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The problematic binary approach to the concept of dominance

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Abstract

This paper aims to analyse the complex concepts of dominance and market power.

A simplistic, discrete and binary definition of these terms, placing dominant firms on one side and non-dominant firms on the other side, actually, conceals a great continuum of possibilities, characterized by the same variables that help to frame these concepts. Indeed, the so-called "adequate" market power necessary for a dominant player to be identified as such varies much depending on the situation and who is analysing a specific competitive problem. To understand what dominance means, it is important to clarify some issues, for example:

- What kind of conduct or merger is being analysed?
- Who are the players involved in the conduct or merger at issue?
- What is the context of the conduct or merger analysed?
- What is the methodology chosen to assess profitability and market share of the players?
- What is the quality of the available information?
- What is the strategy to be used by the interpreter to identify some important parameters of demand and supply of the market?
- Who has the burden of proof to demonstrate market power or dominance?
- How market power evolves dynamically through time?
- What are the means of coercion available for players that want to abuse their market power?
- What teleological choice do analysts have regarding Competition Law?
- What is the nature of the market power: private or sovereign?
- Who has jurisdiction to decide what is a competitive problem?

There may have other issues that could impact the concept of dominance. As there are various elements to consider at the same time, presenting a clear, abstract, closed definition of dominance, or even market power, is, certainly, a complex task.

Key words: market power, dominance, lerner index, Herfindal Hirschmann index

Sumário executivo

Este artigo tem por objetivo analisar os conceitos complexos de dominância e poder de mercado.

Uma definição simplista, discreta e binária desses termos, separando empresas dominantes de um lado e não-dominantes de outro, na verdade, esconde um grande continuum de possibilidades, caracterizado pelas mesmas variáveis que auxiliam a enquadrar esses conceitos. De fato, o chamado poder de mercado "adequado" necessário para que um agente dominante seja identificado como tal varia muito dependendo da situação e de quem está analisando um problema competitivo específico. Para entender o que significa dominância, é importante esclarecer algumas questões, por exemplo:

- Que tipo de conduta ou fusão está sendo analisada?
- Quem são os atores envolvidos na conduta ou fusão em questão?
- Qual é o contexto da conduta ou fusão analisada?
- Qual a metodologia escolhida para avaliar a rentabilidade e participação de mercado dos agentes?
- Qual é a qualidade disponível de informações?
- Qual a estratégia a ser utilizada pelo intérprete para identificar alguns parâmetros importantes de demanda e oferta do mercado?
- Quem tem o ônus da prova para demonstrar poder ou domínio de mercado?
- Como o poder de mercado evolui dinamicamente ao longo do tempo?
- Quais são os meios de coerção disponíveis para agentes de mercado que desejam abusar de seu poder?
- Que escolha teleológica os analistas têm em relação ao Direito da Concorrência?
- Qual é a natureza do poder de mercado: privado ou soberano?
- Quem tem jurisdição para decidir o que é um problema competitivo?

Pode haver outros problemas que podem impactar o conceito de dominância. Como há vários elementos a serem considerados ao mesmo tempo, apresentar uma definição clara, abstrata e fechada de dominância, ou mesmo de poder de mercado, é, certamente, uma tarefa complexa.

Palavras-chave: poder de mercado, dominância, índice de lerner, índice de Herfindal Hirschmann

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The problematic binary approach to the concept of dominance

The Trinko (2004)¹ and Linkline cases (2009)² in the United States and the Deutsche Telekom (2010)³, Teliasonera (2011)⁴ and Telefónica cases (2014)⁵ in Europe have different opinions on what is abuse of a dominant position (see LUGARD & ROACH, 2017). With respect to digital commerce, both jurisdictions had strikingly different views on whether Google abused its market power and whether it manipulated its search engine results to favour its own services in other niches of the market.

In such scenario of great international uncertainty over what characterizes abuse of a dominant position, the OECD recommended that "CADE should adopt guidelines and commit to applying a <u>clear analytical framework to assess dominance</u>".⁶

The OECD claimed that:

"Aside from resource constraints, CADE has also lacked the analytical expertise required to undertake the rigorous quantitative analysis involved in complex abuse cases. CADE has rarely conducted detailed quantitative assessment to measure the net effects on competition or defined objective, economic-based tests for determining an infringement of the abuse of dominance rules."

Therefore, it is important to address more deeply this debate.

Simple dominance (and simple market power), collective dominance⁷ (and collective market power), super dominance⁸ (and super market power) are terms generally used by

¹ Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko (2004)

² Pacific Bell Tel. Co. v. linkLine, 555 U.S. 438 (2009)

³ Deutsche Telekom AG v. Commission (2010) C-280/08

⁴ Case C-52/09 Konkurrensverket v. TeliaSonera Sverige

⁵ Telefónica SA v Commission (2014) C-295/12

⁶ According to <u>https://www.oecd.org/daf/competition/oecd-peer-reviews-of-competition-law-and-policy-brazil-ENG-web.pdf</u> Acessed on June 2019.

⁷ See European Cases Alsatel v Novosam Case (247/86); Kali und Salzi Case (C-68/94 and C-30/95); Società Italiana Vetro SpA v. Commission, Joined Cases T-68, T-77–78/89, [1992] E.C.R. II-1403. (SZYSZCZAK, 2011) Irish Sugar case - Case T-228/97, [1999] ECR II-2969.

⁸ See European Case - Opinion of Advocate General Fennelly, Compagnie Maritime Belge, [2000] E.C.R. I-1365,- UK Case - Napp Pharmaceutical Holdings Ltd Subsidiaries v. Director General of Fair Trading (SZYSZCZAK, 2011)

Antitrust Authorities to determine which players have certain market positions (and may abuse their privileged *status*). In the United States, to determine whether there is monopolization, in violation of Section 2 of the Sherman Act, it may be necessary to first ascertain whether the defendant has "monopoly power", or in other words, a high degree of market power.

Sometimes, market shares are used as a first approximation of market power (and not only in Brazil). To reduce decision-making costs, many agencies around the world use such approximation:

Region	Presumption of market power	Legal basis
Singapore	60% market share	Singapore Guidelines on Section 47 Prohib. §3.8 - 2007
Israel	50% market share	Israel Restrictive Trade Practices § 26
European Union	50% market share	Case 62/86, AKZO v Commission, para 60
China	50% market share	China Antimonopoly Law – art.19
Russia	50% market share	Russia Competition Law – art. 5
Indonesia	50% market share	Indonesia Competition Law – art.17
South Korea	50% market share	South Korea Fair Trade Act – art. 4
Taiwan	50% market share	Taiwan Fair Trade Act – art. 5-1
South Africa	45% market share	South Africa Competition Act § 7
Saudi Arabia	40% market share	Saudi Arabia Executive Regulation art. 7(a)
Poland	40% market share	Act on competition and consumer protection art.4(10)
Serbia	40% market share	Article 15 of the Competition Act
Ukraine	35% market share	Ukraine Competition Law – art. 12.2
Egypt	25% market share	Egypt Competition Law art.4
Brazil	20% market share	Brazilian Competition Law (12.529/11 – art.36 §2)

Table 1– Some jurisdictions that presume market power based on market shares

Source (ICC, 2008) (ELHAUGE & GERADIN, 2011) (CONCURRENCES.COM)9

Brazil, in this list, has the lowest (but *rebuttable*) threshold to presume market power.

The OECD understands that "*a statutory definition of dominance based on market shares does not reflect international best practice*"^{10,} despite the fact that, as stated before, several countries use market shares as a first approximation of market power.

The International Chamber of Commerce (ICC) also understands that presuming market power based on market shares is an unwise decision, especially if it is non-rebuttable. That would occur because these presumptions would discourage "*potentially procompetitive behavior by companies wrongly presumed to have market power*" (ICC, 2008, p. 1). The ICC

⁹ According to <<u>http://www.concurrences.com/Droit-de-la-concurrence/Antitrust-Encyclopedia/?questions=576&lang=fr</u>>. Retrieved: October 26, 2015.

¹⁰ According to <<u>https://www.oecd.org/daf/competition/oecd-peer-reviews-of-competition-law-and-policy-brazil-ENG-web.pdf</u>>. Retrieved: June 2019.

also argues the use of market share ascribes monopoly power or dominance to firms, when, in fact, they do not possess such power.

Using a similar of argument, Kaplow states that:

"market definition process should be abandoned. The central, conceptual argument is that there does not exist any coherent way to choose a relevant market without first formulating one's best assessment of market power, whereas the entire rationale for the market definition process is to enable an inference about market power. Why ever define markets when the only sensible way to do so presumes an answer to the very question that the method is designed to address? A market definition conclusion can never contain more or better information about market power than that used to define the market in the first place. Even worse, the inferences drawn from market shares in relevant markets generally contain less information and accordingly can generate erroneous legal conclusions — unless one adopts a purely results-oriented market definition that ratifies it. Additional, largely unavoidable difficulties are identified with the economic logic underlying market redefinition. Because virtually all of the argument reveals inherent problems in the very conception of the market definition / market share paradigm, it follows that the conclusions here do not depend on one's assessment of the quality of various means of measuring market power either in general or in particular cases and that they are independent of the legal application at hand. Prior criticism of the market definition / market definition at hand. Prior criticism

If this criticism is right about the fact that market power cannot be inferred from market shares, then, a lot of other questions arise, for example: what is the right way to define such concept? How easy is it to find an alternative interpretation, without underestimating uncertainty? How is it possible to define who has and who does not have market power? Is it possible to make such definition in abstract terms? What is the reason to define what is a dominant position in the first place? Is dominance necessarily a means to obtain something or can it be the result of an action? In other words: is dominance a precondition for an anticompetitive conduct or can it also be the outcome of a specific undue practice that raises barriers to entry and modifies the conditions of a competitive market?

By trying to find an alternative definition for structural analysis, the European jurisprudence attempted to use a different wording, defining a dominant position as something that "relates to a position of economic strength enjoyed by an undertaking, which enables it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, its customers and ultimately of the consumers" (see the Hoffmann-La Roche and United Brands

cases)^{11.} Similar language is found in the legislation of several countries, such as Slovakia, Switzerland [Competition Act Article 4(2)], Turkey [Competition Act Section 3], the Czech Republic [Competition Act Art.10, par.1], among many others.

However, some authors understand that it is difficult to translate in economic terms how a dominant player could be *independent* from its own consumers and competitors (MOTTA, 2004, p. 34). To O'Donoghue and Padilla, "only a monopolist operating in a market protected by insurmountable barriers to entry and facing a completely inelastic demand would be able to behave independently of its competitors, competitive fringe and consumers" (O'DONOGHUE & PADILLA, 2006, p. 108). The problem is that the monopolist, in such context, is not supposed to sell anything in the inelastic part of demand. Thus, even this unlikely scenario painted by O'Donoghue and Padilla may underestimate the implausibility of an "independent dominant firm". Moreover, if a dominant player is completely independent from its competitors (with zero diversion ratio) in the midstream, downstream and upstream markets, then, unilateral exclusionary practices would not render any benefit to this dominant player, depriving him from the intent to execute anticompetitive actions.

Another way to express what is market power is to make some reference to a perfect and abstract world (that resembles John Lennon's song called Imagine): the model known as "perfect competition", where market power is absent, where there is an infinite amount of players, selling and buying things, where perfect knowledge of everything is shared among everyone, where there are no barriers of entry and exit whatsoever, the product negotiated is clearly homogeneous, among other very narrow conditions. Unfortunately, such model seems to exist only in the imagination of those who study Economics. Moreover, the Lerner index (Lerner, 1934), as it will be explained in this article, is the concept created to reflect the foundations of this perfect world (or to segregate this unlikely scenario from other real ones). Such concept, however, seems to present some loopholes when one tries to implement it.

As far as this debate is concerned, it is argued in this paper that it is truly difficult to present a closed and uncontestable manner of screening dualistically what dominance is or is not, since such concept means different things, in different situations, to different

¹¹ Case 85/76 – Hoffman La Roche & Co. AG vs. Commission [1979] ECR 461, par.39. Case 27/76 United Brands v. Commission [1978] ECR 207, [1978] 1 CMLR 429.

interpreters. This conclusion seems to be not stressed enough when criticism of structural analysis appears.

In addition, it will be argued that the use of non-classical logics helps to understand why this concept can change through time [dynamically] and depending on circumstantial features of the case. Indeed, dominance and market power are (sometimes) simultaneously defined alongside several other elements that influence endogenously their own definitions.

Therefore, this paper is intended to discuss these concepts and how they can affect antitrust enforcement. In this context, criticism of traditional market power definitions can render a better understanding of competitive pressures and should be encouraged. However, easy and overly simplistic criticism of market power definition based on some traditional heuristics may underestimate the huge and inherent uncertainty of any alternative approach. That is why it is crucially important to discuss the degree of such uncertainty.

1. Challenging classical logic

"To be or not to be: that is the" [dichotomic] "question", (SHAKESPEARE, 1623) framed by prince Hamlet, in hesitation to avenge his father's murder. The prince wondered what would be worse: to live a long life knowing that his uncle, stepfather, and new king Claudius murdered his father (and doing nothing against him or to avenge his dead father, even if such act would cost his own life. Maybe there could be a third option [not involving violence or agony at all], but it would also transform the Shakespearean classical tragedy, so appreciated in literature, in something else.

Shakespeare knew about dichotomy of life [to be=1], a continuous interval that we know; and death [not to be=0] (the end of everything familiar). Therefore, death would mean the absolute, definite and final stage of our existence. There are several crossroads and bifurcations in life, and once someone has decided to follow a path, unfortunately it is not possible to have a second chance to reconsider it. However, sometimes it is also possible, in order to avoid pain, to decide nothing at all. And that is, when Shakespeare questioned, through the mouth of Hamlet, how courageous people are (i) to face the possibility of a dichotomous bad (but courageous) choice or (ii) to live a very long, comfortable (and continuous) life without making any bad decisions; but regretting not having made them, not

having taken any chances, slightly angry, bitter or even anguished for not having made an important albeit dualistic decision that could have succeeded (or not).

If this existentialist approach were to be applied to Antitrust Law, one could see several dualistic specifications regarding market power, relevant market, conduct definitions, burden of proof and several other subjects that would lead antitrust enforcers to a final and binary conclusion about whether something is legal or illegal, allowed or not, by using something like the binary Luhmanian code of decision (LUHMANN, Law as a social system, 1989) (LUHMANN, 1995). On the other hand, if society makes good, conscious antitrust decisions, it may raise the welfare of everyone, may decrease prices and, sometimes, may allow deprived people to afford medicines, food or other goods, that otherwise they would not be able to afford, possibly putting their lives at stake. And here the existential dilemma arises again.

Fighting abusive practices related to concentrated structures in a concentrated world seems to have important distributive impacts, especially if the definitions of relevant markets are not just part of an Idealistic-Hegelian debate but are also linked to the real borders of international markets, which immigrants struggle to cross and where there is so much inequality.



Figure 1 – Champagne-Glass Distribution (CONLEY, 2008)

It is surrounded in these concentrated international structures that practices as tying, refusal to deal, retail price maintenance, predatory practices, international cartels and so many other worldwide or regional anticompetitive behaviours may be detected and punished by only a few authorities affected by them. Therefore, reparation for such undue practices

may also be concentrated in some areas of the world (generally rich ones), as evidence, witnesses, and enterprises' assets that allow the enforcement of certain antitrust decisions may, sometimes, also be concentrated.

There may be Agencies with better screening tools of what is an anticompetitive practice or may be better equipped to deal with grey areas of Antitrust Theory. Appropriate screening is important, given that society, lawyers, judges and civil servants need to know what is right (1) and wrong (0) in order to prescribe what should be done and proscribe/punish what should not be done, even when it is hard to explain, emulating a dummy variable decision.

However, dummy variables (binary variables) are called "dummy" because they greatly simplify reality. Of course, simplification is a necessary rational tool to understand complex environments, and, in legal terms, clear definitions are important to regulate conducts. On the other hand, oversimplifications could represent dangerous pitfalls in some situations.

In this context, substantial market power and dominance are terms that may lead an unadvised interpreter to face dichotomic, absolute and discrete decisions without a little bit of restraint or scepticism. And even if a careful decision-maker thinks the world is not simplistically divided among firms that either have or do not have market power — that is, believing that market power is a matter of degree, varying continuously — it is important to face these questions: Since antitrust authorities must make decisions about concrete cases, what is the specific point or frontier to draw a line between substantial and insubstantial market power? Or, again, what is a dominant and a non-dominant position?

These concepts, based on negative (-) and positive (+) definitions, seem to follow Classical Logic of Aristotle, (LEITE, 2004) and are based on three main principles:

• Identity principle: everything is identical to itself.

 $\forall x, x \leftrightarrow x$

• Non-contradiction principle: it is not possible to *be and not to be* at the same time.

 $\forall x, \neg \neg (x) \leftrightarrow x$

¬ (¬x ∧ x)

Principle of excluded middle: everything <u>is or is not</u>; there is no third option.
∀ x, ¬ x ∨ x

By using such principles, it is possible to claim, dualistically, that something is either inside or outside the market; has or does not have market power; and is or is not a dominant player, without considering the wider context involving the conduct.

On the other hand, non-classical logic (such as dialethism, paraconsistent¹² and/or paracomplete logic) can accept the flexibility of some classical arguments (LEITE, 2004, p. 2), allowing these problems to be concurrently considered (and perhaps even rephrasing the Shakespearean dilemma).

- Dialethism Dialethism argues that sometimes contradictions can exist and be true. In the field of law, legal concepts are not found in the physical world independently from the point of view of the interpreter. Would it be totally illogical or incoherent that some people think a relevant market is well defined, using certain theories, while others think it is not, using other theories (or having a different point of view)? And would it be impossible to disagree on what market power is?¹³ By using some inputs from dialethism, it will be argued on this paper, that it is possible the existence of both (i) valid different interpretations about market power and (ii) situations in which an enterprise can have and not have market power, at the same time, depending on a set of variables.
- Paraconsistency "A paraconsistent logic is a way to reason about inconsistent information without lapsing into absurdity. In a non-paraconsistent logic, inconsistency explodes in the sense that if a contradiction obtains, then everything (everything!) else obtains, too. Someone reasoning with a paraconsistent logic can begin with inconsistent premises — say, a moral dilemma, a Kantian antinomy, or a semantic paradox — and still reach sensible conclusions, without completely exploding into incoherence. Paraconsistency is a thesis about logical consequence:

¹² Despite the debate about dialethism (if a contradiction can or not be true), it is possible to think in terms of paraconsistent logics, as a way to avoid the "explosion" of arguments. Explosion could occur if the interpreter finds a contradiction and, based on that contradiction, everything else, in logical terms, falls apart. Thinking like this, maybe it would be possible that two people with different concepts about how relevant market ought to be interpreted agree on what constitutes market power.

¹³ Even in Physics, the Theory of Relativity could provide some examples of how contradictory views of reality can exist simultaneously (such as in the twin paradox (EINSTEIN, 1905), in which twins exposed to different realities can experience time and life itself in different manners; or light, which can assume the form of a wave without weight, in certain circumstances, but in others be a particle with mass and weight). String Theory's multiverse (EVERETT, 1957) hypothesis also admits the possibility of having different simultaneous realities. (CARR, 2007)

not every contradiction entails arbitrary absurdities. Beyond that minimal claim, views and mechanics of paraconsistent logic come in a broad spectrum, from weak to strong"^{14.} In light of this, maybe it would be possible for two people with different concepts about how relevant market ought to be interpreted, different interpretations of the Lerner index or dissonant views on any other concept to agree on what constitutes an anticompetitive conduct in a concrete case. In other words, inconsistencies regarding market definition and other concepts may not explode the possibility of a consensual inference about the existence of market power or the illegality of behaviours.

• Other logics – Taking a pluralist way of thinking, many other kinds of logic are possible, such as fuzzy logic, intuitionistic logic, modal logic, three-valued logic, multiple-valued logic, among others, with different interpretations of how one should make inferences about reality (and whether the principle of the excluded middle should prevail). These logics are important to question how traditional Econometric inference, widely used in Economics [and in Antitrust], may not be considering correctly the role of critical values and their possible intervals (confident or credible ones). In trying to exclude the middle, intervals of critical values are treated as dots or points, reinforcing the dichotomic classical logic without even considering the implications of this choice (that ultimately deals with burden of proof), as it will be explained in other parts of this article.

In sum, perhaps the use of other kinds of logic could help understand some situations involving antitrust dilemmas that simple classical logic (and dualistic approach) tends to oversimplify. The way to solve such problems is not easy or univocal but it is certainly not something that should be hidden from social, scientific and political debates.

2. Relativity

In respect specifically to unilateral anticompetitive conducts, it is not possible, in abstract terms, to determine whether an enterprise has market power or not.

¹⁴ http://www.iep.utm.edu/para-log/ verified in 10th, March, 2015.

This uncertainty is due to (i) the possibility to perform, (ii) interests to conclude and (iii) effects of some anticompetitive conducts may vary according to some relational aspects, and not to some absolute abstract ones. Depending on how these relations or scenarios are drawn, it is possible to have substantial market power (in certain conditions) and not have it (in others) at the same time.

Thus, knowing that Antitrust Law analyzes lot of conducts $C=\{C_1, C_2, C_3, ..., C_n\}$ involving several players $P=\{P_1, P_2, P_3, ..., P_n\}$ that occur in specific conditions $X=\{X_1, X_2, X_3, ..., X_n\}$, it would be important to determine the relational aspects of such variables {*horizontally*, *vertically* and *diagonally*}, and not consider — in a vacuum — the concept of market power as an abstract precondition to every single antitrust punitive enforcement of all anticompetitive practices or structures (one size fits all).

Indeed, it is possible to have, inside a specific market, different companies with different diversion ratios, price-cost margins, marketing strategies, products and so on. For example, an enterprise can succeed to exclude from the market its nearest competitor through exclusive contracts with the retail sector (P_1 excludes P_2 performing the conduct C_1), where P_1 and P_2 have very high diversion ratios between themselves in a specific niche of the market with high barriers of entry and low rivalry among all other players of this niche [X_1 and X_2 Conditions]. In this case, it is possible that this conduct could generate a great impact if there is a substantial price increase, regardless of how the relevant market is defined in abstract terms or the specific size of the market share that both companies may have.

However, the same conduct can be directed to some specific parts or niches of the same relevant market. In a formal example, P_1 would not have interest to exclude P_3 performing the conduct $C_{2,,}$ knowing, beforehand, that the diversion ration between P_1 and P_3 is almost zero. Therefore, the interest to perform an anticompetitive practice is a relational concept, since the exclusion of the nearest competitor leads to bigger payoffs (in other words, it brings a bigger reward to the company that can succeed in this effort, and it could possibly generate a greater impact in terms of raising prices).

It is possible that P₃ rests on a different niche of the market with different conditions (entry barriers, rivalry levels, capacity constraints, among others: <u>market conditions X_3 , X_4 , X_5 </u>) within the same relevant market. These conditions could interfere not only in the interest but

also in the possibility of exclusion of a rival. If that is the case, P_1 , with a certain amount of market share, can exclude P_2 but not P_3 .

Sham litigation or fraud litigation are examples of how the capacity to exclude rivals may be linked to the conduct itself and not necessarily to the market share. Indeed, even the smallest player of a market can bring a judicial or administrative claim and legally exclude all other players (and acquire market power), raising, subsequently, unsurmountable legal market barriers to rivals. In this example, dominance is the outcome of the conduct and not a precondition for its performance.

Furthermore, what is considered important and substantial market power to one conduct (C_1) may not be substantial or important to another conduct (C_2). For example, contractual relationships with several retailers in the downstream market could be an important precondition to determine what is right or wrong in terms of exclusive contracts. An enterprise could enforce contractual clauses to delay or constrain the entry of a rival in a specific market through exclusivity agreements with retailers (C_1) (because such enterprise has many contractual relationships). However, this same company may have difficulties to perform predatory pricing (C_2) in the same market, targeting the same competitors, depending on how hard it may be to sacrifice its own profits vis-à-vis how efficient its rivals are in terms of production costs.

In some vertical conducts, it is not enough to measure ONE Lerner index, ONE market power, looking just at ONE relevant market. Indeed, to properly analyse the rationale of certain vertical foreclosures, one should simultaneously understand the relationship between the Lerner index of one layer of the market (downstream, for example) with another layer (midstream or upstream, for example).

For example, as mentioned in the European Guidelines on the assessment of nonhorizontal mergers (2008/C 265/07), input foreclosure can depend on the measurement of the Lerner index in both levels (upstream and downstream market):

The incentive to foreclose depends on the degree to which foreclosure would be profitable. The vertically integrated firm will take into account how its supplies of inputs to competitors downstream will affect not only the profits of its upstream division, but also of its downstream division. Essentially, the merged entity faces a trade-off between the profit lost in the upstream market due to a reduction of input sales to (actual or potential) rivals and the profit gain, in the short or longer term, from expanding sales downstream or, as the case may be, being able to raise prices to consumers.

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The trade-off is likely to depend on the level of profits the merged entity obtains upstream and downstream. Other things constant, the lower the margins upstream, the lower the loss from restricting input sales. Similarly, the higher the downstream margins, the higher the profit gain from increasing market share downstream at the expense of foreclosed rivals ¹⁵

Such measure is not necessary (or even possible) in the case of some kinds of <u>unilateral</u> <u>practices that involve just ONE relevant market</u>, such as some "predatory price" practices, sham litigations, or some practices involving raising rivals' costs.

There are also certain models that can be used when both buyers and sellers have market power, as pointed out by Hendricks & McAfee (2010).¹⁶ Hence, depending on the conduct or market, the Lerner index can mean different things in terms of preconditions to engage in a conduct.

3. Concepts

Given that, in the same relevant market and with a certain amount of market share, P_1 can exclude P_2 but not P_3 , one could question if this apparent contradiction could be avoided if the relevant market were narrowed, defining relevant market as a subsegment (niche) in which P_1 and P_2 belong but P_3 does not.

Of course, market definition plays an important role in structural analysis, and there may be some definitions that could capture better the competitive dynamics of a given market than others. However, product heterogeneity is a reality in several markets, and there are many ways to aggregate or segregate markets. Also, it is difficult to consider every single possible way a market can be segregated (or aggregated) from the very beginning of competitive analyses.

Moreover, even if all the information is present (and all possible scenarios are considered), there could be technological problems in market definitions. A common technique to define relevant markets is to identify the smallest market definition within which a hypothetical monopolist could impose a profitable, **significant** and non-transitory increase in Price (SSNIP). If this technique is used, maybe a default SSNIP of 5% for the niche where P₁

¹⁵ Official Journal of the European Union, 18.10.2008, C 265, according to <u>http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:265:0006:0025:en:PDF</u>, verified in 10th, March, 2015.

¹⁶ See http://vita.mcafee.cc/Bin/Vertical/mhi.html verified in 10th, March, 2015.

and P_2 are present is not possible (but a very close SSNIP of 4.5% is). In this specific case, the standard procedure would be to extend the borders of the relevant market, even knowing that, in doing so, it could end up including several other heterogeneous products with a weak relationship with P_1 and P_2 .

Therefore, the problem may not always be the relevant market definition itself. Indeed, in some circumstances, P_1 will be able to exclude P_2 but not P_3 , even with the "correct" market interpretation, according to predefined concepts. This example is very illustrative of how (i) market power is a relative concept when applied to anticompetitive conduct analysis and (ii) SSNIP is a continuous concept behind the discrete definition of relevant market.

Another question that deserves attention is the following: regarding buyer power, could there be a hypothetical monopsonist test? In other words, to measure "dominance" in buyer power side, would it be correct to use the threshold of a Small but Significant and Nontransitory Decrease of Price (SSNDP) instead of a SSNIP? If so, would the test follow the same methodology (looking at market power only horizontally) or would it be necessary to measure the impacts of a hypothetical monopsonist on the upstream, midstream and downstream markets? Certainly, there could be several possibilities to answer these specific questions and no right or wrong answers.

Moreover, there are many other continuous concepts that could influence what a relevant market is. For example, even narrowing the analysis to seller power, there are several hermeneutic options available to define a relevant market, ranging from: the analysis of the qualitative aspects of the product¹⁷; the verification of price levels¹⁸, diversion ratios, price-cost margins and available capacity; the analysis of the movement of some variables, specially prices¹⁹ (simple correlation, cointegration^{20,} impulse response analysis, variance decomposition of vector error correction model, granger causality test²¹ and several other exercises) (FORNI, 2004) (WERDEN & FROEB, Correlation, Causality, and All that Jazz: The Inherent Shortcomings of Price Tests for Antitrust Market Delineation., 1993); the use of

¹⁷ See Brown Shoe Co. v. United States, 370 U.S. 294.

¹⁸ See the European case IV/M.582 – Orkla/Volvo.

¹⁹ See Nestlé/Perrier.

²⁰ See Merger 08012.001885/2007-11 judged by CADE.

²¹ See Merger 04-07/75-18 judged by the Turkish Authority.

critical loss analysis (HARRIS & SIMONS, Focusing Market Definition: How Much Substitution Is Enough?, 1989) (SCHEFFMAN & SIMONS, 2003)²²; the use of critical loss with aggregated diversion ratio (KATZ & SHAPIRO, 2003); generalized critical loss analysis (COATE & WILLIAMS, 2005); and several other methodologies. Moreover, there are methods tailored to the geographic specification of relevant market, such as the Elzinga-Hogarty test (ELZINGA & HOGARTY, 1973) (ELZINGA & HOGARTY, 1978)²³ and the gravity model test (ANDRADE, et al., 2010), just to name a few.

It is important to mention that critical loss can either be a profit maximizing model or a breakeven model. It could be the case that using one of both models could mean the difference between the clearance of a merger and its blocking; the acquittal of an enterprise and its conviction, especially if structural analysis is used.

In addition, some authors suggest it is possible to use a *Full Equilibrium Relevant Market* test (FERM) (IVALDI & LÖRINCZ, 2005) simulating a merger among all players in a specific market to see if the price will raise x%, in an equilibrium situation. Ivaldi & Lorinz (2005) claimed that the FERM test (equilibrium model) differs from critical loss analysis (out of equilibrium model, according to that article). Other authors pointed out the possibility of using other forms of equilibrium, such as the *Marshallian Profit-Maximizer* test (MPM) and the *Price-Leader, Profit-Maximizer* test (PLPM) (FIUZA, 2008). Furthermore, Buccirossi (2000) made some models taking into account several Nash Equilibrium and game theory concepts to define what a relevant market is.

Thus, hermeneutic options (HE) are a set of several methodologies that can lead to the same or different outcomes:

 $HE = \{HE_1, HE_2, HE_3, ..., HE_N\}$

Equation 1 – Hermeneutic options

As mentioned before, depending on the preference of the interpreter, it is possible to choose one or more hermeneutic options. However, if in abstract terms this choice (or preference) leads to different market definitions, in concrete cases it is expected that, using a

²² See U.S. cases FTC v. Swedish Match and United States v. Sungard Data Systems, Inc.

²³ See Merger involving Barloworld Coatings and Midas Paints judged by South African Antitrust Authority

paracomplete logic such as the trivalent logic of Jan Lukasiewicz, for instance, (FRONHÖFER, 2011) a relevant market could be defined as follows:

\forall HE __interpreter-j \rightarrow RM ={ T , \perp , \odot } = {well defined, not well defined, neutral}

Equation 2 – Paracomplete trivalent logic applied to Market Definition

Neutrality (\odot) occurs because certain hermeneutic options are not applicable to some situations. For example, when there are stationary prices, a cointegration test is not applicable. So, this HE_{Cointegration}, when applied to a case, considering this context, will not be able to generate neither negative, nor positive results in terms of market definition. The same can occur if the interpreter wants to use a parametric test without the right specification (for example, it may not be possible to always find a normal distribution of error terms).

In addition, the interpreter-1 (private agent), interpreter-2 (Antitrust Authority); interpreter-3 (judge assigned to the case) and so on, may not reach a consensual decision on who made the right hermeneutic choice.

Thus, it is important to stress that, on a conceptual level, relevant market (and, consequentially, substantial market power defined structurally on the basis of market share) could represent different valid concepts depending on the theoretical choice of the interpreter. This could perfectly well lead to different decisions on what is considered dominance (due to the divergent ideal nature of these different abstract concepts). That would be true even if the interpreter does not define dominance based on market share.

4. Information

To complement this complex inference, in order to define market power or relevant market properly, the interpreter should be able to have access to a relevant amount of information ($\sum Inf$) with good quality (Q). Each of these variables, when normalized, could range from 0 to 1. Zero would mean that the Antitrust Authority has no data at all ($\sum Inf = 0$) or that the market information is so confusing that it is not even possible to understand nothing about the market (Q=0). The opposite situation is when the Antitrust Authority has perfect information of everything, with good quantity and quality (then $\sum Inf=Q=1$). In real

terms, due to asymmetric information, it is expected that, in merger and conduct cases, both numbers should lie in the middle of these extremes.

Some countries have electronic discovery or the possibility of making dawn raids in unilateral conduct cases, in which case they may have access to more information to accurately determine the competitive pressures of some markets compared to other countries that do not have such instruments. On the level of international cooperation, authorities have incentives to cooperate — trying to decrease their own asymmetric information about theoretical questions, models, software, facts of the market and specific practices — seeing what other authorities are doing to identify and remedy problems. Conversely, they may also have incentives not to cooperate, trying to minimize the costs of cooperation itself (regarding the need to conciliate different timetables for investigations, legal difficulties, interests to share evidence and so on).

5. Robustness, convergence and burden of proof

As important as having information (nationally or internationally obtained) is processing such information. In this regard, the strategy of identification (SI) of models or tests could be used in order to grasp the competitive pressures of the market in concrete cases. For example, if an Antitrust Authority is trying to understand the amount of diversion ratio between two enterprises, it may use the following equation:

Diversion_Ratio = $D_{ij} = \frac{\varepsilon_{ij}q_j}{\varepsilon_{ii}q_i}$ Equation 3 – Unity Diversion Ratio

 ε_{ii} = Own-price elasticity of demand (which refers to several confidence/credible intervals, when estimated robustly) ε_{ij} = Cross price elasticity of demand (which refers to several confidence/credible intervals, when estimated robustly) q_j = quantity of j q_i = quantity of i (WERDEN G., Demand elasticities in antitrust analysis, 1998, p. 405)

If the interpreter runs just one regression will see that own and cross price elasticities of demand are intervals. Therefore, diversion ratio itself is also an interval (although sometimes it is treated in some papers as just a point). This problem becomes more complex when instead of having just one regression for these parameters, the interpreter runs several regressions in order to perform a robust exercise to measure own and cross price elasticities of demand. In this case, the interpreter will have at his disposable the interaction between several possible intervals to define what diversion ratio means:

"A now common exercise in empirical studies is a "robustness check," where the researcher examines how certain "core" regression coefficient estimates behave when the regression specification is modified in some way, typically by adding or removing regressors. Leamer (1983) initially advocated investigations of this sort, arguing that "fragility" of regression coefficient estimates is indicative of specification error, and that sensitivity analyses (i.e., robustness checks) should be routinely conducted to help diagnose misspecification. Such exercises are now so popular that standard econometric software has modules designed to perform robustness checks automatically; for example, one can use the STATA commands rcheck or checkrob. A finding that the coefficients don't change much is taken to be evidence that these coefficients are "robust." If the signs and magnitudes of the estimated regression coefficients are also plausible, this is commonly taken as evidence that the estimated regression coefficients can be reliably interpreted as the true causal effects of the associated regressors, with all that this may imply for policy analysis and economic insight". (WHITE & LU, 2014)

However, it is not easy to know what the "core variables" are in a specific equation. Therefore, it is important to know if by adding or removing regressors the exercise is still valid and if problems regarding normal errors, endogeneity, among several others are controlled (WHITE & LU, 2014). Hence, maybe only some of the tested results can present good specifications.

Even if only good models are selected (with good specifications), it is possible that Antitrust Authorities select an **interval** of possible diversion ratios (*means*). The graph below shows a hypothetical example of how this could occur:



Figure 2 – Hypothetical example of possible diversion ratios derived from a robustness test

*For the purpose of the hypothetical exercise, the only valid results are the yellow ones, which specification tests (such as Sargan or Reset tests) can reject at a level of 10%.

However, in this hypothetical example, valid diversion ratios (*means*) lie between 0.65 and 0.75. What if the difference between 0.65 and 0.75 were a crucial difference to know if there is an anticompetitive problem or not? It is not easy to answer this question (or choose among valid possible results).

Another problem is that all these valid model results (yellow dots), are not actually dots but lines or intervals (that were not plotted in graph). Therefore, the interval of diversion ratios (hypothetical yellow lines not plotted in Figure 2) seems to have been underestimated, since the analysis focused only on means but not on the entire interval. The maximum and minimum possible values were not included in this example.

If standard deviations had been plotted, maybe it would be possible to know if model results are converging to some extent.

As for the distributions, convergence exists if the number of observations (*n*) tends to infinity, standard deviation tends to 0 and the mean of random variable *X* of a given sample (\bar{X}) tends to the population mean (μ_X) . In mathematical notation, this could be written as follows:

 $\lim_{n \to \infty} = \bar{X}$

Equation 4 – Convergence in a given distribution.

Depending on the consistency, unbiasedness and minimum variance of the estimators, the convergence process can be more or less efficient. Sometimes, the parameters of several econometric models, also, can converge to specific number.

Econometrics is used to understand scientific issues, and it unifies Statistical knowledge, Economic Theory and Mathematics in an applied manner (GREENE, 2003, p. 1). However, these three areas also comprehend a variety of schools and approaches, that may lead to contradictory model responses (and plausible views of reality) inherently attached to the use of different hermeneutic choices (HE).

Regarding Economic Theory (in the realm of demand estimation), the interpreter should decide if the product is a Giffen good or a normal good; if product is homogeneous or

heterogeneous, at the very beginning of the analysis (and sometimes before any empirical test is implemented). If the market is homogeneous, the antitrust authority is supposed to (at least) consider the use of Cournot's Model. Conversely, if the market presents some heterogeneity, then the authority is supposed to consider Bertrand's Model, or some other model (for example, Stackelberg's Model).

However, there are degrees of homogeneity and heterogeneity, and some products may have some sort of differentiation, even when labelled in a similar manner. Oil (depending on the viscosity) and iron ore (depending on the purity) ²⁴ could be considered heterogeneous (even though someone that is not an expert in these markets may have a different perception about the heterogeneity of such products). In the past, the brands of beef products in Brazil did not play an important role in differentiation. Nowadays, it is possible to see a huge amount of publicity to differentiate these products.²⁵ Therefore, it is even harder to see, in a dynamic perspective, what is heterogeneous, what is becoming heterogeneous and what is not heterogeneous. Therefore, it may be difficult to understand — at the very beginning of the process of definition of relevant markets or market power — what would be the best theoretical approach to this matter.

Independently of this debate, there are several ways to implement demand models, such as with AIDS (Almost Ideal Demand System) (DEATON & MUELLBAUER, 1980); LAIDS (Linear AIDS) (FUJII & MARK, 1985)]; QUAIDS (Quadratic Almost Ideal Demand System) (BANKS, BLUNDELL, & LEWBEL, 1997); RAIDS (Rationed Almost Ideal Demand System) (DEATON & MUELLBAUER, 1981); and different methodologies of this kind; Logit; Nested Logit demand; Mixed Logit demand; assessing consumers' Willingness To Pay (CAPPS, DRANOVE, & SATTERHWAITE, 2003). One could also use calibration, such as with PCAIDS (Proportionally Calibrated Almost Ideal Demand) (EPSTEIN & RUBINFELD, 2003)]; ALM (Antirust Logit Model) (WERDEN & FROEB, The Effects of Mergers in Differentiated products Industries: Logit Demand and Structural Merger Policy, 1994) (WERDEN, FROEB, & TARDIFF, 1996); and AMLM (Antirust Mixed Logit Model) (DeSOUZA, 2009)].

²⁴ CADE's Merger analysis - 08012.002838/2001-08 (Companhia Vale do Rio Doce e Ferteco Mineração S.A.)

²⁵ CADE´s Merger analysis - 08700.010688/2013-83 (Rodopa Indústria e Comércio de Alimentos Ltda. JBS S.A.; Forte Empreendimentos e Participações Ltda.)

Depending on the model used to estimate or calibrate demand, it is possible to have different diversion ratios or different own-price elasticities, impacting the decision of the antitrust authority.

There are other decisions that could affect the outcome of the analysis, for example: What is the proper index to deflate prices? Is it correct to put some kind of filter that would smooth the time series analysed by the authority? What are the rightful variables that should be considered in the econometric model?

Regarding models, how should the authority weight the result of different algorithms? Some other extremely important decisions could influence the outcome of the desired tests, such as using linear, isoelastic or some other form of dependent or independent variables. How is it possible to solve problems such as the absence of normality of errors in parametric regressions? How to solve heteroscedasticity? What would constitute good instruments for a concrete case? Whenever two-stage least squares are used, what is the right approach for the Sargan test, and how strong should be the instruments using the Stock-Yogo methodology or some other? How should the plausibility of results be interpreted in the first and second stages of regressions? How is it possible to assess whether demand is kinked?

Sometimes, there may be disagreements about these (or other) questions. Also, there is the inferencist and Bayesian divide: indeed, part of the academy is in favor of using Baeysian analysis (STRNAD, 2007) (DOWNEY, 2012), and even Bayesian priors (POSNER R. , 2008, p. 67), while other authors are more skeptical of using these methodologies without some restraint (SPANOS, 2007) (MAYO, 1996) (GELMAN, 2008) (NIDA-RÜMELIN, 2008). Regarding Bayesian Econometric methods, there are several strategies to deal with autocorrelation and to achieve a convergent model.

In addition, there are some other problems, linked to the concept of some variables, such as whether critical loss or the Lerner index should be estimated using average variable costs or marginal costs. According to Barry Harris:

"The Critical Loss is equal to $Y \div (Y + CM) \times (100\%)$ where Y is equal to the Merger Guidelines' hypothesized price increase and CM is equal to the contribution margin of the producers in the group. The contribution margin is defined as the difference between the original price and average variable cost stated as a percentage of the original price. Variable cost is a proxy for the actual costs saved because of the reduction in sales. The variable cost element should be consistent with the level of lost sales and the associated time period." (HARRIS B. C., 2015)

Certainly average variable costs (AVC) is a more direct and concrete measure. However, if marginal cost (MC) ought to be empirically estimated, then, the complexities of the exercise increase (and the AVC model may lead to a different critical value when compared to the MC model). The concept of MC is currently being used in some other instances, namely to measure GUPP (Gross Upward Pricing Pressure) and UPP (Upward Pricing Pressure) and in several other simulations used as alternatives to the structural analysis of dominance.

Therefore, a conflict of results is somewhat expected whenever someone is dealing with so many different concepts or different possible ways to implement a model.

Hence, the econometric exercises that an antitrust authority is supposed to present/deliver to society in order to estimate some aspects of the competitive environment are very far from being a dichotomic, clear and obvious task. This endeavor could encompass a series of strategies of identification ($SI = {SI_1, SI_2, SI_3....SI_n}$).

Considering all, the questions worth asking seem to be not what the borders of a specific market are (or even what the market power is, regardless of market share), but:

- (i) What are the definitions of the supporting concepts (HE) used in a concrete model?
- (ii) How are these definitions measured (SI)?
- (iii) What are the maximum and minimum values of each estimated value (given a specific interval)²⁶?
- (iv) What are the critical values (or critical intervals within the *maximum* and *minimum* critical values)?
- (v) And most importantly: How different models (tailored for testing robustness) allow all possible estimated intervals and critical intervals to interact among themselves?

²⁶ Diversion ratio treated sometimes as a line or a point involves an interval of cross elasticities divided by an interval of ownprice demand elasticities.

Sometimes, the outcomes of econometrically measured intervals can converge to a number or a direction. In this sense, a pattern of measured intervals and critical intervals could be discovered.

Then, instead of having a yes or no, true or false, answer — or, in terms of relevant market, the limits of a specific territory — maybe it would be more accurate to define a probable relevant market; and the probability of a given enterprise, in a given circumstance, to exercise market power toward some specific player. Such exercise is not trivial, and the analyst should consider the margin of error of some measurements:

"In Votorantim/Fischer/JV the notifying parties estimated own and cross price elasticities for orange juice and other drinks using monthly retail data for France, Germany, the Netherlands and the UK. The Commission criticized the parties' analysis on a number of technical grounds, noting in particular the small sample size and paucity control variables, and noted that the results were subject to a wide margin of error (that is, the reported coefficients exhibited wide confidence intervals)." (GORE, LEWIS, LOFARO, & DETHMERES, 2013)

For example, in a recent case (Braskem tried to acquire Solvay – Merger Case 08700.000436/2014-27), CADE estimated the critical elasticity value of a specific candidate relevant market as being - 2.57.

The applicants submitted to CADE 48 models (with different specifications) in order to present a robust estimate of the elasticity. The Economic Department of CADE estimated several other models, but for illustrative purpose, it is interesting to focus just on the models presented by the applicants to this merger.

Some of the 48 models did not discard the hypothesis that elasticity could be zero (with a 95% confidence interval above zero). Some of the models that did so were considered not informative of the competitive pressures of the market. In this case, the parties argued that if their own model was not informative it means they do not have market power. This is an incorrect argument, in the sense that in the majority of markets it is not plausible that there is no elasticity whatsoever, meaning enterprises could raise their price in an infinite manner and consumers would still be willing to buy their products no matter what their own budget constraints were. If the parties cannot discard zero elasticity, there is a great chance their model is not very precise. The applicants even argued that in some specifications the confidence interval of demand elasticity varied from + 50 to - 60. That is almost the same thing as to say the temperature of a specific environment is between +1,000°C or -1,000°C. In other words, it is clearly uninformative.

Indeed, applicants may have interest in creating bad and inconclusive models and to use this inconclusiveness to argue that they do not have market power.

However, in this specific case, as it can be seen in the figures below, several other valid models displayed own elasticity of demand of the entire market with statistically negative values, considering a 95% confidence interval.



Figure 3 – All models presented by the applicants in Merger 08700.000436/2014-27. *Green dots represent estimated means and white lines represent confidence intervals. **Elasticities are not in absolute values. These are real measured values.



Figure 4 – Part of the models (35 models) presented by the applicants in Merger 08700.000436/2014-27 (ordered by size of standard deviation).

*Green dots represent estimated means and white lines represent confidence intervals.

**Elasticities are not in absolute values. These are real measured values.

Comparing different valid results, it might be interesting to know if models converge to a specific number. Sometimes it is difficult to increase model specifications toward infinity to know the direction of convergence. So, one possible way to know if models are "converging", is to give more weight to models that have more precision (low standard deviation, or simply "Std"). For the purpose of this paper, the "Stds" were weighted observing this formula:

 $Weight = Std^{-2}$

Equation 5 – Suggested weight

Therefore, models with low standard deviations will have higher weights.

Based on this concept, the following graphic was plotted:

- the horizontal axis represents the inferior/lower limit of the confidence interval of each estimated elasticity;
- the vertical axis represents the mean value of the estimated elasticities;
- the radius of each circle represents its weight.

It is possible to see that (using weights) the biggest area (convergence) is concentrated where the relevant market is well defined.



Figure 5 – Convergence of results. Applicants' model. Merger 08700.000436/2014-27 (ordered by size of standard deviation) **Elasticities are not in absolute values. These are real measured values.

There are other ways to represent graphically the convergence. It would be possible, for example, to plot the inferior limit, upper limit and elasticity means of each test in 3 dimensions.



*Figure 6 – Convergence of results. Applicants' model. Merger 08700.000436/2014-27 (ordered by size of standard deviation). **Elasticities are not in absolute values. These are real measured values.*

The problem of such representations is that when Std^{-2} is used to represent the radius of circles or spheres, it widens the distributions that by concept are concentrated in specific places of the graph. A better way to represent graphically different distributions would be in three dimensions, using cubes or, in a smooth manner, observing the correct standard deviation through more accurate models. Models will have (Std^{-2}) observations (N).



Figure 7- Convergence of results. Applicants' model. Merger 08700.000436/2014-27 (ordered by size of standard deviation). **Elasticities are not in absolute values. These are real measured values.

The figure above (left) was constructed as follows: Initially, it was requested that the software Mathematica made 48 scenarios, corresponding to the 48 elasticities presented by the applicants. For each scenario, the software should construct a normal distribution with randomly distributed observations (in pairs, in this case X and Y), where X would be the mean

of the elasticity parameter measured by Braskem and Y would be its respective standard deviation measured by the model. Following, the software was asked to make a threedimensional histogram (X, Y, and Z) for each of these distributions. For the Z axis, the software was asked to place Std^{-2} cubes in the space. In scenarios with lower standard deviation, the cubes are more stacked, while in scenarios with larger distributions (greater standard deviation), in contrast, there are more dispersed cubes (each distribution have a specific colour). This type of chart helps us identifying more clearly where the regression values converge. And, as identified, the place of convergence is far from the minimum threshold of the critical value, meaning that the relevant market should not be enlarged. The second figure (right) followed the same procedure (but the representation was in a three-dimensional smoothed histogram).

Using such procedure, some minor observations exceeded the limit of the critical value. On the other hand, the majority of the observations (and even entire distributions) stayed inside the area where the market was considered to be well defined. In addition, it is very likely that the observations that crossed the boundaries of the critical values may not be statistically relevant (taking into account the overall distributions of 48 models).

It is important to mention that the Department of Economic Studies of CADE noticed some deficiencies in models that were presented by parties and made its own exercises, which helped CADE reach a decision on this case with more consistent and robust information.

Diversion ratios, own-elasticities, cross elasticities, marginal costs and several other concepts are not discrete concepts. Indeed, such definitions belong to a very rich spectrum of possibilities and probabilities.

Another aspect to highlight is that, generally, statistical and econometrical tests compare measured values with critical ones. Measured values, as explained before, are not dots but distributions. The same can be said about most important critical values. Indeed, critical values themselves could be considered as a wide range of possibilities.

For example, the price-cost margin (used in the Lerner index) is generally referred to as a concept that helps to understand what market power is. Moreover, the idea of Lerner index could be used in critical loss tests and in several other parts of antitrust policy. Such concept could be described as following:

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$$Lerner Index = \frac{Price - Marginal_Costs}{Price}$$

Equation 6 – Lerner index

Although it appears to be a dot, the Lerner index represents a distribution, taking in consideration the following arguments:

- Regarding prices, this concept may constantly vary depending on the client, the features of the products, the period of time or some other aspects. Therefore, to simplify, the Lerner index is a mean of all these values. However, how precise is the Lerner index? If prices have a huge standard deviation, maybe it will not be a good representation of what is important in setting prices and receiving profits for a given market, affecting concepts such as critical loss.
- As for marginal costs, this value could be econometrically estimated. Therefore, the quantification of marginal costs is dependent on a series of other decisions that the interpreter makes and, on the quantity, and quality of information the interpreter has regarding production costs. The problem is that (i) there may be some enterprises that do not even know how to correctly measure their own costs, how to keep record of this information or how to maximize its own profits; (ii) antitrust authorities may not correctly understand the structure of costs of a given sector; (iii) and there could be different products and different production plants with different marginal costs within a given market definition that is being tested.
- In addition, marginal costs could be econometrically estimated. Hence, even with a single estimation (and with full knowledge of the market), such value lies within a confidence interval (inferencist approach) or a credible interval (Bayesian approach). And if the interpreter looks for a robust estimation of marginal costs, the problem of convergence of model results may apply to this concept.
- Whenever perfect competition is mentioned in economic textbooks (and the use of the Lerner index), it is stressed that interpreters should not pay much attention to "accounting costs", but to "economic costs" (that also encompass opportunity costs). On the other hand, opportunity cost is a relative concept. In the real world, there are almost infinite possibilities of devoting efforts to produce something. The interpreter should limit its analysis if the intent is to draw a valid inference about market power.

 Since there is a distribution of values of prices and a distribution of several valid probable marginal costs (within confidence or credible intervals taking into account specific opportunity costs), it seems plausible to refer to these concepts not as dots, but as ranges of numbers.

If marginal costs and prices are used to calculate critical values (critical elasticities or GUPP, for example), similarly, critical values themselves cannot be considered just dots or points but should be represented by some other kind of geometric form. In this situation, the observed interval becomes as important as the estimated mean point.

If that is correct, classical statistical tests could also be difficult to implement without some kind of adjustment. If binary classical statistical tests are used, there are just two options:

- First (Null) hypothesis (H_0) : it lies on one side of the critical value point.
- Second (Alternative) hypothesis (H_1) : it lies on the other side of the critical value point.

However, if the critical value is not a point but, at least, a line, then a third hypothesis may be needed to (fairly) complete the exercise (since there will be some values within the critical value distribution).

- First (Alternative) hypothesis (H_1) : it lies on one side of the critical interval.
- Second (Alternative) hypothesis (H₂): it lies on the other side of the critical interval.
- Third (Null) hypothesis (H_0) : it lies within the critical interval.

That is similar to what happened when classical logic was compared to three-valued or multiple-valued logic. Classical logic is not tailored to deal with this problem (two or more dimensions of critical values), in the sense that, according to classical thought, the reality is either A (Null hypothesis) or not A (Alternative hypothesis).

Of course, antitrust authorities, in the real world, should decide — at least in the majority of cases — according to a dualistic framework: someone is guilty or not of some conduct; a merger should be blocked or not; and so on. However, denying the existence of this problem that underlies the continuous concept of critical value may obscure the debate

about the alternative approaches to deal with these issues, especially if the critical value is estimated with a large standard deviation using a non-efficient estimator.

Regardless of this discussion (and assuming a two valued logic), another interesting debate is how burden of proof should be distributed? More specifically, who has the right to have null hypothesis? Whoever possesses the null hypothesis is in a good and comfortable position, in the sense that the burden of proof lies on the other side (on the alternative hypothesis).

Hence, whenever the discussion of null hypothesis is raised, there is a question underneath the surface: Who is responsible to prove dominance or any other thing? And to what extent?

Indeed, whenever the distribution of the measured value crosses the "point" of the critical value, assuming it is a point, it is important to define, among other things:

- Who has the null hypothesis?
- What is the amount of statistical significance an authority should demand in order to minimize type I errors (accepting a false hypothesis)? Should it be 90%, 95%, 99% or some other value?
- What is the amount of power an antitrust authority should adopt in order to minimize type II errors (rejecting a true hypothesis)? Should it be 90%, 95%, 99% or some other value?



• And what about the severity of the test? How to decide if residuals are not normal?

Figure 8 – Obvious and not-so-obvious decisions about critical values

**Elasticities are not in absolute values

Whenever the whole distribution of the measured value lies in one side of the critical value, it is possible to observe a "clear victory" of one hypothesis over the other.

When the antitrust authority is faced with a "not-so-obvious" decision (in other words, when the distribution of the measured value crosses the critical value), it means that there is room for doubt about the borders of the market. If the critical value is a dot, it is possible (at least) to have (i) a precautionary or (ii) a self-restraint approach (in other words, if there is doubt about what side is correct, it is possible to take another binary decision on which is right = Doubt= $\{0,1\}$).

A precautionary approach establishes that the null hypothesis favours a narrow definition of the market. In other words, if there is doubt, the antitrust authority should prefer narrow definitions. The self-restraint approach, on the contrary, determines the null hypothesis should favour enlarging the market. Hence, when in doubt, antitrust authorities should choose larger markets, according to this approach.

 $H_o = |E| \le |E_{CR}|; H_1 = |E| > |E_{CR}|$

Equation 7 – Victory of (generally) the precautionary approach = narrow market has the null hypothesis

 $H_o = |E| \ge |E_{CR}|; H_1 = |E| < |E_{CR}|$

Equation 8 – Victory of (generally) the self-restraint approach = narrow market has the alternative hypothesis

- * |E| = absolute value of elasticity
- ** $|E_{CR}|$ = absolute value of critical elasticity

Depending on which approach is preferred (regarding burden of proof), two different people could reach different and contradictory solutions when looking at the same data, results and valid scientific models. Whenever a quantitative tie is established between two competing hypotheses, the choice about the relevant market definition or the existence of "dominance" would ultimately depend on the subjective preference of the interpreter. That is the dilemma an antitrust analyst is caught in when faced with just one tie. In merger cases,
CADE prefers the precautionary approach (see the decision of Merger 08700.000436/2014-27).

Nevertheless, what if a "clear victory of a narrow market definition" occurs in some models, together with an "arbitrated victory" (tie) in some other models? And what if a "clear victory of narrow markets" occurs in some models simultaneously with a "clear victory of a larger market" in some other models? How to deal with these problems, taking into account that critical values may be intervals?

The concept of convergence of different model responses (and knowing the direction of such convergence) may, sometimes, help to understand what is the most probable (i) measured value and (ii) critical value. However, sometimes convergence is not achieved and, even in this situation, it is interesting to ask this kind of question regarding the statistical burden of proof.

Together with the discussion of burden of proof of the definition of relevant market itself or market conditions, there may be other important discussions about burden of proof.

Generally, analysts just dualistically segregate illicit per se conducts (in which the existence of the conduct is enough to condemn an enterprise without complementary economic analysis) from conducts that should be reviewed considering the rule of reason, which can require an economic analysis.

However, there are several other questions behind this debate, such as:

(A) What should be proved?

- (i) Is there a conduct C? Is it necessary to prove intent?
- (ii) What does the conduct mean from an economic and/or juridical perspective? For example, in abstract terms, predatory pricing is proven by what measure of cost (avoidable costs, average variable costs, marginal costs, others)?
- (iii) Is the possibility of harm proven by the market share, Lerner index, upstream/downstream profits, contracts, sham judicial claims, coercion, or others? How much foreclosure is admitted?
- (iv) Harm itself: is it necessary to quantify it? Deadweight loss or just overprice? In the long term or short term? What should be done about potential harm (the elimination of potential players, for example)?

- (v) Justifications: is there any efficiency associated with the conduct (statically or dynamically), or other justification?
- (vi) Does harm outweigh justifications? What should be done regarding allocative inefficiencies, distributive inefficiencies, X inefficiencies and so on?

(B) What types of evidence $E = \{E_1, E_2, E_3, ... E_N\}$ are needed? Are testimonies, telephone wires and indirect evidence accepted? Who should produce documents and information about contracts, price, quantities sold, costs and other market information? How should that be legally discovered by the government?

(C) In each of the aforementioned categories, if there is doubt, who wins (Doubt={0,1}) or, statistically speaking, who has the null hypothesis?

(D) What are the different levels of statistical significance and what is an accepted level of power regarding statistical tests that may influence the results of the topics mentioned in A?

There are so many possible combinations of A, B, C and D that they cannot be simply reduced to two options: *per se* illegal practices and practices subject to the rule of reason. Hence, W_i is a specific subset of combinations between A,B,C, D and other variables of this kind, while W is a set of all possible subsets of how the burden of proof should be established or assigned.

 $W = \{W_1, W_2, W_3, ..., W_N\}$

Equation 9 – An interpreter's choice about how burden of proof should be established/allocated

Although there are many possible combinations between these complex questions, the doctrine and case law are only beginning to recognize a limited number of intermediate modalities between the rule of reason and *per se* illicit practices.

Indeed, in the United States there are some other categorizations, such as the "inherently suspect conduct" (hereinafter just "ISC"), which appears to be an intermediate solution for the burden of proof (between a strict rule of reason and a *per se* prohibition). The problem is how such concept should be defined.

According to Richard Liebeskind and Joseph R. Tiffany (LIEBESKIND & TIFFANY, 2009), once market power and ISC are proved, the burden of proving reasonability "shifts from plaintiff to defendant" (In re Nine West C 3937 Polygram Holdings; Leegin Creative Leather *Products, Inc. v.. PSKs, Inc., Bbs Kay's Kloset*). Liebeskind and Tiffany argued that the resale price maintenance (RPM) of the Nine West case was not condemned because "*Nine West did not appear to have market power*" (LIEBESKIND & TIFFANY, 2009, p. 4). Oliver Geoffrey, on the other hand, argued that in "*Realcomp, the FTC challenged practices by a Michigan multiple listing service that limited user access to the listings of discount real estate brokers. Labeling the practices "inherently suspect," the Commission's decision stated that, in the absence of a procompetitive justification, the practices could be condemned <u>without the need of showing market power</u> or actual anticompetitive effects." (OLIVER, 2010, p. 40)*

It appears, that part of theorists thinks that, for an ISC, the plaintiff should prove the defendant's market power (while others disagree).

About this debate, Spencer Weber Waller summarized Justice Stevens' view on intermediate burden of proofs using this graph, which divides practices by a "rule of reason continuum":

Presumed Unreasonable Presumed Unreasonable Presumed unreasonable No Presumption of Illegality No Justifications/Affirmative After Proof of Certain unless defendant has Plaintiff must demonstrate cognizable pro-competitive Defenses Permitted Market actual harm or infer from Facts then no Justification/ justification market definition and power Affirmative Defenses then and only then must defendant provide Permitted procompetitive justification Not ancillary to lawful Certain tying, certain Inherently suspect conduct purpose boycotts in non-typical market Can Plaintiff Rebut the settings Procompetitive or Justification? Is it legally cognizable? Traditional per se unreasonable offenses Is it pretext? Is it established in record? Professional Engineers NCAA Trial Lawyers Ass'n Does harm to competition outweigh procompetitive justifications? Chicago Board of Trade & the Modern Empty Set

THE RULE OF REASON CONTINUUM

Figure 9 – Rule of reason - Adaptation of a Graph presented in (WALLER, 2009)

According to Spencer Weber Waller, there would be certain tying practices or boycotts that, together with ISCs, seem to be in the middle of a "rule of reason continuum". In this scheme, on the other hand, there is no econometric or statistical debate about burden of proof (what is the statistically tolerable amount of significance?).

CADE, in the Administrative Proceeding 08012.001271/2001-44, involving SKF do Brasil Ltda., adopted this intermediate view that the burden of proving RPM (to determine whether

there are efficiencies or whether these efficiencies outweigh competitive harms) should be on the respondent's side in cases involving RPM.

Regarding the burden of proof, one thing is also important to stress is that it is not just a procedural issue. Indeed, in the conceptual level, to define (i) who wins null hypothesis, (ii) the level of significance of the tests (iii), and the strategy of identification of concepts or models, also helps to define what relevant market is, what lerner index (or interval) is, and, consequentially, what market power (interval) is, which are all material matters.

After deciding all these issues, the jurisprudence is formed and may affect the understanding of what can produce harm in an economic environment and what is (or should be) or is not allowed, in material terms. Therefore, this assessment helps to prescribe or proscribe conducts, in general, and is not just a procedural matter. Thus, this is not merely a debate of a single case about who is telling the true version of facts, in which "right" and "wrong" (in abstract terms) are well-established, undisputed concepts.

6. Dynamics

At times, market power (or substantial market power) is estimated to observe whether certain anticompetitive practices could possibly happen. The Brazilian Criminal Law defines an impossible crime as one that cannot happen due to the means or the object. An impossible means to commit a crime is, for instance, to use sugar to poison a person; thus, it is not possible to punish someone for this crime (unless the victim is diabetic or suffer a similar disorder). An impossible object to commit a crime is found when, for instance, someone that intends to murder another, but ends up shooting a dead body, not knowing that the victim was in fact already dead.

In these two examples, the causality between what would constitute an unlawful act and an unlawful result is well established. However, when this issue is transported to the social arena and particularly to antitrust law, to determine whether enterprises can exclude their rivals from the market or intend to do so, things become unclear.

In this respect, the former Commissioner of CADE, Cesar Mattos, formulated this hypothetical example: if two taxi drivers from the nearest point to CADE agree not give discounts to customers, in his opinion, it could hardly be considered an anticompetitive illicit

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given the total lack of market power of these two small players to impose price coordination to all other taxi drivers (Administrative Proceeding 08012.004484 / 2005-51).

This example is not quite satisfactory, since (i) price coordination is *per se* an antitrust violation and may raise some questions regarding whether market power, market share, harm, justifications, and the proper balance between harm/efficiencies should be discussed in cartel cases; and (ii) the recent controversy around Uber demonstrate that the entry barriers to the taxi industry are not negligible.

On the other hand, even market structures that at first do not seem to have the optimal conditions to sustain an anticompetitive conduct may, in a dynamic process, be modified. The reflexivity phenomenon described by Anthony Giddens (GIDDENS, 1989) and Pierre Bourdieu (BOURDIEU, 1998) argues that social and market structures can define the agents' conduct, and that agents can change the structure itself (that is, the concept of structured and structuring structures). Both cases occur simultaneously. The autopoietic concept of Luhmann also acknowledges changes in social structures (LUHMANN, 1989), due to endogenous factors, whereas Giddens and Bordieu understand that exogenous factors could themselves modify social constructs.

Thus, what could be seen at first as an "impossible conduct to engage into" (in markets with low barriers to entry), could become a "possible conduct", especially if agents of a specific market increase entry barriers, for instance. It does not seem "impossible" that players with low market power, but with high persuasion, in a price-fixing scheme, could somehow obtain the approval of several other market players for a given tacit or express conduct.

Dynamic considerations can involve many other factors: taxes can be raised, antidumping penalties can be imposed, logistics can be compromised, clients can enter in loyalty rebates, among other conducts. Time matters.

The antitrust decision can determine, for example, at first (t_1) , to clear a merger based on the evidence of low barriers to entry and international scope of the market. However, at a later time (t_2) , parties can file an antidumping request and, consequently, obtain antidumping protection, which alters market conditions and may even alter the grounds that allowed the favourable antitrust decision that was issued at first (t_1) regarding mergers or market power. Hence, the strategic use of antidumping and antitrust laws could influence the understanding of market power and the definition of the relevant market. Therefore, the timing and dynamic aspect of the analysis are relevant:

 $T = \{t_1, t_2, t_3, ... t_n\}$

Equation 10 – Timing and dynamic aspects of the analysis

Another aspect to be stressed is that several economic models try to measure market power by considering profits, the Lerner Index, market shares, demand features, and other variables related to financial incentives to determine whether it constitutes an anticompetitive restraint, that is, whether it is profitable to carry out unilateral or coordinated actions.

On the other hand, violence may be used to enforce unilateral or coordinated anticompetitive practices, irrespectively from a logical or a traditional commercial point of view. Posner mentioned several price-fixing cases which involved violence (POSNER R. A., 1995, p. 88), from 1925 through 1939.

On Administrative Proceeding 08012.002959/1998-11, one individual that refused to enter a price-fixing scheme and reported the conduct to CADE, had his house strafed three times, with eighteen shots on the front wall of his house. In this context, the incentives, possibilities, and damages of a violent anticompetitive practice may not be reduced to the Lerner index, or to a mathematical evaluation of what overpricing is (and the traditional tradeoffs involving this conduct).

The decision to participate or not in an anticompetitive conduct could mean, in some cases, risking a person's own life and the life of their family members. Let us remember the Shakespearean dilemma between life (the continuous interval that we know) and death (the end of everything familiar). So, life is the most valuable asset one has, can be at stake when a person decides whether or not to participate in a cartel, be part in an exclusive deal, and accept an RPM. Thus, the discussion of "market power" or dominance cannot be limited to the Lerner index.

Aggressive enterprises may establish coercion to the downstream market, upstream market, midstream market, and its own market, based on violence. Even a small player able to resort to violence can increase price, harming entrants and forcing other players to adhere to the conduct (regardless of their profit maximization and their will to participate).

 $MC = \{MC_1, MC_2, MC_3, ..., MC_n\}$

Equation 11 – Means of coercion

Therefore, not all aspects that seem statically impossible are in fact impossible in dynamic terms. Such dynamics are hardly covered by a simple (and quick) answer to the question of how market power should be defined.

7. Teleology

What is/are the goal(s) or value(s) that should be protected by law (and by antitrust laws)?

In order to answer this question, theories (and scientists) may raise political flags alleging the law is applied to maximize, minimize, divide, multiply or other mathematical weighting about a set of pre-determined factors, such as values, principles or some other aspect, depending on the theory. Once the function of law has been defined, it can be determined whether the law fulfils its duties effectively or efficiently, depending also on quantitative considerations.

One possible approach is the interpreter's neutrality with respect to social wealth. Here, the interpreter could state that Law in general, and consequently Antitrust Laws, should not have any allocative or distributive preference. On the other hand, Julian Lamont and Christi Favor understand that the defence of legal and teleological neutrality in this regard is misguided because it:

reveals a confusion about the nature of the choices always facing each society. To claim that we should not pursue any changes to our economic structures in light of a distributive justice argument is, by its very nature, to take a stand on the distributive justice of (or, if one prefers, the 'morality' of the current distribution and structures in the society compared to any of the possible alternative distributions and structures practically available. (FAVOR & LAMONT, 2013)

For example, it is possible that interpreters support a specific allocative distribution of welfare, such as:

- Strict egalitarianism (ROEMER, 1982), (ROEMER, 1985), (COHEN, 1988);
- Difference principle (RAWLS, 1971);
- Luck egalitarianism (DWORKIN, 2000);
- Utilitarianism (BENTHAM, 1781);

- Theories of equality of some authors, such as (RILEY, 1989) (MILLER, 1976) (SARDUSKI, 1985) (DICK, 1975) (MILNE, 1986);
- Libertarianism (NOZICK, 1974);
- The criterion of Kaldor-Hicks efficiency, supported by Richard Posner, in the first phase of his work (POSNER R., 2003);
- Or some other mixed theory (BRUERS, 2010).

It is worth pointing out that (i) it is possible to apply some specific teleological criteria, which should redefine the concentration of social wealth or values already accumulated; and/or (ii) it is possible that such teleological criteria are used to review mergers that are yet to happen. It is also possible to think that the law can be framed to encourage the actions of individuals to fulfil these criteria.

Within the antitrust framework, the interpreter can choose whether actions are abusive depending on certain standards.

Therefore, besides what is *per se* illegal, when the rule of reason is established, critical values (and theories of what would represent harm derived from market power) can often change depending on the predetermined teleological standard of analysis.

Standard	Important value	Explanation
Welfare	Surplus	Depending on how surplus is allocated or distributed, it can be observed whether the use or the obtaining process of market power can be harmful and/or unlawful. As it will be explained in the next table, there are different ways to determine the proper welfare standard.
Consumer choice	Range of options	According to Lande (2001), "the role of antitrust can best be understood in terms of a fundamental standard-the standard of consumer choice. The antitrust laws are intended to ensure that the marketplace remains competitive so that worthwhile options are produced and made available to consumers, and <u>this range of options is not to be significantly impaired or distorted by anticompetitive practices</u> . The antitrust laws thus ensure that the economy responds to the aggregate signals of consumer demand, rather than to government directives or the preferences of individual businesses. An optimal level of consumer choice, which has elsewhere been termed "consumer sovereignty" is the state of affairs where the consumer has the power to define his or her own wants and the ability to satisfy these wants at competitive prices. The concept of consumer choice even embodies some implicit notions about the rights of the individual in the broader society; it is implicitly part of the Western world's response to Marxism and the other totalitarianisms of the Twentieth Century."
Multiple goal	Not predetermined	When Dworking questioned if wealth is a value to be protected by law, no matter what the other consequences are, he argued that

			there are other values that should be protected by law, rather than simple efficiencies concerns (DWORKING, 1980). According to Schwartz "The difficult question is not whether non-economic considerations are a proper, indeed conventional, component of the antitrust calculus, but how to take them into account." (SCHWARTZ, 1979, p. 1080).
Competitive process	The itself	process	As explained by Jacobson "competitive process standard" is "articulated by Gregory Werden and others. Under this approach, practices and transactions that interfere with competition as a process would be prohibited, focusing only on economic effect, but without focusing on any particular welfare standard. Practices that do not impair the competitive process would not be prohibited, even if there is some negative impact on consumer surplus." (JACOBSON, 2015, p. 3)

Table 2 – Some standards about antitrust goals

Standard	Main question	Result
Price	Will it increase prices?	If yes, abusive MP occurs.
Consumer Surplus	Will it decrease CS?	If yes, abusive MP occurs.
Producer Surplus	Will it decrease PS?	If yes, abusive MP occurs.
Hillsdown	Will efficiencies generated exceed reduction in CS?	If no, abusive MP occurs.
Total Welfare	Are efficiencies generated lower than DWL?	If yes, abusive MP occurs.

CS = Consumer Surplus

PS = Producer Surplus

MP = Market Power

DWL = Deadweight loss

**We can also have some intermediate forms of balancing efficiencies, CS, PS or other variables, attributing, for example, specific weights for each observable variable

Table 3 – Ranking of some Welfare Standards

One way to illustrate how such standards can interfere in antitrust reasoning about dominance is to look how Rosch and Werden disagreed in *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co., Inc.,* 127 S. Ct. 1069 (2007), [or just Weyerhaeuser case]. Thomas Rosch understands Antitrust Laws should not protect sellers and buyers equally. If consumers are not harmed, there would be no reason to support conviction of unilateral practices²⁷. That is

²⁷ "In my view the antitrust laws protect consumers – and by "consumers" I mean consumers who buy the output in the relevant market. Having practiced antitrust law for more than forty years, I yield to no one in my belief in the value and benefits of the Sherman Act. But I don't think the Act is supposed to cure all societal ills by preventing allocative inefficiencies. (...) In Weyerhaeuser, Ross-Simmons – a saw mill in the Pacific Northwest – claimed that Weyerhaeuser engaged in a variety of anticompetitive conduct in the late 1990s in an effort to monopolize the relevant lumber market. One allegation was that Weyerhaeuser had purposely overpaid for inputs (alder sawlogs) and bought more than it needed in an effort to increase its rivals' costs and drive them out of business. The jury returned a verdict for the plaintiff despite finding that the plaintiff had failed to prove that alder lumber was a distinct product market from all hardwood lumber. In the hardwood lumber market, Weyerhaeuser had less than a 10% market share and the jury, in a special verdict, found that Weyerhaeuser lacked market power in that market. Nonetheless the jury awarded damages to the plaintiff because it found, in accordance with the district court's instructions, that Weyerhaeuser had purchased more alder sawlogs than "necessary," paid a higher price than "needed," and prevented plaintiff from obtaining logs at a "fair price." (...) If, but only if, the trier of fact finds that <u>the defendant enjoys market power in the output market, would it be necessary to determine whether the defendant also enjoyed monopsony (or oligopsony) power vis-a-vis the input market and, if so, whether it exercised that power in a fashion that enabled it to exercise market power in the output market. This test would dispose of the "predatory bidding"</u>

the reason Rosch did not agree with the outcome of the U.S. Supreme Court decision on this case. Following this understanding, CADE's former Commissioner, Luiz Carlos Delorme Prado, in the case related to Preliminary Inquiry 08012.010713/2004-96, stated that "*it is not a duty of the Antitrust Authority to arbitrate profit margins in a productive chain, if there is no harm to consumers whatsoever.*"

On the other side, Gregory Werden claims that the decision of the U.S. Supreme Court was adequate, even if the predatory practice did not impact consumers *directly*, in the sense that anticompetitive process should be the rightful goal to pursue (and not protecting this goal could even mean indirect harmful impact to consumers that the other position purports to defend) (WERDEN G., 2007). ²⁸

There may be other theories that would include or exclude other goals to Antitrust Law.

Depending on theoretical subjective preferences, interpreter can be more akin to accept regulation or not, or more likely to accept the probability of a vertical restraint. In this regard, Michael H. Riordan summarized the problem of vertical integration (Chicago and post-Chicago divide) with these words:

> Vertical integration is an enduring topic for economics. The structure-conductperformance perspective of the 1950s and 1960s viewed vertical integration suspiciously, worrying about exclusionary practices that foreclose competitors and leverage monopoly from one market to another. The Chicago School of the 1960s and 1970s rebutted these concerns by pointing out the weak microeconomic foundations of leverage theory, and explaining why vertical integration increases economic

claims in Weyerhaeuser. As previously stated, the jury found that Weyerhaeuser did not have market power in the downstream market (or output) – in my view that fact was dispositive. Given my conviction that the antitrust laws are supposed to protect consumers in that market, I do not believe Section 2 liability should attach to predatory bidding allegations if it does not create or maintain monopoly power in the downstream (or output) market – or create a dangerous probability of creating that monopoly power." (ROSCH, 2006)

²⁸ According to Werden: "Congress responsible for the Sherman Act and the courts that have interpreted the Act were far from indifferent to the plight of sellers exploited by buyer cartels or monopsonies (...)this essay argues that promoting consumer welfare is a goal of the Sherman Act, but only a goal, and that making end-user welfare the touchstone under the Act could have extraordinarily undesirable consequences (...) Both end-user welfare and aggregate welfare are concerned with the well being of people, but people normally do not participate in the markets within which Sherman Act violations occur.111 Determining the legality of business conduct on the basis of its effects on the welfare of people, thus, could force antitrust analysis to look far beyond the relevant market.112 If end-user welfare were made the touchstone, it would become necessary to trace the incidence of effects all the way down the distribution chain. This necessarily would impose an additional burden on plaintiffs and the courts; moreover, in some cases, no end-user harm flows from conduct normally considered anticompetitive. Restricting output and raising price are the usual effects of cartelization, monopolization, and other conduct addressed by the Sherman Act. Restricting output reduces the efficiency of resource allocation and thus lessens aggregate welfare. Raising price transfers wealth from trading partners and normally also causes transfers from end users, but the latter effect need not occur. (WERDEN G., 2007). Werden was worried if: (i) price increase resulting from the elimination of competition may affect only the fixed costs of the companies that are the direct purchasers. If so, direct purchaser companies typically would not pass on the higher prices in the short term, but maybe in long term there could have some effect to consumers (ii) a firm that engages in predation to become a monopolist in the sale of a consumer product sold to retailers through a two-part pricing scheme with a fixed fee plus a per-unit charge. The creation of a monopoly at the manufacturing level would raise the fixed fee but not the per-unit charge, which is optimally set at competitive level.

efficiency. Transaction Cost Economics of the 1970s and 1980s staked a middle ground, identifying new efficiency rationales for vertical integration, while cautioning that firms with market power may have strategic goals poorly aligned with consumer welfare (Williamson, 1975; 1985). Most recently, a new literature on vertical foreclosure (a.k.a. Post-Chicago Economics) applied game-theoretic tools to develop new theories of strategic vertical integration and identify circumstances in which vertical integration alters industry conduct to the detriment of competitors and consumers. The rich intellectual history of industrial organization economics thus reveals assorted approaches to the topic. Vertical integration raises contentious issues for antitrust policy and industry regulation. Antitrust policy in the United States recognizes that a vertical merger can create incentives for anticompetitive foreclosure or facilitate collusion, while remaining mindful that vertical integration can achieve efficiencies (ABA, 2003). Vertical integration raises a similar conflict for the economic regulation of industries. While foreclosure concerns offer a rationale to restrict the conduct of vertically integrated firms, faith in market efficiency and doubt about the regulatory benevolence support a trend toward deregulation (Stigler, 1971). While Chicago School critiques of foreclosure theory and cautions about the difficulties of collusion (Stigler, 1964) urge a permissive approach to vertical mergers and the regulation of vertically integrated industries, Post-Chicago theories of harmful vertical integration nevertheless featured prominently in some recent merger reviews and regulatory proceedings. (RIORDAN, 2008, p. 145)

Depending on how one should assess the role (and the possibility or probability) of the State in interfering with vertical agreements, it is possible to observe different teleological preferences on what antitrust should do, in concrete cases.

Thus, a merger or a specific conduct can be considered anticompetitive depending on a specific teleological approach. It means that the use or abuse of market power is not clearly harmful or unlawful (or even substantial), independently of a teleological choice of the interpreter.

 $TL = \{TL_1, TL_2, TL_3, ..., TL_N\}$

Equation 12 – Interpreter's teleological available choices

At this point, a subtle, but important matter should be addressed. In order to determine what should be protected or not by law, it is important to define:

- who has or should ideally have, in a perfect scenario, currently, power to deal with the issue; and
- (ii) what is or should ideally be, currently, the field of law to deal with such matter.

Again, such determinations are made purely based on subjective (or dogmatic) preferences.

Suppose a merger between all television channels or newspapers decreases prices and increases consumer and producer welfare (in terms of quantity socially produced). In such

case, the democratic participation of society will most likely decrease, as different previous editorial views will be concentrated in a specific political group. As a consequence, said merger could harm the spread of ideas. Moreover, in this scenario, one could argue whether democracy should be subject to antitrust defence. Additionally, one could question whether the merger should be blocked.

One possible response to these considerations, hopefully not shared by many interpreters, is defending that democracy should not be protected at all (and such answer or choice is derived from the interpreter's own subjective preference). Because of this totalitarian and antidemocratic preference, it would be unfeasible to adjudicate this hypothetical case (either within the antitrust agency or outside this context), having no reason to block the merger.

Another possible response is to recognize that there is a problem and that democracy should be protected. However, there may be disagreements regarding whether antitrust authorities should protect democracy.

Those who argue that antitrust laws have no power to block such mergers can present several arguments, such as that the government should establish other bodies to decide on and maybe block this merger. Some may argue that such option is better for *transparency purposes*, to restrict the antitrust authority as an agency responsible solely for decisions concerning welfare, competitive issues and/or consumer choices, whereas other authorities have the power to deal with other kinds of issues, such as justice, fairness, democracy, among others. Some might even argue about "a widespread agreement" against multiple goals considerations, and everything that is not categorized as "welfare" or "economic value" is seen pejoratively as antitrust "populist goals:"

there is now widespread agreement that this evolution toward welfare and <u>away</u> <u>from noneconomic considerations</u> has benefitted consumers and the economy more broadly. Welfare-based standards have led to greater predictability in judicial and agency decision making. They also rule out theories of liability (e.g., a transaction will tend to reduce the number of small businesses in a market) and defenses (e.g., the restraint upon trade is necessary to save consumers from the consequences of competition) that would significantly harm consumers. Further, the focus upon economic welfare has led the Court to reject per se prohibitions of conduct once thought anticompetitive but now, owing to advances in our economic knowledge, understood to be efficient. Untethered from an economic welfare standard, it is difficult to imagine a rationale for eliminating those per se prohibitions. (WRIGHT & GINSBURG, 2013) [T]here is no reasonable basis for presuming that courts must give priority or even weight <u>to populist goals</u> where the pursuit of such goals might injure consumer welfare by interfering with competitive pricing, efficiency, or innovation. (...) The pursuit of these goals would broaden antitrust's proscriptions to cover business conduct that has no significant anticompetitive effects, would increase vagueness in the law, and would discourage conduct that promotes efficiencies not easily recognized or proved. (TURNER, 1987)

The biggest advantages conferred by the use of relatively traditional microeconomics as the guiding principle for antitrust are two: coherence and welfare. . . . [P]opulist goals should be given little or no independent weight in formulating antitrust rules and presumptions. As far as antitrust is concerned, they are substantially served by a procompetitive policy framed in economic terms.... [I]njection of populist goals, by broadening the proscriptions of business conduct, would multiply legal uncertainties and threaten inefficiencies not easily recognized or proved... [Despite some inadequacies,] economics gives a focus to antitrust interpretation and is critical to any formulation of rational rules. (AREEDA & HOVENKAMP, 2006, p. 110)

"Populist goal" is a subjective term since the understanding of the concept may differ, as it differs, for example, for Gregory Werden (WERDEN G., 2007) and Thomas Rosch (ROSCH, 2006).

When multiple trade-offs are considered, unfortunately, it allows for the defence of inefficient market structures (or the blind belief in an inefficient structure).²⁹ On the other hand, as explained here, the lack of "predictability", "vagueness of law" or "uncertainties" are necessary effects of fairly considering non-classical logics. One thing is to endorse inefficient structures. Another is to recognise there are other values besides economic efficiencies (DWORKING, 1980), such as democracy, for instance.

Furthermore, defining what is "economic" or "non-economic" considerations is somewhat problematic, as to be considered a "non-economic" issue, something should be immune from scarcity problem and could not be modelled by rational way of thinking, which is a quite rare phenomenon.

There are other problems with pushing competence to deal with "democratic values" to other branches of law: specifically, what if there is no previous authority formed to deal with all other "non-economic" issues derived from concentrated structures?

Besides that, the problem of common goods (and an undefined competence) is that whatever is everyone's responsibility to deal with it also creates incentives that no one claims

²⁹ Another aspect that must be taken into consideration is that allowing Agencies to balance "multiple goals" may sometimes face unclear values or contradictory goals. For example, the protection of small businesses or "small dealers and worthy men", were values mentioned in *United States v. Trans-Missouri Freight Ass'n*, 166 U.S. 290, 323 (1897). Also, some other precedents tried to ascertain that the goal of Antitrust is to protect "small, locally owned businesses" (*Brown Shoe Co. v. United States*, 370 U.S. 294, 344 (1962); accord, e.g., United States v. Alcoa, 148 F.2d 416, 427 (2d Cir. 1945).

responsibility for taking action in regard of that specific issue. Can Antitrust Agencies states, for example, that if democracy is harmed by the approval of the hypothetical merger, it is someone else's fault? Yes, lawyers, judges and agencies might choose to act like Poncio Pilatos for the sake of "predictability". However, there may be other interpretations of what is the current competence or the ideal competence (or institutional design) about how to deal with so many multidimensional tradeoffs that Antitrust Law can face.

Here, also, it could be argued that the <u>structure</u> (or institutional governmental design) can influence <u>conduct</u> of Antitrust enforcers and its <u>performance</u> to reach good or bad Antitrust decisions over these multidimensional tradeoffs [and that is why some prefer to ascertain Antitrust competence as an absolute "should be"].

On the other hand, even a perfect government structure in terms of competence may be unable guarantee good or predictable decisions. First, it is necessary to observe the teleological choice of the interpreter, before determining what would be a proper or improper antitrust decision.

Sometimes it is difficult to determine how teleological preferences could interfere in the analysis, whether a merger or conduct creates or endorses an "abusive" market power; and whether such merger or conduct should be acceptable in antitrust terms.

8. Non-structural analysis

The arguments against the use of "market share" as proxies of market power could be considered as part of a non-structural analysis.

Jonathan Baker³⁰ and W. Blumenthal³¹ consider that if it is possible to show Market Power or competitive harm directly, there is no need to delineate the borders of relevant market, in the sense that the "thing" (effect) speaks for itself ["*Res ipsa loquitur*"]. Such Latin wording is derived from the speech *Pro Tito Annio Milone ad iudicem oratio* (*Pro Milone*). Marcus Tullius Cicero, 52 b.C., made such speech in the benefit of his friend Titus Annius Milo,

³⁰ BAKER, Jonathan. *Product Differentiation Through Space and Time: Some Antitrust Policy Issues*. Available at: < http://www.ftc.gov/public-statements/1996/02/product-differentiation-through-space-and-time-some-antitrust-policy >. Accessed on: 17 August 2009.

³¹ BLUMENTHAL, William. *Why Bother?: On Market Definition under the Merger Guidelines*. FTC/DOJ Merger Enforcement Workshop. Available at: <<u>http://www.justice.gov/atr/public/workshops/docs/202600.htm</u>>. Accessed on: 13 May 2010.

that was accused of killing Publius Clodius Pulcher. Cicero argued that, considering circumstantial evidence, there was no need to prove directly the innocence of his friend, because circumstance speaks by itself (in other words, it was so clear that Titus was innocent that Cicero did not have to prove any other thing). Although ironically Cicero lost such case³², this principle was adopted in *Byrne v Boadle* (2 Hurl. & Colt. 722, 159 Eng. Rep. 299, 1863) by *Chief* Baron Pollock in a tort law claim, and rescued by Baker within the antitrust context³³.

The problem, however, is that even if someone is not skeptical about *res ipsa loquitor*, it is possible to assert that a thing, sometimes, can speak for itself, but occasionally it needs a translator to be correctly understood by the interpreter. Thus, what seems to be a more sophisticated (or even superior) way to deal with market power (without the need to define the market or the Lerner index) is not exempt from subjective influences. On the other hand, it is also not possible to guarantee that the outcome of this approach will necessarily be better than some alternative procedure or even immune from uncertainty.

It is important to stress out that, although some extremist views of non-structural approach state that market definitions are not required, databases used in econometric exercises are tailored to contain just a limited number of variables. Even a "non-structural" approach may be dependent, to some degree, of heuristics simplification.

8.1. With control groups

In Antitrust Law, one can try to measure the effects of some practices, in order to determine if conduct cases cause some specific harm (using a specific standard). For example, it is possible to observe what happened to prices before and after the conduct, and compare the result with the prices of markets in which the conduct did not happen. For merger cases this analysis can be used to ascertain whether the merger will produce unduly market power. However, there is no straightforward way of making such "direct inference" on the effects of a specific conduct or merger. Indeed, there are many ways for measuring it. Thus, an adequate

³² MURRAH, Morgan. *Res ipsa loquitur*. According to the website <<u>http://officialinformationact.blogspot.com.br/2012/10/the-thing-speaks-for-itself-usually-but.html>.</u> Accessed on: 20 October 2014.

³³ Baker, Jonathan B. and Reitman, David, Research Topics in Unilateral Effects Analysis (November 9, 2009). American University, WCL Research Paper No. 09-37. Available at SSRN: <u>http://ssrn.com/abstract=1504863</u> or <u>http://dx.doi.org/10.2139/ssrn.1504863</u>

algorithm must be selected to perform treatment effects analysis, such as difference in difference analysis (GRUBER, 1994) (CARPENTER & STEHR, 2011):

 $y = \beta_0 + \beta_1 dT + \delta_0 dt + \delta_1 dt dT + u$

Equation 13 - Difference-in-Difference analysis (DD)

 $\hat{\delta}_{1} = \left[\overline{treatment}_{before} - \overline{treatment}_{after}\right] - \left[\overline{control}_{before} - \overline{control}_{after}\right]$

Equation 14 – DD estimator

 $y = \beta_0 + \beta_1 dT + \beta_2 dO + \beta_3 dT dO + \delta_0 dt + \delta_1 dt dT + \delta_2 dt dO + \delta_3 dt dT dO + \beta_2 X + u$

Equation 15 – Triple Difference or Difference-in-Difference-in-Difference analysis (DDD)

y = outcome of interest. dT = dummy variable differentiating treatment and control groups dt = dummy variable differentiating before and after treatment dO = dummy variable differentiating other dimension u = residuals

*It is possible to include other control variables in these equations.

There are, also, some concerns about (Difference-in-Difference analysis) DD estimator:

"conventional DID estimator is based on strong assumptions. In particular, the conventional DID estimator requires that in absence of the treatment, the average outcomes for treated and controls would have followed parallel paths over time. This assumption may be implausible if pre-treatment characteristics that are thought to be associated with the dynamics of the outcome variable are unbalanced between the treated and the untreated group." (ABADIE, 2005)

Furthermore, BERTRAND, DUFLO, & MULLAINATHAN (2004) identified that DD estimator can present "*severe serial correlation*". To manage it, the authors made some suggestions, such as: (i) the use of nonparametric technique, block bootstrap (EFRON & TIBISHIRANI, 1994); (ii) to remove time dimension, aggregating it into only two periods (pre and post treatment); (iii) among other possible solutions.

Additionally, other authors suggest the use of: feasible generalized least squares estimators (HAUSMAN & KUERSTEINER, 2008); semiparametric estimators (ABADIE, 2005); among others. With multiple control groups, some authors who suggest simplification of DD models. For example, claim Abadie, Diamond and Hainmueller (2010, p. 503) argue that "comparative case study research has broad potential in the social sciences. However, the empirical implementation of comparative case studies is plagued by inferential challenges and ambiguity about the choice of valid control groups." As a consequence, in the presence of two or more control groups, these authors prefer the use of a synthetic control group (SCG), a weighted average of the available control units. The weights suggested basically depend on a vector of observed covariates, not affected by the intervention, and a vector of unobserved common factors (see for example command synth in Stata and in R). After determining the SCG, authors perform a "placebo-like technique", by measuring intervention (treatment) mean squared prediction error (MSPE), as a matter of gap between the SCG and the treated group, comparing such value with the gap between the SCG and the other control groups individually.³⁴

While some authors support the use of SCG (aggregate control group), others think that control groups should be disaggregated. According to Stephen Donald and Kevin Lang, the lack of control of "common groups" or different groups in a sample, in some DD analysis, can lead to bias:

"in the typical differences-in-differences model, we regress outcomes at the individual level (e.g. employment in a firm in state s in year t) on a policy that applies to all individuals in the group (e.g. the minimum wage in state s in year t). Moulton (1990) shows that in regression models with mixtures of individual and grouped data,

³⁴ For example, it is important to observe if an individual that receives treatment is subject to selection bias or not, even in non-random assignment: $E(y_{it} | dT = 0) \neq E(y_{it} | dT = 1)$ (HECKMAN & HOTZ, 1989). Also, some authors use placebo-like techniques: "The inferential techniques proposed in this article are related to Abadie and Gardeazabal (2003). In their study of the economic effects of terrorism, Abadie and Gardeazabal (2003) use a synthetic control region to estimate the economic growth that the Basque Country would have experienced in the absence of terrorism. To assess the ability of the synthetic control method to reproduce the evolution of a counterfactual Basque Country without terrorism, Abadie and Gardeazabal (2003) introduce a placebo study, applying the same techniques to Catalonia, a region similar to the Basque Country but with a much lower exposure to terrorism. In this paper, we extend the idea of a placebo study to produce quantitative inference in comparative case studies. The idea of the placebo test proposed here is akin to the classic framework for permutation inference, where the distribution of a test statistic is computed under random permutations of the sample units' assignments to the intervention and nonintervention groups. As in permutation tests, we apply the synthetic control method to every potential control in our sample. This allows us to assess whether the effect estimated by the synthetic control for the region affected by the intervention is large relative to the effect estimated for a region chosen at random. This inferential exercise is exact in the sense that, regardless of the number of available comparison regions, time periods, and whether the data are individual or aggregate, it is always possible to calculate the exact distribution of the estimated effect of the placebo interventions. Notice also that the inferential exercise proposed here produces classical randomization inference for the case where the intervention is indeed randomized across regions, a rather restrictive condition. More generally, our inferential exercise examines whether or not the estimated effect of the actual intervention is large relative to the distribution of the effects estimated for the regions not exposed to the intervention. This is informative inference if under the hypothesis of no intervention effect the estimated effect of the intervention is not expected to be abnormal relative to the distribution of the placebo effects. In this sense, our inferential procedure is related to that of DiNardo and Pischke (1997) and Auld and Grootendorst (2004). DiNardo and Pischke (1997) compare the wage differential associated with computer skills (as reflected in the on-the-job computer use) to the wage differentials associated with the use of other tools (pencils, telephones, calculators) that do not proxy for skills that are scarce in the job market." (ABADIE, DIAMOND, & HAINMULLER, Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program, 2010, p. 503)

the failure to account for the presence of common group errors can generate estimated standard errors that are biased downwards dramatically. The differencesin-differences estimator is a special case of this model. Researchers use a number of standard techniques to adjust for common group effects:

- random-effects feasible GLS estimation which under certain conditions is asymptotically efficient,
- correcting the standard errors using the error covariance matrix based on common group errors as in Moulton,
- correcting the standard errors using a robust covariance estimator according to a formula developed by Liang and Zeger (1986) and more commonly known as the Stata cluster command

(...) standard asymptotics cannot be applied when the number of groups is small as in the case where we compare two states in two years, two cities over a small number of years, or self-employed workers and employees over a small number of years. In such cases, failing to take account of the group-error structure will not only generate underestimates of the standard errors as in Moulton, but applying the normal distribution to corrected t-statistics will dramatically overstate the significance of the statistics". (DONALD & LANG, 2007, p. 221)

Regardless of how different control groups should be treated, maybe it would be possible or even preferable to use a multilevel mixed-effects linear regression, in some cases, incorporating random and fixed effects.

Also, it is important to know whether there are spillover effects from the treatment group to the control group. This assessment is important to guarantee that the control group is not influenced by the treatment group (and that stable unit treatment value assumption – SUTVA, remains valid after treatment) or, at least, whether there is a way to measure or to deal with this problem:

"Communication between participants, band wagon effects, and other social psychological processes may violate what Rubin (1986) has termed the "stable unit treatment value assumption" (SUTVA), which is routinely invoked when drawing causal inferences about experimental effects. SUTVA holds that there is no interference between units; the experimental assignment of one subject has no effect on other subjects' potential outcomes.1 SUTVA rules out "spillover effects" that occur, for example, when treated individuals transmit the information contained in the treatment to the control group (Rosenbaum 2007). Other examples of SUTVA violations outside the realm of elections include the displacement of crime from treatment areas that receive heightened police surveillance to control areas (Sherman and Weisburd 1995), social comparisons that cause the control group assessments to be influenced by the intervention received by the treatment group (Sobel 2006), strategic interaction between subjects such that the control group adjusts its behavior in light of prior treatments and treatments received by others (Bednar et al. 2010), and strategic calculations that lead political actors in one jurisdiction to take cues from neighboring jurisdictions that receive a treatment, such as financial audits or election monitoring (Hyde 2010; Silva 2010). Although SUTVA is fundamental to causal analysis, experiments (as well as observational studies) have typically downplayed the possibility of spillovers." (SINCLAIR, McCONNELL, & GREEN, 2012)

Therefore, one should always consider whether there are spillover effects from the treated group to the control group.

Another option the interpreter can use is a quasi-maximum likelihood (QML) technique to infer equation estimators (EE) in the outcome model (OM) or in the treatment model (TM), to compare them with a system of equations.

This procedure allows for effect analysis to be run through: regression adjustment [there are those for and against this use, see (LIN, 2013), (FREEDMAN, 2008) (RUBIN, 1974)]; endogenous treatment-effects estimation (CERULLI, ivtreatreg: A command for fitting binary treatment models with heterogeneous response to treatment and unobservable selection, 2014); linear regression with endogenous treatment effects (VELLA & VERBEEK, 1999); Inverse-probability weighting (CERULLI, treatrew: A user-written command for estimating average treatment effects by reweighting on the propensity score, 2014); augmented inverse-probability weighting; inverse-probability-weighted regression adjustment; multivalued treatment effects; nearest-neighbour matching; propensity-score matching, among several other valid methodologies.

These estimators observe some assumptions, such as:

- <u>independent and identically distributed (i.i.d.) sampling</u> ensures that the outcome and treatment status of each individual are unrelated to the outcome and treatment status of all the other individuals in the population;
- <u>conditional-independence (CI)</u> once there is a control for all observable variables, the potential outcomes are independent of treatment assignment;
- <u>overlap</u> each individual has a positive probability of receiving treatment.

Given that y1 corresponds to individuals who got treatment (t=1) and y0 individuals who belong to the control group (t=0), it is possible to measure:

ATE = E(y1 - y0)

Equation 16 - Average treatment effect (ATE) in the population

POMt = E(yt)

Equation 17 - Potential-outcome mean (POM)

ATET = E(y1 - y0/t = 1)

Equation 18 - Average treatment effect on the treated (ATET)

The algorithm may change depending on the selected functional form of model, that could be linear, logit, probit, hetprobit, poisson, among others.

Susan Athey and Guido W. Imbens developed another nonparametric and nonlinear model, called Change-in-Changes (ATHEY & IMBENS, 2006). Other authors also tried to combine approaches regarding the use of methods based on the exogeneity assumption (such as matching methods) and based on change-score (difference-in-differences) (HO, IMAI, KING, & SUART, 2007).

There is a wide menu to choose from regarding the proper algorithm and how to best design the experiment in order to draw a good counterfactual analysis.

Variables themselves can influence the result; thus, it is essential to have a good and trustable database to carry out this type of analysis.

Taking into account all possible ways to perform a regression using control groups, we can infer that problems related to robustness check, convergence of results, and the use of non-classical logic, can arise in this kind of exercises as well. There could also be discussions regarding whether the control group defined for the exercise is in fact a valid control group for subjective reasoning.

8.2. Without control groups

Looking at a set of variables can be informative as to how much market power an enterprise has.

For example, it is important to note: (i) whether consumers are discriminated; (ii) the market share stability; (iii) whether production or selling decreases as profit increases; (iv) whether the level of profitability or efficiency³⁵ is comparable to other industries; (v) the levels of demand price elasticity and supply price elasticity; (vi) capacity constraints in the industry; (vii) the number of competitors in the market; (viii) the number of consumers in the market;

³⁵ Jan Boone coined the concept of relative profit differences (RPD) that deals with profitability and efficiency. According to the author the definition is as follows: "Let π (n) denote the variable profit level of a firm with efficiency level $n \in \mathbb{R}$ + where higher n denotes higher efficiency (more details follow below on how variable profits and efficiency are defined). Consider three firms with different efficiency levels, n'' > n, and calculate the following variable RPD = $\frac{[\pi(n') - \pi(n)]}{[\pi(n) - \pi(n)]}$ (BOONE, 2008)

(ix) how easy it is to enter in the market; (x) whether competitors negotiate among themselves and how often; (xi) transparency in relation to price, production, capacity, bids or other variables; (xii) among several other relevant aspects.

Also, someone might be interested to know how a specific conduct changed price or profitability of a given enterprise (and consequently its own market power), and that may be done through a chow test or any test for a structural break test, to measure whether that specific act or conduct changed the observed parameter (to know the effects of an exclusive contract, a refusal to deal, and so on).

For example, if *b* is "break date" (when an anticompetitive conduct, a merger or any other event happened, such as market entry or exit of a given player), then, a simple model that could comprise structural break could be the following:

 $y = x_t\beta + \epsilon_t \qquad if \ b \le t$ $y = x_t(\beta + \partial) + \epsilon_t \quad if \ b > t$ $H_o = \partial = 0 = No \ structural \ break$ $H_1 = \partial > 0 = Structural \ break$

Equation 19 – Structural break test

Of course, this is a very simplistic model, and there may be other ways to carry out such analysis. For example, it is possible to run an event study to know how a specific rate of return of a specific activity [y] is influenced by a given event "s," expressed by dummy variable D (SHARPE, 1963) (LAFONTAINE & SLADE, 2007) (BINDER, 1998, p. 124).

 $R_{it} = \alpha_i + \beta_i R_{mt} + \gamma_i D_t + u_{it}$

 $R_{it} = return on asset i in period t$

 $R_{mt} = market return on broadly based portfolio in period t$

 $D_t = Dummy \ variable \ for \ the \ event \ s \ = \ 1 \ if \ Event \ occurred \ or \ 0 \ otherwise$

Equation 20 – Event analysis

There are many events that can be measured: capacities constraints, exit or entry of competitors, specific conducts, among others.

One of the many possible events studies involves the evaluation of the reaction of players that invest in the financial market when they receive the news about a possible merger. In this methodology, the price reaction of shares of both merging parties and its competitors are measured after the transaction is reported, to assess whether the financial market expects supranormal pricing after completion of the transaction. On the other hand, the adoption of this methodology requires a high degree of care, since the explanatory power of this type of test can be contested [especially if the financial markets are not efficient] or if other factors that may explain share movements, both regarding the merging parties and their competitors, are not fully comprised by the econometric model (ECKBO, 1983) (McAFEE & WILLIAMS, 1988).

Another path is to treat all time series "breakings" or events as unknown features, in order to, in a second moment, try to verify if Econometric model find these breaks and if they coincide with the event that is being analyzed. It is possible to run – for example - a Markov-switching regression. Such regression shows different dynamics across unobserved states using state-dependent parameters to accommodate structural breaks or other multiple-state phenomena. If the regression presents evidence that the structural breaks coincide with the expected conduct, then, it may be possible to infer the impact or effect derived from the conduct itself.

The issue, in the absence of control groups, is that sometimes some price or profitability variation may not be due to the observed event, but due to something else that is not being properly controlled or observed by the interpreter.

An example in Brazil is that on May 2007, the SDE, together with the SEAE, the Federal Police and the Prosecution Services of the State of Paraíba carried out search and seizures in the cities of João Pessoa and Recife to obtain evidence of a cartel in the fuel retailer sector. The case involved 190 agents that searched 26 different places and served 16 arrest warrants. The operation was called "Operation 274" because the investigated cartel allegedly agreed on BRL 2.74 as the price to be set for the litter of gasoline.

After the search and seizures were carried out, the price decreased from BRL 2.74 to BRL 2.37.

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Figure 10 – Pact 274

Is it possible to say that the operation decreased the price? Maybe, but it is important, to assess whether the decrease was not due to simultaneous cost reductions, demand decrease, or some other simultaneous explanatory variable that is not controlled, by an econometric exercise, to avoid a spurious correlation.

Some authors tried to build models to infer market power, from certain parameters, not using control groups. In fact, "conduct parameter method (CPM), which employs an empirical model based on the theory of conjectural variations to estimate a conduct parameter. This parameter is purported to measure the competitiveness of a market in a very general way, yielding an elasticity-adjusted price-cost margin and simultaneously nesting the perfectly competitive, monopoly, and classical Cournot models". (CORTS, 1999, p. 228)

The existing literature identifies market power as a conduct parameter, λ , nesting three types of first-order conditions within one equation:

$$P + q_j \frac{\partial P}{\partial Q} \lambda - Cmg = 0$$

where λ can take three distinct values, depending on the underlying scenario of industry conduct.

:

Model	CP (conduct parameter)	How can agents maximize profits?
In perfect competition	$\lambda = 0$	P-Cmg=0
In Cournot	$\lambda = 1$	$P + q_j \frac{\partial P}{\partial Q} - Cmg = 0$
In cartel or monopoly	$\lambda = \frac{Q}{q_j}$	$P + Q\frac{\partial P}{\partial Q} - Cmg = 0$

Table 4 – Conduct parameter method (CPM) used to estimate λ

Source: Oleksandr Shcherbakov and Naoki Wakamori. Identifying the Degree of Collusion Under Proportional Reduction. Bank of Canada Staff Working Paper 2017-51, November, 2017, p.18

Bresnahan-Lau model tried to create a methodology to measure λ .

Bresnahan-Lau Model – In this model BRESNAHAN (1982) and LAU (1982) suggested the rotation of the demand curve in order to estimate the degree of market power. If the enterprise has no market power whatsoever, according to the model, a shift on the demand slope, in other words, the rotation of demand curve (given that supply slope is not changed) should not affect the equilibrium price. That occurs because the price in perfect competition equals to the marginal costs. Since marginal costs did not change (only the demand slope) it should not influence the equilibrium price if the market is similar to perfect competition model. However, if there is some degree of market power, the price is not equal just to the marginal cost. In this case, if there is a rotation of the demand curve (and the supply curve does not change), the equilibrium price is expected to vary (and conduct parameter tries to identify the amount of market power in said situation).³⁶

Kenneth Corts claimed that this strategy has some flaws. Corts worried that market power and supply slope could vary over time, affecting the result of conduct parameter estimate, which in his view, *"is valid only if the true process underlying the observed equilibrium generates behavior that is identical on the margin, and not just on average, to a conjectural variations game"*. (CORTS, 1999, pp. 234-235).

³⁶ See also (PORTER, 1983)

Afterwards, the author used Nash's game theory to test how *N*-firm symmetric oligopoly game would behave in an environment with efficient supergame equilibrium, in which deviations were punished by reversion to one-shot Cournot equilibrium strategies forever. The author concluded that:

if observed equilibrium behavior results from efficient supergame collusion, the estimated conduct parameter underestimates the degree of market power if demand shocks are not fully permanent, and may fail to detect any market power whatsoever when demand shocks are completely transitory, even if average price-cost margins are near the monopoly level. (CORTS, 1999)

That is an important warning on how this kind of methodology can present some limitations.

Panzar-Rosse Model – According to this empirical methodology (PANZAR & ROSSE, 1987), the measure of marginal cost - price elasticity (called as H statistics) could be informative of market power. The "key point is that a monopolist's output and total revenue decline when his marginal cost curve shifts upward. On the contrary, in a perfectly competitive sector, an increase in marginal costs would be fully reflected in price, thus increasing total revenues one-to-one for the sector as a whole. In between these two extremes is the case of oligopolistic structure: as the marginal cost curve shifts upward, total revenues increase by less than one-to-one with the increase in costs" (BELAISCH, 2003).

Other authors, however, understand that:

"a Panzar-Rosse price function or scaled revenue equation – which have both been widely applied in the empirical competition literature – cannot be used to infer the degree of competition. Only an unscaled revenue equation yields a valid measure for competitive conduct. Our theoretical findings have been confirmed by an empirical analysis of competition in banking industry, based on a sample covering more than 11,000 bank year observations on almost 18,000 banks in 67 countries during 1986-2004 period." (BIKKER, SHAFFER, & SPIERDIJK, 2009)

 Carman – Sexton Model - (CARMAN & SEXTON, 2005) – These authors tried to measure the amount and the speed in which retail market pass through consumers increases or decrease of costs, to know if they are non-reversible functions (HOUCK, 1977).

There can be many other manners to perform a non-structural analysis and there are a lot of strengths and weaknesses that such techniques can present.

Sometimes, parties try to use this kind of methodology to invalidate direct evidence of cartels. On this regard, Commissioner Fernando de Magalhães Furlan stated on a case that:

"Claims based on projections of possible economic scenarios and presented on econometric studies derived from a predefined fact have reduced evidentiary strength when confronted with direct evidences of the case. There is direct evidence of collusion. There are rules regulating the cartel interactions. There is explicit division of customers. There are even current accounts at the headquarters of each company to calculate gains and division of the illegal agreement. And in the face of all this myriad of evidence, there are opinions saying that the market cannot afford to support a cartel and that there is no evidence of collusive behavior. There is no credible interpretation authorizing such arguments in the face of the evidences in the file. Companies and executives do not spend years writing, storing and supplying each other with documents proving an illegal practice that do not perform. I cannot conceive that several companies have come together to set rules of a cartel only for sport. I cannot accept the idea that documented and explicit mentions of division of markets and customers are only acts of concealment that had no intention to occur. Such allegations are not only baseless, but, with all due respect, foolish."

(Administrative Proceeding 08012.009888/2003-70, regarding the following applicants: AGA S.A., Linde Gases Ltda., Air Liquide Brasil Ltda., Air Products Brasil Ltda., Indústria Brasileira de Gases Ltda., S.A. White Martins, White Martins Ltda, White Martins Gases Industriais Ltda , Carlos Alberto Cerezine, Gilberto Gallo, Hélio de Franceschi Junior, José Antônio Bortoleto de Campos, Moacyr de Almeida Netto, Newton de Oliveira, Vitor de Andrade Perez and Walter Pilão).

When economists try to ignore direct evidence of a cartel and based on this dissociation from reality arrive at the inexplicable conclusion that there would be no conditions for a cartel to exist in the sector (based on a Bresnahan-Lau method, Panzar-Rosse method, or other), it seems that science is being used for tautological purposes.

Tests should be applied with great caution and restraints, when used to <u>determine</u> whether an anticompetitive conduct exists or to <u>infer</u> market power, since the strategy of identification may not properly express the level of competition in the sector or may not

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properly capture how the strategic performance of enterprises allocate gains of a cartel, in a repeated game scenario.

Other models try to understand (or simulate) "collective" market power derived from a specific merger, such as CPPI (MORESI, REITMAN, SALOP, & SARAFIDIS, Gauging Parallel Accommodating Conduct Concerns with the CPPI, 2011); Model of Compte/Jenny/Rey (COMPTE, JENNY, & REY, 2002); cGUPPI (MORESI, REITMAN, SALOP, & SARAFIDIS, cGUPPI: Scoring incentives to engage in Parallel Acommodating Conduct, 2015), among others. (See also Merger 08012.010195/2004-19 regarding applicants Suzano Bahia Sul Papel Celulose S.A., Votorantin Celulose e Papel, and Ripasa S.A. Celulose e Papel; and Merger 08700.000658/2014-40 regarding applicants BRF S.A. and Minerva S.A.).

It is important to highlight that all methodologies can present some limitation associated with the process of statistical inference and to the difficult task of choosing the "rightful" (or most suitable) identification strategy.

9. International Relations and "market" power

Market power and some antitrust theories based on abstract models are generally studied in abstract terms, considering consumer or social welfares in a vacuum, apart from real world and from international relation theories of how world politics works. Neorealism (MEARSHEIMER, The tragedy of Great Power Politics, 2001) (MEARSHEIMER, 1990) (WALTZ, 1979), Critical Theory (COX, 1981) (ASHLEY & WALKER, 1990) (ASHLEY R. , 1984) (LINKLATER, 1996), and several other points of view seem to be apart from the classical antitrust approach to deal with a series of issues. These International Relation's theories seek to understand the "balance of power", a term rarely used in the antitrust field.

There are many reasons why a country desires to protect its own markets (increasing market power to domestic enterprises and decreasing it to foreigners), based on "national interests".

Protectionism is often linked with the greed of a specific sector driven by patrimonialism (rent seeking) or corruption, or any other manner to obtain undue, illegal and personal advantages over the entire society, benefiting some firms in detriment of a healthy international competitive environment. Therefore, protectionism is perceived as a form of advantage for a small group over society's welfare.

On the other hand, there may be other values that may substantiate at least some considerations about it. In fact, countries can:

- focus on internal security matters (trying to restrict trade against rivals, maintain balance of power, achieve political purposes, defeat terrorism or some other goal);
- intentionally avoid a predatory subsidy from another area of the world (that will harm in short term internal industry, but in the long term will allow market power of this new subsidized foreign enterprise, similarly to a national anticompetitive conduct of predatory price. In this case, fostering national enterprise can represent a remedy against such undue international practices);
- boycott certain goods produced without a specific social standard (environmental standard, for example, as discussed in Shrimp/Turtle WTO Panel or in Tuna/Dolphin WTO Panel);
- protect the nation against unilateral anticompetitive practices of other countries that restrict important technology, creating and favouring certain national enterprises that are engaged with R&D internally;
- among several other goals that are not limited to benefit a few in detriment of society's welfare.

The controversy in antitrust is that a strong defence of competition with theories focused on "price-based welfare" (and the idea that defending other values is just a "populist" decision) seems to deny other non-price values/tradeoffs, contrasting with worldwide dependence on some other topics. This antitrust silence, surrounded by diplomatic and strategic interests, that international antitrust forums usually do not dare to discuss, hinders the fight against undue international (and here called as "sovereign") market power (which differs from domestic and civil market power).

SM = {0,1}

Equation 21 – Nature of Market Power

* SM = 0 in case of a domestic use of market power or 1 in case of a "sovereign" market power

The existence of OPEC's³⁷ market power is an example of how this concept is intertwined with international political pressures and interests, rather than just marginal costs, and how antitrust law may sometimes find limitations to deal with market power abuse.

In a deeper level, the United Nations Security Council³⁸ only grants veto power to those nations that assumedly have force, nuclear weapons and dual technology. All the other

It is not by chance that some countries are more "able" to finance their deficits while others suffer the deadweight loss of some anticompetitive "sovereign" practices. The origin of OPEC market power is based on a predefined concept of what is immune of adjudication or not. This issue (how to limit the undue "sovereign" market power), certainly, is a complicated matter for a single country to solve it (and is certainly different from market power measured by Lerner Index). What are the proper international institutions that could deal with these cases? Or could a single country, isolated from all others, deal with this issue alone? These are worth questions to be made in international forums. What seems clear is that anticompetitive acts of this kind should not be shielded or imposed this way, in a democratic international society, without a great discussion about it.

³⁸ See Binder, Martin and Monika Heupel. (2015) The Legitimacy of the UN Security Council: Evidence from Recent General Assembly Debates. International Studies Quarterly, doi: 10. 1111/isqu.12134.

³⁷ In this regard, for example, Christopher Lento made a very good picture of how Antitrust Law conflicts with some rules of Organization of Petroleum Exporting Countries (OPEC), while, at same time, diplomatic interests are at stake. His view is from a United States and European perspective, but it seems that other countries or regions have not so different treatment to this question:

[&]quot;The United States' dependence on foreign oil has historically led to an enormous reliance on the goodwill of an organization that is per se illegal under U.S. antitrust law, but antitrust authorities are conspicuously quiet when it comes to confronting OPEC's market controls and manipulations. In the last few decades, there have been suggestions that the United States may have the means to assert subject-matter jurisdiction over OPEC and should move towards pursuing claims against the organization despite the dismissal of an earlier attempt to assert jurisdiction in 1981. There, the court held that OPEC was shielded from jurisdiction because it was acting in its governmental capacity when it regulated production. However, in 1993, this earlier contention was cast into doubt by Hartford Fire Insurance Co. v. California , in which the Supreme Court ruled that the Sherman Act could be applied to the acts of foreign corporations committed in foreign countries "that were meant to produce and did in fact produce some substantial effect in the United States," which OPEC's actions consistently do. Increasing gasoline prices and higher prices for oil used by industry, such as airplane and jet fuel, have also led to legislative pressure from both the Senate and House. In April 2000, and again in April 2001, Senator Arlen Specter sent letters to both President Clinton and President Bush urging litigation against OPEC. Senator Specter also argued in front of Congress on June 22, 2005, urging the legislature to find that OPEC's immunity from jurisdiction be nullified. In the past, OPEC's immunity from suit sprung from its classification as a governmental entity, which would place it under the Foreign Sovereign Immunities Act of 1976, providing that a foreign defendant shall be immune from suit in any federal or state court if the defendant qualifies as a "Foreign State" and unless a statutory exception to immunity applies. However, Senator Specter argued against the courts, finding that OPEC Members' cooperation to fix pricing was a "governmental activity" as opposed to "commercial activity" and suggested that OPEC should be subject to suit in either U.S. federal court or the International Court of Justice at the Hague. (...) In 2011, the Fifth Circuit Court of Appeals affirmed the dismissal of a major challenge to OPEC's antitrust violations. In Spectrum Stores, et al. v. Citgo Petroleum Corp., et al., a group of gasoline retailers brought class actions against oil companies owned by OPEC Member Nations, alleging that the national oil companies conspired with OPEC to fix crude oil prices in the United States through production limits. Although the suit was brought against oil production companies rather than the OPEC Member Nations themselves, the Fifth Circuit affirmed the dismissal by the district court under both the political question and act of state doctrines. (....) citing the act of state doctrine, the Court of Appeals held that adjudication of the suit would call into question the acts of foreign governments concerning their natural resources, which was outside the sphere of the Judicial Branch(...) While this is damaging in a concrete sense, it is mitigated by the fact that the price of oil is pinned to the dollar, and the normal standards of economics are skewed as far as they pertain to the United States. Most oil importing countries are forced to reserve capital in the form of U.S. dollars in order to maintain imports at the necessary levels, and oil exporting countries similarly hold, as their currency reserve, billions in U.S. dollars, the currency in which they are paid. This reservation of reserve capital in U.S. dollars, in turn, creates a constant upwards pressure on the dollar, independent of economic conditions within the United States; this upward pressure on the dollar allows the United States to discount bond rates to other countries. Because of these discounted bond rates, oil exporters and producers are able to invest profit made on oil straight back into the U.S. economy, with virtually zero currency risk. This allows the United States to run higher, and virtually permanent, trade deficits at a more sustainable level than most other countries and also maintains relatively low prices on imported goods." (LENTO, 2014)

nations that do not have such weapons, according to the UN rules, do not obtain the same treatment and are subject to "nuclear non-proliferation" regimes. Some countries ought to disarm themselves while others claim to have special powers derived from their nuclear power. The problem (besides, of course, international democracy and the right to self-protection) is that non-belligerent use of nuclear technology and research on this field may be subject to unilateral anticompetitive practices. Brazil, for instance, created Nuclebrás to avoid nuclear technology dependence on international monopolies.³⁹ So, there may be many

Again, the case of Brazil and US relationship is mentioned here, but there are a lot of other kinds of relations involving States and Antitrust-nuclear matters. In addition, the Department of Justice and the Federal Trade Commission of US play an extremely important role, being truly world beacons of how Antitrust is better applied. However, this other face of

[&]quot; Caron (1993) alludes to the domination of the Council by a few powerful states and to the unfairness of the veto held by the permanent Council members. Voeten (2005:28) and Thompson (2006:27) stress that the Council's procedures fail to conform to common standards of inclusiveness, transparency, and accountability; they also criticize its inconsistent application of moral and legal principles. Scholars in this group do not uniformly deny the relevance of legitimation. Yet, they point to the Council's manifold legitimacy problems in order to argue that states act through the Security Council not because acquiring that body's approval would be appropriate, but because according to Thompson (2006) and Chapman (2009), states use the Council to transmit strategic information. That is, states seek the body's approval to signal information about their political intentions and possible policy outcomes to domestic and foreign audiences and leaders. Voeten (2005:543, 551) conceives of the Council as an "elite pact" that functions as a focal point for governments, helping them to "coordinate what limits to the exercise of power should be defended," thus contributing to effectively enforcing constraints on the United States and, in doing so, playing a legitimizing role in global politics. Westra (2010:522) argues that great powers do not seek Security Council authorization as a means of collective legitimation but rather to persuade other states that their actions are in accordance with Charter rules intended to sustain the existing international order whose legitimacy is based on habit and rational calculation".

³⁹ For example, Brazil bought Angra 1 (Brazilian first Nuclear Power Plant) from a North-American enterprise called Westinghouse. This enterprise had a huge market and bargaining power that was able to impose to Brazil a contract without stipulating any penal clause for delaying the construction of Angra 1, refusing to transmit any nuclear technology to Brazil and even refusing to supply Angra 1 with enriched uranium (that was necessary to make Agra I work, as expected). This Power Plant was ironically named as a "nuclear firefly"³⁹, because was not able to produce nuclear energy in a stable manner. Although the initial price of the Westinghouse plant was 330 million dollars, the total cost of the project to Brazil was increased to US\$ 2.2 billion (OLIVEIRA, 1999), what clearly shows the charge of an overprice.

When Brazil tried to negotiate with German [Kraftwerk Union A. G. (KWU)] and French [Framatome] competitors of Westinghouse, the construction of another nuclear power plant (with a better contract and with technology transfer), North American government itself intervened, raising several commercial sanctions against Brazil and Brazil's partners (Germany and France), making extremely difficult such negotiations. (BANDEIRA, Estado nacional e política internacional na América Latina: o continente nas relações Argentina-Brasil (1932-1992), 1995) (BANDEIRA, O "Milagre Alemão" e o Desenvolvimento do Brasil - As Relações da Alemanha com o Brasil e a América Latina (1949-1994), 1995). New York Times, from the June 13, 1975 edition, called German-Brazilian agreement as a "nuclear madness". John Pastore, US Senator and Chairman of Joint Committee on Atomic Energy insisted on the Agreement's nullification and suggested a reconsideration of the U.S.'s NATO commitments to Germany to demonstrate the U.S.'s stance on nonproliferation.³⁹

[&]quot;it was the largest and, at the time, the most expensive transfer of advanced technology to a developing country; it was the first breach of the U.S. monopoly over the world export market for nuclear reactors by a non-American vendor" (KOLLMANN, 2012)

For protecting these monopolistic interests, in March 1977, Jimmy Carter took measures against both Brazil and Germany: he pressured two American banks, Chase Manhattan Bank and Eximbank, to suspend all financing activities negotiated with Brazil, and halted the supply of enriched uranium to Germany. (BANDEIRA, Estado nacional e política internacional na América Latina: o continente nas relações Argentina-Brasil (1932-1992), 1995) (BANDEIRA, O "Milagre Alemão" e o Desenvolvimento do Brasil - As Relações da Alemanha com o Brasil e a América Latina (1949-1994), 1995).

aspects to take into consideration, concerning the nationality of enterprises, when antitrust reviews are carried out.

However, on recommended practices related to "State-Created Monopolies", the ICN assert that antitrust authorities should treat all enterprises as "private undertakings by using standard antitrust analysis to assess dominance/substantial marker power, regardless of state ownership or legal status of the firm." Antitrust authorities should "advocate for an expeditious liberalization of barriers to entry in markets with state-created dominant enterprises".

These principles can certainly make sense "in a vacuum". Nonetheless, since "sovereign" market power and "sovereign" anticompetitive practices are different from traditional market power (more difficult to control or adjudicate) and immersed in a multidimensional trade-off world where nationality matters, maybe dogmatic ways to determine what is the rightful antitrust strategy towards state ownership or enterprise's nationality deserve some flexibility, rather than a traditional, straightforward and narrow guideline in this regard.

10. Privatization of competence or minimalist approach?

As already mentioned, given that there are a lot of subjective roads that lead to different market power definition, defining competence, in other word, defining who has the legal authority to determine the appropriate strategy to define market power, is a huge issue in Antitrust Law.

The definition of what constitutes anticompetitive practices can be made by public Authorities or by private parties through arbitration. Two approaches are considered in cases of intersection between antitrust and arbitration. According to the OECD:

 "Under the <u>maximalist approach</u>, national courts are required to carry out an in depth review of arbitral awards when they are challenged, or when enforcement is required. This involves a full review of the entire case and all the evidence associated with it. The rationale for this approach is to avoid the risk that arbitration will be used

international trade (and refusal to deals) should be understood from a wider and bigger perspective, especially if governments with specific political interests endorse "market power."

This is just one example from the past of what can happen in this area and how market power is not immune from international sovereign political pressures.

to circumvent competition law. Courts can therefore consider in detail whether competition law has been applied 'correctly'.

Under the <u>minimalist approach</u> no special treatment is given for awards raising competition law issues, and emphasis remains on taking the case outside of the courts, and settling it via arbitrators. The rationale for this approach is that if a full review of the award is carried out, this arguably defeats the purpose of going into arbitration in the first place and undermines the trust afforded to arbitrators and the institution of arbitration. Courts should therefore only overturn awards where there is a fundamental breach of public policy." (OECD, 2011, p. 14)

Both views can have excesses (and the mere choice of one over another, as a binary decision, can perhaps oversimplify the actual underlying social concerns of individual cases.

On one hand, in the maximalist theory, in which the state revises all acts and arbitration awards, the authority can improperly reward a party that deliberately includes a "competitive issue" in a contract together with an arbitration clause, so if the arbitration award is unfavorable to the losing party, it would be possible to use an "antitrust discussion" as a means to invalidate arbitration award.

On the other hand, the minimalist view can also pose social problems, especially when the interpreter or the authority is less likely to consider material matters by being more formalistic (seeking to unburden only the judiciary from its backlog and maintain the decision of the Arbitration Court in any case, even if eventually this decision will affect the price of goods consumed by several people who did not have the chance to participate in the arbitration agreement entered between private parties).

This dualistic way of seeing arbitration may deserve a third theory that concerns both kinds of excesses and some other institutional design (ID).

 $ID = \{ ID_1, ID_2, ID_3, ..., ID_n \}$

Equation 22 - Different institutional designs

For example, *Mitsubishi Motors v. Soler Chrysler-Plymouth*, (1983, US First Circuit and 1985 US Supreme Court) seems to have involved a very different approach from French cases

such as *Thales v. Euromissile*; however, the decisions in these cases all fall under the "minimalist" approach.

In the first case, *Mitsubishi Motors v. Soler Chrysler-Plymouth*, the US First Circuit of Appeals dealt with a vertical restraint, which is not a clear antitrust violation. The Court understood that *"the mere appearance of an antitrust dispute does not alone warrant invalidation of the selected forum on the undemonstrated assumption that the arbitration clause is tainted."* However, the US First Circuit of Appeals allowed the district court to decide:

- (i) whether the matters are sufficiently separable to justify isolated and contemporaneous treatment;
- (ii) Whether the permeation of antitrust issues halted or not arbitrability, in case of not being possible to segregate private and antitrust issues.

As district court did not have the opportunity to decide such matters, the case was remanded in these regards. It is not a simple delegation to private parties to estimate if public law was breached or if there was public harm derived from such private contracts. There is a specific methodology to observe in order to avoid minimalist excesses, while granting deference to the choice of forum of private parties involved in a contract.

A different approach seems to be used in *Thales v. Euromissile*. According to Cuniberti:

In November 2004, the Paris Court of Appeal had ruled in Thales Air Defense v. GIE Euromissiles that there was such a procedural rule in France. The French rule was that only violations of French public policy which were "obvious, actual and concrete" (flagrante, effective et concrete) would be sanctioned. As a consequence, in Thalès, the Court had dismissed a challenge in a case where the **parties had arguably shared the relevant European market**. The issue of the validity of the contract had not been raised during the arbitration. (CUNIBERTI, 2008)

If that is correct, in such case, one party confessed that the contract, which included an arbitration clause, was the result of a cartel agreement, with relevant market division. Also, according to Emmanuel Gallard, the Paris Court of Appeals preferred to confirm the arbitral award without making an "economic analysis" of the practice, in order to decide whether there was a violation of an antitrust obligation. (GAILLARD, 2007)

Therefore, the Paris Court of Appeals chose to adopt a highly formalistic understanding, mentioning that the argument of cartel agreement was not raised during arbitration. Ergo, there was no "flagrant" violation of competition rules, even though one party clearly confessed to have agreed with a very long non-competition clause in certain regions of Europe (and that, in fact, such agreement resulted from the actions of a cartel that divided the European market). If such a claim is true and if the Paris Court of Appeals understands that it was not a flagrant violation of competition rules, it seems unlikely that other conducts could fulfil such standard (WALLE, 2013, p. 215).

Undue market power or a cartel can be maintained and even legally enforced if a dispute involving such issue is settled by arbitration or not raised during arbitration.

11. Conclusion

To be or not to be a dominant player?

Trying to fairly deal with this question, the answer (without the Shakespearean's eloquence), as expected, is "well, it depends on a lot of variables", such as the ones on the list below:

Variables that might influence if there is dominance	Notation
Type of conduct (or merger)	$C = \{C_1, C_2, C_3, \dots C_n\}$
Players (involved in conducts or mergers)	$P = \{P_1, P_2, P_3,, P_n\}$
Circumstances of the practice	$X = \{X_1, X_2, X_3, \dots X_n\}$
Hermeneutic options regarding methodologies	$HE=\{HE_1, HE_2, HE_3,, HE_N\}$
Amount and quality of an interpreter's available information	$\sum Inf = \{0,, 1\} \& Q = \{0,, 1\}$
Strategy of identification	$SI = {SI_1, SI_2, SI_3,SI_n}$
How burden of proof should be established or distributed	$W = \{W_1, W_2, W_3,, W_N\}$
Timing (and dynamic aspects) of the analysis	$t = \{t_1, t_2, t_3, \dots, t_n\}$
Means of coercion	$MC = \{MC_1, MC_2, MC_3,, MC_n\}$
Interpreter's teleological choice	$TL=\{TL_1, TL_2, TL_3,, TL_N\}$
Sovereign nature of market power	SM={0,1}
Who is the interpreter (what is the institutional jurisdictional design)	$ID=\{ID_1, ID_2, ID_3, \dots ID_n\}$

These are certainly just some of the possible influences about important aspects to measure dominance, as several other variables that were not properly mentioned in this paper can also contribute to this debate.

Some risks would have to be taken in order to properly settle this issue. Maybe nonclassical logic can help us understand what risks are at stake. Following the OECD's suggestion and presenting a "<u>clear analytical framework to assess</u> <u>dominance</u>" is an extremely difficult task to consider in abstract terms, without knowing beforehand who is engaging in a certain anticompetitive conduct, who is being harmed and what are the conditions or circumstances in which the practice was perpetrated).

Thus, when considerations are made in regard to the use of market shares as a first approximation to market power, these topics are not usually taken into account, which indicates some of the limitations of the alternative approaches. Certainly, these alternative approaches can be very sophisticated. Nonetheless, using them does not eliminate uncertainty, especially when interpreters are aware of the different subjective options in a continuous array of choices, and it is the interpreters' responsibility to find the exact point where such continuous interval is divided in only two parts. There are many ways to make such choice.

If the will to answer the question presented by OECD is real, then it is necessary to point out that there are many ways to define what dominance is (or is not), and it is truly difficult to present a closed definition for this specific concept.

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