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# Tropical medicine: The economics and the evolving practice of antitrust remedies in Brazil☆

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**Abstract**

Antitrust remedies are a central part of the competition policy toolbox. Their actual use and design depends on interrelated factors such as the Antitrust Authority's analytical capabilities, institutional design and bargaining power. Economics can contribute to the design of remedies, using a transaction cost, principal-agent incomplete contract framework, as remedies are generally drawn as an agreement between the Authority and parties under extensive information asymmetries. This provides a rationale for the principles and policies' choices of the Brazilian Antitrust Authority, CADE, on remedies over the past decade. There has been a shift towards agreements instead of unilaterally imposed remedies, extensive use of trustees and communication by an Antitrust Remedies Guide to signal CADE's policies.

*Keywords:* antitrust remedies, mergers, Brazil.
*JEL classification:* K21, L4.

## 1. Introduction

Antitrust remedies are conditions imposed by an Antitrust Authority (Authority hereafter) on firms under competition policy scrutiny to solve anticompetitive problems. They are mostly associated with mergers, but are also used in abuse of dominance and cartel cases. In the case of a merger, remedies are required for the clearance of a merger if market conditions and merger specificities lead the Authority to conclude that it will harm competition. As such, antitrust remedies are a central part of the competition policy toolbox (OECD, 2012).

☆ Research Group in Economics, Law and Competition — GDEC/IE/UFRJ (www.gdec-ie.com). The paper cites publicly available material prepared by the author to the Remedies Research Project CADE/PNUD, 2016, used as support to CADE's Antitrust Remedies Guide. The statements and conclusions are personal views and cannot be associated with the official position of CADE, PNUD, UFRJ or CNPq.

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Remedies provide the opportunity to clear a merger to the extent that merger synergies that would enhance welfare are realized while, at the same time, targeting the actual sources of competitive harm from the merger (Motta, 2004).

Designing and implementing remedies is no simple task. There are many risks associated with the design of an over-weak (or over-strong) remedy that will not properly solve the competition problems related to the merger or business practice. Even if the remedy appears balanced and targeted to the antitrust harm, fulfilling it poses important challenges (ICN, 2016). Understanding the link between the theory of harm and the remedy is a necessary, but insufficient, condition for effective remedies.

The discussion, evaluation and dissemination of best practices on antitrust remedies is an active topic in the literature (e.g., DG COMP & EC, 2005; FTC, 2017). For young or developing country agencies, implementing antitrust remedies is an ongoing challenge, in parallel to competition policy consolidation and improvement (Kovacic and Lopez-Glados, 2016; ICN, 2016; Avdasheva and Radchenko, 2017). Each economy has its institutional (code law, Authority credibility and bargaining power, *inter alia*) and economic structure that can influence the practice of remedies. To take the analogy with medicine—specific diseases require specific medication, as in tropical medicine. Yet Brazil is no different from other jurisdictions moving along the learning curve of competition policy practice.

In Brazil, antitrust remedies have been used since the inception of modern competition policy, in 1994. The remedies practiced shifted over time, with differences in design, use and profile, as we shall see below. Two important changes can be pointed out. First the change in merger control, from ex-post to ex-ante in 2012, with the new competition law (12529/2011) and a more detailed specification of remedies agreements, particularly for merger cases (ACC in the Brazilian acronym). Second, the clear shifts in the types of remedies since the new law, consolidated in the 2018 Antitrust Remedies Guide (CADE, 2018). Two characteristics do come out in the Guide and in practice: the ubiquitous use of agreements to implement remedies and the use of Trustees. These are third parties paid by the merging parties that respond to the Authority. They provide monitoring of firm practices associated with the remedy and, management and asset sale preparation and bargaining services in case of structural remedies. No trustee was used up to 2013. Since 2017 nearly all merger remedies consider such trustees.

The goal of this paper is twofold. First, I review remedies' principles stated by CADE at its Antitrust Remedy Guide. Second, I document and provide an explanation about the extensive use of Trustees by CADE in merger remedies.

The explanation is based on the application of economic theory to the antitrust remedies' problems. The paper argues that issues surrounding remedies can be understood and properly addressed by a transaction cost, principal-agent, incomplete contract framework. This framework has not been made explicit in the literature although more recently it was mentioned in Kwoka (2019).

Some papers that use the transaction cost framework to discuss remedies, such as Joskow, (2002) and references therein, consider the need to understand the boundaries and institutional design of the firm when specifying a remedy, not the actual process of having the remedy implemented. Others use it to discuss the balance between antitrust and regulation to affect market outcomes (e.g., Bickenbach et al., 1999). Another strand in the literature uses principal-agent theory to apply remedies as an information revelation principle to the Authority (Dertwinkel-Kalt and Wey, 2016; Cosnita and Tropeano, 2009). And an additional large strand of the literature discusses optimal remedies as a deterrence or signaling device (Page, 2015). Radchenko and Avdasheva, (2014) is an example of another line of research that explores the actions of, and reaction to, behavioral remedies.

The analytical framework highlights that a remedy is a contract between the Authority and the merging parties, particularly in the case of Agreements that are the norm in remedies (since 2015 all but one case that required remedies for clearing used Agreements). The contract sits in an environment where incentives of the parties and the Authority are not aligned or goals differ, asymmetric information is rampant against the Authority, and there are extensive transaction costs. Merger Remedies Agreements have explicit incomplete contract characteristics. This could lead to inefficient outcomes or a high risk of remedies failure if not carefully written.

The use of trustees aims to mitigate the fundamental problem of asymmetric information. It is perceived that principal agent issues between the Authority and the trustee would be of smaller magnitude than the problems with the merging firm when implementing the remedies. In the latter, a high risk of moral hazard by the firm outweighs adverse selection issues on picking the trustee. The recent CADE Antitrust Remedies Guide also recognizes the information asymmetry and misaligned incentives. It goes at some length in describing the role of the trustee in minimizing asymmetric information, with a full chapter on the issue and an appendix. In addition (i) the Guide prioritizes structural remedies, (ii) states that the level of fines for compliance and sale mechanisms should be such as to align incentives as much as possible.

The evolution of CADE's remedies practice depended on international mergers, as the actual decision to use trustees came from international experience. The experience also shows that learning by doing is most effective in relatively small, relatively simple, yet harmful to competition, cases. This suggests that a competition policy practice that focuses on very large cases — the most relevant cases only to save resources — may handicap the handling of these large, complex mergers.

The paper is divided as follows. The next section provides an overview of merger remedies' principles in international competition policy, followed by the main issues in designing remedies. Then we discuss the economic framework to understand and design remedies. The actual recent experience with remedies in Brazil and the change in remedies practice is described in the last section, before concluding comments that close the paper.

## 2. Overview of merger remedies in international competition policy: Taxonomy and principles

This section is intended to organize the discussion of remedies and the practice of CADE to the reader. It provides an overview of merger remedies taxonomy and principles, summarizing information in well-known texts such as ICN (2016), OECD (2012) and remedies' guides across the globe (such as the United States, France, the United Kingdom, Japan, Germany and the European Union).

The standard classification of mergers is found, for example in CCUK (2008). Merger remedies can be divided into structural and behavioral remedies. Structural remedies consider changes in the market structure, namely, the sale of part of productive capacity from the merging parties to third parties, either a current (non-dominant) competitor or an entrant. Structural remedies foresee the exchange of property rights across firms. Productive capacity transferred as a remedy may be either an existing business unit, as a plant or line of business, or "carved out" assets to create a new business. Structural remedies aim at the transfer of competitively relevant, financially viable assets, which will reverse the competition problems generated by the merger.

Behavioral remedies impose duties and obligations on how to conduct the daily business of a firm, such as terms and conditions of sale contracts, pricing policy, supplier relationships and product portfolio.

Behavioral remedies require long term monitoring of firm business practices in detail. These are seen as less interesting remedies, compared to structural remedies as (i) the former are more costly to the Authority, requiring the allocation of staff to monitor the firm over a long period of time; (ii) they do not alter the cause of the competitive harm, namely the structural changes in the market after a merger (FTC, 2017).

A theory of harm is an indispensable part of designing merger remedies (ICN, 2016; Kwoka, 2015). Competitive harm from a merger may arise from the reduction in market contestability, as the merger raises entry barriers (so that entry is either unlikely or insufficient or not timely). A merger can impose a significant loss to competition by reducing the rivalry in the market (from either the presence of scale economies, or the suppression of a viable independent competitor by the acquiring firm for example), or creating coordinated effects in the relevant market. In vertical merger cases it may induce the foreclosure of upstream or downstream competitors.

Yet the proper specification of the merger theory of harm is not a sufficient condition to an effective remedy. The design, monitoring and implementation of the remedy is as important and key to an effective remedy, as reflected in all remedies' guides across jurisdictions, as mentioned above.

Remedies are extensively described in many jurisdictions. Surprisingly, they follow similar principles, as they seek similar competition policy goals in economies based on private property. Merger remedies policy is also made explicit in a number of jurisdictions, such as the United States (two guides), the European Union, Germany, France, the United Kingdom, Japan, as well as developing countries, like Brazil. International organizations, such as the ICN, have proposed guidelines as well. This section provides a synthesis of the steps and principles that guide antitrust remedies. It is not necessarily the majority view, but has been influential enough to be used as a basis for some sections of the Brazilian Antitrust Remedies Guide. The section will not make explicit references to any of the guides, as the working and principles are quite homogeneous across guides. No claim of originality in the section is made, unless noted.

Designing antitrust remedies includes a number of steps, namely: detailing the remedy, devising the agreement (most likely), monitoring and stating that the remedy was implemented. Often, all four activities are referred to as remedy design in the literature. We continue this practice, although the design may refer to the ongoing implementation of the remedy after it is signed.

One can place four goals that lead to four directives, or principles, when designing a remedy. The goals and principles will be stated with a focus on merger remedies, but they can be easily used in abuse of dominance cases.

On goals, first and foremost, a remedy must be effective, i.e., it must be able to restore competition levels after a merger and mitigate the anticompetitive effects of a merger. Second, the remedy should be adequate, in so far it is believed ex-ante to be effective. Third, the remedy must act to reverse the actual anticompetitive leverages generated by the merger, e.g., a reduction in rivalry, the elimination of recognizable competition forces faced by the merging firms, or the sponsoring of entry or reversal of entry barriers or dwindled contestability caused by the merger. And the remedy should have the least risk possible. The latter issue is of particular interest for the UK CC guide. Remedies' risk include unexpectedly weak competitive assets to be sold (underestimation or depletion of the business units), absence of actual effective buyers, slackness, or outright contempt over the asset sale and monitoring process and regulatory risks.

These goals lead to principles that antitrust design should always keep in mind.

First, merger remedies should be *proportional* to the harm to competition. Proper merger analysis should point to a solid, coherent theory of harm, which explicitly states what the merger would have done, and what mechanism led to a harm to competition. The actual concept used to judge the harm to competition differs across jurisdictions. For example, there is the significant impediment to competition, in the European standard (EU, 2013), or the substantial lessening of competition in the UK perspective (CCUK, 2018). In Brazil, the standard is that remedies should address mergers that have a net (after efficiencies are taken into account) effect on the elimination of competition in a substantial part of the relevant market, on the increase of the coordination likelihood, or the creation or reinforcement of a business dominant position that can lead to market dominance of the relevant market under scrutiny (see articles 36 and 88 Law 12.529/2011). As mentioned above, competitive harm from a merger may arise from the reduction in market contestability, as the merger raises entry barriers (so that entry is either unlikely insufficient or not timely). A merger can also impose a significant loss to competition by reducing the rivalry in the market (from either the presence of scale economics, or the suppression of a viable independent competitor by the acquiring firm for example), or creating coordinated effects in the relevant market dwindling competition levels. In vertical merger cases it may facilitate market foreclosure.

Second, merger remedies should be *timely*, both on its design, negotiation and implementation. It should seek the shortest time frame possible for the actual realization of the remedy (in the case of structural remedies, preparing for the sale, monitoring, the actual sale and a follow-up period where contractual links may tie the selling and buying firm). For structural remedies a short period is recommended so that the structure of the market post-merger does not prevail for long and the divested unit is not depleted of its competitive strength. For behavioral remedies, on the other hand, a longer period is required so that the market does change and renders the anticompetitive business practice ineffective.

Third, merger remedies should be *feasible*. This feasibility requires assets to be disinvested or business practices to change hands with the least effort or friction or risk of depleting the assets of its key personnel, equipment capability and actual productive capacity, input supply levels and customers. Feasibility is concerned with remedies that avoid or mitigate implementation risks, high financial, activity and personnel costs to both the Authority and parties.

Last, but not least, merger remedies should be *verifiable*. The remedies should consider information gathering, key information performance indicators to be monitored, activity registration and listing of acts or steps needed to implement the remedy. The motivation is twofold: first, to anticipate problems before they become significant issues (such as not meeting the asset sale deadline) and second, to provide evidence for future complaints in courts.

As mentioned, these principles, if observed, should generate effective remedies. In other words, the remedies would fulfill their goal of reversing the merger's anticompetitive effects.

## 3. An economic perspective on designing remedies

Economic theory can contribute to the design of antitrust remedies in two ways. First, economics points to the necessary connection between the theory of harm to competition from the merger or business practice and the items of the remedy (e.g., carving out output capacity from a merged entity to allow entry of a new contestable business). This is the most common economic perspective (e.g., Coleman and Weiskopf, 2019; ICN, 2016; Kwoka, 2015). It is integrated into the generally recognized merger remedies principles described in the previous section. Second, antitrust remedy design should be looked through the transaction cost and principal-agent theories lenses. This second way is least explored in the literature, although clearly in the Authorities' mind.

It must be noted that previous application of transaction cost economics to remedies, such as Joskow (2002), considered the role of this theoretical framework on the design of the remedy and the debate of structural versus behavioral remedy, not on its implementation. Considering remedies through the lens of transaction costs is maybe more important for the effectiveness of merger remedies, as the theory of harm analysis is not sufficient for actual implementation of a remedy. The correct implementation of a remedy is a requirement for effective remedies.

Designing and implementing remedies should consider (i) the highly asymmetric information environment between the Antitrust Authority and the firm on the effectiveness of the remedy to restore competition levels; (ii) the opposing incentives between the Antitrust Authority (to foster competition faced by the firm) and the firm that is under antitrust scrutiny (to minimize competition faced by it); and (iii) the extensive transaction costs of the incomplete contract drawn as the remedy.

Transaction cost economics, or new institutional economics, can frame the design of antitrust remedies concentrating on the incomplete contract that will be signed by the Authority and the firm(s). Also, in related fashion, the remedy implementation should consider the principal-agent theory (a draft of this perspective can be seen in Kwoka, 2019). This provides insights on the merger remedies principles summarized in the many jurisdictions guides, as we shall see here.

We present a brief, simplified presentation of transaction costs economics/principal-agent models to frame the discussion (e.g., Hart, 2017; Besanko et al., 2010). Any activity involving the transaction between two parties requires the design of a contract. A contract presents a list of duties and rights to both sides and, importantly, the means to solve potential disagreements. The rights and duties must, in principle, include possible outcomes in addition to the contracted outcome. To be enforceable, the contract should be able to provide proof of behavior and outcomes to various (all?) possible outcomes (contingencies on the deliverance of the contracted goods and services). That requires detailed monitoring in all dimensions, including volume, quality and time. Otherwise a third party, called upon to solve disagreements and enforce the contract, cannot undoubtedly and fairly decide on assignment of contract breaching party and associated imposed penalties and commands. An enforceable contract is such that a third party can decide on breach of contracts in a timely manner and, more importantly, without undue cost.

It appears a daunting task. Indeed, contracts are seen as necessarily incomplete. Incompleteness arises from a number of factors. Agents may appear to have exceeded rationality, given the impossibility or infeasibility of accounting for all contingencies. Perfect outcome measurement and procedural monitoring may not be possible or feasible (too costly in financial terms or in terms of time), leading to incomplete information, in case nature draws lead to unexpected or not contracted outcomes. Just as important, and central to the analysis here — asymmetric information may plague the transaction. One side is better informed on the cause and effect of the chosen actions taken. This creates a "veil of ignorance" that severs outcomes from the observed efforts of the parties.

And last, but not least, the parties' incentives are almost always misaligned, as both parties want to maximize the surplus of the transaction (benefits net of costs), but each party's desired maximum benefit is often the other party's maximum cost.

Many contracts handle the situation of an agent required to carry out instructions imposed by a principal, for a monetary exchange or obligation to avoid a penalty. Even in the case of a simple contract, where the terms of the exchange are clear (what is to be delivered by the agent, and what would be paid by the principal), imperfect or asymmetric information may generate uncertainty as to whether failure to meet the contract (non-delivery of what was arranged) was due to slackness or fortuitous, exogenous events. The asymmetric information reinforces agency costs, which include monitoring and evaluating the agent.

Hart (2017) notes that that principal-agent theory generally assumes complete contracts. Here we explore the incompleteness of the contract, given transaction costs and incomplete information.

An antitrust remedy fits squarely in the transaction cost / principal-agent framework. According to this view, when designing effective remedies one should (i) re-align incentives by the firm, generating an effort by the firm to meet the goals of the remedy contract; (ii) minimize as much as possible the asymmetric information environment that the Authority faces; (iii) minimize as much as possible transaction costs, such as evidence gathering and the dependency on the courts to enforce contract breaches.

Incentives of the Authority and the parties are clearly misaligned when designing remedies (e.g., CCUK, 2015; Autorité de la Concurrence, 2013). Consider a structural remedy that requires the sale of a business of the merging parties. The merged firm's goal is to weaken as much as possible the competitive strength of the asset that will be competing as part of a competitor after the sale. The goal of the Authority is that the assets disinvested effectively constrain the merging firm's dominant position and market power.

Asymmetric information is rampant when designing remedies. The Authority does not know what made the parties' business successful. Neither will it necessarily be able to grasp the subtleties of competitive forces that shaped it in the past, and more importantly for the remedy's success, in the future. Note that merger analysis may provide a limited picture of such policies. Running a business is a combination of resources and coordination and codes and activities within a firm that is complex, multidimensional (financial, operational, sales, logistics, human resources, taxes) and maybe non-reproducible. A business unit's ties and assets may be specific to the working firm. At best, a well specified theory of harm would be a mapping of the competitive forces *outside* the firm. The activities *inside* the business are not a part of the working skills and tasks of the Authority. Yet, when designing remedies, knowing about the actual disinvested business is central.

The asymmetric information arises also from the cost of gathering the information. The Authority does not have the resources or expertise or experience to engage in mergers and acquisitions contract design bargaining or the valuation exchange between the seller and the buyer.

Selling a business, whether it involves carving out one, or divesting an already independent unit, requires extensive knowledge of the business. Asymmetric information opens the door to opportunistic behavior of the merging party, as a firm may always claim that it was meeting the contract item when not transferring relevant assets or contracts with the disinvested unit.

Remedies' agreements are decided within the short time frame of a case (in Brazil up to 290 days). High transaction costs are the norm in merger remedies design. It is not feasible to foresee all possible contingencies during the preparation to sale, sale and immediate operation of the structural remedy unit, due to macroeconomic and sectoral conditions changes, buyer behavior or actual practices. It may be costly to both sides to charge a firm that did not meet a remedy agreement, in the Authority view, when the contract does not state the actual terms, scope, and procedure for sale. A third party, either the courts or an arbitrageur, will have difficulties coming to a timely decision.

In short, the Authority often has difficulties both in understanding the business as well as monitoring the actual deeds of the firms in meeting the agreement. Note that slacking or shirking is in the firm's interest as a way of weakening or depleting the asset to be disinvested. How do we define, characterize and verify the best methods to reach a goal?

A lesson from principal-agent models, where the principal wants to extract as much effort as possible from the agent, but the agent wants to expend the least effort for a given benefit, is that a contract should be designed in such a way that the agent sees that it is in her own interest to seek the principal's goals (Besanko et al., 2010). The principal-agent design should not hinge upon surveillance punishment to change behavior, given the asymmetric information, but instead consider benefits the agent can accrue to align incentives.

Framing remedies analysis from a transaction cost economic view is key to understanding the recent trend on the extensive use of trustees seen in practice and in Remedies Guides across jurisdictions. Trustees are Authority appointed, firm financed, business executives that provide services to the Authority and take executive power on the firm regarding remedies.

There are different types of trustees (names also differ across jurisdictions, so we explain the terms used here). There is the *monitoring trustee*, when the executive provides oversight, information collection and auditing services to the Authority, but has no power to interfere in the firm operations. There is the *divestiture trustee* that leads the "packaging" and negotiation process for the sale of the remedy business. These trustees help the Authority guarantee that the negotiation terms are in best interest of the Authority and help lead to a strong, competitive new business in the market. It may also avoid shirking in the negotiation process, such as undue requests by the firm or information hoarding to the potential buyer. Finally, there is the *management trustee*, or hold separate manager, that takes over the management of the day-to-day activities of the remedy target business unit until the unit is taken over by the new owner (ICN, 2016).

The roles of the trustee can be understood as follows, in line with the principal-agent, transaction cost analysis. Trustees may significantly reduce asymmetric information on business conditions and practices. By working day-to-day at the remedy target business, the trustee can provide information to the Authority, reducing asymmetric information as the remedy unfolds. The improvement in information clarity of the firm practices can abort misaligned practices from the remedy point of view and, just as importantly, generate enforceable evidence in case of judiciary review of remedies. The lower transaction costs from the use of trustees should help enforce remedies.

The focus on verifiability sits squarely with the transaction cost economics/incomplete contract approach to remedies. Not only does it seek to diminish the asymmetric information, raising monitoring requirements, but, more importantly, it understands that an enforceable contract requires a third party to verify acts and outcomes. Verifiability seeks enforcement of the contract, under likely, but non-contractual, contingencies.

As mentioned, Trustees can also run the actual remedy business during the sale process or can lead the sale process itself. In both cases the rights of the firm are shifted to the Authority, before the sale of the remedy business. This alters the firm incentives, contributing to better, more effective remedies in principle. The use of a hold separate manager trustee intentionally explores the separation between management and ownership, where now the manager is an agent to the Authority and not the merging firm. Of course, this management trustee is subject to principal-agent contract problems between the trustee and the Authority, but these are of smaller magnitude than merging parties-Authority problems. While trustee-Authority problems are limited to slack or least effort by the trustee, in the case of merging parties-Authority, there is clear opposition to the imposed remedy as it is expected to reduce the profitability of the whole merger.

The issues raised in the economic models used as the analytical framework also help understand the recommendation of structural remedies over behavioral remedies in many remedies' guides and publications. It reflects the attempt to reduce the scope for opportunistic behavior. In the parlance of Coleman and Weiskopf (2019) these are called self-enforcing remedies in a clear reference to principal-agent models. The sale of existing business units also reflects the idea that a firm is organized in such a way that it is more than a collection of assets, in transaction cost economics view. The remedies therefore focus on personnel, patents and tacit knowledge that need to be transferred. The need to provide a long transition period and relentless opposition and opportunistic activities by the selling firm require a financially sound and sector-knowledgeable potential buyer.

To further the relationship between the theoretical recommendations of minimizing asymmetric information and to navigate through the transaction cost/principal-agent problem of a remedy, from the point of view of an Antitrust Authority, we look at the Brazilian experience with remedies in the following section.

## 4. The Brazilian experience on merger remedies and the use of trustees

To save space we will not provide an introduction to the Brazilian competition policy institutional framework and legislation. The reader is referred to OECD (2019); Ribeiro et al. (2018) or IBRAC (2015), inter alia. Merger remedies are part of the competition law since its inception in 1994 (Law 8884/1994). Further modifications allowed CADE, ruling body of the Brazilian Antitrust Policy System, to impose changes in property rights and sign agreements with parties regarding these rights (such as the sale of assets, intellectual property and others). The agreements were called TCD (*Termo de Compromisso de Desempenho*—Performance Commitment Statement in a free translation). Law 12529/2011 consolidated legal aspects of the remedy agreements under a new name, ACC (*Acordo de Controle de Concentrações*—Merger or Concentration Control Agreement in a free translation).

Law 12529/2011 shifted merger analysis from post-merger to pre-merger perspective. Based on our analytical framework, it is clear that the hold separate, no gun jumping, status quo during merger analysis by the Authority radically altered the incentives of the merging parties, making them more aligned with the Authority. The firm is now interested in a timely decision by CADE to consummate the merger. In a post-merger analysis, the longer the merger decision takes, the harder it would be to disentangle the merged parties, or to carve out business units to meet the remedy design. The "outside option" altered as well. With ex-ante analysis, it is easier to block a merger. With ex-post analysis, before 2012, blocking a merger would require "unscrambling the eggs" in many cases. The new competition law also altered the timing of the negotiations, as parties have to propose an ACC remedy agreement up to 30 days after the investigative body of CADE, the SG, issues its opinion. After that period, only CADE can suggest an ACC.

CADE's profile of remedies in decisions changed significantly over time as seen in Fig. 1 (and also Cabral and Mattos, 2016; Pereira Neto and Furquim, 2015). Earlier remedies were few and imposed unilaterally by the authority. The majority of remedies were behavioral, with a few exceptions such as in the important Antarctica/Brahma (Ambev) case. The early (before 2002) agreements were actually unilateral decisions that could be altered to an agreement, if the firm chose to, after the ruling. Most remedies could be considered weak, such as pledges to improve quality after a merger (to "guarantee" that merger synergies reach consumers). Ribeiro et al. (2017) suggest that from 2002 to 2006 merger policy was not as strict as in later periods for a number of reasons, so remedies were hardly used. 2002 saw not a single remedy imposed or committed by firms. Fig. 1 also shows that the proportion of structural remedies varies over

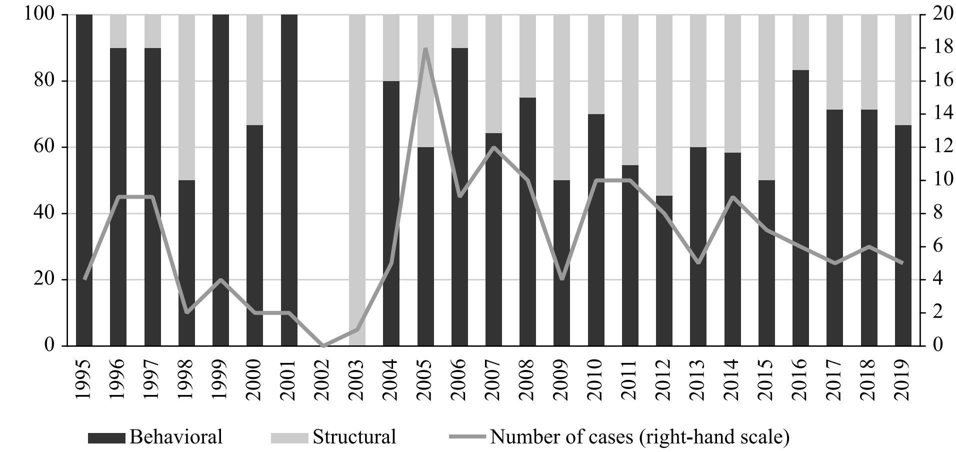


**Fig. 1.** Number of cases with remedies 1995–2019, and remedy type by case — CADE (%).

*Note:* A case may have both behavioral and structural remedies. In that case the case was counted as both behavioral and structural.

*Source:* Cabral and Mattos (2016); Soares et al. (2019); M. Lyra and the author.

time, with around 50%–30% in recent years. Note that even as CADE's Remedy Guide suggests a preference for structural remedies, there is a large proportion of behavioral remedies, yet often in conjunction with structural remedies.

The relatively high proportion of behavioral remedies may reflect the structure of the Brazilian economy. It is a developing economy, in which state enterprises were dominant if not monopolist in many industries before privatization and liberalization in the 1990s, markets are often concentrated and entry is difficult. There are credit and financial constraints and most firms are family owned, with no publicly held shares. In many cases (e.g., the financial sector) a structural solution may not be feasible as potential competitively strong buyers would be dominant players themselves.

On the theory of harm analysis, the different remedies may address a number of concerns. Table 1 reviews merger cases from 2010 to 2015, a period with active remedies policy, as seen above, and a period with both structural and behavioral remedies. Table 1 presents a list of remedies types (including whether structural or behavioral) and the theory of harm. The takeaway from the Table 1 is the connection between the theory of harm and the chosen remedy used. Interestingly, the same competitive situation (e.g., rivalry) may have more than one solution, as the sale of assets or a no merger period for the merging parties. An explicit link between the theory of harm and the antitrust remedy is a necessary condition for remedy effectiveness as seen in the merger remedies review section above. Table 1 also suggests that, in the case of Brazil, the horizontal merger competitive harm and structural remedy, and the vertical harm and behavioral remedy nexus is observed.

From 2006 to the end of the first 2000's decade, a number of court reversals of unilateral remedies or compliance failures shifted policy towards the use of negotiated (agreement) remedies. Agreements have the advantage that they impede merging parties' judicial review initiatives, as the firm signed a contract with the Authority. No court would consider a case when administrative procedures

**Table 1**
Theory of harm and detailed type of remedy imposed, 2010–2015, Brazil.

| Remedy type | Theory of harm | | | | | |
|---|---|---|---|---|---|---|
| | Entry | Vertical foreclosure | Rivalry | Rivalry and entry | Horizontal rivalry and vertical foreclosure | Total |
| Asset Sale (S) | 5 | | 9 | 6 | 2 | 22 |
| Temporary embargo of M&A (S) | 1 | | 7 | | | 8 |
| Franchisee contractual revision (S) | 2 | 1 | 3 | | | 6 |
| Capacity expansion embargo (S) | | 1 | 4 | 1 | | 6 |
| Sale compulsory licensing IP (S) | 2 | | 2 | 3 | | 7 |
| Minority shareholding sale (S) | | | 4 | | 3 | 7 |
| Mandatory notification of M&A (B) | | 1 | 11 | | 1 | 13 |
| Innovation / Quality commitment (B) | | | 4 | 1 | 1 | 6 |
| Transparent prices to 3rd parties (B) | | 4 | | | | 4 |
| Non-discrimination commitment (B) | | 7 | | | | 7 |
| Chinese wall (B) | | | 3 | | | 3 |
| Vertical contract amendment (B) | | 3 | 1 | 1 | | 5 |
| Total | 10 | 17 | 48 | 12 | 7 | 94 |

*Note:* (S) — Structural remedy; (B) — Behavioral remedy.
*Source:* Authors' survey of remedies merger cases for UNDP/CADE.

have not been exhausted (and the Agreement may be in place for a number of years). In case of non-compliance with the remedy Agreement (the main worry of opportunistic behavior in the economic sense), the Agreement allows parties to be brought to courts by CADE for breaching a voluntary commitment in a contract. This avoids the discussion of the merit of an antitrust decision of a party in courts. Clearly this would make the Agreement more enforceable, making the remedy more effective. Interestingly, CADE's Agreement negotiating teams did include a legal office member, in addition to the reporting Commissioner and its staff, or the SG, so to make the Agreement more enforceable. Last but not least, there is information revelation in an Agreement, either on the business that will be sold or business practices to be fulfilled in case of behavioral remedies.

On the other hand, to entice firms to come to the negotiating table, in an ex-post-merger analysis, the level of restrictions seen on the remedy contract could be less than an outside option of stricter unilateral remedies. Otherwise the firm would not commit itself to an agreement, choosing to stick to the outside option that can always be challenged in courts (CADE's rulings are under administrative law). The authority faces a trade-off with remedies' agreements: increase the likelihood of remedy compliance, while reducing the extent or "intensity" of the remedy to entice the merging parties to sign it.

Two examples show the difference between remedies agreements over time. The Medley generic pharmaceutical manufacturer acquisition by Sanofi-Aventis raised competition concerns in a number of relevant markets in 2010 (under the ex-post-merger analysis framework). The remedy agreement was the sale of the intellectual property, licenses and know-how to manufacture two drugs. While the sale included "associated knowledge and licenses required for the retail of the drugs" the Agreement was written in general terms. The Agreement did not see any monitoring of the sale conditions or hold-separate clauses. The agreement had just 5 pages. It is possible that such a hands-off approach to the merger remedy was a bargaining strategy by CADE to attract the parties to the Agreement, one of the few at that time.

The Continental–Veyance 2015 case stands in sharp contrast. It was held under the new law, ex-ante merger analysis. The 20 plus pages of single space small font agreement has details on terms and obligations to the parties. It saw the use of both sale trustee and a monitoring trustee. It required monthly monitoring reports on day-to-day business to guarantee that assets were not being depleted, and reports on the sale steps. This was an international merger, with notifications in Europe and Mexico. Close collaboration with international agencies is highlighted in the Reporting Commissioner's vote. We believe that this case led to a significant leap in the remedies learning curve by CADE.

CADE also progressively altered the sale process. A unilateral decision by the Authority often prescribed a time frame for the sale of a specific asset. But what happens if the sale period is not met but is central to the effectiveness of the remedy, as any backward induction game analysis would indicate. Over time CADE has been able to impose as remedy a no minimum-price auction to the sale of remedy business (one can compare once again the Sanofi-Aventis–Medley remedy case, 2010, with the Votorantim–AcelorMittal case, 2018). In general, this is a second round of sale efforts. Given the drastic fire sale, "$1 bid for a $1 million asset" as a lawyer once put it, CADE accepted that firms take complete control over the sale process (who to sell to, price, means of payments, bargaining contingencies) in a first round sale attempt. The sharp low value of the outside option for a firm not to meet the first round of the sale deadline seemed to provide reasonable incentives for the firm to commit to a timely sale. CADE had been able to sustain in courts that such no-minimum price did not correspond to a "seizure" of private property, protected under constitutional rights.

As another small but important change, our analytical framework led to potentially more effective remedies: firms agree that the remedy agreement is an executive non-judicial contract that parties abide to. This reduces enforcing costs to the Authority and mitigates procrastination strategies by parties. In general, the Brazilian codes required that parties must show that the party against whom a complaint was lodged should be informed by the complainer party of the contract breach ("extrajudicial notification") and that efforts towards an amiable settlement have been unsuccessful, before denouncing a contract to the courts. From 2012, CADE has required a statement in the ACC's that says that the remedy agreement is such an extrajudicial notification and that parties are considered informed of possible complaint by the Authority using a simple letter, as well as stating that there will not be further renegotiation of terms. This implies that when the firm does not abide by a letter requesting that the breach of the ACC be met in a given period, judicial review is agreed by both Authority and Firm.

Certainly, one could argue that the stricter or more commanding ACC's between CADE and the parties over the past decade have been the result of a stronger bargaining position by CADE. While the legal codes have changed in the benefit of the Authority in case of agreements, particularly in the face of judicial review, it appears that CADE has "gained teeth" and presented "credible threats" using a game theoretical term (OECD, 2019). In 2017, four large mergers were blocked. The argument was either that (i) the required remedy amounted to near half or even more of the merger; (ii) parties did not come with credible, constructive agreements, leaving ample space for holdup or renegotiation; (iii) the parties' proposed remedies were insufficient to meet the competitive problems; (iv) practical implementation issues, or an overreliance on the parties' proposition of behavioral remedies, led to too high a risk of an infeasible merger remedy. The higher number of blocked mergers signaled that the outside option of no merger should be part of the merging firms' decision set.

To provide details on the remedies in mergers, Table 2 lists the remedies' cases from 2016 to 2019. It highlights the competitive harm, whether the remedy was structural or behavioral or both, whether trustees were involved and comments on the case. Readers are referred to the table for case details. From 2015 the Authority discussed the issue of a Remedies Guide. Table 2 presents cases negotiated while the Guide background studies were prepared. The cases show the Remedies Guide policy in practice. Not only principles on the scope of remedies were put forward, but negotiation principles were stated as well. In some cases, such as the time frame for structural and behavioral remedies, the Guide serves as an anchor for bargaining process between the firm and the Authority.

The Remedies Guide focus on structural, rather than behavioral remedies, stems clearly from the significant transaction costs associated with the latter. While the sale of a business is no easy task, the cost to the Authority of handling the (i) monitoring (ii) complaint investigation of day-to-day business practices with potentially large number of clients for a long time is too resource consuming for the Authority.

In behavioral remedies the Authority has pointed to both market based monitoring, where competitors in vertical cases in particular, can complain to CADE that the firm is breaching the agreement terms; and arbitrage solutions in such cases. First, by requesting transparent transaction terms to the many buyers of services from the merging parties, it helps third parties to spot discriminatory treatment. Second, the use of arbitrage is positive as the Authority does not want to be tangled into a legal debate of intent to harm competitors and the extent of such breach while only a business dispute between buyer and seller is at play. An example of the use of an arbitrageur to handle a remedy breach was in the BMF&Bovespa/Cetip stock exchange and equity registrar case. An entrant argued that B3, the resulting merged firm, was unduly restricting access to equity registration or handling.

Of interest to this paper is the increasingly important role of trustees. They did not exist up to 2010 and started appearing in ACCs up to the point that almost all remedies now see the presence of at least one trustee type.

The first reference to a Trustee in a merger remedy can be traced to the Munksjö–Ahlstrom case in 2013 (see Table 2 for the list of cases with trustees before 2016). It was a case where remedies were imposed in Europe, by the DGComp and the European Union. The relevant market structure in Brazil reflected the European setting, so European case remedies were imposed in Brazil as well. Parties agreed to waive access to confidential information abroad to CADE, contributing to close international cooperation with the European Authority. The European remedy saw the use of monitoring and sale trustees and provided an important learning opportunity for CADE. From the Brazilian perspective, it was a relatively small case, where theories of harm were clear and

**Table 2**
Comments on Trustee cases before 2016.

| Case | Year | Horizontal / vertical | Structural / behavioral | Trustees | Comments |
|---|---|---|---|---|---|
| Ball–Rexam | 2015 | Horizontal | Structural | Monitoring | Competitive harm on aluminum beverage cans and caps. Sale of assets. Behavioral supply obligations to disinvested plants (08700.006567/201507) |
| Dabi–Gnatus | 2015 | Horizontal | Structural | Sale | Competitive harm on dental clinical sets. Sale of Gnatus brand and intangible assets (08700.001437/201570) |
| GSK–Novartis | 2015 | Horizontal | Structural | Monitoring and sale | Competitive harm on nicotine product. Sale of pharmaceutical product, including tangible and intangible assets (08700.008607/2014-66) |
| Continental–Veyance | 2015 | Horizontal | Structural | Sale and independent disinvestment unit manager | Competitive harm on springs and conveyor belts. International cooperation. Remedies include sale of plant in Mexico and São Paulo (08700.004185/2014-50) |
| Holcim–Lafarge | 2014 | Horizontal | Structural | Monitoring | Competitive harm on cement markets. Sale of assets (08700.007621/2014-42) |
| Munhsjö–Ahlstrom | 2013 | Horizontal | Structural | Monitoring | CADE followed the EU remedy agreement with parties. EU remedy imposed a monitoring trustee. The CADE agreement does not require monitoring trustee as it is located in Europe and would report to DGComp (08700.009882/2012-35) |

*Source:* Case documents at CADE's website (http://en.cade.gov.br/).

international cooperation was key, given merger parties' production capabilities around the globe.

The second use of trustees is again in an international merger, Holcim–Lafarge, with remedies imposed in many jurisdictions. In Brazil it is important to highlight that it was the first case with a "fix-it-first" agreement proposal by merging parties. In other words, the merger was presented with a concomitant antitrust case of the sale of assets to a third party to mitigate antitrust concerns anticipated by the merging parties. The next merger that used trustees is the Continental–Veyance case in 2015. It is, again, an international merger with extensive collaboration across jurisdictions. Based on case documents, the case appears to have provided extensive opportunity to learn about contractual design of a trustee mandate and trustee selection.

In many cases CADE has been imposing audit firms to act as monitoring trustees. They are required to collect and not just audit the information sent by parties to the Authority. From Table 3 it is clear that monitoring trustees are almost a standard feature of agreements, particularly in horizontal mergers with either structural or behavioral remedies. In 2017 and 2018 all merger cases with remedies used a monitoring trustee. Hold separate managers are used in structural remedies as a rule, except in the LATAM-BA case (where the structural solution was partly regulatory, on airport slots) and Bayer–Monsanto case. This latter case may require a few comments. The hold separate manager was not used as the parties presented a fix-it-first solution, with a potential buyer agreement to much of the disinvested assets (in cotton, corn and soy). CADE did not impose seed traits compulsory licensing, but only non-discriminatory behavior. Note that previous Monsanto cases at CADE forbade exclusive dealing of seed traits licensing (in the early 2000's), blocked the use of licensing fees that generated a de facto exclusive dealing (in 2013) and, more importantly, the separation between the royalties verification system data and the commercial information data activities in the Monsanto Syngenta case in 2014.

Interestingly, trustees have been invoked in abuse of dominance cases as well. For example, in one particular cartel case (Gasol) and another involving an abuse of dominance on port handling operations, CADE has imposed a trustee manager to oversee day-to-day activities. It effectively separated control by owners and management by the trustee. In the case of the fuel cartel, prices have fallen by more than 10% after the trustee came into action.

Agreements have become more careful when wording the required divestiture. Recent cases have used expressions such as "physical assets, intangible assets, input contracts, personnel and any other inputs required to the proper functioning of the business unit" or "all related assets and rights" to characterize the structural remedy. This broad wording recognizes that a firm may be a collection of resources and not just the sum total of its physical assets, a costly idea in transaction cost literature. In addition, to guarantee that the remedy business is sold as a viable competitor and is not depleted during the sale process, Agreements have imposed that remedy assets maintain their pre-merger revenue or market share levels (e.g., the Sadia-Perdigão merger in 2012). It shifts the focus of what is sold, from a description of assets, to an economically meaningful unit.

Nevertheless, the harsh realities of remedies Agreement contract incompleteness appeared in recent cases where firms have not been able to meet the divesti-

**Table 3**
Comments on Remedies cases, 2018–2019.

| Case | Year | Horizontal / vertical | Structural / behavioral | Trustees | Comments |
|---|---|---|---|---|---|
| Disney–Fox | 2019 | Horizontal | Structural | Monitoring, sale and independent disinvested unit manager | TV content. Competitive harm on market for sports channels. Required the sale of sports channel FoxSports. Behavioral remedy not accepted by majority of CADE; behavioral without trustee; price formulae; International coordinator with similar remedies in Mexico (08700.004494/2018-53) |
| SM–All Chemistry | 2019 | Horizontal | Behavioral | – | Competitive harm on pharma market. Merger ban 2 years (08700.005972/2018-42) |
| Intermédica–Mediplan | 2019 | Vertical / horizontal | Behavioral | Monitoring | Competitive harm on both health services (hospital) and managed care (health insurance). Main theory of harm explicit: Non-discrimination at integrated hospital; no exclusive agreements health plan- hospitals. Uses audit firm as monitoring trustee. Minority opinion for structural remedies. (08700.005705/2018-75) |
| GlaxoSmithKline–Pfizer | 2019 | Horizontal | Structural | Monitoring, sale and independent disinvested unit manager | Competitive harm on pharma market. Fix it first solution with buyer found by the time ACC signed. Buyer is pharma company at other ATCs. (08700.001206/2019-90) |
| Prosegur Transvip | 2019 | Horizontal | Behavioral | – | Competitive harm on cash/valuables in transit market. Merger ban 3 years (08700.003244/2019-87) |
| Praxair–Linde | 2018 | Horizontal / vertical | Structural | Monitoring, sale and independent disinvested unit manager | Competitive harm on industrial gases manufacturing and distribution markets. If sale not met, CADE may impose sale directly (08700.007777/2017-76) |
| Itaú–XP | 2018 | Vertical | Behavioral | Monitoring | Main theory of harm explicit: Vertical integration on the distribution of investment funds by independent investment platforms such as XP. Minority opinion to block merger (08700.004431/2017-16) |
| Weg–TGM | 2018 | Vertical | Behavioral | Monitoring | Theory of harm explicit: Non-discrimination by manufacturer (Weg) to sale turbine parts to non-integrated. Uses audit firm as monitor on reports (08700.008483/2016-81) |
| Petromex –Petrobras | 2018 | Vertical | Behavioral | Monitoring | Specific price, volume and quality contracts between merger parties and non-integrated downstream plant. Use of audit firm as monitor (08700.004163/2017-32) |
| Bayer Monsanto | 2018 | Horizontal / vertical and conglomerate | Behavioral / Structural | Monitoring | Competitive harm on seeds genetic traits and herbicides markets; non-discrimination to non-integrated up/downstream (licensing, exclusive agreement sales; no bundling). Structural remedy: sale of traits and herbicides. Fix it first. International coordination.<br>Minority opinion to block merger or broader structural remedies (08700.001097/2017-49) |
| ArcelorMittal–Votorantim | 2018 | Horizontal | Structural | Monitoring | Competitive harm on specific steel products. Sales of plant(s); commissioner claims there are behavioral remedies, but those are required actions to maintain remedy assets valuable. Note: if no sale, CADE may auction assets (08700.002165/2017-97) |

(continued on next page)

**Table 3** (continued)
Comments on Remedies cases, 2016–2017.

| Case | Year | Horizontal / vertical | Structural / behavioral | Trustees | Comments |
|---|---|---|---|---|---|
| ATT–Time Warner | 2017 | Vertical | Behavioral | Monitoring | Behavioral remedy of non-discrimination treatment of non-integrated content at Sky and distribution of TimeWarner content to other cable/satellite TV distributors. Requires use of arbitrage to solve disputes with third parties before they go to CADE. International coordination (08700.001390/2017-14) |
| Itaú–Citibank | 2017 | Horizontal | Behavioral | Monitoring | Competitive harm on banking services market. Remedies: consumer switch costs reduction. Merger ban 2.5 years. External audit to report compliance (08700.001642/2017-05) |
| Dow–Dupont | 2017 | Horizontal | Structural | Monitoring, and Sale and Independent disinvested unit manager | Competitive harm on corn seed traits and on specific herbicides. Fix-if-first. Sale trustee may have bonus based on transaction value obtained. International coordination. (08700.005937/2016-61) |
| BMF–Cetip | 2017 | Horizontal / Vertical | Behavioral | Monitoring | Competitive harm on financial assets deposit services. Private regulation body to set prices; non-discriminatory treatment of other exchanges. Arbitrage required in case of unfair treatment accusation (08700.004860/2016-11) |
| TAM–Iberia BA | 2017 | Horizontal | Structural / Behavioral | Monitoring | Competitive harm on LON-SAO route: slots to competitors; capacity requirements; new routes, Brazil-Europe. (08700.004211/2016-10) |
| GIC | 2016 | Vertical | Behavioral | Monitoring | Competitive harm on credit bureau market. GIC is a JV by largest banks. Non-discriminatory information flow or prices to non-integrated bureau or banks. Monitoring by independent audit firm (08700.002792/2016-47) |
| Reckitt–Hypermarcas | 2016 | Horizontal | Structural | Monitoring and sale trustee | Competitive harm on condoms and lubricants markets. Portfolio concerns. (08700.003462/2016-79) |
| HSBC–Bradesco | 2016 | Horizontal | Behavioral | Monitoring | Competitive harm on banking services and credit markets. Merger ban 2.5 years; remedies to minimize consumer switch costs. Monitoring by independent audit firm. (08700.010790/2015-41) |
| SBT Record RedeTV | 2016 | Horizontal | Behavioral | – | Competitive harm on TV content transmission rights. Smaller open TV channels coordinate prices and bundle themselves on deals with operators. Pricing rules imposed not to abuse smaller operators (MFN) (08700.006723/2015-21) |
| Itaú–MasterCard JV | 2016 | Vertical | Behavioral | – | Competitive harm on payment market. Issuer and Scheme to launch new scheme. Non-agreement (no ACC). Behavioral non-discrimination remedies (08700.009363/2015-10) |
| Saint-Gibain–SiCBRAS | 2016 | Vertical / Horizontal | Behavioral | Monitoring | Competitive harm on abrasive based products. JV for dedicated abrasive plant in Paraguay. Remedy imposed cost based price for integrated firms (no double marginalization). Information separation for non-coordination. Monitoring by independent audit firm (08700.010266/2015-70) |

*Source:* Case documents at CADE's website (http://en.cade.gov.br/).

ture commitments. In the 2014 ruling of the Via Varejo (Casas Bahia/Ponto Frio) merger parties agreed to the sale of a large number of appliances retailer stores in concentrated markets. The unforeseen economic crisis in 2015–2017, where GDP per capita fell by more than 10%, saw the lack of interest of competitors or an entrant to acquire the stores, when competitors were themselves downsizing and closing unprofitable stores. CADE allowed the closing of the remedy stores. As of 2020, CADE is deciding on blocking the Disney-Fox 2019 merger in Brazil (see Table 3). No buyer of the Fox Sports channel (with its programming rights of national and continental soccer championships) was found.

In short, the recent experience of CADE with antitrust remedies can be understood from a transaction cost / principal-agent framework. Since 2010 there has been a shift towards Agreements instead of unilateral remedies imposed, the use of arbitrage to solve third parties complaints, more detailed Agreements with broader scope of assets to be sold in case of structural remedies and extensive use of trustees.

## 5. Concluding comments

The goal of this paper was to present the recent experience of the Brazilian Antitrust Authority, CADE, with merger remedies. The presentation was structured by the use of the transaction cost / principal-agent under asymmetric information theoretical framework. It provides a rationale to many of the directives stated in the recently published Antitrust Remedy Guide by CADE.

The paper highlighted that many of the merger remedies' principles seen in international organizations' guidelines and many jurisdictions seek to solve the problems associated with incomplete contracts, to mitigate transaction costs and align incentives as much as possible under a principal-agent perspective. This view supplements the more common economic analysis recommendation that effective remedies must address a clearly stated, proved theory of harm from a merger.

From this perspective, remedies' practice also reflects the goal of enhancing the Authority's bargaining position by closing opportunistic behavior loopholes in incomplete contracts. The extensive use of trustees, from non-existent as early as 2013 to default setting in 2018, reflects the perception of the urgent need to circumvent the recognized information asymmetries between the Authority and the merging firms. The interaction and cooperation with other jurisdictions Antitrust Authorities in international merger cases was central to the use of trustees.

In general, merger remedies practice reflects specific market structure and institutional settings. The paper has shown that, while a local variety of remedies have been used, in most aspects the remedies are not radically different from other countries, given the observed competitive malaises that appear in some mergers. The tropical antitrust medicine, as a figurative language to the remedies practice in Brazil, appears to be explained and directed to universal Competition Policy practice and issues. At the same time, the non-uniqueness of the Brazilian experience can help other countries consider their remedies, particularly in the case of younger agencies, both in tropical and temperate weather locations.

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## References

ACC (2011). *Merger guidelines*, updated version. Australian Competition & Consumer Commission.

Autorité de la Concurrence (2013). *Lignes directrices de l'Autorité de la concurrence relatives au contrôle des concentrations*. République Française.

Avdasheva, S., & Radchenko, T. (2017). Remedies in BRICS Countries: Are there lessons from and for competition economics? In T. Bonekele, E. Fox, & L. Mncube (Eds.), *Competition policy for the new era: Insights from the BRICS countries* (pp. 160–172). Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198810674.003.0009

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2010). *Economics of strategy* (5th ed.). New York: Wiley.

Bickenbach, F., Kumkar, L., & Soltwedel, R. (1999). The new institutional economics of antitrust and regulation. *Kiel Working Papers*, No. 961, Kiel Institute of World Economics.

Cabral, P., & Mattos, C. (2016). Remédios em atos de concentração: Teoria e prática do CADE [Merger remedies: Theory and practice by CADE]. *Revista de Direito da Concorrência, 4*(1), 57–94.

CADE (2016). Guia: Análise de atos de concentração horizontal [Horizontal merger guidelines]. Conselho Administrativo de Defesa Econômica, Brasília.

CADE (2018). Guia de Remédios Antitruste [Antitrust remedies guide]. Conselho Administrativo de Defesa Econômica, Brasília.

Coleman, M., & Weiskopf, D. (2019). Economic analysis of merger remedies. In R. Harty, & N. Kiratzis (Eds.) *Merger remedies guide* (2nd ed., pp. 24–34). Global Competition Review.

Cosnita, A., & Tropeano, J.-P. (2009). Negotiating remedies: Revealing the merger efficiency gains. *International Journal of Industrial Organization, 27*(2), 188–196. https://doi.org/10.1016/j.ijindorg.2008.06.003

CCUK (2008). *Merger remedies: Competition Commission guideline*s. UK Competition Commission.

Dertwinkel-Kalt, M., & Wey, C. (2016). Structural remedies as a signaling device. *Information Economics and Policy, 35*(C), 1–6. https://doi.org/10.1016/j.infoecopol.2016.03.002

Davis, P., & Garcés, E. (2009). *Quantitative techniques for competition and antitrust analysis*. Princeton: Princeton University Press.

DG COMP & EC (2005). *Merger remedies study*. EU Directorate-General for Competition & European Commission.

DOJ (2011). *Department of Justice policy guide to merger remedies*. Washington, DC: US Department of Justice.

EU (2013). *Mergers: Overview*. https://ec.europa.eu/competition/mergers/overview_en.html

FTC (1999). A study of the Commission's divestiture process. Washington, DC: Bureau of Competition of the Federal Trade Commission. .

FTC (2017). FTC's merger remedies 2006–2012: A report of the Bureaus of Competition and Economics. Washington, DC: Federal Trade Commission.

Hart, O. (2017). Incomplete contracts and control. *American Economic Review, 107*(7), 1731–1752. https://doi.org/10.1257/aer.107.7.1731

IBRAC (2018). *Merger control in Brazil: Frequently asked questions*. São Paulo: Istituto de Estudos de Concorrencia, Consumo e Comercio International.

ICN (2005). *Merger remedies review project.* Report for the fourth ICN annual conference, Bonn, June 2005. International Competition Network.

ICN (2016). *Merger remedies guide*. International Competition Network.

Joskow, P. (2002) Transaction cost economics, antitrust rules and remedies. *Journal of Law, Economics and Organizations, 18*(1), 95–116. https://doi.org/10.1093/jleo/18.1.95

Kwoka, J. (2015). *Mergers and merger remedies*. Cambridge, MA: MIT Press.

Kwoka, J. (2019). *Principals, agents, and the economics of merger remedies*. Presentation at OECD Competition Committee in Paris, France, June 2019.

OECD (2012). Remedies in merger cases. *OECD Policy Roundtables, 2011*.

OECD (2019). *OECD peer reviews of competition law and policy: Brazil 2019*. Paris: OECD.

Page, W. (2015). Optimal antitrust remedies: A synthesis. In R. Blair, & D. Sokol (Eds.), *The Oxford handbook of international antitrust economics* (Vol. 1, pp. 262–267). Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199859191.013.0011

Pereira Neto, C. M., & Furquim, P. (2015). Remédios no âmbito de acordos em controle de concentração (ACCs): Um balanço dos primeiros anos da Lei 12.529/2011 [Remedies and ACC's a survey of the first years of Law 12.529/2011]. In V. M. Carvalho (Org.), *A Lei 12.529/2011 e a nova política de defesa da concorrência* (1st ed., pp. 221–254). São Paulo: Singular.

Radchenko, T., & Avdasheva, S. (2014). Antimonopoly conduct remedies and marketing decisions of dominant companies in non-regulated industries: Russian experience. *Global Marketing Conference, 2014: Global Marketing Conference at Singapore*, pp. 1788–1797. https://doi.org/10.15444/GMC2014.09.06.03

Ribeiro, E. P., Pires-Alves, C., & Prado, L. C. D. (2018). Antitrust and competition policy in Brazil. In E. Amann, C. R. Azzoni, & W. Baer (Eds.), *The Oxford handbook of the Brazilian economy* (pp. 718–739). New York: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190499983.013.36

Soares, M., Zuccolo R., & Camara, P. (2019). Brazil. In R. Harty, & N. Kiratzis (Eds.), *Merger remedies guide* (2nd ed., pp. 190–200). Global Competition Review.