (10th Cir. 2002).
[381] *Re Aluminium Phosphide Antitrust Litigation*, 893 F. Supp. 1497 (D. Kan. 1995).
[382] *Crafsmen Limousine, Inc. v. Ford Motor Co.,* 363 F.3d 761 98th Cir. 2004); *Williamson Oil Co. v. Philip Morris USA,* 346 F.3d 1287 (11th Cir. 2004); *Twin Cities Bakery Workers Health and Welfare Fund v. Biovail Corp.,* 2005-1 Trade Cas. (CCH) ¶ 74,741, 2005 U.S. Dist LEXIS 5570 (D. D.C.. Mar. 31, 2005); *Sundar v. Nilavar M.D.*, 244 Fed. Appx. 690 (6th Cir. 2007).
[383] One could exempt from this conclusion the class-certification stage where a lesser (not full-blown) Daubert analysis is usually performed. See, for instance, *In re South Dakota Microsoft Antitrust Litig*., 2003-1 Trade Cas. (CCH) P73,962
[384] *General Electric Company v. Robert Joiner*, at 146.
[385] *Kumho Tire* Co. *v. Carmichael*, 526 U.S. 137, 152 (1999).

verifies if the expert has departed from the level of professional care normally observed in the scientific domain (outside the litigation context)[386].

In *City of Tuscaloosa v. Harcros Chemicals, Inc*[387]*.* the District court excluded economic evidence presented by an economist and a statistician regarding a price-fixing conspiracy. The experts had relied on neoclassical price theory to infer the existence of tacit collusion from a number of factors, such as that there was a small number of firms in the market, that the product was homogenous with identical or similar costs, that there was transparency in the market as the defendants published their list prices and additional evidence of identical bidding, thus making collusion a plausible explanation. The district court rejected the economic evidence under the *Daubert* standard, noting that there is a difference between "conscious parallelism" in an oligopoly and antitrust agreement. As it was noted by different commentators and the Eleventh Circuit, which reversed the decision, the district court mainly based its decision to exclude the economic testimony on grounds that related to the conclusions reached and not to the methodology employed by the experts, which was the well-accepted multiple regression analysis, "a methodology that is well-established as reliable"[388]. The Eleventh Circuit noted that the exclusion conflated admissibility issues with issues regarding the sufficiency of the plaintiff's evidence. However, the Eleventh Circuit also accepted some of the district court's finding with regard the some of the expert's conclusions on legal standards which were outside the area of his competence[389].

It is particularly difficult to draw limits between the admissibility and sufficiency issues, in particular if judges subject economic experts' methodologies to a thorough examination[390]. Some courts exercise, however, a form of self-restraint in the examination of economic testimony and seem influenced by a more limited perception of the aim of the *Daubert* rule: afford the courts "limited control over extreme and unreliable expert testimony"[391].

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[386] David H. Kaye, "The Dynamics of Daubert: Methodology, Conclusions and Fit in Statistical and Econometric studies", (2001) 87 *Vanderbilt L Rev* 1933, 1980.

[387] *City of Tuscaloosa v. Harcros Chemicals, Inc*., 877 F. Supp. 1504, 1995-1 Trade Cas. (CCH) P 70967 (N.D. Ala. 1995).

[388] *City of Tuscaloosa v. Harcros Chemicals, Inc*., 158 F.3d 548, 566 (11th Cir. 1998).

[389] Ibid., at 565. See also, for a similar confusion of admissibility and sufficiency issues, *In re High pressure Laminates Antitrust Litg.,* 2006-1 Trade Cas. (CCH) P75,297.

[390] See the analysis in Andrew Gavil, "After Daubert: Discerning the Increasingly Fine Line Between the Admissibility and Sufficiency of Expert Testimony in Antitrust Litigation", (1997) 65 Antitrust L J 663.

[391] See, *In re Scrap Metal Antitrust Litigation*, 2006 U.S. Dist. LEXIS 75873, at 47 ("Daubert is not to be used to exclude expert evidence simply because it has weaknesses": the court distinguishes between weaknesses and :fundamental econometric flaws", which may lead to the exclusion of the admissibility of the evidence); *Aventis Environmental Science USA LP v. Scotts Co.,* 383 F. Supp. 2d 488, 514-515 (S.D.N.Y. 2003): distinguishing admissibility and weight of the evidence; *Northwest Airlines Corp. et al., Antitrust Litigation*, 197 F. Supp. 2d 908, 921 (ED Mich. 2002).

5.1.3. A critical assessment of the Daubert test

Although in some cases the *Daubert* test may seem more liberal and permissive than the general acceptance test of *Frye*, it can also be more restrictive in other circumstances, in particular for knowledge that has not yet been empirically verified to be sound, although it gained acceptance in the field. This could be a problem in economics as frequently economic assumptions and theories have not been empirically tested. Quantitative/statistical techniques, such as regression analysis, have been declared in principle admissible by the courts[392], unless there are problems with the selection of observations, the design of the statistical model, the variables included in the statistical model, the inferences that follow from the statistical analysis, or if the study is irrelevant for the purposes of the investigation [393]. Kaye notes that "Daubert motions to exclude statistical studies or conclusions have migrated from the realm of epidemiology in which Daubert was grounded to many substantive fields and types of statistical proof"[394]. This is one of the consequences of the blurring between methodology and conclusions, a trend initiated by the Supreme Court in *Kumho*.

For example, the admissibility of evidence based on game theory may be problematic in some circumstances. Adopting a strict interpretation of the *Daubert* doctrine, in particular of falsificationism[395], Malcolm Coates and Jeffrey Fischer argue that, although the classic micro-economic theories of competition and monopoly are "sufficiently robust to meet the Daubert

[392] See, *City of Tuscaloosa v. Harcros Chemicals, Inc*.,at 566; *Ohio v. Louis Trauth Dairy, Inc*., 925 F. Supp. 1247, 1252 (S.D. Ohio 1996), the experts "were economists or statisticians (who) conducted econometric and regression analyses that were testable, generally acceptable, and reproducible".

[393] See, David H. Kaye, "The Dynamics of Daubert: Methodology, Conclusions and Fit in Statistical and Econometric studies", (2001) 87 Vanderbilt L Rev 1933, 1948 ("traditionally, Frye simply was not perceived as a barrier to statistical testimony"); See e.g. *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039 (8th Cir. 2000); *Freeland v. AT&T Corp.,* 2006-2 Trade Cas. (CCH) P75,404 ("Ordinarily, the failure to include a variable in an expert's regression analysis will affect the probative value of the analysis and not its admissibility. Where a study accounts for the "major factors" but not "all measurable variables," it is admissible. Where significant variables that are quantifiable are omitted from a regression analysis, however, the study may become so incomplete that it is inadmissible as irrelevant. Because the burden of proving helpfulness and relevance rests on the proponent of a regression analysis, it is the proponent who must establish that the major factors have been accounted for in a regression analysis".

[394] David H. Kaye, "The Dynamics of Daubert: Methodology, Conclusions and Fit in Statistical and Econometric studies", (2001) 87 *Vanderbilt L Rev* 1933, 1987.

[395] See, Malcolm B. Coate & Jeffrey H. Fischer, "Daubert, Science, and Modern Game Theory: Implications for Merger Analysis", at footnote 100, where they advance that in Daubert, "the Court sided with the Popperians in the science wars, resolving the issue with respect to expert legal hypothesis. Scientists who believe historical, political, social and rhetorical ideas are more important than tested hypothesis can publish what they want, but their untested analyses are not admissible as expert opinion. The Court really had no other choice, because the relativist side in the Science wars only offer opinion and opinion does not assist the dispute resolution process". Emphasis added.

standard for admissibility, structuralist theory fails the test of admissibility and "modern game-theoretic unilateral analysis" fails it even more crudely: "applied to mergers, unilateral effects game theory is mathematics, not validated economic science"[396]. This is certainly linked to the Popperian view that mathematics is not a science[397].

Coates and Fischer advance a number of arguments to support this claim. Inspired by Milton Friedman's instrumentalism, they claim that, ultimately, the demarcation criterion should be the ability of a "scientific" theory or "best-validated hypothesis", to predict well. The assumptions should meet minimal standards of rationality (they should be logically complete and consistent), but these assumptions do not need to correspond to reality or to be empirically validated as such. Friedman is ready to assume that reality corresponds to the assumptions and structures of the theory, if the predictive results of the theory are accurate (his "as if" argument)[398].

Coates and Fischer dismiss "out of hand" post-modern philosophy, "as it ponders questions exogenous to legal (and many suggest) scientific pursuits"[399]. They consider that legal analysis "needs decision making tools (instrumentalism) more than explanations (realism) and facts (falsification) more than deductive logic (scientific positivism)"[400]. The *Daubert* rule recognizes that by advancing falsifiability as the main demarcation criterion, which is interpreted by the authors, citing Friedman, as analogous to an empirical verification of the theories advanced[401]. The authors seem to confuse falsifiability and falsification, as they seem to argue that *Daubert* requires that the theory has been tested, more than it is a testable hypothesis[402]. This is in conformity with their interpretation of the *Daubert* test as including two steps, a "simple methodology screen" followed by "a quick look at the merits", thus implying that they do not perceive the distinction between methodology and conclusions as being sharp[403].

Based on this reading of the *Daubert* condition, Coates and Fischer question the empirical foundations of the structure-conduct-performance paradigm, as well as of some aspects of modern oligopoly theory. They argue that empirical evidence demonstrated that market concentration is not linked with the existence of additional profits, thus undermining the earlier conclusions and implying that "structuralism was not a generally applicable

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[396] Ibid., at 31.
[397] See, however, the contrary conclusions of Imre Lakatos, *Mathematics, Science and Epistemology* (Cambridge University Press, 1978).
[398] See the analysis above of Friedman's instrumentalism.
[399] Malcolm B. Coate & Jeffrey H. Fischer, "Daubert, Science, and Modern Game Theory: Implications for Merger Analysis", above, at footnote 57.
[400] Ibid.
[401] Ibid., at 27.
[402] Ibid., at 4, "Daubert does not allow the courts to substitute the economist's vision of science for tested science". Emphasis added. See also footnote 100 the word "tested" (instead of testable) is used again.
[403] Ibid. at 24.

scientific principle"[404]. They note that structuralist theory could have passed under the *Frye* test, as it was generally acceptable for a long time after its foundations have been contested, "because the economic consensus changes slowly", thus implying that, under a *Daubert* standard, admissibility of the structuralist theory would not have been possible immediately after the empirical foundations of the theory were tested[405]. They continue by attacking the revival of the Structure Conduct Performance paradigm by new industrial economics based on game theory, which is the foundation of what is called the "post-Chicago" school[406]. First, any oligopoly theory based on Cournot equilibrium model "is falsified as a general economic proposition (Science is a harsh matter)"[407]. Second, differentiated goods Nash-Bertrand equilibria models, are based on a "heroic assumption" that "while changes in market structure affect price, firms cannot adjust their market strategies outside the narrow focus on price allowed by the optimization calculations", and, in addition, have been advanced "with very little empirical evidence" falsified by empirical studies in different industries[408]. The authors conclude that "overall, the consumer goods evidence appears to falsify the Nash-Bertrand merger model, because, as a general rule, these models do not predict well" and suggest that Daubert rules preclude the general application of the "methodology" of the general unilateral effects model[409].

Coates and Fischer do not argue that the theory of unilateral effects is completely irrelevant, but they just confine it to a secondary role, as a "possibility theory", applying "a set of assumptions relevant to as few as one situation and draw a conclusion for that specific set of facts"[410]. In other words, unilateral effects theory may not pass the admissibility test, unless one brings lots of empirical support in the form of "generalizing evidence", in which case, it becomes a possibility theorem that may be examined at the stage of the evaluation of the evidence. Others have also criticized the propensity of game theory for continuous adjustments to the initial assumptions and

[404] Ibid., at 35. They cite studies undertaken by economists Yale Brozen, Harold Demsetz and Richard Schmalensee, as well as, the opinion of lawyers, such as Timothy Muris and Abbott Lipsky on the "collapse of structuralism".
[405] Ibid., footnote 129.
[406] Malcolm B. Coate & Jeffrey H. Fischer, "Can Post-Chicago Economics Survive Daubert?", (2001) 34 *Akron L Rev* 795, 828.
[407] Malcolm B. Coate & Jeffrey H. Fischer, "Daubert, Science, and Modern Game Theory: Implications for Merger Analysis", above, at footnote 132.
[408] Ibid., at 38-39.
[409] Ibid., at 42, "(w)ithout scientific evidence to support a general unilateral effects model, Daubert precludes the general application of the methodology. For the model to assist in the final decision, the court needs evidence that Nash-Bertrand analysis offers more than a parameterized mathematical tautology. Economists have not provided this evidence and thus these theoretical analyses should be excluded from the record".
[410] Ibid., at 43.

hypotheses and argued against drawing generalized conclusions to implement in competition law analysis[411].

An additional attack to game theory could be the unrealistic nature of its assumptions. Game theory assumes that individual action is instrumentally rational, that there is common knowledge of this rationality, that there are common priors, that is that "rational agents draw the same inferences on how a game is to be played", that individual players know the rules of the game and that "a person's motive for choosing a particular action is strictly independent of the rules of the game which structure the opportunities for action", what is called the principle of "consistent alignment of beliefs"[412]. One could remark that these assumptions are not less realistic than those of the perfect competition model in neoclassical theory, starting with Cournot. Game theory shares also with neoclassical theory, methodological individualism, thus ignoring the existence of institutions and other social factors, which could be separate from the actions of individuals, or, in other words that they are not created spontaneously through conventions between instrumentally rational individuals interacting[413]. However, if one questions these assumptions it is difficult to support the concept of Nash-equilibrium, the basis of modern oligopoly theory: first, rational players must hold consistently aligned beliefs, which is difficult to accept as a general proposition in dynamic games, and, second, it is unclear "how one Nash equilibrium is selected when there are many"[414].

Coates and Fischer conveniently ignore this possible criticism to game theory, as it would also jeopardise the foundations of the perfect competition/monopoly models that they support. Their insistence on Popperian philosophy of science may thus be understood as an ideal cover-up for this omission: as I have previously explained Popper insisted on the importance of "situational analysis" or "situational logic" in the methodology of

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[411] Bruce Kobayashi, "Game Theory and Antitrust: A Post-Mortem", (1997) 5 *George Mason L Rev* 411; Franklin M. Fisher, "Games Economists Play: A Noncooperative View", 20 *Rand Journal of Economics* 13, 116 (1989) (stating that game theory says "nothing remarkably helpful" about the analysis of oligopoly); Michelle M. Burtis, Modern Industrial Organization: A Comment", (2003) 12(1) *George Mason L Rev* 39, 41 ("game theory models often do not lend themselves to empirical methods traditionally used in economics because it is difficult to formulate testable hypotheses related to the models' critical assumptions. […] Many assumptions underlying the game theory models are not testable, may vary depending on the particular situation being analyzed, and can critically affect the basic conclusions of the analysis')

[412] Shaun P. Hargreaves Heap & Yannis Varoufakis, *Game Theory – A critical text* (2nd ed., 2004, Routledge), at 27-28. This is itself based on the Harsanyi-Aumann doctrine: "if two individuals have the same information, they must draw the same inferences and come, independently, to the same conclusion". This is itself based on the assumption of the common knowledge of rationality.

[413] Ibid., at 34. For a game-theoretic perspective on the emergence of institutions, see Ken Binmore. *Playing Fair: Game Theory and the Social Contract I*. (MIT Press, Cambridge, 1994) & Ken Binmore, *Just Playing: Game Theory and the Social Contract II*. MIT Press, Cambridge, 1998)

[414] Shaun P. Hargreaves Heap & Yannis Varoufakis, above, at 118.

social sciences, thus providing scientific status to assumptions based on the rationality principle[415]. They also rely on the predictive power of the perfect competition/monopoly model, following Milton Friedman's methodology, which they oppose to the empirical predictive weakness of game theory. However, the predictive power of their model is less than clear. First, one could argue, with regard to the monopoly model, that there is conflicting empirical support of the proposition that monopoly is linked with less performance, if one takes into account dynamic efficiency gains and incentives to innovation (the classic Schumpeterian argument)[416]. Empirical and experimental evidence about oligopoly theory is also more nuanced than the picture presented by the authors, with a number of studies showing that market outcomes get more competitive the larger the number of firms[417]. Nothing thus explains the asymmetric treatment by Coates and Fischer of the predictive power of these different models. Second, they take for granted the view that a proposition is scientific, if it is possible to base on it successful predictions[418]. This hypothesis can be questioned. As Tony Lawson rightly observes, one may

[415] See my analysis, above, at . As Bruce J. Caldwell, "Two proposals for the recovery of economic practice", in Roger E. Backhouse (ed.) *New Directions in Economic Methodology* (Routledge, 1994), 137, at 140 notes, "[…] in pursuing this method (of situational analysis), the social scientist describes the 'situation' (both goals and constraints) an actor faces, assumes that the actor chooses rationally ('the rationality hypothesis'), then makes a prediction about the actor's behaviour. If the actor fails to behave as predicted, the social scientist re-examines the prediction of the situation. Crucially, the rationality hypothesis is never questioned".

[416] It has been argued by some that monopolistic profits are a necessary ingredient of innovation and therefore improved performance. The argument relates to the capacity of dominant firms (market leaders) to invest on research and development. See, S. Ahn, "Competition, Innovation and Productivity Growth: A Review of Theory and Evidence", (2002) *OECD Economics Department Working Papers*, No. 317, OECD Publishing, available at http://puck.sourceoecd.org/vl=29359926/cl=19/nw=1/rpsv/workingpapers/18151973/wp_5lgsjhvj7xq5.htm ; Richard J. Gilbert, *Competition and Innovation,* Competition Policy Center. Paper CPC07-069 18-19 (Jan. 27, 2007), *available at* http://repositories.cdlib.org/iber/cpc/CPC07-069 , at 18-19; Wesley M. Cohen and Richard C. Levin, "Empirical Studies of Innovation and Market Structure in Richard Schmalensee and Robert D. Willig (ed.), *Handbook of Industrial Organization* (North-Holland, 1989, vol. I), 1059-1107

[417] See, Steffn Huck, Hans-Theo Normann & Jörg Oechssler, "Two are Few and Four are many – On Number Effects in Cournot Oligopoly", (2004) 53 *Journal of Economic Behaviour & Organization* 435; Martin Dufwenberg & Uri Gneezy, "Price Competition and Market Concentration: An Experimental Study", (2000) 18 *International Journal of Industrial Organization* 7; Nikolaos Georgantzis, "Testing Oligopoly Theory in the Lab", (2006) 15 *Anales de Estudios Económicos y Empresariales* 37; Stephen John Nickell, "Competition and corporate performance", (1996) 104 *Journal of Political Economy* 724. See however Philip Aghion & Rachel Griffith, *Competition & Growth: Reconciling Theory and Evidence* (MIT Press, 2005), at 32.

[418] This is linked to their insistence on "tested" propositions instead of the more Popperian "testable" propositions. As I have noted previously the authors seem to confuse falsifiability and falsification. The irony is that the fact that propositions have been tested, demonstrates ipso facto their ability to be tested (testability). If one takes Popper seriously, this is enough to qualify the specific method as scientific. Possible evolutions of a theory are possible, to the condition, however, that this does not constitute an immunizing stratagem and that the new theory is more testable than the one that has been refuted.

argue that "the primary aim of science is not the illumination or prediction of events at all but the identification and comprehension of the structures, powers, mechanisms and tendencies which produce or facilitate them"[419]. Successful prediction may also be theoretically undesirable as an objective for science: "for the possibility of successful prediction, turning as it does on the existence of constant conjunctions of events, would mean either that the future is already determined, or, if exogenous variables could be fixed by us, open to social control", which would be "inconsistent with the possibility of generalised human choice and freedom"[420].

More importantly, the *Daubert* rule may lead to establishing the dominance of a particular theory, without giving the opportunity to newer theories that it has not been possible to subject to systematic testing and empirical research, to be heard in court. One could argue that the application of the *Daubert* rule will exceedingly favour the Chicago school antitrust economics, which are based on the simpler models of monopoly and perfect competition and it will disfavour post-Chicago economic theory, which relies on game theory and oligopoly models with differentiated products. The assumption of rationality and the "situational logic" of Popperianism immunize the Chicago school's assumptions from every realist-assumptions type criticism and conveniently exclude rival post-Chicago theories from access to the courtroom[421].

This may have profound implications on the outcomes of antitrust cases. And indeed, empirical research is telling: According to a recent empirical study on the application of the *Daubert* rules to economic expertise in antitrust cases, the successful challenges of an expert economist amount to 40% of all *Daubert* challenges in antitrust cases, which indicates that economists in antitrust cases are more likely to be challenged than any other experts or any other economic experts[422]. In addition, the study compared the percentage of exclusion of economic expertise when the Daubert challenge is presented by the defendant against the plaintiff's expert with situations where it is presented by the plaintiff against the defendant's expert and found that the exclusion rate for plaintiff's economic expert's is much higher than that of the defendant's economic experts. This finding confirms the hypothesis that the *Daubert* rule favors defendants more than plaintiffs. The study concludes that "antitrust plaintiffs appear to have a substantial likelihood of being challenged and having their cases thrown out based on *Daubert* grounds,

[419] Tony Lawson, *Economics and Reality – Economics as Social Theory* (Routledge, 1997), at 289.
[420] Ibid., at 290.
[421] See, John E. Lopatka & William H. Page, "Economic Authority and the Limits of Expertise in Antitrust Cases", (2005) 90 *Cornell L Rev* 617.
[422] James Langenfeld and Chris Alexander, "Daubert Challenges of Antitrust Experts" (AAI Working Paper 08-06, December 4, 2008), at 3, available at http://www.antitrustinstitute.org/Archives/workingpaper0806.ashx

since virtually all antitrust cases need experts to articulate the theory, provide evidence and data on liability, and estimate damages"[423]. Indeed, "economists testifying on liability and/or damages for the plaintiff have close to a 1 in 2 chance of some or all of their opinion being excluded once challenged, while economists testifying for the defense have closer to a 1 in 4 probability of being fully or partially excluded after challenge[424]. These results underscore the asymmetry of *Daubert*'s effects on plaintiffs and defendants and seem incompatible with the idea that *Daubert* entrusts to the judges a "neutral gatekeeping function that preserves the fact-finding role of the jury"[425]. More than a simple methodological issue, the *Daubert* rule seems to affect the legal conclusions/interpretation reached by the courts and the outcome of antitrust cases.

A possible explanation for these results may be the fact that "higher quality experts self select as defense witnesses"[426]. More empirical investigation needs to be done, but a brief examination shows that the testimony of well-known and internationally respected economists has also in some cases been excluded as inadmissible. One may also expect that the plaintiff's experts have more time to prepare their testimony than defendant's experts, as they might have been consulted before the litigation was engaged, but this is not always the case.

An additional criticism of the exclusionary ethos of the *Daubert* rule is that the Court emphasizes superficial criteria of admissibility (such as general acceptance, qualifications, publication, peer review, error rate of the theory's predictions) that do not offer the possibility to the court to seriously engage with the essence of the expertise. One of the reasons advanced for this is the methodology/conclusions distinction. But the real reason for this distinction may be more profound. It represents the choice of the US legal system to favor a system of "peripheral or heuristic" processing of information, whereas the decision-maker is expected not to focus on the quality and validity of arguments but to adopt shortcuts to determine the value of a message (e.g. the communicator's credentials), rather than a system of "central processing", which would require the decision-maker to examine the "content of a communication to assess its validity" and therefore to examine the quality (in terms of persuasiveness) of the arguments advanced[427].

The development of admissibility standards (and of the *Daubert* rule) could be perceived as a division of tasks between judges and juries: at the first step of the assessment of expert evidence, the judges will conduct both a peripheral processing of the information, as well as a central processing

[423] Ibid., at 8.
[424] Ibid., at 7.
[425] John E. Lopatka & William H. Page, above, at 694-695.
[426] James Langenfeld and Chris Alexander, above, at 7.
[427] Joseph Sanders, "The Merits of the Paternalistic Justifications for Restrictions on the Admissibility of Expert Evidence", (2003) 33 *Seton Hall L Rev* 881, 909.

regarding the scientific methodology used, while, at the second step, the jurors will proceed to the central processing of the information which was not excluded at the first step. In other words, the *Daubert* rule implies a lack of confidence in the jurors' capacity to perform the peripheral processing of the *Daubert* criteria of the qualification of the experts, publication and peer review, or the central processing of scientific methodology used, while they are considered as able to conduct the central processing of the economic evidence presented. This seems paradoxical, as one would have expected that if the jurors were able to perform the more difficult task of central processing in the evaluation of evidence step, they should be able to conduct at least parts of the peripheral or central assessment required by *Daubert* in the admissibility step. One could argue that in this case the distinction between central and peripheral processing is artificial, as in reality the judges maintain also the control of the central processing step, simply by defining the standard of proof (standard of persuasion) required for the evidence to be deemed convincing. The jurors are thus absent from the first step and only the nominal masters of the process in the second step.

The *Daubert* rule, as well as the *Frye* rule, are based on the principle of "epistemic paternalism"[428]: the aim is to protect the jurors from their propensity to focus on peripheral criteria and not on the essence of the issues. Brian Leiter notes that the *Daubert* rule develops two types of epistemic rules: primary epistemic rules requiring the exclusion of unscientific evidence, a rule justified by "the epistemic shortcomings of jurors" ("their susceptibility to confusion and prejudice or their generally modest level of intellectual ability"), and secondary epistemic rules requiring judges to exclude unscientific evidence, which, however, do not fit with the epistemic shortcomings of judges, in particular, "their general lack of expertise in scientific matters"[429]. Indeed, if there is some empirical and laboratory support of the epistemic shortcomings of jurors in complex cases[430], the situation of generalist judges is not better, in particular for the central processing bits of *Daubert*. Of particular interest is the finding that "only four percent of the judges offered an explanation that involved a clear understanding of falsifiability and thirty-five percent gave answers that were clearly wrong"[431]. Most of the analysis from generalist judges of admissibility questions focused on peripheral processing,

[428] Alvin Goldman, "Epistemic Paternalism: Communication Control in Law and Society", (1991) 88 *Journal of Philosophy* 113; Brian Leiter, "The Epistemology of Admissibility: Why even good philosophy of science would not make for good philosophy of evidence", (1997) *Brigham Young University Law Review* 803, 814.
[429] Brian Leiter, above, at 814-815.
[430] Joseph Sanders, above, at 901-907; W. Kip Viscusi, "Jurors, Judges and the Mistreatment of Risk by the Courts", (2001) 30 *Journal of Legal Studies* 107.
[431] Sophia Gatowski et al., "Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a post-Daubert World", (2001) 25 *Law and Human Behavior* 433, finding that 35% of judges' explanations of falsifiability were blatantly wrong, 10& were wrong in their assessment of error rate and 86% gave error rates that were equivocal.

such as the issues of relevance and qualifications[432]. It follows that, even if the epistemic paternalism argument is true, there is a considerable misfit between the justification of paternalism and the tools that have been used in order to overcome the respective epistemic shortcomings of judges and experts.

In conclusion, juries and generalist judges present many similarities, as in both cases there is a "novice" (jury or generalist judge), who is not in a position to assess the "expert's" testimony by using her own opinion[433]. Emphasizing the specific role of judges as gatekeepers would therefore lead to increase the amount of peripheral processing in presence of conflicting expert testimony. Alvin Goldman cites different sources of evidence that a novice may have in order to trust one expert rather than another: argumentative justification (strong support for the premises of a specific argument[434]), dialectical superiority of one expert to the other (this may be linked to the ability of the expert to communicate clearly its expertise but also a greater capacity to collect or manipulate relevant information), agreement from other experts of the field (although he defends that numbers do not always matter), "evidence of distortion interests and biases that might be behind a putative expert's claims"[435], or using past track-records[436]. It is submitted that these criteria might be helpful complements to the analysis and may affect the probative value of the evidence. However, it would be wrong to elevate this type of peripheral processing to an absolute barrier for the admissibility of the proffered evidence.

The model is very different in the context of an "expert/expert" situation, which characterizes the context of expertise in a specialized tribunal or in the presence of a court-appointed expert: in this case, the judges proceed to either "direct calibration", that is "use their own opinion about the subject matter in question", or "indirect calibration", that is, use the opinion of other scientists, whose opinions they have previously evaluated by direct calibration, "based on their own opinion about the subject-matter in

[432] Ibid., at 929.
[433] Alvin I. Goldman, "Experts: Which Ones Should you Trust?", (2001) 63 *Philosophy and Phenomenological Research* 85, 90
[434] For example, a laissez-faire inspired judge would have relatively more difficulty to accept a conclusion that will lead to more state intervention in the economy
[435] Ibid. at 104-105. He gives the example of someone "who is regularly hired as an expert witness for the defense in certain types of civil suits: who has the "economic interest in delivering strong testimony in any current trial, because her reputation as a defense witness depends on her present performance". The bias may also "infect a whole discipline, sub-discipline, or research group", which "would make the numbers game trickier for the novice to negotiate". Two examples of biases are provided (ibid, at 105): (1) "the exclusion or underrepresentation of certain viewpoints or standpoints within a discipline or expert community, (2) the economics or politics of the research community and the constant need of "experts" to "exaggerate the probativeness" of evidence that supports their findings, especially to outsiders".
[436] Ibid, at 106.

question"[437]. There is a propensity of the "expert" judge to critically assess the economic reasoning presented by the "expert" (a specialized authority integrating expertise in the case of judicial review or a stand alone expert witness) and to proceed to a different economic assessment. An example is the clear rejection by the Competition Appeal Tribunal (CAT), a specialised UK competition court, of the so-called 'Efficient Component-Pricing Rule' (ECPR) as an applicable pricing rule to determine margins and any alleged squeeze. Briefly, ECPR is a form of marginal-cost pricing according to which it is optimal to set the access price to a bottleneck equal to the direct cost of providing access plus the opportunity cost of providing access to the interested provider, which is equivalent to the reduction of the incumbent profit caused by the provision of access –i.e., the price minus the direct cost and the marginal cost. ECPR is then a pricing rule proposed as a second-best access rule in cases where the user-level price has already been fixed (ensuring absence of monopoly rents) and the regulator is concentrated *solely* on productive efficiency. In the *Albion* case the CAT felt more confident than "experts" regulators to decide whether the application of such debatable rule was meritorious or not, or even worse, whether the rule was reasonable enough to be applicable .[438] The perception of expertise may not only be linked to the status of specialised tribunal but could also be justified on increased familiarity with economic thinking, for example because of previous exposure to a certain type of cases. Even an "expert" judge needs, however, to respect the institutional constraints of her role, in particular if the "expert" authority maintains a discretionary power to make policy choices. This should nonetheless be the only reason limiting the scope of the "expert" judge's intervention in reviewing economic reasoning.

Daubert's emphasis on methodology (with a small m) does not also take into account the fact that the objectives and values of legal decision-making are different from those of scientific research and that this approach may affect the admissibility of relatively new, non-tested, theories, even if they are generally accepted by the specific scientific community. The exclusionary ethos of *Daubert* might block useful information that could be taken into account, along with other data and theories, during the assessment/evaluation of evidence phase. The judge may give less weight to an idiosyncratic opinion at the stage of the assessment of evidence. If examined in conjunction with other facts and data, these idiosyncratic economic theories may nevertheless make more sense (in other words fit better with the facts of the case). The analysis of the reliability of evidence precedes the examination of the issue of relevance. In other words, if the theory or methodology advanced does not fulfil some of the peripheral processing type of conditions of reliability under

[437] Ibid.
[438] CAT, *Albion Water Limited & Albion Water Group Limited v. Water Services Regulation Authority* [2006] CAT 23, para. 873.

Daubert, it could not be examined at the stage of relevance. Consequently, the result of *Daubert* is that the excluded expertise will be ignored both by the judge and the jury when they assess the facts of the case, thus excluding the benefit of important insights to the decision maker.

Less restrictive alternatives are possible in order to mitigate the risks of "hired guns" and "expert witness shopping". Richard Posner has suggested mandatory disclosure rules as an alternative[439]. Parties will be asked to disclose the list of economists contacted by their lawyers, even those experts that did not accept to work for them. Posner also suggests the establishment of a roster managed by an economists association or non-profit firm that will contain "all testimonial appearances by members of the association… an abstract of the member's testimony… and would also record any criticisms of the testimony by the judge or by the lawyers or experts on the other side of the suit.[440]" This record would allow the academic community to "monitor its members' adherence to high standards of probity and care in their testimonial activities". This suggestion underlines the need to develop rules of evidence that regulate the pre-trial, the trial process and the post-trial process, thus expanding the scope of evidence law beyond the trial-focused traditional conception[441].

Another possibility, which has been explored in UK criminal law procedure consists in establishing extra-judicial bodies (sort of interdisciplinary commissions), which will regulate the quality standards of the forensic science market and will conduct some form of post-conviction scrutiny focusing on the issue of the reliability of forensic evidence. The House of Commons Select Committee on Science and Technology published in 2005 a report "Forensic Science on Trial" where it suggested the creation of a Forensic Science Advisory Council (FSAC), which will "oversee the regulation of the forensic science market and provide independent and impartial advice on forensic science", the creation of a forum for Science and the Law and the establishment of a Scientific Review Committee within the Criminal Cases Review Commission[442]. The Report considered that, "the absence of an agreed protocol for the validation of scientific techniques prior to their being admitted in court is entirely unsatisfactory" and that "judges are not well-placed to determine scientific validity without input from scientists". The Report recommended that one of the most important tasks of the Forensic Science Advisory Council will be to develop a "gate-keeping" test for

[439] Richard A. Posner, 'The Law and Economics of the Economic Expert Witness', (1999) 13(2) *Journal of Economic Perspectives* 91.
[440] Ibid., at 96.
[441] John D. Jackson, 'Analyzing the New Evidence Scholarship: Towards a New Conception of the Law of Evidence', (1996) 16(2) *Oxford Journal of Legal Studies* 309, at 324.
[442] House of Commons Select Committee on Science and Technology, *Forensic Science on Trial*, 2005, available at http://www.publications.parliament.uk/pa/cm200405/cmselect/cmsctech/96/96i.pdf

expert evidence, which should be done in cooperation with judges, scientists and other key players and should build on the US Daubert test"[443]. The Report was adopted following some high profile criminal law cases where forensic evidence in the form of statistics led to concerns of miscarriage of justice[444].

The FSAC was established in 2007 with the mission to regulate the market of forensic science but nothing is mentioned in the FSAC's terms of reference on possible intervention in the area of ex-post conviction assessment of the admissibility of forensic evidence. However, other examples exist in the UK criminal procedure system. The Criminal Cases Review Commission (CCRC) in England or the Scottish Criminal Cases Review Commission (SCCRC) have been established to conduct a post-conviction scrutiny of forensic evidence with the possibility to refer a case back to the court of appeal if the forensic evidence relied on was found inadmissible and they believe that "a miscarriage of justice may have occurred"[445]. Some have argued that these "cross-border institutions", should have the mission to scrutinize the reliability of scientific evidence that has been submitted in specific cases and decide whether the scientific theory or the application of this theory in the specific case, was unreliable[446]. These recommendations for post-trial scrutiny may be considered as a form of compensation for the relatively liberal UK standards for the admissibility of evidence and expertise in courts. They indicate an alternative way to address concerns of admissibility of scientific evidence. Their applicability in the competition law context could, however, be subject to doubt. First, the costs of false convictions in the criminal law field are much more important than the costs of type II errors in the enforcement of competition law, in particular in the EU, where there is no provision for criminal sanctions for competition law infringements. Second, their existence has been mainly justified by the "asymmetrical distribution of knowledge and means of proof" between the defendants and public prosecution in the context of a criminal trial to the benefit of pubic prosecution[447]. In contrast, in EC competition law, as it is recognized by the European Commission's staff working paper on damages, "(c)ompetition cases are characterised by a very asymmetric distribution of the available information and the necessary evidence: it is often very difficult for claimants to produce the required evidence, since many of the relevant facts are in the possession of the defendant or of third persons and are often

[443] Ibid, at 76, para 173.
[444] Science baffles juries, ay MPs, The Guardian, 29 March 2005, available at http://www.guardian.co.uk/uk/2005/mar/29/ukcrime.immigrationpolicy
[445] Available at http://www.opsi.gov.uk/acts/acts1997/ukpga_19970048_en_4
[446] Peter Duff, "Criminal Cases Review Commissions and 'Deference' to the Courts: The Evaluation of Evidence and Evidentiary Rules", (2001) *Criminal Law Review* 341, 391.
[447] Burkhard Schafer, Colin Aitken and Dimitris Mavridis, "Daubert in the UK – Second order evidence between courts and commissions", Discussion paper, available at http://www.maths.ed.ac.uk/~cgga/Cutting%20the%20Daubert%20knot.doc

not known to claimants in sufficient detail".[448] Such a process of post-conviction evaluation under *Daubert*-like standards of scientific evidence will nevertheless offer the opportunity to transform the *Daubert* test from a "past-oriented" analysis of the of a theory to a "future-oriented assessment of the falsifiability of the theory, without incurring the risk of opening widely the door to non-admissible scientific arguments.

One could also argue that the gate-keeper role of the judge advanced by *Frye* and *Daubert* does not take sufficiently into account the need to guarantee both greater reliance on the scientific Method in addressing complex issues of facts and a more effective judicial decision-making process. The important point is not to examine if a theory is "formally" scientific but to determine "when it is rational to accept a scientific theory for the purpose of decision making"[449]. This highlights the need for a decision-theoretic approach in order to address the complexity of scientific evidence, in presence of epistemic asymmetry. However, it also leads to an inevitable blurring of the distinction between admissibility and evaluation of scientific evidence, as in such a setting, the "quantitative" assessment of how the verified consequences of a theory have increased our rational belief in its truth, which is inspired by the Hempel part of Daubert replaces the "qualitative" Popperian requirement of the testability of the theory[450].

The confusion becomes even clearer if one adopts a Bayesian probability approach, instead of a statistical frequency type of perspective. One important difference between the two approaches is that the frequentist view accepts only two outcomes: either acceptance or rejection of a theory, while the Bayesian approach essentially attaches a probability to a specific hypothesis, thus making possible a more nuanced assessment of the evidence. The *Daubert* rule essentially adopts a frequentist view for admissibility, as it either includes or excludes a specific theory for consideration. This may be appropriate in clear-cut cases of "junk science" and personal bias where there is no doubt that the theory presented is totally unfounded or the expert is unqualified. However, it is not an adequate standard in the greater majority of cases, where there is a suspicion of structural intellectual or other bias. It is also clear that a frequentist approach does not deal directly with the "science for litigation" problem, as in most cases litigation driven research fulfils the Daubert criteria and is then assessed in equal terms with independent academically created research. It is therefore important not to artificially distinguish between the admissibility and the assessment step but to address both issues together. After all, as Twining

[448] Commission Staff Working Paper on Damages Actions for Breach of the EC antitrust rules, SEC(2008) 404, 2.4.2008, available at http://ec.europa.eu/comm/competition/antitrust/actionsdamages/documents.html
[449] Burkhard Schafer, Colin Aitken and Dimitris Mavridis, "Daubert in the UK – Second order evidence between courts and commissions", above.
[450] Ibid.

has once observed, the focus should be on "information in litigation", that is, "the collection, construction, processing, uses of and argumentation about information in respect of important decisions in the context of litigation seen as a total process"[451].

5.2. Assessment and sufficiency of economic expertise: the discursive ethos

The assessment of scientific evidence requires, as it is the case for all types of evidence, the evaluation of the strength of all arguments presented and the decision to attach a specific weight to arguments/theories implying the existence of different outcomes. Assuming the consequentialist nature of the competition law decision-maker's task (as the use of economic evidence indicates that there is less place for a deontological-principled judgment), one could argue that if all evidence presented or induced from rules of general experience does not imply a specific outcome, it is important to determine a point where evidence will be deemed sufficient, in other words, the decision will be legitimate. This implies that the judicial decision-maker is not a passive receiver of economic expertise.

One could distinguish two steps in this process. Initially, the decision-maker assigns weight to any particular piece of economic evidence. This is a concrete analysis that takes into account the specific characteristics of each case. The issue of the standard of proof comes next: the quantity/quality of evidence needed in order to persuade a decision-maker that an allegation is true. This is an abstract determination, in the sense that it is determined *ex ante* for all cases or for categories of cases.

5.2.1. Attaching weight to economic evidence as a filter for a more extensive competition law assessment

5.2.1.1. The development of procedures requiring the weighing of economic evidence: summary judgments and the expansion of the plausible economics inquiry

In US antitrust law, the Supreme Court developed "an aggressive doctrine" of summary judgment which offers the possibility to pass judgment on the quality and weight of admissible economic testimony[452]. A defendant

[451] William Twining, *Rethinking Evidence: Exploratory Essays* (CUP, 2006), at 249.

[452] Herbert Hovenkamp, "Economic Expertise in Antitrust Cases", Chapter 44, in David L. Faigman, David H. Kaye, Michael J. Saks, and Joseph Sanders (ed.), *Modern Scientific Evidence: The Law and Science of Expert Testimony* (2nd ed.,West Group, 2002), 713, at 718. This is certainly a noticeable evolution since the position of the Supreme Court in *Poller v. Columbia Broadcasting System*, 368 U.S. 464, 473 (1964), that "summary procedures should be used sparingly in complex antitrust litigation where motive and intent play leading roles, the proof is largely in the hands of the alleged conspirators, and hostile witnesses

may move for summary judgment and argue that no reasonable jury could accept as sufficient proof of an antitrust infringement (or some elements of it, such as the existence of an antitrust agreement) the economic evidence advanced by the plaintiff. The Court looks to the entire record and examines whether "there is no genuine issue, as to any material fact and that the moving party is entitled to a judgment as a matter of law"[453]. If the Court finds that the defendant is entitled to a judgment as a matter of law, then it enters a summary judgment in favour of the defendant.

For a long time, summary judgments were "used sparingly" in antitrust litigation[454]. However, in *Matsushita Electric Industrial Co. v. Zenith Radio*, the Supreme Court employed the summary judgment doctrine in order to erect an additional evidentiary barrier to the plaintiffs[455]. In a decision drafted by Justice Powel, the Court declared that if "the factual context renders respondents' claim implausible – if the claim is one that simply makes no economic sense – respondents must come forward with more persuasive evidence to support their claim than would otherwise be necessary"[456]. In the presence of ambiguous evidence over the alleged conspiracy between Japanese manufacturers to a predatory pricing scheme with the aim to exclude their US competitors, the Court dismissed the Third Circuit's exclusion of the summary judgment motion as it did not consider the plausibility of the inferences drawn from the existing circumstantial evidence and, in particular, the conclusions of the economic expert. According to the Court,

> "if the factual context renders respondent's claim implausible – if the claim is one that simply makes no economic sense – respondents must come forward with more persuasive evidence to support their claim than would otherwise be necessary"[457].

This additional hurdle to the plaintiff may be explained by the underlying aim of the Supreme Court to construct a restrictive interpretation of the concept of

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thicken the plot". The progressive limitation of the scope of antitrust since the late 1970s in the United States and the development of "door-closing" devices for plaintiffs, such as antitrust injury and standing, summary judgments, motions to dismiss, may provide the theoretical framework rationalizing this evolution. See, William H. Page, "The Chicago School and the Evolution of Antitrust Characterization, Antitrust Injury, and Evidentiary Sufficiency", (1989) 75 *Virginia L Rev* 1221, 1285, "…much of the change is the result of the courts' reliance on the Chicago models"; See also, *Virgin Atlantic Airways Ltd. V. British Airways PLC*, 257 F.3d 256, 263 (2d Cir. 2001), the objective of summary judgments is to avoid "wasteful trials and prolonged litigation that may have a chilling effect on precompetitive market forces".

[453] Federal Rules of Civil Procedure 56(c).

[454] *Poller v. Columbia Broadcasting System, Inc.*, 368U.S. 464, 473 (1962).

[455] *Matsushita Elec. Indus. Co. Ltd v. Zenith Radio Corp.*, 475 U.S. 574, (1986). The majority of summary judgment motions in antitrust cases are made by the defendants.

[456] Ibid., at 585-586.

[457] Ibid., at 587. Emphasis added.

antitrust conspiracy in order to limit false positives[458]. That has already appeared as a clear trend in the case law in a decision rendered two years earlier in *Monsanto Co. v. Spray-Rite Service Corp.*, also drafted by Justice Powel[459]. In both cases the Court found that the risk of false positives and the possible risk of deterring or penalizing "perfectly legitimate conduct[460]" should be seriously considered. This would be "especially costly", because such behaviour "chill(s) the very conduct the antitrust laws are designed to protect[461]" The Court thus required a higher standard of evidentiary sufficiency for the plaintiffs:

> "(t)o survive a motion for summary judgment or for a directed verdict, plaintiff seeking damages for a violation of § 1 must present evidence that tends to exclude the possibility that the alleges conspirators acted independently"[462].

The Court found that the risk of false negatives was particularly low in these cases[463], in particular, as it assumed that a rational maximizer of profits would not conspire in the circumstances of the case[464]. The assumption of the Court may be subject to criticism. Justice White observed in his dissenting opinion that "in discussing the unlikelihood of a predatory conspiracy" the Court "consistently assumes that petitioners valued profit-maximization over growth", but this seemed inconsistent with the factual record of the case, as the firms in question commercialised their goods while incurring substantial losses over a long period of time[465]. Other authors have criticized the court's narrow focus on error costs, instead of error costs and information costs[466].

The assumption of rational profit-maximizer has since made heavy inroads in antitrust analysis, and same for the concern of false positives[467]. The broad implications of the Supreme Court's position in *Matsushita* is that it

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[458] Ibid., at 593, "In Monsanto, we emphasized that courts should not permit factfinders to infer conspiracies when such inferences are implausible, because the effect of such practices is often to deter precompetitive conduct". See also, Andrew Gavil, "Burden of proof in U.S. Antitrust Law", in Chapter 5, ABA, *Issues in Competition Law and Policy*, (2008), 125, at 135.
[459] *Monsanto Co. v. Spray-Rite Service Corp*., 465 U.S. 752 (1984).
[460] Ibid., at 763
[461] *Matsushita Elec. Indus. Co. Ltd v. Zenith Radio Corp*, above at 594.
[462] Ibid., at 588. See also *Monsanto*, above, at 764. Emphasis added.
[463] *Matsushita*, above at 594.
[464] The reasoning of the Court in *Matsushita* was that predatory pricing schemes require a sacrifice of profits and a possibility of recoupment in the future. However, "the gains depend on a host of uncertainties, making such schemes more likely to fail than to succeed. These economic realities tend to make predatory pricing conspiracies self-deterring": *Matsushita*, above at 594. The low probability of false negatives was not addressed in *Monsanto*, probably because the conspiracy was in this case vertical and the Court did not seem to attach importance to this type of restriction. The Court highlighted in this case only the high cost of false positives that a lower standard of proof for the plaintiff would have entailed: *Monsanto*, above, at 763-764, "… distributors are an important source of information for manufacturers… To bar a manufacturer from acting solely because the information upon which it acts originated as a price complaint would create an irrational dislocation in the market".
[465] *Matsushita*, above, at 603.
[466] Andrew Gavil, "Burden of proof in U.S. Antitrust Law", at 135.
[467] See, *Verizon Communicatins Inc. v. Law offices v. Trinko, LLP,* 540 U.S. 398, 399 (2004).

added a new "early exit route" in antitrust cases brought by plaintiffs with the aim to introduce a series of filters that would mitigate the important risk of excessive private litigation in the US, because of the incentives offered, for example, by treble damages, contingency fees and class actions[468]. This is particularly true for practices for which the calculus of the cost of type 1 versus type 2 errors leans towards false positives, such as vertical restrictions or price-cutting behaviour. The requirement that the plaintiff's theory should make economic sense requires from the judge a *prima facie* assessment of the economic arguments of the theory of consumer harm advanced by the plaintiff.

The Supreme Court has nevertheless adopted a more restrictive approach in granting motions for summary judgment in situations where it is more likely that the alleged anticompetitive behaviour would cause consumer harm. In *Eastman Kodak v. Image Technical services, Inc.*, the Supreme Court denied Kodak's motion for summary judgment as the later failed to demonstrate that the inference of Kodak's market power on the aftermarkets was unreasonable[469]. There was direct evidence of the capacity of Kodak to raise prices, in particular in view of the characteristics of the market: the existence of locked-in customers and high information costs[470]. The Court interpreted restrictively the requirement of plausibility of *Matsushita*: the plaintiff's theory should be "economically senseless", that is, non reasonable jury could find in its favour[471]. The moving party has therefore "a substantial burden in showing that it is entitled to summary judgment"[472]. The position of the Court may be explained by the low risk of false positives in this case. Contrary to *Monsanto* and *Matsushita*, the conduct in question led to higher service prices and market foreclosure and was "facially anticompetitive", thus not creating any presumption in favour of summary judgment[473].

The Supreme Court moved in *Bell Atlantic Corp. v. Twombly* even further towards a standard of increased scrutiny of the economic plausibility of the theory of anticompetitive effects by the close of pleading and before discovery (at the notice pleading stage)[474]. The Federal Rules of Civil Procedure (FRCP) embody two conflicting sets of principles: Rule 1 emphasizes that the Rules should be "construed and administered to secure the just, speedy and inexpensive determination of every action", while Rule 8(a) FRSP imposes to the plaintiff only a "short and plain statement of the

[468] Charles Goetz & Fred McChesney, *Antitrust Law: Interpretation and Implementation* (4th ed. 2008) at 166.1.
[469] *Eastman Kodak Co. v. Image Technical services, Inc.*, 504 U.S. 451 (1992).
[470] Ibid., at 477.
[471] Ibid., at 468-469.
[472] Ibid.
[473] Ibid. at 478.
[474] *Bell Atlantic Corp. v. William Twombly*, 127 S.Ct 1955 (2007).

claim showing that the pleader is entitled to relief"[475]. The objective of this rule is to give fair notice to the defendant so that it can prepare for trial[476]. If, it is clear from the face of the complaint that the plaintiff cannot win, the defendant is entitled to file a motion to dismiss, according to Article 12 of the FRCP. For a long time, the Supreme Court had adopted a liberal interpretation of Rule 8(a) and did not require the plaintiffs to set out in detail the facts upon which they based their claims. In *Conley v. Gibson,* the Court indicated that "a complaint should not be dismissed for failure to state a claim unless it appears beyond doubt that the plaintiff can prove no set of facts in support of his claim which would entitle him to relief"[477]. The Supreme Court had subsequently declared that the same notice pleading requirement applied to antitrust cases, therefore not imposing a heightened pleading requirement for antitrust complaints[478].

In *Bell Atlantic Corp. v. Twombly*, the Supreme Court considered that the "enormous" cost of discovery, in particular in an antitrust class action setting, and the possibility of discovery abuse which cannot be solved by a careful scrutiny of the facts of the case at the summary judgment stage should lead to a re-interpretation of Rule 8(a) in favour of the defendants[479]. The plaintiffs alleged that the four major local exchange carriers colluded to block competitive entry into their respective local telephone and/or high speed internet services markets. The plaintiffs rested their claims of antitrust conspiracy on the description of parallel conduct alone without bringing forward direct evidence of actual agreement or other plus factors[480], in particular as parallel conduct could have had in this case alternative explanations[481]. As it is rightly observed by Richard Epstein, "it seems clear that these allegations meet the requirements of Rule 8 insofar as they put the defendant on notice of the nature of the claim and place of the challenged conduct"[482]. However, for the Court, accepting such broad allegations would have the effect to increase claims brought with the aim to harass companies and force them to a settlement for fear of a long-term and costly discovery procedure. The Court reinterpreted Rule 8(a) of the Federal Rules as excluding the possibility for the plaintiff to prove only one set of facts, thus reversing the favourable position of the plaintiffs in the previous case law.

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[475] Federal Rules of Civil procedure, Rule 1 and Rule 8(a), available at http://www.uscourts.gov/rules/civil2007.pdf

[476] Richard A. Epstein, "Bell Atlantic v. Twombly: How motions to dismiss become (disguised) summary judgments", (2007) 25 *Wash. U. J. L. & Pol'y* 61, 69.

[477] *Conley v. Gibson,* 355 U.S. 41, 45-46 (1957).

[478] *McClain v. Real Estate Bd. Of New Orleans,* 444 U.S. 232, 246 (1980)

[479] *Bell Atlantic Corp. v. William Twombly*, 127 S.Ct 1955 (2007) (hereinafter *Twombly*).

[480] Ibid. at 1970-1971, ("the nub of the complaint" was parallel behaviour).

[481] Ibid., at 1972 ("a natural explanation for the non-competition alleged is that the former Government-sanctioned monopolists were sitting tight, expecting their neighbors to do the same thing").

[482] Richard A. Epstein, "Bell Atlantic v. Twombly: How motions to dismiss become (disguised) summary judgments", at 75.

Following Twombly, to overcome a motion to dismiss, there must be at least one set of facts in support of the plaintiff's claims, but also, the plaintiff must plead the facts "beyond a speculative level" to plausibly claim that an antitrust violation has occurred[483]. Parallel conduct alone could not constitute a sufficient indication of the plausibility of an antitrust violation, in particular as there was no reason to infer in this case "that the companies had agreed among themselves to do what was only natural anyway; so natural, in fact, that if alleging parallel decisions to resist competition were enough to imply an antitrust conspiracy, pleading a §1 violation against almost any group of competing businesses would be a sure thing"[484].

In conclusion, the result of *Twombly* is that it extends *Matsushita*'s rule for summary judgment motions in an earlier stage of the case and transforms motions to dismiss to "disguised summary judgments"[485]. The Court/s decision did not consider the likelihood of error costs that might follow from such a rule (false negatives) and emphasized only information costs (discovery costs). The Court's position is consistent with its case law on class certification where economic analysis has also made heavy inroads[486]. As a result of this case law economic analysis matters now at the early stages of the proceedings as the plaintiff should be able to bring forward a plausible economic story in order to proceed first to a class complaint then to discovery and finally to trial. The objective is to limit the risk of class actions and litigation costs for business as well as to filter the cases that arrive to the jury. These examples show that the current system has enough filters to avoid speculative and not sufficiently substantiated economic theories to be advanced in litigation. The admissibility step seems therefore redundant, including for the reasons advanced earlier on the difficulty to distinguish questions of admissibility from issues of sufficiency of evidence.

5.2.1.2. How to determine the evidential weight of economic evidence?

[483] *Twombly*, above, at 1964.
[484] Ibid. at 1971.
[485] Richard A. Epstein, "Bell Atlantic v. Twombly: How motions to dismiss become (disguised) summary judgments", above, at 77-79, noting the parallel between Twombly and Matsushita and concluding that Twombly "should be framed as a mini-summary judgment case, conducted at the close of the pleadings".
[486] Wendy L. Bloom, "Why Economics now matter for antitrust class actions at the class certification stage", *GCP Magazine*-June 2008-II; David S. Evans, "The New Consensus on Class Certification: What it Means for the Use of Economic and Statistical Evidence in Meeting the Requirements of Rule 23"(January 2009). Available at SSRN: http://ssrn.com/abstract=1330594 The degree of rigorous economic analysis in the class certification process varies (see, David Evans, at 2). However, the question at the class certification stage is "whether plaintiff's expert evidence is sufficient to demonstrate common questions of fact warranting certification of the proposed class, not whether the evidence will ultimately be persuasive": *Visa Check/Mastermoney Antitrust Litigation v. Visa, United States*, 280 F.3d 124, 135 (2001, 2nd Cir.)..

A closer look to the case law also shows that, in practice, the evidential weight of economic theory varies and depends on the acceptability of the premises of the theory or the perception of its empirical validation by the judge. The judge's perception is itself influenced by the relative weight/credence of the theory in the specific scientific community.

The use of oligopoly theory in merger litigation may provide a useful illustration of this link. Both in the United States and in Europe, there are three broad theories of anticompetitive effects for horizontal mergers: the merger might lead to monopoly or dominance, it might lead to coordinated effects or it might lead to non-coordinated effects[487]. In the United States, the first and the third possibility are classified under the same category: that of unilateral effects, the main difference between them being that the analysis of mergers to monopoly draws essentially from the model of monopoly, while the analysis of mergers producing non-coordinated effects draws from oligopoly models. In all these cases the merging firms may find it profitable to alter their behavior unilaterally, following the acquisition, by elevating the price and suppressing output, by acting independently of the remaining firms[488]. It is only recently in Europe that unilateral effects that do not reach the level of dominance were included in the scope of EU merger control, following the adoption of a new substantive test, that of significant impediment of effective competition (SIEC) which expanded the EU merger control's scope beyond the situations where the merging firms acquired a dominant position[489].

As it was previously explained, both unilateral and coordinated effects' theories are based on Nash-Cournot, Nash-Bertrand equilibria models or auction models[490], which make use of game theory in order to assess the likely anticompetitive effects of a merger. The main difference between unilateral effects and coordinated effects is that unilateral effects reflect a move from a static premerger Cournot or Bertrand equilibrium to a static post-merger equilibrium induced by the merger, in other words, "this partial equilibrium approach assumes that rivals maintain their premerger prices or outputs and the assumption is that the post-merger game will continue to be

[487] European Commission, Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings [2004] OJ C 31/5 (hereinafter EU horizontal merger guidelines).

[488] US DOJ & FTC, 1992 Horizontal Merger Guidelines, available at http://www.ftc.gov/bc/docs/horizmer.htm (hereinafter US Horizontal Merger Guidelines)

[489] Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings [2004] OJ L 24/1, Article 2(2).

[490] In the Oracle/PeopleSoft merger, the government used an auction model (an English procurement auction) to predict the merger effect. The Court rejected the predictions of the model because it was based on "unreliable data" as it was based on market share statistics that were themselves based on a wrong, according to the Court, definition of the relevant market : *United States v.* Oracle, 331 F. Supp. 2d 1098, 1169-1170 (N.D. Cal. 2004). Auction models are also explicitly mentioned in the US Horizontal Merger Guidelines, §2.21 n. 21.

Cournot or Bertrand" (the assumption is that this is a single play game)[491]. Coordinated effects are based on a more dynamic model of "an equilibrium outcome of repeated interactions, where each interaction is just a play of the static Cournot or Bertrand game"[492]. The fact that firms interact repeatedly may enable them to realize more profitable and less competitive outcomes relative to what would have been the case in a single play game and also "affects firms' incentives and ability to implement and sustain a collusive outcome"[493].

A closer look to the US and European case law on these three types of anticompetitive effects illustrates that the respective weight accorded to qualitative evidence or quantitative evidence of anticompetitive effects, the latter including economic theory based inferences (including structural models) and pure empirical findings (in the sense of observations from natural experiments[494]), varies and is not similar in all three theories of anticompetitive harm[495].

In the United States, as well as in Europe, there is a presumption of anticompetitive effects for mergers to monopoly or dominance[496]. Once evidence is brought that the resulting merger will create a dominant position on the relevant market, it is more likely that consumer harm will follow, unless if there is the constraint of potential entry or if there are efficiency gains[497]. In

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[491] Janusz A. Ordover, "Coordinated Effects", in Chapter 57, ABA Section of Antitrust Law, *Issues in Competition Law and Policy*, Vol. II (ABA, 2008), at 1359, 1362.

[492] Ibid., at 1362.

[493] Ibid. As it is noted by Oliver Budzinski & Arndt Christiansen, "Simulating the (Unilateral) Effects of Mergers: Implications of the Oracke/PeopleSoft case", (August 15, 2006). Available at SSRN: http://ssrn.com/abstract=924375 at 3 (also published as Oliver Budzinski & Arndt Christiansen, "The Oracle/PeopleSoft Case: Unilateral Effects, Simulation Models and Econometrics in Contemporary Merger Control", (2007) 34(2) *Legal Issues of Economic Integration* 133), "the decisive difference, therefore, lies in the nature of strategic relationship between the merging firms and the remaining competitors. It is crucial that unilateral effects do not require the other firms in the market to also raise their prices (as with coordinated effects)".

[494] On natural experiments, see Mary Coleman & James Langenfeld, "Natural Experiments", Chapter 31 in ABA Antitrust Section, *Issues in Competition Law and Policy*, Vol. 1 (2008), 743, at 744" natural experiments "compare market outcomes associated with the firm or market of interest (treatment group) with those of other similar firms or markets that serve as a control group unaffected by the behaviour of interest".

[495] Judge Walker has distinguished in his decision in *United States v. Oracle*, at 1122 two broad categories of evidence: "merger analyses range from highly qualitative ("circumstantial) to highly quantitative ("direct"), depending on the data available for a particular market.

[496] The underlying economic models are monopoly or dominant firm with a competitive fringe.

[497] See, Case T-221/95, *Endemol v Commission*, [1999] ECR II-1299, para. 134; Case T-102/96, *Gencor v Commission*, [1999] ECR II-753, para. 205; EU horizontal merger guidelines, para. 17; This is the main consequence of the structural presumption in US merger control: *Philadelphia National Bank*, 374 U.S. 321, 363-364 (1974) {"(w)ithout attempting to specify the smallest market share which would still be considered to threaten undue concentration, we are clear that 30% presents that threat"); *United States v. Baker Hughes Inc.*, 908 F. 2d 981, 982-83 (D.C. Cir.1990); *FTC v. H. J. Heinz Co.*, 246 F. 3d 708, 715 (D.C. Cir. 2001); To rebut this presumption, defendant may show that "the market-share statistics give an inaccurate account of the merger's probable effects on competition in the relevant market" or efficiencies resulting from the merger: *United States v. Oracle*, at 1110.

other words, qualitative evidence (increased concentration in the market) may be sufficient to prove anticompetitive effects absent any likelihood of potential entry or efficiency gains.

When coordinated effects are advanced as the main theory of consumer harm in oligopoly markets, both US and EC competition law impose a certain number of pre-defined requirements/conditions for the courts to conclude that evidence of anticompetitive effects is sufficient. Increased market concentration (structural presumption) is not enough. Further evidence on the ability of the merging firm to monitor the common policy, the incentive not to depart from the common policy and the results (impact) expected of the common policy is required[498]. These criteria were set out by the Court of First Instance (CFI) for the finding of a collective dominant position (the *Airtours* criteria)[499]. Since the CFI's decision in *Impala v. Commission*, they can be proved either directly or indirectly by reference "to indicia and items of evidence relating to the signs, manifestations and phenomena inherent in the presence of a collective dominant position"[500].

These conditions essentially reproduce those generally advanced by economists who, most recently, have focused their attention on the "mechanism of coordination" between the merging firm and other firms on the market and pay less attention to structural factors such as market concentration, likelihood of entry, firm and product homogeneity, the extent of excess capacity, stability of demand or past evidence of attempted or successful collusion[501]. Recent economic theory is attached on the precise description of the means by which coordination would be implemented and sustained as well the identification of the conditions that would enable the coordination mechanism to be effective, which explains the difficulty of employing coordinated effects and the high standard of proof that the recent decisions of the Court of First Instance have imposed to the European Commission[502].

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[498] On the "ability-incentive-impact" framework, see the excellent analysis of Alexandr Svetlicinii*, "*Exploring the role of legal presumptions under the 'convincing evidence' standard in EC merger control", (2008) 1 *Global Antitrust Review* 117, 120, available at http://www.icc.qmul.ac.uk/GAR/Svetlicini.pdf . See also, in a non-horizontal context, EU non-horizontal merger guidelines, [2008] OJ C 265/6 (ability, incentive and likely impact).

[499] See, Case T-342/99, *Airtours plc v. Commission* [2002] ECR II-2585, para 62 :

- sufficient market transparency to enable each member of the dominant oligopoly to know how the other members are behaving and to monitor whether or not they are adopting a common policy
- the ability to sustain a situation of tacit coordination over time, i.e., the existence of deterrents to ensure that there is a long-term incentive not to depart from the common policy; and
- the results expected by the common policy must not be jeopardised by the foreseeable reaction of current and future competitors, as well as of consumers.

[500] Case T-464/04, *Impala v. Commission* [2006] ECR II-2289, para 251.

[501] Janusz A. Ordover, "Coordinated Effects", above, at 1363-1372.

[502] Case T-342/99, para. 58-61; Case T-464/04, *Independent Music Publishers & Labels Association (IMPALA) v. Commission*, [2006] ECR II-2289, para. 247-248 & 525-528.

In other words, the theory of coordinated effects is accepted as a possible source of anticompetitive effects and what is required by the plaintiff/competition authorities is to bring factual evidence that these three conditions are fulfilled *in concreto*, following what the theory of coordinated effects will operate automatically and will bring the decision-maker to the conclusion that the merger is likely to produce anticompetitive effects. Of course, this is not dismissive of the case as it would be possible to consider constraints imposed by possible entry or efficiency gains that would pass on to consumers. In other words, the theory of co-ordinated effects has an independent evidential value to the empirical evidence advanced in support of the likelihood of collusion between the merging firm and its rivals on the relevant market.

The situation seems to be slightly different with regard to unilateral effects. Although the competition agencies in the US and Europe have published guidelines spelling out the conditions for the unilateral (non-coordinated) effects theory to build an inference of anticompetitive effects in differentiated product markets[503], the courts have not yet explicitly accepted an independent evidential value for the theory. In the United States, theories of unilateral effects were advanced in cases such as *Swedish Match*[504], *Heinz*[505], *Staples/Office depot*[506], *Kraft General Foods*[507], *United States v. Oracle*[508], *Whole Foods*[509]. In all these cases the Federal Trade Commission based its unilateral effects claim on a wealth of empirical evidence as well as on economic models. In practice, two methods are mainly used in order to assess whether a particular merger is likely to cause substantial unilateral effects or whether these are negligible. First, on could employ econometric methods, such as regression analysis, in order to identify the competitive interrelations between firms from past data and estimate the intensity of competition through diversion ratios in local markets. The diversion ratio measures how much the firm can profitably increase price and decrease output for one product when it owns another product which is consumers' second choice. The calculation considers if the products are close or distant substitutes by looking to data such as marketing surveys, bid information, loss business reports, own-price or cross-price elasticities, if these are known. The diversion ratio will then be used to estimate a post merger price increase.

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[503] US DOJ & FTC, Horizontal Mergers Guidelines (1992), available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/toc.html ; EU, Horizontal Merger Guidelines, above, para 24-38. I am not examining here unilateral effects in non differentiated product markets, which can be dealt with under the merger to monopoly or dominance category.

[504] *FTC v. Swedish Match*, 131 F. Supp 2d 151 (D.D.C. 2000).

[505] *FTC v. H.J. Heinz Co.*, 246 F.3d 708 (D.C. Cir. 2001).

[506] *FTC v. Staples, Inc.,* 970 F. Supp 1066 (D.D.C. 1997).

[507] *New York v. Kraft Gen. Foods, Inc*., 926 F. Supp. 321 (S.D.N.Y. 1995).

[508] *United States v. Oracle Corp*., 131 F. Supp. 2d 1098 (N.D. Cal. 2004).

[509] *FTC v. Whole Foods Market, Inc.*, 548 F. 3d 1028 (D.C. Cir. 2008).

The result should be complemented by a closer look to "post merger product repositioning, entry or efficiencies"[510].

Second, merger simulation models may also provide reliable projections of the effects of the merger on price or quantity for a short term (2-3 years after the merger). Merger simulation is a method that estimates post merger prices based on pre merger market conditions and assumptions about the behaviour of the firms (such as short-run profit maximization) production technology (the nature of costs) and consumers (the demand functions for the product) post merger. Structural models, such as simulation, are designed "to capture the key economic elements of the real world, abstracting from those elements that are not crucial", the choice of the key elements being dependent on the model specification[511]. The advantage of merger simulation is that it incorporates efficiencies as the model takes usually into account the extent to which the claimed efficiencies are likely to reduce incremental costs post merger. Indeed, simulation uses economic models grounded in the theory of industrial organization and in particular oligopoly theory. The model is partly based on data and partly on assumptions. For example, one of the first steps is to estimate market shares and own or cross-price elasticities of demand pre-merger from retail supermarket scanner data or manufacturer level data[512]. These estimated elasticities are then combined with observed data on price, quantities or market shares to calibrate the demand system. The calibration process involves some degree of subjective judgment as it essentially determines the parameter values of the model indirectly from "casual empiricism or unrelated econometric studies or are chosen to guarantee that the model precisely mimics some particular feature of the historical data"[513]. The second step of the simulation model estimates the price changes post-merger that would be consistent with the merged firm's

[510] Carl Shapiro, "Mergers with differentiated products", (1996) Spring issue, *Antitrust*, 23, 27. Diversion ratio techniques have been used in the *FTC v. Swedish Match*, above, at 169 ("the weight of the evidence demonstrates that a unilateral price increase by Swedish Match is likely after the acquisition". The Court noted that "two factors are of particular concern in determining this likelihood. First, the price cost margin for National is important because it determines the profit that will be retained by Swedish Match by users who switch from Swedish Match's brands to National's brands… Second, the diversion ratio is important because it calculates the percentage of lost sales that go to National. High margins and high diversion rations support large price increases, a tenet endorsed by most economists").

[511] Gregory K. Leonard & J. Douglas Zona, "Simulation in Competitive Analysis", in Chapter 59, ABA Section of Antitrust Law, *Issues in Competition Law and Policy* (2008), 1405. For a survey, see Oliver Budzinski & Isabel Ruhmer, "Merger Simulation in Competition Policy: A Survey", Joint Discussion Paper Series in Economics, No 07-2008, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1138682

[512] I am referring here to the two steps of the Antitrust Logit Model for mergers (ALM), which is sued to screen mergers in markets with differentiated products by the US Department of Justice: Gregory Werden & Luke Froeb, "The Effects of Mergers in Differentiated Products Industries: Structural Merger Policy and the Logit Model", (1994) 10 *Journal of Law, Economics & Organization* 407.

[513] Kevin D. Hoover, "Facts and artifacts: Calibration and the empirical assessment of real-business-cycle models", (1995) 47(1) *Oxford Economic Papers* 24, at 25.

maximizing profits for all the brands it owns, while it incorporates merger-related costs changes and the likely reaction of competitors to the changed competitive environment.

A frequent criticism to simulation models is that they abstract too much from the actual details of the industry under consideration. The Antitrust Logit Model, which is employed in merger control, is based on strong assumptions concerning the form of the demand or the fact that firms are price setters, and its utility in complex data settings, when market shares premerger are asymmetric and there are post merger synergies, has been questioned[514]. There is also little empirical evidence of the accuracy of merger simulation in predicting the effects of actual mergers. The defenders of the theory argue, in a pure Friedman's instrumentalist tradition, that "a model is properly tested by examining the accuracy of its predictions of economic outcomes rather than the realism of its assumptions"[515]. But even if one adheres to Friedman's theory[516], and it is clear that this is not the position defended in this study, there is the risk that behind the veil of "esoteric knowledge" of the economist, a crucial factor may be omitted, thus leading to biased predictions[517] or that the process would be based on unquantifiable and incommensurate variables[518]. Unravelling the omitted factor will certainly be time consuming and costly, if this is to be done by an expert. Courts have also generally been more reticent to accept predictive evidence as opposed to evidence of past events or current events, and this affects the success of predictive quantitative methods, such as merger simulation[519].

It could be argued that in an adversarial system, the opposing expert may fulfil precisely this role. However, facing two conflicting experts would put the non-specialist judge in front of a difficult choice. In the "battle of expert witnesses" the Court must ultimately choose the most convincing evidence[520].

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[514] See, Douglas D. Davis & Bart Wilson, "Differentiated Product Competition and the Antitrust Logit Model: An Experimental Analysis", (2005) 57 *Journal of Economic Behavior & Organization* 89.

[515] Gregory K. Leonard & J. Douglas Zona, "Simulation in Competitive Analysis", above, at 1431.

[516] Contrary to what these authors imply, there are very few empirical studies evaluating ex post the performance of merger simulation, and the few studies that exist are more cautions on their support for merger simulation. See, Orley Ashenfelter & Daniel Hosken, "The Effect of Mergers on Consumer Prices: Evidence from Five Selected Case Studies", Working Paper 13859, NBER, March 2008.

[517] Some argue that it is easier to find that the merger will produce significant price effects with a merger simulation. See, however, Statement of Daniel Rubinfeld, Antitrust Modernization Commission Hearings, January 19, 2006, available at http://govinfo.library.unt.edu/amc/commission_hearings/pdf/rubinfeld_statement_final.pdf at 8 (observing that there is no bias in a properly designed simulation and that the simulation technique is flexible enough to be applied under alternative behavioral assumptions).

[518] See, the second imperfection of translational systems mentioned by Michael Risinger, Preliminary thoughts on a functional taxonomy of expertise for the post-Kumho World, above, at 84 and my developments *supra* at p. 8.

[519] Case C-12/03 P, *Commission v. Tetra Laval* [2005] ECR I-987, para 42.

[520] In the expression of Judge Walker, *United States v. Oracle Corp*., above, at 1158.

Werden, Froeb and Scheffman propose, in order to address this problem, the definition of strict technical standards for the quality of merger simulation models, such as a strict application of the *Daubert* reliability screen for merger simulation that would require justification for every modelling choice, evidence that the theory has been applicable in the past to the industry under consideration and systematic sensitivity analysis of its impact[521]. This strategy is insufficient, according to Budzinski and Ruhmer, as "it cannot completely prevent that competing models with incompatible predictions, all of which fulfil these standards, are injected into an antitrust procedure by the parties"[522]. They add that the "political interests" of the experts may bias their models, without the later being necessarily of insufficient quality and that even if no distortions by biased experts existed, "it might be impossible to unambiguously identify the most appropriate model among the available ones due to them being all imperfect and possessing the same 'distance' to the underlying real case"[523]. In most cases the judge will solve this selection problem based on other empirical evidence, if available, such as the company's documents.

Oliver Budzinski and Isabel Ruhmer indicate additional problems for merger simulation. First, it is difficult and often impossible to collect the comprehensive and precise data that are required to calibrate the merger simulation; Second, one should take into account the possibility of non-

[521] See, Gregory Werden, Luke M. Froeb & David Scheffman, "A Daubert Discipline for Merger Simulation", FTC Economic papers, February 16, 2004 (draft), available at http://www.ftc.gov/ftc/economic.shtm ("merger simulation cannot be deemed reliable on the basis of a well-established and consistent high degree of prediction accuracy, so the reliability of any particular application of merger simulation should be gauged by examining the modelling process, which is at least as much art as science. To make the myriad choices required, the modeller draws from a complex combination of beliefs as well the available data, so any predictions from a model derive from a complex combination of beliefs, qualitative evidence, and data. Particularly because merger simulation may be used in an adversarial setting, it is important to examine the process of combining these inputs. Thus, we propose that every modelling choice in a merger simulation apt to matter significantly be accompanied either by some sort of justification or by a sensitivity analysis indicating its impact").

[522] Oliver Budzinski & Isabel Ruhmer, "Merger Simulation in Competition Policy: A Survey", above, at 27. The authors note that "the elaborate modeling of one parameter usually comes at the expense of a stronger simplification of another, so that incompatible MSM's (merger simulation models) of the same case simplify on different parameters, or respectively, put their modeling emphasis on different parameters". See also, George Akerlof, "The Missing Motivation in Macroeconomics", (2007) 97(1) *American Economic Review* 5, at 28 ("…most economic problems involve simultaneity (as in supply and demand), making establishment of causality difficult. In almost any instance, such a large number of models can be fitted statistically that it is extremely hard—and perhaps impossible—to statistically reject all the variants of models without norms. As a result, the program of positive economics—with its initial nulls of models based only on utility with objective variables verified only by statistical hypothesis testing— has severe bias against explanations of economic phenomena where norms play a role". The norms developed in a specific industry context may, however, affect the effects of a merger on the market.

[523] Oliver Budzinski & Isabel Ruhmer, "Merger Simulation in Competition Policy: A Survey", above, at 28. See also, Oliver Budzinski, "A Note on Competing Merger Simulation Models in Antitrust Cases: Can the Best be Identified?", (May 2008). University of Marburg Economic Paper No. 2008-01. Available at SSRN: http://ssrn.com/abstract=1116181

anticipatable “structural interruptions” that will change post-merger the form of competition, for example, from Bertrand to Cournot and contrary to the assumptions of merger simulation model; Third, it is possible that the merger simulation will neglect non-quantifiable short-run and long-run competitive effects, (consumer sovereignty, innovative efficiency for the long-run or barriers to entry and exit or buyer power and brands for the short-run), which cannot be modelled or quantified; Fourth, they note the high costs of the procedure, in collecting data, employing experts, duration of the proceedings, the important notification and submission requirements that a simulation model will require in the notification phase of a merger[524].

Natural experiments also depend on some degree of subjective judgment from the expert, for example, in the choice of an appropriate economic model (e.g. Bertrand, Cournot, others) to set up the test for measuring the impact of the event on the relevant outcomes or for the “correct” identification of endogenous (as opposed to exogenous) variables, which ultimately depends on the choice of the economic model that is considered. Similar criticisms have been addressed to the accuracy of other quantitative methods in antitrust, such as critical loss analysis[525] or event studies[526].

One could also argue that the courts have not completely embraced the merger simulation tool when they assess evidence of anticompetitive effects[527]. The European Courts have been relatively silent on the probative value of merger simulation[528], and they have not yet employed the theory of

[524] Ibid., at 25-30. See also, Ioannis Kokkoris, “Merger simulation: a crystal ball for assessing mergers”, (2005) 28(3) *World Competition* 327.

[525] See, for instance, Daniel P. O'Brien and Abraham Wickelgren, "A Critical Analysis of Critical Loss Analysis", (2003) 71 *Antitrust Law Journal* 161; Ioannis Kokkoris, “Critical Loss, critically Ill?”, (2005) 9 *European Competition Law Journal* 517; Gregory Werden, “Beyond Critical Loss: Properly Applying the Hypothetical Monopolist Test, *GCP Magazine*, February 2008-II

[526] Ioannis Kokkoris, “A practical application of event studies in merger assessment: successes and failures”, (2007) 3(1) *European Competition Journal* 65.

[527] See the discussion in US FTC, Unilateral Effects Analysis and Litigation Workshop, February 12, 2008, available at http://www.ftc.gov/bc/unilateral/transcript.pdf

[528] Except the polypropylene case, Case T-10/89, Hoechst AG v Commission, [1992] ECR II-629, para 164 (mentioning the Commission’s argument on the “limits to the possibilities offered by econometric methods as regards the simulation of competitive prices” in order not to take into account the expert’s report) and the Opinion of Advocate General Vesterdorf in Case T-1/89, Petrofina SA v. Commission, [1991] II-867 (noting the “methodological problems” associated with price simulation). On the use of simulation in general (economics but not in a competition law context), see Case C-352-356/07, C-365-367/07 & C-400/07, *A. Menarini - Industrie Farmaceutiche Riunite Srl and others*, Opinion of Advocate general V. Trstenjak [2008] not yet published para 91 (mentioned positively); Case C-241/94, *French Republic v Commission* [1996] ECR I-4551, para 32 (noting the “hypothetical elements” of the model and thus its low probative value); Case C-303/81, *Klöckner-Werke AG v Commission* [1983] ECR 1507, para 28; Case C-244/91, *Klöckner-Werke AG v Commission* [1983] ECR 1451, para 29; Case T-301/01, *Alitalia - Linee aeree italiane SpA v Commission* [2008] ECR II- , para 306 (calculation of the recuperation of illegal state aids); Case T-145/04, Elisabetta Righini v Commission [2005] ECR , para 123 (employment case); case T-17/02, *Fred Olsen, SA v Commission* [2005] ECR II-2031, para 254, 266 (the Court did not examine

unilateral effects to oppose a merger[529]. If the US antitrust authorities have embraced unilateral effects theory[530], US courts have subject claims of unilateral effects to a higher standard of proof than coordinated effects. One could explain this cautious approach by the fact that the courts have been receptive to some uncertainty and questioning in the economic profession over the empirical grounding of the theory[531]. This is a paradox, as the theory of coordinated effects is more controversial, in economic theory, than unilateral effects[532]. An alternative explanation is that the formulation of unilateral effects theory is fairly recent, compared to coordinated effects, and this may justify the slow and low impact of the theory in the courtroom[533].

The *Oracle/PeopleSoft* case in the US provides an example of this cautious attitude of the judiciary towards the theory of unilateral effects with differentiated products[534]. The case involved a horizontal merger between the US software company oracle and its US rival PeopleSoft. The Department of Justice files suit essentially arguing that the merging entity will be able to increase the prices as well as lead to less innovation and consumer choice in

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the probative value of the simulation model following its case law on "complex economic facts");

[529] See, case T-282/06, *Sun Chemical Group BV and others v. Commission* [2007] ECR II-2149, para 143 and seq.. The Court confirmed the decision of the Commission which rejected the application in this case of the theory of coordinated as well as non-coordinated (unilateral effects). See also Case T-212/03, *MyTravel Group plc v Commission* [2008] ECR (the Court rejected the argument of the applicants who intended to engage the extra-contractual responsibility of the Commission because, they argued, the latter had relied on the unilateral effects theory in its decision in the Airtours case for declaring the Airtours/First Choice concentration incompatible with the Common market,. The case was examined under the older regulation 4064/89 that did not include unilateral effects in its scope. The Court agreed with the Commission that in the Airtours case the issue was collective dominance, which did not include unilateral effects (thus implying that the concept of collective dominance covers only coordinated effects). See also, Case T-342/99, *Airtours v. Commission*, above, para 49-65, in particular para 62.

[530] Jonathan Baker, "Why did the Antitrust Agencies embrace unilateral effects?", (2003) 12 *George Mason Law Review* 31; Jonathan Baker, "The case for Antitrust Enforcement", (2003) 17 *Journal of Economics Perspectives* 27.

[531] See, for example, the position of Malcolm B. Coate & Jeffrey H. Fischer, "Daubert, Science, and Modern Game Theory: Implications for Merger Analysis", above, at 3-4 ; Statement of Daniel Rubinfeld, Antitrust Modernization Commission Hearings, January 19, 2006, available at http://govinfo.library.unt.edu/amc/commission_hearings/pdf/rubinfeld_statement_final.pdf at 7 (noting that "the economic issues relating to unilateral effects are more controversial (than coordinated effects), and the case law is less extensive"); Jordi Gual, "Time to Rethink Merger Policy?", (2007) 3(1) *Competition Policy International* 29, 35 (noting that unilateral effects may increase the probability of type I errors).

[532] Janusz Ordover, "Coordinated Effects", above, at 1360 ("as compared to unilateral effects analyses, there is much less analytical rigor and much more reliance on a broad range of qualitative indicators when gauging the likelihood of coordinated effects"; *Contra*, Jordi Gual, "Time to Rethink Merger Policy?", above, at 35 (noting the generality of the results underpinning the theory behind unilateral effects).

[533] The theory (for differentiated products) was developed during the 1980s and became prominent in the 1990s, coinciding with the Clinton administration in antitrust enforcement: See, Oliver Budzinski & Arndt Christiansen, "Simulating the (Unilateral) Effects of Mergers: Implications of the Oracke/PeopleSoft case", above, at 2-3.

[534] *United States v. Oracle Corp.*, 331 F. Supp. 2d 1098, 1113-1123 (N.D. Cal. 2004).

the market for business software, namely that for enterprise application software, based on the theory of unilateral effects. Part of the DOJ's case relied on a narrow definition of the relevant market, which was based on evidence from customer witnesses, industry witnesses and economic expert testimony. Judge Walker, of the District court of Northern California, subjected the proof of a unilateral effects claim to four strict evidential conditions:

> "First, the products controlled by the merging firms must be differentiated. Products are differentiated if no perfect substitutes exist for the products controlled by the merging firms… product differentiation that goes to fairly fundamental differences in product design, manufacturing costs, technology, or use of inputs…
>
> Second, the products controlled by the merging firms must be close substitutes. Products are close substitutes if a substantial number of the customers of one firm would turn to the other in response to a price increase…
>
> Third, other products must be sufficiently different from the products controlled by the merging firms that a merger would make a small but significant and non-transitory price increase profitable for the merging firms.
>
> Finally, repositioning by the non-merging firms must be unlikely. In other words, a plaintiff must demonstrate that the non-merging firms are unlikely to introduce products sufficiently similar to the products controlled by the merging firms to eliminate any significant market power created by the merger"[535].

The Court required also from the plaintiff to demonstrate that "the merging parties would enjoy a post-merger monopoly or dominant position, at least in a 'localized competition' space", which implies, if one takes into account the further analysis by the court of the risks of defining sub-markets and the court's emphasis on marginal buyers' only, that it would be very difficult for the plaintiffs to argue a theory of unilateral effects[536]. Because of the high risk of a narrow market definition the court observed that "a strong presumption of anticompetitive effects based on market concentration is especially problematic in a differentiated products unilateral effects context" and therefore "unwarranted"[537]. The high standard of proof to which the court subjected the theory of unilateral effects is also clear in the assessment of the different types of evidence advanced by the plaintiffs. The court seemed more inclined to be convinced by econometric analysis such as diversion ratios rather than by merger simulation or qualitative evidence (customer testimony)[538], although it also made the general statement that "merger

[535] Ibid., at 1117-1118.
[536] Ibid, at 1118.
[537] Ibid., at 1122-1123.
[538] Ibid., at 1132 ("unsubstantiated customer apprehensions do not substitute for hard evidence") & 1172 ("customer testimony was flawed and unreliable").

simulation models may allow more precise estimations of likely anticompetitive effects and eliminate the need to, or lessen the impact of, the arbitrariness inherent in defining the relevant market"[539]. Indeed, econometric evidence proved essential in all other cases, where the court accepted claims of unilateral effects[540].

The position of the DC Circuit in *Whole Foods* indicates a trend towards the opposite direction[541]. The court of appeal reversed the decision of the district court, which had rejected the demand for a restraining order and preliminary injunction brought by the FTC in order to block a merger between two premium, natural and organic (PNO) supermarkets. The government's case was based on the theory of unilateral effects, advancing that the merger will create a monopoly in eighteen cities where the two merging companies were the only PNO supermarkets. This contention was based on internal business documents that demonstrated the closeness of competition between the two merging companies and direct evidence (based on diversion ratios) showing that entry by other PNO supermarkets had greater impact on PNOs prices than entry by conventional supermarkets. The district court rejected these arguments, that were focusing on the effect of the merger to consumers that were buying only organic food and proceeded to a market definition that considered important the role of marginal consumers, thus including the conventional supermarkets in the same relevant market as the PNOs: "because so many people are cross-shopping for natural and organic foods and are marginal rather than core customers, the actual loss from a SSNIP would exceed the critical loss", that is it will be unprofitable[542].

By insisting on the step of market definition, the district court ignored the possibility of proving unilateral effects directly, which was the point of the FTC. The court of appeal agreed with the district court on the need to define a relevant market[543] but it also emphasized that core consumers, demanding exclusively a particular product or package of products, are in some situations "worthy of antitrust protection[544]", therefore leading to the definition of a distinct submarket that could be affected by the merger. Indeed, these consumers "may be captive to the sole supplier, which can then, by means of price discrimination, extract monopoly profits from then while competing for the business of marginal consumers"[545]. This position influenced the evidential weight of the different methodologies applied by the parties' experts: the court rejected the defendant's expert conclusions, which were

[539] Ibid, at 1122.
[540] *Kraft Gen. Foods*, above at 356; *Sweidish match*, above at 169.
[541] *Federal Trade Commission v. Whole Foods Inc.*, 548 F.3d 1028 (2008).
[542] *Whole Foods*, 502 F.Supp 2d 1, 17.
[543] *Federal Trade Commission v. Whole Foods Inc.*, at 1036 (although it also mentioned that this need not be settled in the preliminary stage of a procedure).
[544] Ibid., at 1037.
[545] Ibid., at 1038. Compare with the importance that Judge Walker gave to marginal consumers in merger analysis in *US v. Oracle Corp.*, at 1117.

based on critical loss analysis (focusing on marginal loss of sales) as these did not fit with the focus of the court on "core consumers"; in contrast, the critical diversion ratios focusing on the average behaviour of customers, employed by the FTC's expert, were more appropriate in this case[546]. The court of appeal also found relevant evidence of industry or public recognition of the distinctiveness of the market in question, focusing merely on the company's internal documents. The overall approach of the court facilitates the proof of unilateral effects, to the price, however, of employing the much contested concept of "submarkets".

5.2.2. The determination of the standard of proof

The previous examples showed that examining the sufficiency of economic evidence is a complex task that includes different considerations. The courts seem to be influenced by the general acceptability of a theory, its established track record in the case law, econometric evidence such as diversion ratios, circumstantial evidence such as internal company documents, customer testimony or even the qualifications of the experts[547], thus including elements that form part of the admissibility step in assessing economic evidence. The modularity of the standard of proof (standard of persuasion) in evaluating and weighing economic evidence seems also a superior alternative to the frequentist/categorical view. There are two different approaches in determining the standard of persuasion for economic evidence. The standard of proof may be conceptualized as essentially a probabilistic enquiry. This seems to be the position adopted in some of the most recent competition law cases of the European Courts, which employ the concept of "reasonable probability" or just "probability" when assessing the impact of cartels for the setting of fines on the basis of the gravity of the infringement[548] or when the dominant firm demonstrates "with a sufficient degree of probability" that the four conditions for the acceptance of efficiency gains, under Article 82, are fulfilled[549]. An alternative view will conceptualize the

[546] Ibid., at 1038.
[547] See, for example, *US v. Oracle Corp.*, at 1134, noting that a business administration expert's attempt to establish a product market failed for "lack of economic analysis".
[548] Case T-329/01, *Archer Daniels Midland Co. v Commission* [2006] ECR II-3255, para 176 & 178; Case T-322/01, *Roquette Frères SA v Commission* [2006] ECR II-3137, para 73 & 75; Case T-43/02, *Jungbunzlauer AG v Commission* [2006] ECR II-3435, para. 153 & 155 ; Case T-59/02, *Archer Daniels Midland Co. v Commission* [2006] ECR I-3627, para 191 & 201; Joined cases T-109, 118, 122, 125, 126, 128, 129, 132 and T-136/02, *Bolloré SA and Others v Commission*, [2007] ECR II-947, para 449; Case C-511/06, Opinion of AG Mengozzi, *Citric acid cartel* [2008] not yet published, para. 201; Case T-53/03, *BPB plc v. Commission* [2008] not yet published, para. 300, 301 & 304 ("reasonable probability which is not precisely quantifiable"); Case C-510/06 P, Opinion of AG Trstenjak [2008] not yet published, para 151 & 159
[549] Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, C(2009) 864 final, para 30.

standard of proof as a relative plausibility enquiry, which seems also to be an approach followed by the case law.

5.2.2.1. A probabilistic account of standards of proof (persuasion) for economic evidence

Taking a probabilistic perspective, Oliver Budzinski and Arndt Christiansen describe different forms of standard of proof for predictive economic evidence (from most to less difficult for plaintiffs to carry their burden of proof[550]).

> "(a) beyong reasonable doubt (certainty)
>
> (b) balance of probabilities (i.e. more likely than not, preponderance of evidence; (probability π › 0,5) [harm to consumers must be more likely than no harm]
>
> (c) considerable or appreciable effects (i.e. a more than negligible probability; e.g. π › 0.25
>
> (d) plausibility (i.e. not against logic and experience),
>
> (e) possibility (i.e. a positive probability; π › 0.[551]"

The authors support standard (c) as the most adequate for economic evidence[552] but they also advance an argument to "adjust the standard of proof according to the nature of economic evidence", which will involve a "two-sided standard of proof, encompassing some kind of mixed burden of proof or a qualified burden of proof".[553] They point out that "in this scenario, it would not be enough for the opposing side to raise doubts, instead, the opposing party would be obliged to present a reasonable and at least equally plausible alternative"[554]. They conclude that "this would allow for a level-playing field of competition between the affected parties on the merits of their models with the prospect of increasing the economic quality of the outcome"[555].

This analysis constitutes a promising starting point. First, it integrates in the assessment of economic evidence the flexibility of differentiated rules, which could be set optimally, according to a number of criteria, so as to provide the adequate legitimacy to judicial determinations, in other words the

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[550] By burden of proof this study refers to the concept of the burden of production, that is the order in which the parties present their evidence on the relevant issues at the court.

[551] Oliver Budzinski & Arndt Christiansen, "Simulating the (Unilateral) Effects of Mergers: Implications of the Oracke/PeopleSoft case", above, at 23.

[552] Ibid., at 24: "(a) would factually impede the use of predictive economic evidence and (b) would allow only very unambiguous models to enter the courts (probably few cases). In other words, these thresholds would be overly ambitious. Contrariwise, standards (d) and (e) might even allow for economics-only-based decisions (plausibility of causal relations are a domain of formal model theory and a probability › 0 is almost impossible to disprove" (thus leading to a high risk of false positives)".

[553] Ibid., at 26.

[554] Ibid.

[555] Ibid.

required level of confidence for a certain finding[556]. This could make possible the continuous adjustment of the level of sufficiency of economic evidence, according to past experience.

Second, it offers the opportunity to develop different types of standards in each stage of the litigation process with the objective to economize the important costs of decision-making (costs of information gathering, processing and administrative costs: called direct costs). In an adversarial setting, these costs are mostly assumed by the litigants but also by the judicial system. The objective of the system is "to minimize the sum of error costs and direct costs"[557]. Decision makers employ a sequential information gathering process in order to reduce information costs.[558] The decision to process more information is function of a trade-off between two types of costs: "error costs on the one hand", costs of "wrong" decisions (false positives or false negatives), and "information costs on the other".[559] This decision-theoretic analysis is relevant and has been employed in order to explain the allocation of the burden of proof between the parties. However, setting the standard of proof (standard of persuasion) is a decision that cannot depend only on economic considerations, as, by definition, we do not know the real value of errors costs, assuming we know the probability of their occurrence. The concept of the standard of proof is profoundly interlinked with the issue of the legitimacy of the court's decision: the adequate standard of proof should enable the court to reach a reasoned opinion which could be perceived, by the disputants or the broader community, as "a fair and consistent result"[560].

In the "two-sided standard of proof" model, whatever the standard of proof is for the plaintiff in order to prove an allegation, it should be equally easy or difficult for the defendant to disprove the allegation. For example, if the plaintiff relies on circumstantial evidence, such as market shares in order to prove market power, the defendant should be able to rely on the reduction of these market shares in order to disprove market power. If the plaintiff brings direct evidence of market power (e.g. a critical diversion ratios analysis) the defendant should also be able to rely on direct evidence to disprove the allegation. If the standard of persuasion is plausibility, the standard of disproof should also be plausibility.

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[556] The necessity to adopt differentiated rules in the design of antitrust law has been a well analyzed topic by recent economic and legal literature. See, Arndt Christiansen & Wolfgang Kerber, "Competition Policy with Optimally Differentiated Rules Instead of 'per se rules vs rule of reason", (2006) 2(2) *Journal of Competition Law and Economics* 215; Yannis Katsoulacos and David Ulph, "Welfare-Based Optimal Legal Standards: A Brief Review of Theory and Applications" , this Volume.

[557] Richard A. Posner, "An Economic Approach to Legal Procedure and Judicial Administration", (1973) 2 *Journal of Legal Studies* 399, at 401.

[558] C. Frederick Beckner III & Steven C. Salop, "Decision Theory and Antitrust Rules", (1999) 67 *Antitrust L J* 41.

[559] Ibid., at 46.

[560] Andrew Gavil, "Burden of proof in U.S. Antitrust Law", at 131 (explaining the procedural justice approach regarding burdens of proof).

The recent decision of the Court of First Instance (CFI) in *Impala v. Commission*, annulling the decision of the Commission that cleared a merger between two of the five music majors, may be considered as the first step towards the institutionalisation of a "two-sided standard of proof"[561]. In applying the *Airtours* criteria, the CFI concluded that the Commission did not bring sufficient evidence that the market was not conducive to collective dominance and, in particular, its finding that the market was not transparent was not supported by specific data. The CFI pointed out that the alignment of prices together with other factors, such as power of the undertakings in an oligopoly situation, stability of market shares, could suggest, or constitute an indication, in the absence of an alternative explanation, that "the alignment of prices is not the result of the normal play of effective competition and that the market is sufficiently transparent in that it allowed tacit price coordination"[562]. In other words, the CFI required from the Commission to adopt a "two-sided standard of proof". Even if the merger fulfils the Airtours conditions, the Commission should not adopt a clearing decision before it examines alternative explanations for the market conditions and possible signs of collusion.

The determination of the adequate standard of proof for economic evidence could also be differentiated, according to the stage of the procedure. At the initial stage of private antitrust enforcement there is a "very asymmetric distribution of the available information and the necessary evidence" between the parties[563]. This may indicate that the standard of persuasion should be lower than the standard of proof in the assessment of liability at trial. In deciding to provide to the plaintiff the opportunity to collect evidence, and thus to use the discovery procedure, one could argue that the courts should just ask for evidence of a probable claim, certainly not the high standard adopted by the Supreme Court in *Twombly*[564]. It is also clear that, in order to pass through the summary judgment stage in the US, the plaintiff is facing a high standard of proof which resembles more to a considerable or appreciable effects standard rather than to a plausibility standard, despite the wording

[561] Case T-464/04, *Impala v. Commission* [2006] ECR II-2289.
[562] Ibid., para 253-254.
[563] As it is explained by Commission Staff Working Paper on Damages Actions for Breach of the EC antitrust rules, SEC(2008) 404, 2.4.2008, available at http://ec.europa.eu/comm/competition/antitrust/actionsdamages/documents.html, ("it is often very difficult for claimants to produce the required evidence, since many of the relevant facts are in the possession of the defendant or of third persons and are often not known to claimants in sufficient detail").
[564] The plaintiff should bring evidence "beyond a speculative level" to plausibly claim that an antitrust violation has occurred: Twombly, above, at 1964. It seems that this standard of persuasion is lower than that required for summary judgment for a conspiracy claim (evidence tends to exclude the possibility of independent action).

used in *Matsushita*[565]. The preponderance of the evidence standard constitutes the default standard of persuasion in the trial stage of a case, which seems fair as it puts the parties to an equal starting point[566]. The criminal standard is beyond reasonable doubt[567].

In the European context, the standard of proof is still an unsettled issue[568]. Contrary to the US, where merger enforcement takes place in a court litigation setting, the European merger control system is based on an administrative process that takes place at the European Commission's level. The Commission's decision is subject to the judicial review of the Court of First Instance. In a number of cases, the Community courts have suggested that the Commission be subject to a standard of "convincing evidence"[569]. This is certainly not very helpful as an indication and somehow tautological, as it introduces a certain degree of subjectivity in the judgment of what constitutes convincing: what may be convincing for one judge, would not necessarily be convincing for another: everything depends on previous experience. In the European context where decisions are taken by a number of judges in chambers, without the possibility of dissenting opinions, it would be particularly difficult to predict *ex ante* what could be convincing. For example, if the judge did not have any economic training or familiarity with industrial economics literature or quantitative methods before, it is clear that he or she would be more inclined to see lions in Regent's park than Alsatian's, if one employs Lord Hoffman's metaphor[570].

Parr and Burrows rightly point out that "the concept of standard of proof and the cogency of the evidence required for the standard of proof to be met

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[565] According to the Court, "the plaintiff seeking damages for a violation of § 1 must present evidence that tends to exclude the possibility that the alleges conspirators acted independently": *Matsushita*, above, at 588. This is a higher standard of proof than plausibility.

[566] For example, in the merger field, see, *United States v. Marine Bancorp., Inc.,* 418 U.S. 602, 622 (1974); *FTC v. H J Heinz Co.*, 246 F.3d 708, 713 (D.C.Cir. 2001); *United States v. Oracle Corp.*, 331 F. Supp.2d 1098, 1109 (N.D.Cal. 2004). In the antitrust field, see *Park v. El Paso Board of Realtors*, 764 F.2d 1053 (5th Cir. 1985), cert. denied, 474 U.S. 1102 (1986), with the burden of proving the amount of damages somewhat lighter: Richard M. Steuer, "Standards of Proof and Judicial Review: a U.S. Perspective, in (Barry E. Hawk, ed.) *2005 Annual Proceedings of the Fordham Corporate Law Institute* (Juris Publishing, 2006), 143.

[567] *Holland v. United States*, 348 U.S. 121, 138 (1954) cited by Richard M. Steuer, above.

[568] See, David Bailey, "Standard of Proof in EC Merger Proceedings: A Common Law Perspective", (2003) 40 *Common Market Law Review* 845; Tony Reeves and Ninette Dodoo, "Standards of Proof and Standards of Judicial Review in EC Merger Law" in (Barry E. Hawk, ed.) *2005 Annual Proceedings of the Fordham Corporate Law Institute* (Juris Publishing, 2006) 117; Nigel Parr & Euan Burrows, "Burdens and Standards of Proof in European Community Competition Law", in ABA Antitrust Section, *Issues in Competition Law and Policy* (2008), 159.

[569] Case T-342/99, *Airtours v. Commission* [2002] ECR II-2585; Case C-12/03 *Commission v. Tetra Laval* [2005] ECR I-987, para 41.

[570] *Secretary of State for the Home department v. Rehman*, [2002] 1 All E.R. 122, para. 55, "…some things are inherently more likely than others. It would need more cogent evidence to satisfy one that the creature seen walking in regent's Park was more likely than not to have been a lioness than to be satisfied to the same standard of probability than it was an Alsatian".

are two separate matters"[571]. The European Court of Justice has nevertheless the tendency to collapse the two concepts in one. For example, in *Tetra Laval* the European Court of Justice adopted some *Matshushita* language, noting that

> "..the quality of the evidence produced by the Commission in order to establish that it is necessary to adopt a decision declaring the concentration incompatible with the common market is particularly important, since that evidence must support the Commission's conclusion that, if such a decision were not adopted, the economic development envisaged by it would be plausible"[572].

If plausibility is the standard of proof for mergers, this is lower than the standard of proof in US merger law at the trial stage of the procedure, or than the standard of proof in UK merger control[573]. However, in the immediately previous paragraph, the Court employs language that implies a higher standard than plausibility:

> "the prospective analysis consists of an examination of how a concentration might alter the factors determining the state of competition on a given market in order to establish whether it would give rise to a serious impediment to effective competition. Such an analysis makes it necessary to envisage various chains of cause and effect with a view to ascertaining which of them are the most likely"[574].

The distinction between standard of proof and cogency of evidence may have inspired the position of the Court of First Instance towards non-horizontal mergers. In *Tetra Laval*, the Court ruled that, "(s)ince the effects of a conglomerate-type merger are generally considered to be neutral, or even beneficial, for competition on the markets concerned […] the proof of anti-competitive conglomerate effects of such a merger calls for a precise examination, supported by convincing evidence, of the circumstances which allegedly produce those effects"[575]. This positive presumption towards

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[571] Nigel Parr & Euan Burrows, above, at 171.
[572] Case C-12/03 *Commission v. Tetra Laval*, at para 44. Emphasis added.
[573] *IBA Health Ltd. V. Office of Fair Trading* [2003] C.A.T. 27, para 182.
[574] Ibid., at para 43. The French version is particularly revealing in the interpretation of "sot likely": "*imaginer les divers enchaînements de cause á effet, afin de retenir ceux dont la probabilité est la plus forte*". The Court seems to follow the opinion of Advocate general Tizzano, para 74, "It therefore cannot be claimed that in order to prohibit a concentration the Commission must establish with absolute certainty that the concentration would lead to the creation or strengthening of a dominant position as a result of which effective competition would be significantly impeded in the common market or in a substantial part of it. It seems to me sufficient for that purpose if, on the basis of solid elements gathered in the course of a thorough and painstaking investigation, and having recourse to its technical knowledge, the Commission is persuaded that the notified transaction would very probably lead to the creation or strengthening of such a dominant position. If the Commission is not so convinced, it must on the contrary authorise the merger". Emphasis added ("*très probablement*" in the French version).
[575] Case T-5/02, above, para 155.

conglomerate or vertical mergers[576] "increases the burden of proof on the Commission up to the 'convincing evidence' standard"[577]. More precisely, notwithstanding the "perfectly symmetrical nature" of the standard of proof[578], the cogency of evidence required for non-horizontal mergers is of a higher degree than for horizontal mergers: after all, it is more likely to see an Alsatian walking in the Green Park than a lion[579].

With regard to the standard of proof in Article 81 and 82 proceedings, one should distinguish between administrative proceedings and private enforcement. The concept of standard of proof is not known as such in civil law systems, which emphasize instead the principle of "unfettered evaluation of evidence" without any specific indication on the level of certainty that evidence must achieve in order to carry conviction[580]. The Community Courts have imposed the rather broad requirement of "sufficiently precise and coherent proof" for the public enforcement of competition law[581]. Parr and Burrows observe that, in practice, this approach "imports a considerable degree of flexibility, dependent upon the particular circumstances of the case, the allegation made and the nature of the evidence involved"[582].

There are different reasons explaining the flexibility of the standard of proof. First, the standard of proof is indirectly related to the standard of review performed by the courts. The Commission has traditionally been offered a little more margin of appreciation in matters of economic analysis, under the cover of the doctrine of "complex economic assessments"[583]. Advocate

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[576] See also, EU Non-horizontal Merger Guidelines, above, para

[577] Alexandr Svetlicinii, above, at 124.

[578] Opinion of AG Tizzano, Case C- 12/03 P *Commission v Tetra Laval*, above, para. 73-75.

[579] See, for example, the dismissal by the CFI of the Commission's overall theory of bundling of avionics and non-avionics products, for not examining the profits that the merging entity would have to proceed to such a commercial strategy in order to determine its incentive for this future conduct: Alexandr Svetlicinii, above, at 125.

[580] See also Opinion of AG Vesterdorf, Case T-1/89 *Rhone Poulenc SA v. Commission* [1991] ECR II-867, part E.

[581] In the context of Article 81(1) see, Case C-29-30/83, *Compagnie Royale Asturienne des Mines SA v. Commission* [1984] ECR 1679; See also, *Case* C-89/85, *Ahlstrom Osakeyhtio v. Commission* [1998] ECR II-3141, para 127 ("'a firm, precise and consistent body of evidence") & 193; Case T-30/91 *Solvay SA v Commission* [1995] ECR II-1775, para 75; Case T-62/98, *Volkswagen AG v. Commission* [2000] ECR II-2707, para. 199; Case T-368/00 *General Motors Nederland BV and Opel Nederland BV v Commission* [2003] ECR II-4491, para 88; Case T-67/00 *JFE Engineering Corp and others v. Commission* [2004] ECR II-2501, para 341; Case T-168/01 *GlaxoSmithKline Services v. Commission* [2006] ECR II-2969, para 82. In the context of Article 81(3) see, Joined Cases 43/82 & 63/82 *VBVB and VBBB* v *Commission* [1984] ECR 19, para 52; Case T-168/01 , para 235, 263, 303 ("a person who relies on Article 81(3) EC must demonstrate that those conditions are satisfied, by means of convincing arguments and evidence"). In the context of Article 82, there are specific indications regarding the standard of proof for efficiencies, see Case Case T-203/01 *Manufacture française des pneumatiques Michelin v Commission* [2003] ECR II-4071, para 108-109 (the dominant company must provide "specific information" or "provide economic reasons to explain specifically the discount rates chosen").

[582] Nigel Parr & Euan Burrows, above, at 177

[583] According to an established case law, when faced with complex economic assessments, judicial review is confined to the existence of a manifest error of appreciation (substantive

general Tizzano may have been inspired by this view of judicial review when he suggested, in the context of merger control, that

> "(w)ith regard to the findings of fact, the review is clearly more intense, in that the issue is to verify objectively and materially the accuracy of certain facts and the correctness of the conclusions drawn in order to establish whether certain known facts make it possible to prove the existence of other facts to be ascertained. By contrast, with regard to the complex economic assessments made by the Commission, review by the Community judicature is necessarily more limited, since the latter has to respect the broad discretion inherent in that kind of assessment and may not substitute its own point of view for that of the body which is institutionally responsible for making those assessments"[584].

One could establish a distinction between economic facts and economic authority with regard to the intensity of the judicial review[585], thus affecting the standard of proof required for each of these types of economic evidence. A possible distinction could also be established between economic evidence entirely based on past events (e.g. event studies) and essentially predictive evidence of a prospective nature based on particular future events or courses of events (e.g. simulation or theories of potential anticompetitive harm, as is, for example, most of the time the case when the anticompetitive conduct is exclusionary)[586].

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illegality): the Court should establish whether the evidence relied on is factually accurate, reliable and consistent. See, Case 42/84 *Remia and others v. Commission* [1985] ECR 2545, para 34 & 57; Case T-168/01 *GlaxoSmithKline Services v. Commission* [2006] ECR II-2969, para 14 (recognizing a "margin of discretion" to the European Commission for the balancing exercise carried out in the context of Article 81-3); Case T-170/06 *Alrosa Company Ltd v. Commission* [2007] ECR II-2601, para 125; See also, Case T-201/04 *Microsoft Corp. v. Commission* [2007] ECR II-3601, para 87-88. Remarkably, the Court noted in *Microsoft* that (para. 89), "…while the Community Courts recognize that the Commission has a margin of appreciation in economic or technical matters, that does not mean that they must decline to review the Commission's interpretation of economic or technical data. The Community Courts must not only establish whether the evidence put forward is factually accurate, reliable and consistent but must also determine whether that evidence contains all the relevant data that must be taken into consideration in appraising a complex situation and whether it is capable of substantiating the conclusions drawn from it" (emphasis added). See also, para 482 (definition of the product market). The Court thus follows the more intensive judicial review approach practiced in the field of merger control (Case C-12/03 P *Commission v. Tetra Laval* [2005] ECR I-987, para 38-39); Case T-145/06 *Omya AG v. Commission* [2009] not yet published, para 32; See also, Case T-282/06 *Sun Chemical group BV and others v. Commission* [2007] ECR II-2149, para 61 (a merger case where the Court noted that its judicial review should also consider "any possible omissions" in the economic assessment of the Commission).

[584] Opinion of AG Tizzano, Case C-12/03, above, para 86.

[585] The Court seem to recognize to the Commission a "broad discretion" when the complex economic assessment involves quantitative economic analysis or methods: see, Case T-340/03 *France Télécom SA v. Commission* [2007] ECR II-107, para 129, 162-163.

[586] See the discussion in *British Sky Broadcasting Group Plc v The Competition Commission* [2008] CAT 25, §78-82.

Second, the standard of proof for economic evidence seems to vary according to the type of evidence (direct, circumstantial) or because of the existence of presumptions on the inherent dangerousness of the conduct for competition. For example, in his Opinion in *Rhône-Poulenc*, Advocate General Vesterdorf remarked that "considerable importance must be attached to the fact that competition cases of this kind (cartels) are in reality of a penal nature, which naturally suggests that a high standard of proof is required" and that "there must be a sufficient basis for the decision and any reasonable doubt must be for the benefit of the applicants according to the principle *in dubio pro reo*"[587]. The principle *in dubio pro reo*, enshrined in Article 6(2) of the European Convention of Human Rights, requires that "any doubt in the mind of the Court must operate to the advantage of the undertaking to which the decision finding an infringement was addressed", in particular for decisions imposing fines or periodic penalty payments[588]. This is particularly the case in presence of indirect evidence of a concerted practice, such as parallel conduct, the Courts being relatively reluctant to infer the existence of a concerted practice, and thus requiring a relatively high standard of proof[589]. In contrast, when undertakings participate to meetings with their competitors, there is a presumption that they take account of the information exchanged with their competitors, if they remain active on the market, thus leading to the finding of collusion[590]. This different approach can be explained by the relatively important weight recognized to direct evidence of concertation in comparison to circumstantial evidence. The standard for the finding of collusion in the presence of parallel conduct is not, however, the beyond reasonable doubt standard[591], although it seems to require a higher degree of evidential cogency, in particular because of the high risk of false positives to which the inclusion in the scope of Article 81 of situations of oligopolistic interdependence would have led.

Third, although less pronounced, in comparison to US antitrust law, the standard of proof varies according to the stage of the administrative proceedings. The standard of proof for the opening of the proceedings or

[587] Opinion of AG Vesterdorf, Case T-1/89, above.
[588] Case T-44/02 *Dresdner bank AG and others v. Commission* [2006] II-3567, para 60-61.
[589] See, Joined Cases 40-48/73, 50/73, 54-56/73, 111/73, 113-114/73 *Suiker Unie and Others v Commission* [1975] ECR 1663, para 354 (a different explanation of the parallelism of the conduct may raise doubts on the existence of a concerted practice).
[590] See, Case C-49/92 P *Commission v Anic* [1999] ECR I-4125, para. 121, 126; Joined Cases C-204-205/00 P, C-211/00 P, C-213/00 P, C-217/00 P & C-219/00 P *Aalborg Portland and Others v Commission* [2004] ECR I-123, para. 81; Joined Cases C-403/04 P and C-405/04 P, *Re Seamless Steel Tubes Cartel: Sumitomo Metal Industries Ltd and Others v Commission* [2007] 4 C.M.L.R. 16, para 47-48 & 51.
[591] See, Case T-53/03, *BPB Plc v Commission*, [2008] not yet published, para 64, "(i)t is apparent from that case law that the Court must reject the applicant's assertion that the Commission must adduce proof "beyond reasonable doubt" of the existence of the infringement in cases where it imposes heavy fines".

sending a statement of objections is not clear in EC competition law[592], but national competition authorities, such as the OFT in the UK, are required to have "reasonable grounds" for suspecting the existence of a competition law infringement[593]. In *Claymore*, the CAT distinguished three steps in the investigative proceedings of the OFT: the first stage is the investigation as such, the second stage is prosecution (Rule 14 notice) and the third stage is decision-making: the CAT imposed a sufficient evidence standard for the second and the third stage of the proceedings[594]. The CFI has nonetheless determined the standard of proof required in order for the Commission to grant interim measures prior to the finding of an infringement[595] or the possibility for Community Courts to suspend the effect of a Commission's decision on appeal (interim relief)[596], which are, in both cases, lower than the standard of proof required for the finding of a competition law infringement.

With regard to private enforcement, there is no definition at the European level of the standard of proof required for the finding of a competition law infringement, the matter being left to the Member States[597]. There was a discussion in the Green paper on damages to lower the standard of proof for the issue of damages and causation, in comparison to the standard of proof for the finding of an infringement, as a possible means to address the informational asymmetry between the plaintiffs and the defendants[598]. This option was explicitly rejected by the European Commission[599]. The absence of a European framework leads to important differences between jurisdictions where the concept of standard of proof is known and jurisdictions which simply mention that evidence should be convincing; in practice, however, there is little difference between the two standards[600]. The UK courts seem to require a balance of probabilities

[592] Perhaps because these are preparatory acts and therefore not subject to judicial review to the European Courts.
[593] Article 25 of the Competition Act..
[594] *Claymore Dairies Ltd v. OFT* [2003] CAT 18 para 11 cited by Nigel Parr & Euan Burrows, above, at 179.
[595] Case T-44/90 *La Cinq v. Commission* [1992] ECR II-1; Case T-184/01R IMS *Health Inc. v. Commission* [2001] ECR II-3193. The standard of proof is that the finding is based on reasonable grounds, there is an urgent need for interim measures and a risk for serious and irreparable damage to competition.
[596] Case T-184/01R IMS *Health Inc. v. Commission*, above, at para 73.
[597] According to recital 5 of Reg. 1/2003, "this regulation affects neither national rules on the standard of proof nor obligations of competition authorities and courts of the member States to ascertain the relevant facts of a case, provided that such rules and obligations are compatible with general principles of Community law".
[598] Option 9 of the Green Paper - Damages actions for breach of the EC antitrust rules, COM(2005) 672 final.
[599] Commission Staff Working paper, SEC(2008) 404, para 91. Similarly, the standard of proof for the passing-on defense cannot be lower than the standard to which the claimant has to prove the existence and the amount of the damage: Ibid, para 214.
[600] Commission Staff Working paper, SEC(2005) 1732, para 79, "(i)n the individual case there may not be any significant difference between these two tests, since the judge may require being convinced that one explanation is more likely than the other". For an analysis of the different national rules see, Ashurst, *Study on the conditions of claims for damages in case of*

standard or a higher standard of proof in some cases for finding a competition law infringement[601]. A lower standard of proof applies when the courts give summary judgments[602] or grant interim applications[603].

In conclusion, the concept of the standard of proof offers a great flexibility in integrating economic evidence in competition law proceedings. Contrary to the all-or-nothing determination of the admissibility of evidence,

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infringement of EC competition rules, 2004, at pp. 55-56, available at http://ec.europa.eu/competition/antitrust/actionsdamages/comparative_report_clean_en.pdf

[601] The question of the standard of proof has been considered in a number of cases (public and private enforcement alike). *Panayiotou v. Sony Music Entertainment (UK) Ltd.* [1994] E.E.C.C. 395, 410*; Bookmakers' Afternoon Greyhound Services Limited*, [2008] EWHC 1978 (Ch), para 393; In *Napp Pharmaceuticals v. DGFT* [2002] CAT 5 ; *JJB Sports plc v& All Sports Limited v. OFT* [2004] CAT 17 it was held that the standard of proof is the civil standard of proof on the balance of probabilities although the seriousness of an infringement of Article 81 or of the 1998 Act, involving (as it may) the imposition of penalties, is a factor to be taken into account in considering the probabilities of an infringement having occurred; For the requirement of a higher degree of evidential cogency see also *Chester City Council, Chester City Transport Limited v Arriva Plc* [2007] EWHC 1373 (Ch), para 10; *Ineos Vinyls Limited and Others v. Huntsman Petrochemicals (UK) Limited* [2006] EWHC 1241, para 210-211; *Attheraces Limited and Another v The British Horseracing Board* [2005] EWHC 3015, para 126; *Ultraframe (UK) Ltd v Gary Fielding* [2005] EWHC 1638 (Ch), para 9. As Lord Nicholls of Birkenhead explained in *Re H and Others* [1996] AC 563, 586., "the more serious the allegation the less likely it is that the event occurred and, hence, the stronger should be the evidence before the court concludes that the allegation is established on the balance of probability…this does not mean that where a serious allegation is in issue the standard of proof required is higher. It means only that the inherent probability or improbability of an event is itself a matter to be taken into account when weighing the probabilities and deciding whether, on balance, the event occurred".

[602] Part 24 of the UK Civil Procedure Rules 1998 provides that the Court may give summary judgment against a Claimant or a Defendant on the whole of the claim or on a particular issue if:—

> "(a) it considers that —
> (i) the Claimant has no real prospect of succeeding on the claim or issue; or
> (ii) the Defendant has no real prospect of successfully defending the claim or issue; and
> (b) there is no other compelling reason why the case or issue should be disposed of at a trial"

The test has been further explained in *Swain v. Hillman* [2001] 1 All E.R. 91 ("real prospect" is to be contrasted with "fanciful"); real prospect is certainly a lower standard than the balance of probabilities (*Adidas-Salomon AG v Draper and Others* [2006] EWHC 1318, para 24, "a prospect can be real, notwithstanding that it is a small prospect or one that does not seem terribly likely to eventuate"). See also *Three Rivers Dist. Council v. Bank of England* [2003] 2 AC 1, para 95, which limited the possibility of summary judgment in complex cases: "more complex cases are unlikely to be capable of being resolved in that way (summary judgment) without conducting a mini-trial on the documents without discovery and without oral evidence"; Competition law cases are complex cases: *Intel Corp. v. Via Technologies Inc*., [2002] EWCA Civ. 1905, para 32 (Articles 81 and 82 cases raise questions of mixed law and fact which are not suitable for summary determination); See, however, *Wireless Group v. radio Joint Audience research Ltd*. [2004] E.W.H.C. 2925, para. 52-53 (remarking that "(t)he expense of bringing the present case to trial may be enormous" and that "(t)he pre-trial and trial costs of competition cases, with the need for expert evidence from economists, are notoriously high" before finding that the claim has no reasonable prospect of success, and that judgment should be entered for the defendant under Part 24); *P & S Amusements Limited v Valley House Leisure Ltd* [2006] EWHC 1510 (Ch), para 15 ("such claims or defences require careful scrutiny so as to prevent cases lacking in sufficient merit going to long and expensive trials"); *Unipart Group Ltd v. O2* [2004] E.W.H.C. 1034

[603] *Jobserve* [2001] EWCA 2021, §§ 15 & 29 (the case should be "seriously arguable").

the standard of proof accommodates the inclusion, in the judicial consideration of facts and law, of all economic evidence that corresponds to the requisite standards of conviction in each stage of the proceedings. This does not mean that all economic evidence included will have an equal impact in the decision-making process. In practice, evidence is not evaluated in isolated pieces but, as Hock Lai observes "rather in large cognitive structures most familiarly in the form of narratives, stories or global accounts"[604].The approach is holistic rather than atomistic and "judgments of plausibility are rendered not on propositions of facts viewed individually and in isolation"; "the truth of any particular proposition of fact will have to be assessed in the context of a larger hypothesis or story or narrative account"[605]. Kahneman and Tversky have shown the importance of "heuristics" and the tendency to fit information into existing "schemas" in order to fill in gaps and interpret evidence, rather than making probability statements on the basis of specific units of information[606]. The next section will advance a different perspective in the assessment of economic evidence, not based on probability

5.2.2.2. Relative plausibility theory and standards of proof (persuasion)

The probabilistic view of the standard of proof derives from and accommodates an objectivist view of economic science. The relative plausibility theory departs from different premises, and seems a superior alternative if one adopts, as this study does, a more sceptical view of the "objective" nature of economic knowledge/science. Plausibility does not reduce to probability. This is even if the term probability is not meant in the statistical or frequency theory sense but is perceived as having instead an essentially epistemic nature. Hock Lai argues that "in the epistemological sense probability does not reside in the content of the believed proposition, as objective probability does, it is rather a measure of the extent of belief in a proposition"[607]. This conception fits relatively well with our approach of denying any claim of objective truth in economic science statements and perceiving them as a form of rhetoric that attempts to persuade a specific audience. The belief formed will not be categorical but partial: contrary to categorical belief which is "knowledge-oriented" (knowledge constituting the aim of all scientific endeavour), partial belief is "action-oriented": it is the state where the quest for additional knowledge is excluded, the fact-finder

[604] Ho Hock Lai, *A Philosophy of Evidence Law* (OUP, 2008), 161, what he calls the "narrative model of trial deliberation". See also, Nancy Pennington & Reid Hastie, 'A Cognitive Theory of Juror Decision Making: The Story Model', (1991) *Cardozo Law Review* 519.
[605] Ibid., at 162.
[606] Amos Tversky & Daniel Kahneman, 'Causal schemas in judgments under uncertainty', in Daniel Kahneman, Paul Slovic & Amos Tversky (ed.), *Judgment under uncertainty: heuristics and biases* (CUP, 1982), 117.
[607] Ho Hock Lai, *A Philosophy of Evidence Law*, above, at 126.

considering that the knowledge acquired so far is sufficient to justify this partial belief *as a matter of practical reasoning*. Nevertheless, the fact-finder adopts an approach of humility: she recognizes that her belief falls short of a categorical nature and she is ready to reconsider this belief in light of additional knowledge/information. The assessment of the evidence or more generally fact-finding should not therefore focus on probabilities but on the relative plausibility of competing hypothesis presented by the parties[608]. According to this theory, legal proof is a form of inference to the best explanation that examines the comparative plausibility of the parties' stories[609] "ending in the question whether one is justified in believing (or treating) any of them as the true (or most plausible) account"[610].

Such an approach has important implications on the integration of economic evidence in litigation. First, it renders redundant the separate step of admissibility of economic evidence. In order to decide on the probative value of evidence, judges "ought to consider the quality of competing explanations in the context of the case"; "the probative value of evidence will be determined by what best explains it"[611]. The process will involve two steps[612]: first, it is important to generate potential explanations of the evidence; second, it is important to select the best explanation from the list of potential ones (which will be the "actual explanation")[613]. Choosing among competing explanations depends on the relative plausibility of each narrative/story, as measured by reference to a number of criteria: the degree of coverage (that is "the greater the portion of the evidence a story is able to account for the higher its plausibility"), the completeness/consilience of the story (it explains more facts and has less gaps)[614], the coherence of the narrative (that is "the added quality of the individual elements integrating well together to yield a smooth and convincing narrative of events" and finally its probative force (that is "the positive support it receives from the evidence)[615].

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[608] See the "relative plausibility theory" of Ronald J. Allen, "The Nature of Juridical proof", (1991) 13 *Cardozo L Rev* 373.

[609] Ronald J. Allen, "Explanationism all the way down", (2008) *Episteme* 320; Michael S. Pardo & Ronald J. Allen, "Juridical Proof and the Best Explanation", (2008) 27 *Law and Philosophy* 223.

[610] Ho Hock Lai, *A Philosophy of Evidence Law*, above, at 156.

[611] Michael S. Pardo & Ronald J. Allen, "Juridical Proof and the Best Explanation", above, at 263.

[612] I follow the pattern of "prospect theory" which identifies a two-steps guiding choice (or behaviour): first, setting a reference point by editing alternatives, then, combining or segregating outcomes after a comparative plausibility analysis: Reid Hastie & Robyn M. Dawes, *Rational Choice in an Uncertain World* (SAGE, 2001), Chapter 13 (however, contrary to prospect theory, we consider that the selection step does not rely on probabilities of occurrences or expectations but on a relative plausibility enquiry).

[613] Michael S. Pardo & Ronald J. Allen, "Juridical Proof and the Best Explanation", above, at 229.

[614] One could employ the expression "explanatory power", that is "the ability of a theory, model, hypothesis to take into account all the observed data and make a persuasive scientific argument": Erican Beecher-Monas, *Evaluating Scientific Evidence* (CUP, 2007) at 140.

[615] Ho Hock Lai, *A Philosophy of Evidence Law*, above, at 164.

It becomes therefore clear that plausibility cannot be confined to a simple statement of probability, quantitatively determined as a percentage of already known "objective data" or universal objective frequencies, which would assume that all available explanatory hypotheses would be known by the court[616]. Rather it refers to the relative "strength of the explanation", as determined by the "inferential interests of the decision-maker"[617], the context of other evidence or other contrary explanations[618]. An inclusive rather than an exclusionary approach to economic evidence will certainly fit better to the importance of contextual determination that plausibility, as opposed to probability, entails.

Second, it facilitates the introduction of a two-sided plausibility standard. Relative plausibility requires an active participation of both parties in proving and disproving evidence. One cannot decide on the relative plausibility of a hypothesis before hearing the competing story/narrative. The parties should be able to advance their competing stories at each stage of the judicial decision-making process. The burden of proof will have a significant role to play in situations where both stories are equally plausible or implausible and it is difficult to differentiate among potential competing explanations. Pardo and Allen explain that "(i)f the proffered explanations truly are equally bad (or good), including additionally constructed ones, judgment will (and should) go against the party with the burden of persuasion" and that "(t)hrough burdens of proof the structure of civil trials thus assuages concerns associated with too few potential explanations"[619]. The two-sided plausibility standard is particularly well suited for economic evidence, where it is always possible to advance different explanations or causal linkages between conduct and actual or potential market outcomes. The issue of proving a concerted practice in presence of parallel conduct may illustrate the point. The case law of the European courts has focused on the presence of alternative explanations of price parallelism than collusion. Their approach is holistic and compares competing narratives. If an alternative explanation/narrative (e.g. simple oligopolistic interdependence) is more plausible than collusion, the

[616] Ronald J. Allen, "Explanationism all the way down", above, at 326.
[617] For example, in the US jury system as "the court's assessment of plausibility defines the range of the jury's decision-making discretion", the range of that discretion may vary according to the court's perception of "jury's breadth of experience with the types of issues presented" and the capacity of the jury to deal with technical issues: William H. Page, "The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency", (1989) 75 *Virginia L Rev* 1221, 1282. These considerations are not present in the European legal system (non-jury system), thus potentially leading to a different definition of plausibility in this context.
[618] Michael S. Pardo & Ronald J. Allen, "Juridical Proof and the Best Explanation", above, at 261.
[619] *Ibid.*, at 238.

courts conclude that there is no concerted practice and therefore finds no infringement of Article 81 EC[620].

Third, the concept of the standard of proof could be considered as a decisional threshold: if the fact-finder's belief in the plausibility of a proposition, compared to another one, crosses a certain level, she must accept it[621]. The level refers to the degree of differentiation in plausibility among potential competing explanations, which would be deemed persuasive for the decision-maker. For example if the standard of proof (persuasion) is the balance of probabilities, a slight differentiation in the plausibility of an hypothesis A compared to a hypothesis B, A is a little bit more plausible than B, will be deemed sufficient to persuade the decision-maker that A is the "actual explanation". If, however, the standard of proof is "clear and convincing evidence", a slight differentiation in the plausibility of hypothesis A, relative to hypothesis B, may not be sufficient to carry persuasion that A is the actual explanation: "the explanation must be plausible enough that it is clearly and convincingly more plausible than those favoring the other side"[622]. In this case, even if hypothesis A is slightly more plausible than hypothesis B. Hypothesis B will prevail if the burden of proof falls on the party advancing hypothesis A.

The level of the decisional threshold (e.g. balance of probabilities, clear and convincing evidence, beyond reasonable doubt) is determined according to some social policy objective: optimal deterrence or compensation for consumer harm, with always in mind the efficient use of administrative/judicial resources. According to economic analysis of law, "(t)he optimal standard of proof…should balance the social cost of false convictions … against the social cost of false acquittals and further, against the costs of errors must be weighed the costs of installing procedures to reduce the rate of errors"[623]. The magnitude of costs (real or perceived) will exercise an influence over the determination of the standard of proof. This theory may explain the reference to the "enormous" cost of discovery in antitrust litigation in order to justify the

[620] See, Case 48/69, *ICI v. Commission* [1973] ECR 619, para 31-32 9comparing the relative plausibility of two competing narratives explaining price parallelism (collusion versus normal operation of an oligopolistic market). The Courts perform a similar relative plausibility analysis when they apply the counter-factual test. For a similar approach in US antitrust law, in the context of a summary judgment, see *In re High Fructose Corn Syrup Antitrust Litigation*, 295 F.3d 651, 655-656 (2002, 7th Cir.) in an opinion drafted by Judge Posner: "the second trap to be avoided in evaluating evidence of an antitrust conspiracy… is to suppose that if no single item of evidence presented by the plaintiff points unequivocally to conspiracy, the evidence as a whole cannot defeat summary judgment. It is true that zero plus zero equals zero. But evidence can be susceptible of different interpretations…The question for the jury in a case such as this would simply be whether, when the evidence was considered as a whole, it was more likely that the defendants had conspired to fix prices than they had not conspired to fix prices".

[621] Ho Hock Lai, *A Philosophy of Evidence Law*, above, at 174.

[622] Michael S. Pardo & Ronald J. Allen, "Juridical Proof and the Best Explanation", above, at 239-240.

[623] Ibid., at 176.

adoption of a higher standard of proof for motions to dismiss in *Bell Atlantic Corp. v. Twombly*[624]. It may also explain the evolution of the standards of persuasion and sufficiency (cogency) of evidence for a number of commercial practices, such as vertical restraints, following the Chicago school revolution. As it is well explained by William Page,

> "the problem of error costs is largely a product of the discretion of inexpert decision-makers in applying broadly stated rules. So long as practices like resale price maintenance and tying arrangements were perceived as simply monopolistic, there was little concern that juries might wrongly apply rules to alleged instances of a practice. The benefits of deterring the practices appeared to outweigh any costs of error associated with the vagueness of antitrust rules. The models' identification of efficiencies associated with practices facially similar to those prohibited by antitrust rules has made the courts more aware of the potential for false positives in the application of the rules. It has limited the types of permissible inferences from ambiguous evidence in cases where 'mistaken inferences…are especially costly, because they chill the very conduct the antitrust laws are designed to protect"[625].

It is clear that substantive and procedural/processual issues are closely interlinked in competition law.

6. Conclusion

There are important differences across legal systems on the way economic analysis informs competition law. The study explored the hypothesis that this divergence may be explained by three factors: (1) institutional dissimilarities regarding the administration of economic expertise in courts, (2) different perceptions concerning the role of the actors of the system (experts, judges) and (3) the role of scientific networks (e.g. schools of economic thought) and power relations in shaping the behaviour of the actors of the system. It is argued that the institutional and social framework of economic expertise has a particularly important role in shaping competition law doctrine. Procedural or substantives rules developed in order to organize the process of expertise and to mitigate the risks flowing from the epistemic asymmetry that exists between judges and experts. This inevitably influences the interpretation and enforcement of competition law. It is important also to recognize the "cultural" differences between lawyers and economists in envisioning their respective role in the process: practical reason and the principle of the administration of justice may set limits to the open-ended environment of scientific discourse.

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[624] See our analysis above.

[625] William H. Page, "The Chicago School and the Evolution of Antitrust Characterization, Antitrust Injury, and Evidentiary Sufficiency", above, at 1286.

At the same time, the analysis of the social context of expertise brought into light the “trials of strengths” between competing networks and schools of thought in economics. It also indicated the non-neutral, in the sense of non-directional, role of the legal context of expertise in the evolution of economic research. Admissibility and assessment rules in the consideration of economic evidence may influence the perception of a specific economic discourse, not only in the sphere of the legal, but also in the economics community. The study relies on the assumption that the social context of expertise and the interaction between academic and forensic economists establish the existence of a link between the broad legal environment (the legal framework of expertise, its application in competition law) and the research agenda of economics. Disclosure rules for the methodologies used, or assumptions and, as much as possible, clear presentation of the arguments and the methodology followed may identify the different positions defended by the experts and may mitigate the risks of epistemic asymmetry. However, the adversarial process may provide incentives to discredit the expert, based on methodological grounds rather than on substantive conclusions. There is probably the need for a model that promotes discussion and consensus building (e.g. hot tub). We should abandon the view that expert witnesses (in antitrust proceedings) should be “neutral” and “objective” (a theory based on the educator and translator view of expertise, which does not correspond to current practice) and adopt instead the theory that experts are advocates, like lawyers: economic consultancies operate along with law firms for the defence of their clients. Interdisciplinary panels of experts and specialised courts would reduce the risks posed by the epistemic asymmetry between judges and experts. At the same time, it is contended that court-appointed experts or specialised tribunals will inevitably influence the incentives, role and behaviour of economic experts and could possibly lead to the emergence of more “middle of the road” economic expertise that would not be systematically and institutionally pro-defendant or pro-plaintiff.