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DETERMINANTS OF MERGER REVIEW DECISIONS: AN ASSESSMENT OF THE BRAZILIAN ANTITRUST AUTHORITY'S CAPABILITIES AND THE INFLUENTIAL ROLE OF ANTITRUST COMMISSIONERS

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To my wife, Isabel, and Henrique, our newborn son, who was not here when this thesis began, but is in my arms to celebrate this moment. And to my family and friends who are always in my heart.

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ABSTRACT

Merger reviews are institutionalized and customized analyses of mergers and acquisitions by antitrust authorities which result in approvals or disapprovals of the strategic intents of firms. In view of the wide variety of agents whose lives may be changed by a merger review, the fact that different stakeholders might induce a government intervention on a particular deal, and the central role of antitrust commissioners in this context, the general aim of this thesis is to examine the determinants of merger review decisions, but particularly those related to commissioners' personal attributes, values and interests. Additionally, some structural and procedural issues contained in the antitrust regulatory sphere as well as control variables related to other perspectives of analysis are included as part of this empirical analysis. To achieve the mentioned general objective and other specific goals, a unique dataset was built that covers a fourteen-year period of competition regulation in Brazil. The sample of this study comprises 30,543 votes by 36 different panel members on 5,091 transactions examined through ordered probit models.

This thesis, mainly, reveals that 'political ideology', 'prior work experience in the public service' and 'human capital' of antitrust commissioners, in addition to the size of commissions' voting panels, affect consistently merger review verdicts. In short, under the PSDB presidential administration, for example, transactions were less challenged in Brazil. Regarding the 'public service experience', commissioners who have predominant prior job or professional association in Education, Health and Social areas, inversely to 'political ideology', increase the likelihood of high levels of intervention in private deals. Additionally, commissioners' accumulated skills and knowledge – the 'human capital' – also affect positively law enforcement on merger reviews. The implications of this particular contribution to public administration follow the same path of 'public service experience': if societies do not pressure politicians to improve public service, considering not only a remarkable knowledge in Law or Economics to appoint a commissioner, but having a broader view of individuals' motivations and pretension, interferences between 'concepts, principles and norms' stated in laws, and law enforcement will continuously occur. The last consistent result shows that the likelihood of the Brazilian authority to impose significant changes to firms decreases the greater the voting panel. Thus, this thesis suggests to antitrust policymakers that wide ranges of minimum and maximum *quorum* in voting panels must be avoided. To the best knowledge of this thesis author, there is not any past research that found such results. It means a unique contribution to the antitrust and management literatures.

RESUMO

Atos de concentração são processos de análise institucionalizados e customizados de fusões e aquisições, realizados por autoridades antitrustes, que resultam na aprovação ou bloqueio dos intentos estratégicos das firmas. Em vista da grande variadade de agentes cujas vidas podem ser afetadas pelos atos de concentração, do fato de que diferentes agentes podem induzir uma intervenção do governo em uma transação específica e o papel central dos conselheiros antitruste neste contexto, o objetivo geral desta tese é examinar os determinantes das decisões de uma autoridade antitruste sobre atos de concentração, mas particularmente os determinantes relacionados aos atributos pessoais, valores e interesses dos conselheiros. Adicionalmente, alguns fatores contidos na esfera regulatória antitruste são considerados nesta análise empírica. Para que o objetivo geral mencionado e outros específicos sejam alcançados, um banco de dados único foi construído e cobre um período de catorze anos de regulacão no Brasil. A amostra deste estudo, então, contém 30,543 votos de 36 diferentes membros do CADE sobre 5,091 transações. Modelos probit ordenados são usados para a análise dos dados. Esta tese, principalmente, revela que 'ideologia política', 'experiencia prévia de trabalho no setor público' e 'capital humano' dos conselheiros antitruste, somando-se ao tamanho do plenário votante, afetam consistentemente os veriditos de atos de concentração. Em resumo, sob a administração federal do PSDB, por exemplo, as transações foram menos alteradas no Brasil. Quanto à experiência no serviço público, os conselheiros que tiveram atuação profissional predominante nas áreas de Educação, Saúde e Assistencia Social, inversamente à 'ideologia polítical, aumentam a probabilidade de altos níveis de intervenção estatal em acordos privados. Adicionalmente, habilidades e conhecimento acumulados dos conselheiros, o chamado 'capital humano', também afetam positivamente o nível de emprego da lei em atos de concentração. As implicações destes achados para a administração pública seguem um mesmo caminho: se a sociedade não pressionar os políticos a aperfeiçoarem o serviço público, considerando-se não somente o notável saber jurídico ou econômico para a nomeação de um conselheiro, mas tendo uma visão mais ampla das motivações e pretensões dos indivíduos, interferências continuarão a existir entre 'conceitos, principios e normas' anunciados pela lei e a lei aplicada. Por fim, como último resultado consistente, a probabilidade de que a autoridade antitruste Brasileira imponha mudanças significativas às firmas decresce à medida que os conselheiros habilitados para votar são mais numerosos. Portanto, esta tese sugere aos formuladores de políticas que sejam evitados intervalos largos entre o mínimo e o máximo de votantes.

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LIST OF ABBREVIATIONS

BCPS – Brazilian Competition Policy System

CADE – Brazilian Administrative Council for Economic Defense

CH – Chairman

DOJ – Department of Justice of the United States

EC – European Commission

EU – European Union

FTC – Federal Trade Commission of the United States

HSR – Hart-Scott-Rodino

M&A – Mergers and Acquisitions

PAC – Growth Acceleration Program

PN – Voting panel

PSDB – Brazilian Social Democracy Party

Pseudo R^2 – Likelihood Ratio Chi-Square

PSM – Public Service Motivation

PT – Workers' Party

RC – Reporting-commissioner

SBDP – Brazilian Society of Public Law

SCP – Structure-Conduct-Performance

SDE/MJ – Secretariat of Economic Law of the Ministry of Justice

SEAE/MF – Secretariat for Economic Monitoring of the Ministry of Finance

US – United States of America

VIF – Variance Inflation Factor

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1 INTRODUCTION

1.1 The ‘merger review’ phenomenon and the central role of antitrust commissioners

Mergers and acquisitions have long been a huge concern to antitrust authorities worldwide, mainly those transactions which imply horizontal or vertical integration (CHURCH; WARE, 2000; HANKIR *et al*., 2011; WANG; RUDANKO, 2012). Since the beginning of the twentieth century, national and community governments have institutionalized reviews of M&A because these transactions can limit or otherwise restrain open competition or result in the control of markets by the transacting parties (BITTLINGMAYER, 1992; WESTON *et al*., 2003; BRUNER, 2004; GAUGHAN, 2011). These reviews, so-called ‘merger reviews’, cover economic as well as legal aspects of the transacting firms and their agreements with a specific final aim: the approval or disapproval of the firms’ arrangements.

In general terms, firms engaged in a relevant merger or acquisition must submit their agreement to the antitrust authorities responsible for the markets potentially affected by the deal.[1] The regulators analyze the potential impact of the respective combination of businesses on the level of competition, usually by measuring the probability of the firms being able to exercise market power. If the antitrust authority concludes that the deal could lead the firms to exercise market power and, at the same time, it does not see enough efficiencies to compensate for the loss of competition under its jurisdiction, the regulators may completely block the applicants’ transaction, or they can impose or negotiate conditions with the merging firms – known as ‘remedies’ – to let them consummate the deal. Conversely, if the antitrust commission has no concerns regarding the possibility of the firms exercising market power as a result of the merger under review, the intent of the applicants is approved without restrictions.[2]

By definition, ‘market power’ is the ability to profitably raise prices above the competitive level, which means price above marginal cost (SALOP, 1987; CHURCH; WARE, 2000). In

[1] Each national or community jurisdiction has its own criteria for submission stated in the competition law. Transactions between global firms tend to affect territorial markets under different antitrust jurisdictions.
[2] Antitrust guidelines throughout the world provide a script of economic and judicial fundamentals regarding the assessment of the potential creation of market power under each merger review that serves to standardize each antitrust authority’s decision process (OLIVEIRA; RODAS, 2004).

the context of merger reviews, the exercise of market power is characterized by whether the merging firms are able to limit competition for a product or a portfolio of products in a certain geographic area – by eliminating competitors, restricting other players' access to sources of raw materials, raising entry barriers to the market, or implementing other effective anticompetitive strategies – and are also able to increase both prices and profits significantly and permanently, with the gains arising at the expense of customers (SCHERER; ROSS, 1990; MELLO, 2002; NUSDEO, 2002; SCHEFFMAN *et al*., 2003; BERGMAN, 2005; CADE, 2007; GAMA; RUIZ, 2007; DEVOS *et al.*, 2008; EREL, 2011; GABAN; DOMINGUES, 2009; FINKELSTEIN; FINKELSTEIN, 2012; WANG; RUDANKO, 2012).[3] Because consumer welfare is considered one of the ends of antitrust policies, antitrust agencies are supposed to act by controlling potential harmful transactions.[4]

However, it is not only citizens' wellbeing that drives or is affected by antitrust authorities' decisions in merger reviews. Governments bargain with so many actors and they must serve so many different interests (STIGLER, 1971; SPILLER, 1990; MINTZBERG, 1996; EVANS; SALINGER, 2002; SETH, 2004; RASIAH *et al*., 2010; DICKEN, 2011) that regulators are constantly immersed in a conflictual, controversial and contentious environment (LAWRENCE; ABRAMSON, 2014) no matter their level of decisional autonomy. Merger reviews, thus, are not a 'by-the-book' task.

Interest groups, on the one hand, seek political support to exert influence over public officers. Politicians, eager for campaign contributions, electoral support or personal benefits, work for their 'clients' by pressuring or controlling agencies and regulators (COATE *et al.*, 1990; COATE; KLEIT, 1998; COATE, 2002; MIWA; SAMSEYER, 2005; OLSHFSKI; CUNNINGHAM, 2008; BERGMAN *et al*., 2010). On the other hand, interest groups also reveal their concerns and wishes regarding a transaction by responding to the formal requirements of the authorities during the investigation phase.[5] In this case, the interest groups may not resort to intermediaries because they have a chance to exert influence over public

[3] See Price (1989) for a focused debate on the definitions of 'market power' and 'monopoly power' in antitrust analysis.
[4] Although the need for competition policies is not equal all over the world – see Crandall and Winston (2003), Baker (2003) and Aktas *et al*. (2004; 2007) for some arguments – most well-stablished competition systems highlight the role of social wellbeing in antitrust activism. According to Evans (2012, p. 549), some statutes are based on consumer welfare, while others, "[…] such as Australia, New Zealand, South Africa and Norway, have statutory obligations to consider total welfare […]."
[5] See Calvani and Alderman (2010, p. 135-140) for an overview of 'third party involvement' in different antitrust jurisdictions.

officers, too. In addition, interest groups may proactively and publicly advocate for a decision that better fits their respective plans.[6] Thus, substantial exposure of a case in the press can work as a mechanism to pressure regulators (COATE *et al*., 1990; CONKLIN; POCKLINGTON JR., 2000).

Finally, the commissioners themselves – those who address all of the issues above – can also be sources of influence on merger reviews. This idea is based on the assumption that, despite merger reviews' systematization and jurisprudence as well as theories of antitrust law and economics, commissioners' personal attributes, values and interests are inseparable from their professional thoughts while judging (OLSHFSKI; CUNNINGHAM, 2008). Furthermore, it is worth noting that merger reviews are a 'case-by-case' assessment in most jurisdictions, so a final verdict can assume quite different contours when considering the ways that antitrust commissioners can technically interpret some issues, such as the definition of the 'relevant market' and its respective dynamic over time (SALOP, 1987; KRATTENMAKER; PITOFSKY, 1988; MELLO, 2002; KIRKWOOD, 2011; EVANS, 2012; OECD, 2012). As another example for how antitrust regulators' attributes or interests may affect a merger review decision, a commission job can be used by the commissioners themselves as a platform to capture benefits, such as a post-commission job in a regulated firm, industry or, even, at an private advisory office dedicated to regulatory causes (POSNER, 1969; CLARKSON; MURIS, 1981; ECKERT, 1981; COHEN, 1986; CHE, 1995; ZHENG, 2015).

Therefore, based on the wide variety of agents whose lives may be changed by a merger review, the fact that different stakeholders might induce a government intervention on a particular deal, and the central role of antitrust commissioners in this context (SALOP, 1987; LAWRENCE; ABRAMSON, 2014), Cushman (1972) affirms that the success of regulatory commissions strongly depends on the panel members. Despite the long period of time since Cushman's comment, the statement still holds. Lawrence and Abramson (2014, p. 111) argue similarly by declaring that "the selection of the regulators and their successful confirmation by the Congress are a continuing challenge". Miwa and Samseyer (2005, p. 248) suggest that "[…] over-zealous antitrust regulators have done more than their share of harm to the US

[6] In addition to non-procedural political pressure, the merging firms and their competitors, suppliers, employees and customers are usually invited by antitrust authorities to present arguments for or against transactions under review. Thus, different interests are not only expressed through intermediaries to competition agencies but also interested parties have a chance to report and comment on a transaction directly to their respective antitrust authorities.

economy." Thus, the authors clearly highlight the importance of antitrust commissioners to merger reviews and therefore to societies as a whole.

In view of what is stated in the foregoing, the general aim of this thesis is to examine the determinants of merger review decisions, but particularly those related to commissioners' personal attributes, values and interests. Additionally, some structural and procedural issues contained in the antitrust regulatory sphere are included as part of this empirical analysis. Thus, the 'human capital' and other organizational features hereinafter form what will be called *Authorities' Capabilities*. Regarding the sources of information used in this investigation, past research on business and public administration as well as on law and economics, the Brazilian Antitrust Act – Law 8,884/94, and official public merger review reports of the Brazilian Administrative Council for Economic Defense – abbreviated *CADE* in Portuguese – including audio tapes, were essential to the execution of this project. To achieve the mentioned general objective and other specific goals, a unique dataset was built that covers a fourteen-year period of competition regulation in Brazil. The sample comprises 30,543 votes by 36 different panel members on 5,091 M&A judged by the CADE from 2000 to 2013. Finally, regarding the main empirical strategy adopted, *ordered probit* models were designed.

1.2 Research motivations and expected contributions: addressing specific goals of the study

> "It is necessary to disseminate concepts, principles and norms which can guarantee the delicate balance among several interests: normal disputes among enterprises for market share, the defense of the consumers' right and the overall health of national economies. It is a complex task, which, nevertheless, could be facilitated when each of the actors in this process has the required knowledge to act within the limits of the law, as in the norm of civilized societies where Democracy and the Rule of Law prevail." (CADE, 2007, p. 121)

This speech by the Brazilian antitrust authority implicitly addresses some of the reasons for this research and its contributions to the private and public sectors, the academy and citizens in general.

The CADE describes the necessity of disseminating antitrust concepts, principles and norms to facilitate actors' comprehension of the antitrust regulation limits, which is fairly reasonable.

However, it is also important for firms, businessmen, scholars, society and even governments to be aware of how antitrust authorities actually behave and the patterns of their actual decisions over the years.

In other words, it is known that reliable, stable and predictable regulatory frameworks attract investments and increase societies' confidence (MINTZBERG, 1996; OLIVEIRA, 2001; SKAF, 2011). Nonetheless, between 'concepts, principles and norms', and 'practice' there are different opportunities for interference in different realms. The *analytical model for merger review decisions* proposed in Chapter 2, supported by Appendix I, offers a broad spectrum of potential explanations for such interference, which constitutes the first contribution of this thesis. Below, other particular motivations are revealed that are mostly related to the Authorities' Capabilities – which, again, are the focus of this study.

Paradoxically, the content and form of antitrust laws may be the primary sources of bias in competition policy implementation. According to Bruner (2004), the complexity of the laws and their subtleties make antitrust constraints one of the least well-known themes to practitioners in the business field. In addition, in some cases, the texts of the laws are poorly designed, open to criticism and allow diverse interpretations. It is not uncommon to find publications in law and economics that highlight faults or opportunities for the improvement of official documents.[7] The historical overview of the United States' antitrust regulatory system examined in the next chapter, for example, shows that the first antitrust legislation adopted in that country, the *Sherman Act*, failed in the law's wording. Despite the fact that only about one hundred years later Brazil launched its first antitrust law, the same occurred.[8] Baker (2012) reinforces the motivation for this debate while questioning agencies' need to issue so many 'guidelines', 'guidance papers', and speeches to explain the law and enforcement priorities to affected groups. Krattenmaker and Pitofsky (1988), not surprisingly, argue that some antitrust agencies have not enforced their guidelines.

In sum, if the laws' wording allows diverse interpretations and their rules have not been applied, it is plausible to believe that commissioners' personal attributes and values, such as 'educational background', 'motivation for public service', 'experience on the bench' and even

[7] See 'Country reviews of competition policy frameworks' on the OECD website (http://www.oecd.org/daf/competition/countryreviewsofcompetitionpolicyframeworks.htm).
[8] See Pop and Abdala (1997).

‘age’ can be influential to agencies’ performance. This research, then, tests the effects of these factors on merger review decisions.

At the same time, the dissemination of knowledge on antitrust subjects required by the CADE’s speech involves a richer portfolio of analyses than the official rules can offer if the purpose is to reach diverse interest groups. According to Kovacic (2005, p. 197), a former Chairman of the Federal Trade Commission of the United States – FTC, “[…] a current and historically complete enforcement database would promote better understanding and analysis, inside and outside the agency, of trends in enforcement activity.” Breunig *et al*. (2012), taking the same direction, affirm that a database can reveal regulators’ reasoning for their decisions, thus reducing regulatory uncertainty. As a response to both experts’ claims, this investigation accounts for more than 90% of the verdicts on M&A announced by the Brazilian antitrust agency during the period of Law 8,884/94. It is therefore clear that there is a latent motivation, from this thesis author’s perspective, for a dense and comprehensive analytical exercise on the influential role of commissioners’ characteristics on competition law enforcement.

The second possible interference in the application of regulatory concepts, principles and norms, rests on the *political ideology* of state governments as well as on *private parties* and *personal interests*. Commissioners’ interpretation on rules and use of norms may change based on these elements. Aktas *et al.* (2007, p. 1096), for example, state an important conclusion related to these issues: “The authorities themselves claim to be combating monopoly power and protecting consumers. But the last two decades of empirical research has found little supporting evidence for such motives. An alternative is that M&A regulation is actually designed to protect privileged firms.” Discussing divergences and convergences of industrial and antitrust policies, Fagundes (1998) and Horn and Stennek (2007) also seem to suggest that antitrust enforcement can vary based on political ideology and other interests. The authors argue that ‘antitrust policy’ under a ‘structural industrial policy’ can be held through the creation of ‘zones of exception’. Consequently, a set of an industrial policy’s targeted sectors would be considered outside the scope of antitrust policy over a period of time, which would be beneficial for some groups.

This thesis examines, among other features, how Brazilian federal administrations over fourteen years have organized the capacities of the CADE to react against the potential anticompetitive strategies of firms. The OECD (2005) asserts that politics, rather than

expertise, characterized most of the appointments to the Brazilian antitrust council up to that time.[9] Thus, the findings related to a political explanatory variable will lead economic actors and scholars to more accurate measures of the influence of political ideology on the level of merger review enforcement. To illustrate how this issue is addressed later in this thesis, the following question is formulated: Are commissioners appointed by 'liberals' such as former Brazilian President Fernando Henrique Cardoso more interventionist than commissioners appointed by 'statists' such as former President Luiz Inácio Lula da Silva and current President Dilma Rousseff? Additionally, another contribution of this study related to political ideology rests on how two of the largest Brazilian political parties, the Brazilian Social Democracy Party – PSDB and the Workers' Party – PT, have addressed antitrust matters.[10]

Regarding the *private parties* and *personal interests* mentioned earlier, this investigation also intends to enrich the debate on whether at the end of their terms, the voting panelists on antitrust commissions posture to increase their attractiveness to investigated industries or firms or even for post-commission public jobs. The biographical profile of the CADE's commissioners who have served on voting panels from 2000 to 2013 was drawn to make feasible the analysis of public agents' self-interest and third parties' interests in merger reviews.

The third possible interference that can be noted regarding conceived rules and their execution by public agents addresses the *maturity* of antitrust agencies. Actually, it denotes a significant portion of the previously mentioned *Authorities' Capabilities*. As discussed above, the OECD (2005) suggests that, despite the remarkable legal and economic knowledge and unblemished reputation that commissioners should have before presidential appointment, what really counted for antitrust agency nomination in Brazil was politics until the mid-2000s. The 2007 Brazilian Antitrust Authority Management Report not necessarily contradicts the OECD's statement, thus revealing the effects of the authority's youth. The CADE (2007, p. 70) notes that until 2005, the data revealed a "[…] situation of absolute ineffectiveness of administrative activity" but also that 75% of the authority's decisions rendered between 1994 and 2005 on merger reviews 'demanding obligations of firms' – e.g., divestiture or changing contractual clauses – were suspended under court injunctions. In addition, according to the Brazilian

[9] "Nonetheless, there is some disagreement on this issue; a number of practitioners take the view that such politicization has not affected the CADE" (CALVANI; ALDERMAN, 2010, p. 79).
[10] Fernando Henrique Cardoso is a member of the Brazilian Social Democracy Party, while Luiz Inácio Lula da Silva and Dilma Rousseff are affiliated with the Workers' Party.

Society of Public Law – in Portuguese abbreviation SBDP (2011), approximately 80% of the authority's decisions were challenged in court, and many still had no definitive judgment in 2011.

Nusdeo (2002), Gama and Ruiz (2007), and Avellar *et al*. (2012) also agree that, in the early years of norm implementation in Brazil, it was not possible to characterize the decisions of the Brazilian antitrust authority either on merger reviews or on cases of firms' anticompetitive conduct. Nusdeo (2002) particularly emphasizes that the decisions had been based more on the commissioners' background and beliefs than on the basis of the law, while Gama and Ruiz (2007) affirm that the application of economic theory had been quite heterogeneous and did not have the necessary theoretical accuracy. Although, over the years, some progress in the CADE's performance has been observed,[11] it is fair to believe that antitrust laws and guidelines have not been either absolutely applied as economic actors expected or strictly based on official rules. For those reasons, this investigation analyzes the effects of the CADE's annual budget, prior enforcement level on ulterior merger reviews and late-notified mergers to determine whether the pattern of the CADE's decisions varied according to financial robustness and were taken into account by firms before signing new deals. Additionally, some concepts founded on *Traditional Antitrust Economics*, for example the level of integration and relatedness between merging firms, provide some evidence on the application of economic theory in merger reviews under the Law 8,884/94.[12]

Another factor contained in antitrust laws that may vary in enforcement practice is the size of the judging panel.[13] Observing CADE panels from 2000 to 2013, which were composed of a Chairman and a maximum of six Commissioners, as described later, only four voters were used to reach a verdict in some cases. Thus, inspired by the judicial and criminal literature, in which debates on the influence of jury size are extensive, this investigation incorporates a decision-making structure concept to seek a complete explanation of the merger review phenomenon through the lens of the authorities' capabilities.

[11] The OECD (2010) and Botta (2011) comment that the CADE has been recognized locally and internationally for its improvements in several areas, and it is ranked 7th best among all antitrust commissions worldwide.
[12] These concepts work as control variables in this thesis. Thus, they are not subject to an in-depth analysis.
[13] Variations in the size of the voting panel are foreseen by laws such as the Brazilian Antitrust Act enacted in 1994. More details are provided in Chapter 2.

It is still worth noting in this introductory section that, even as the 'size of the voting panel' characterization is supported by past judicial and criminal past research, other concepts discussed in this thesis require support from diverse research fields. The main reason for seeking supportive theoretical frameworks and empirical experiences in other streams of literature is quite simple: very few arguments related to the capabilities of antitrust authorities have been tested so far. Actually, the *Authorities' Capabilities* perspective is the most underexamined in theoretical and empirical terms. Additionally, scholars have neither employed so many arguments nor examined so much data in a single paper. Garside *et al*. (2013), which is the article that is closest to this thesis' scope, analyzes 85 case-level and 388 company-level observations of possible abuse of monopoly power. Regarding the determinants of the United Kingdom Commission's decisions, the authors test only the influence of *pre-commission and 'on the bench' experience of the Chairman*, *panelists' experience on the bench* and *political variables*. Therefore, the comprehensiveness of the study is far from this thesis' models, which use 30,543 votes by 36 commissioners on 5,091 merger reviews and test 10 concepts related to the authorities' capabilities. Thus, this investigation fills a current gap in the literature and should be considered a quite original contribution to academic research.

In addition to everything presented above, this research effort is motivated by other factors and generates some further contributions. Conklin and Pocklington Jr. (2000), McAfee and Vakkur (2004) and Coate and Kleit (2004) indicate that antitrust investigations are costly and time-consuming both for firms and regulatory agencies. Therefore, money and management time can be reduced if the executives and shareholders of private firms include in their strategic planning the full set of knowledge available herein. Despite the fact that most mergers may not wait for 'the best regulatory moment', this thesis will help firms enhance the predictability of regulatory outcomes based on the commissioners' characteristics and other capabilities of the antitrust authorities. Additionally, the arguments that are usually used to support firms' intent when challenging antitrust systems will be better founded, thus increasing firms' chances of success. To the Brazilian antitrust authority but also to the federal state administration, this study offers insights for an extended reflection on both organizations' performance. The evolution of antitrust policies depends on the precise assessment of past rules, individuals' past behavior and the decisions made by public agents. Thus, the desired harmonious and less costly relationship between economic actors and regulatory bodies can be improved the more that such content, as provided herein, is accessed.

Finally, an intrinsic motivation for this study rests in society's welfare. In short, consumers' interests are affected by antitrust regulators, so any research effort that provides new, relevant information on this matter contributes to the debate on social and economic development, mainly in developing countries. According to the FTC (2015), more than 120 countries and 6 communities of states currently have antitrust laws, but there were only three among developing nations in 1950, and, in the 1990s, there were fifty (SINGH, 2002). Thus, the findings from Brazil can be very useful for societies that are still crawling in terms of antitrust regulation.

1.2.1 Specific goals of the study

The first specific purpose of this thesis is to provide evidence whether the capabilities of antitrust commissions, such as commissioners' 'educational background', 'prior work experience in the public sector', 'experience on the bench', 'self-interest' and 'age' but also the 'authority's budget', determine authorities' decisions on merger reviews. At the same time, part of this specific aim is also to examine the influence of other factors, such as 'political ideology alignment with federal administration', 'size of voting panel', 'past enforcement activity' and 'late notification', on merger reviews. Secondly, this study intends to measure the marginal effects of such factors on different levels of intervention in M&A imposed by the Brazilian antitrust authority in order to check their relevance in determining merger review verdicts. Third, and last, this investigation briefly examine the influential role of the 'Reporting-commissioner' and the 'Chairman' on merger review verdicts, despite the fact that a majority of the votes of a panel of commissioners decides the future of a merger or an acquisition. Both particular public agents have distinctive responsibilities in the decision-making process, so it is worth assessing their influence on final judgments.

1.3 Thesis' structure

The previous topics introduced the context, the general and specific objectives of this study, and the motivations and expected contributions of the investigation. It is therefore appropriate to present the subsequent parts of this thesis. Beginning with the next section, this study is organized into seven parts, as follows.

Chapter 2 presents a summary of the relevant literature on the determinants of merger review decisions. Firstly, however, an analytical model of merger reviews decisions is introduced as a result of the literature review available in Appendix I. The sections that follow the analytical model describes, then, the main findings of past research split in four perspectives.

Chapter 3 shows (i) a historical overview of antitrust regulation in the United States and the European Union to provide an understanding of the origin of the Brazilian Antitrust Act framework; (ii) another historical overview focused on the evolution of competitive matters in Brazil regarding its regulatory marks; (iii) a description of the process of merger reviews under the Brazilian Antitrust Act enacted in 1994; (iv) and a presentation of the economic and judicial fundamentals that were supposed to guide the verdicts of the Brazilian authority.

Chapter 4, in turn, discusses the theoretical aspects related to the capabilities of antitrust authorities that support their potential to determine merger review verdicts. Hypotheses associated with these concepts, which are converted into variables at the end of the sections, provide guidance for subsequent empirical tests.

In Chapter 5, the main features of the dataset, its conception process and some statistics are described. The econometric approach chosen to achieve the general and specific objectives is also provided. Finally, a discussion of the characteristics and suitability of the empirical strategy for this research is presented.

Chapter 6 describes the results of this study, followed by additional considerations in Chapter 7. The references and the appendixes conclude this project. Appendix I, as mentioned earlier, provides the full description of the literature on the determinants of merger reviews while the Appendix II shows the CADE commissioners' profile.

2 LITERATURE REVIEW

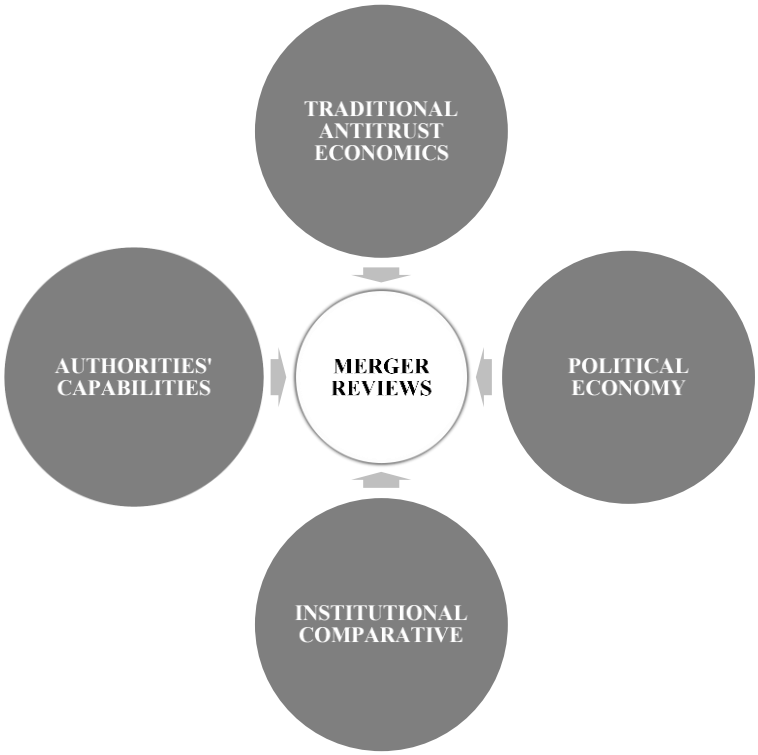
In theoretical terms, merger reviews can be considered a multifaceted phenomenon. Governments serve so many different actors and interests, including public officers themselves, that merger reviews enforcement can be explained by several theories. In the empirical academic field, likewise, scholars have attempted to understand antitrust authorities' verdicts through a great number of factors, reflecting theoretical predictions. "Understanding competition law thus is not only about dissecting legislative texts and judicial decisions according to settled canons of interpretation but is also about understanding the particular forces that have influenced the direction of competition policy at particular times." (MONTI, 2007, p. 3)

Despite the technical character of antitrust laws and authorities' guidelines worldwide, the possibilities for diverse interpretations that lead cases to different conclusions are real (SALOP, 1987; KRATTENMAKER; PITOFSKY, 1988; MELLO, 2002; KIRKWOOD, 2011; EVANS, 2012; OECD, 2012). The basis of economic and judicial fundamentals allows the adoption of analytical paths according to commissioners' choice, for example, which may vary from one to another. To illustrate, only in this thesis' dataset, 40 merger reviews were not unanimous in terms of final verdict. Additionally, some transactions that were approved with remedies were not unanimous regarding the changes imposed by the CADE.

For all exposed above, an analytical model for merger review decisions on the determinants of merger reviews is proposed by this thesis author in Figure 1. It can be a useful tool to understand particular forces that influence the direction of competition policy and enforcement over time. As a 'bonus track', the analytical model is also useful in organizing the literature review.

In the following sections, then, a summary of a rich portfolio of potential explanatory concepts of the antitrust authorities' verdicts are presented under Figure 1 categorization. Finally, Appendix I provides the full description of the literature on the determinants of merger reviews that reveals an interesting predictive power regarding agencies' enforcement worldwide.

Figure 1 – Determinants of merger review decisions: an analytical model



Source: Thesis author

2.1 Traditional Antitrust Economics perspective

A traditional theoretical approach in Industrial Organization that provides elements to antitrust guidelines conception is the so-called 'Structure-Conduct-Performance – SCP' paradigm. It dates back to the first half of the twentieth century, and it is originally associated with the Harvard school. In short, this traditional approach assumes that there is a stable, causal relationship between the structure of an industry, firms conduct, and market performance (CHURCH; WARE, 2000). In the context of merger reviews, antitrust commissioners stablish relationships between structural variables – e.g. market shares of transacting firms and barriers to entry –, and market performance, founded on a particular hypothesis: the *market power hypothesis.* In other words, a high degree of market concentration suggests the exercise of market power by the merged firm which results in high profit margins through price increases. If the market power hypothesis is likely, then, the antitrust commission should intervene in the deal under investigation, according to the SCP paradigm.

In contrast, the so-called 'Efficiency paradigm', associated with the Chicago school in the 1950s, relativizes the importance of market concentration in merger review enforcement based on the argument that high levels of concentration can generate high degrees of efficiency. Thus, *the efficiency hypothesis* adopted by antitrust commissioners states that if 'efficiency gains' such reduction of costs and innovation occur and improve customers welfare, the antitrust commission should not interfere in the deal. The inherent challenge to authorities' reviews, then, is to preserve and foster competition without curbing concentration initiatives that are beneficial to markets and society, but would not be possible from a single firm initiative.

Most scholars interested in seeking pieces of evidence on the determinants of antitrust authorities' decisions all over the world – but mainly the FTC and the European Commission – have applied both traditional approaches to check whether M&A have been blocked or approved under their arguments. Parameters such as market shares and other concentration indexes, ease of collusion, barriers to entry, the presence of import competition, remaining vigorous competitors, countervailing buyer power, anticompetitive effects and efficiencies have been tested.

Coate *et al*. (1990; 1995), Coate and McChesney (1992); Coate (2002; 2005), Weir (1992; 1993), Khemani and Shapiro (1993), Strong *et al.* (2000), Coate and Kleit (2004), Aktas *et al*. (2004; 2007), Coate and Ulrick (2005; 2006), Bergman *et al*. (2005), La Noce *et al.* (2006), Duso *et al*. (2007; 2011), Avalos and De Hoyos (2008), and Garside *et al*. (2013)[14], to a greater or lesser extent, examine the traditional antitrust parameters and clearly show that structural factors outweigh efficiencies in merger reviews. Actually, in some cases, contrary to most of the guidelines, an indication of efficiency gains on reports increases the probability of a case being challenged.[15]

[14] The papers listed above do not have the same research questions or dependent variables. However, all of them aim to reveal determinants or arguments that should explain antitrust authorities' decisions, changes in market competition levels, and similar issues. The most unique paper in terms of research question is that of Duso *et al.* (2007). The authors investigate type I and II errors: if the European Commission blocks or prevents a merger that stock markets regarded as procompetitive or anticompetitive.
[15] E.g., Avalos and De Hoyos (2008).

2.2 Political Economy perspective

The prior literature also discusses and empirically examines other dimensions in addition to Traditional Antitrust Economics. *Political Economy*, which is highly correlated with public-interest theory, has been explored by scholars through distinct concepts, such as political influence over commissions. First, Coate *et al*. (1990) as well as Coate and McChesney (1992) rate political influence through 'visibility of merger in press' and 'number of congressional committees for further explanations by antitrust commissioners' in addition to a 'failing-firm factor' to measure concerns about job and government losses due to firms' bankruptcy. Coate *et al*. (1995) and Breunig *et al*. (2012), however, use the 'value of the deal' to capture the political size/importance of an event. Coate (2002), then, proposes a congressional index, a presidential dummy, and a combined term of both variables that aims to determine the influence of legislative and executive powers over the antitrust authority. The author also adds a populist term to determine whether enforcement under a populist government outweighs more traditional political control. Bergman *et al*. (2005) as well as Bougette and Turolla (2008) try to capture the influence on authorities' decisions of Mario Monti in Europe – former Chairman of the European Commission – while Garside *et al*. (2013) look for evidence during Margaret Thatcher's period as prime minister in the United Kingdom context. Finally, Weir (1992; 1993) as well as Coate and Kleit (2004) also provide proxies for political influence, such as employment growth, type of industry under investigation, and even regulated industry, and assume political meaning in the investigations. Additionally, Weir (1992; 1993) tests the effects on foreign trade that a merger can generate. "Harming the balance of payments is […] highly significant, with only an 11% chance of a bid being allowed with such a conclusion" (WEIR, 1992, p. 29). As the general outcomes of this group of articles, 'political economy' and 'public-interest' appear to influence antitrust authorities' decisions. These parameters also outweigh the 'expected efficiencies' generated by business combinations, but not 'industrial structure characteristics', such as market share and barriers to entry – concepts that belong to the *Traditional Antitrust Economics* perspective.

2.3 Institutional Comparative perspective

A third theoretical and empirical dimension of the merger review phenomenon that can be found in the prior literature is formed by *institutional* factors. Coate *et al*. (1995) and Aktas *et al*. (2004; 2007), for instance, add to their models concepts such as 'origin of capital of transacting firms'. The last authors cited concomitantly test 'target size', 'estimated cumulative abnormal returns', 'target/bidder size ratio', 'mode of payment' – i.e., cash offer or stock offer – and bidder's past performance. Moreover, Bergman *et al*. (2005) examine concepts such as 'world leadership' and 'super dominance' of at least one transacting firm, whether at least one of the notifying firms was based in the United States, and whether the relevant geographic market was national or smaller. La Noce *et al*. (2006) and Duso *et al*. (2007) use quite similar variables. In addition to these analyses using an institutional lens, Duso *et al*. (2007) suggest testing the degree of integration of the transacting parties – i.e., full acquisition/merger or partial acquisition/merger. Later, Duso *et al*. (2011) introduce a measure for cross-border deals in their tests. As examples of findings for this group, it is worth briefly noting (i) a positive and significant influence of bidder/target returns correlation and deal value in the European Commission's decisions (AKTAS *et al*., 2004; 2007); (ii) a 'national relevant market' contribution to a reduction in the probability of phase-2 assessments in Europe (BERGMAN *et al*., 2005); and (iii) the lack of influence of the foreign firm variable in explaining merger enforcement in the United States (COATE; MCCHESNEY, 1992).

2.4 Authorities' Capabilities perspective

The fourth dimension of the analytical model, finally, is associated with the authorities' capabilities. By far, among all of the factors presented in the earlier papers, the antitrust *Authorities' Capabilities* perspective is the most underestimated in theoretical but mainly in empirical terms as possible determinants of decisions on merger reviews.[16] Since Posner (1970) and Long *et al*. (1973), whose articles resort to statistics to explain antitrust activity,

[16] Notably, considering only academic studies that resort to empirical tests and comprehend developing countries' jurisdictions, it is possible to affirm that such studies are rare – if they have been conducted. This research has not found any paper in the intersection of the following subject groups: (i) empirical examinations; (ii) background, experience and self-interest of antitrust commissioners; (iii) merger reviews; and (iv) developing countries.

very few arguments related to this dimension have been used to generate insights for a better understanding of authorities' verdicts.

Coate *et al.* (1990; 1995) and Coate (2002)[17] as well as Coate and McChesney (1992), for example, examine the influence of the FTC's Bureau of Economics and Bureau of Competition on merger review verdicts. The authors use both bureaus' views on anticompetitive factors – market concentration, claims for barriers to entry and claims for industry conducive to collusion – to measure their influence on verdicts. They find that lawyers' analyses affected the FTC's decisions more than economists' analyses at that time. Coate and Kleit (1998, p. 9), in contrast, explore the effect of commissioners' party affiliation and the party of the appointing President on mergers submitted to the FTC. The authors conclude that "[…] a Republican-dominated Commission appears less likely to support a merger order with the effect linked to the party of the individual Commissioners, not the party of the appointing President." More recently, Garside *et al*. (2013) explore concepts such as 'panel's experience', 'age of chairmen', and 'pre-chair experience'. The main purpose of that study is to look for evidence regarding whether the experience of public officials on the United Kingdom Commission affects the probability of a 'guilty' verdict in investigations into suspicions of abuse of monopoly position. The authors conclude that the experience of chairman matters. In their own words, "[...] replacing an inexperienced chairman with one of average experience increases the probability of a 'guilty' outcome by approximately 30% and, after chairing around 30 cases, a chairman is predicted to find almost every case guilty" (*ibid*, p. 474). However, the 'panel's experience', 'age', and 'pre-chair experience' variables had no statistical significance according to the authors. Quirk (1981) examines the post-commission employment incentives that regulators have to favor the regulated industry. The author, through a series of interviews conducted with high-level officials from four federal agencies, reveals that, predominantly, FTC respondents consider such incentives to be more likely if they increase the level of law enforcement.

In sum, there is a lack of knowledge regarding the influence of antitrust commissioners' attributes, values and interests as well as other capabilities of antitrust authorities in the past antitrust literature. For that reason, theoretical references from other fields are added to

[17] Coate *et al*. (1995) and Coate (2002) group anticompetitive factors into two variables: anticompetitive factors BC – Bureau of Competition – and anticompetitive factors BE – Bureau of Economics.

pertinent works in the antitrust field to support the hypotheses and variables tested in Chapter 6. In Chapter 4, the theoretical fundamentals are presented.

3 ANTITRUST REGULATION IN BRAZIL

The nineteenth and twentieth centuries were marked by government intervention in the global economy. A wide variety of behaviors were observed, from states that predominantly assumed a more regulatory function by adopting policies to protect the public interest to others that focused more on protecting domestic industries to defend against external shocks to those that mainly acted to disallow inefficient sectors from succumbing to competition from foreign firms (LIPTON, 1987; HARRISS *et al*., 1995).

In Latin America, for example, many governments assumed the role of producers in industries that were considered vital – in the name of national sovereignty – and they also supported financially and politically powerful industrialists motivated by mutual self-interest (HABER, 2006; BOTTA, 2011; BAZUCHI *et al*., 2013). At the same time, in most European countries, states assumed the responsibility to plan, operate, coordinate and manage the economic infrastructure as well as to assist people *via* social programs. As an illustration, the model of European network industries – telephone, water, electricity and gas – was characterized by the formation of large state companies that disposed of territorial and vertically integrated monopolies (PINTO JR.; FIANI, 2002). In North America, however, interventions were primarily aimed at protecting the social welfare and controlling private monopolies. Companies in the aforementioned industries were founded on the legal-institutional framework, but regulation often filtered upward from local agencies to the state and ultimately to the federal level (GOLDIN; LIBECAP, 1994; PINTO JR.; FIANI, 2002).

Additionally, economic blocks, cooperation agreements, and common markets were established among nations over the years. In the microeconomics environment, collaborations between private business groups motivated by stability of price and sales volumes also influenced the distribution of power in certain markets (BRUNER, 2004; GAUGHAN, 2011). In this context, therefore, the first government initiatives emerged to contain companies' exercise of market power that affected the social welfare as well as to build the main antitrust regulatory frameworks that are known today.

3.1 Historical overview of antitrust regulation in the United States and the European Union: influences on Brazilian antitrust regulatory frameworks

The first national, institutionalized antitrust doctrine originated in North America, specifically in Canada, in 1889, to prevent and suppress agreements between firms whose intention was to restrict trade (GAMA; RUIZ, 2007; GABAN; DOMINGUES, 2009).[18] Almost concurrently, in 1890, the United States adopted federal antitrust legislation, called the *Sherman Act*, in response to problems related to the abuse of economic power arising from the emergence of large industrial groups, especially 'trusts' (BITTLINGMAYER, 1992; NUSDEO, 2002; WESTON *et al.*, 2003; BRUNER, 2004; GAUGHAN, 2011).[19] At that time, large firms or groups of firms that concentrated a considerable part of the production or sales of certain goods fixed prices freely (OLIVEIRA; RODAS, 2004).

Although the Sherman Act is considered the core of any antitrust activity in the United States, and it has been the basis for the legislation of other countries, such as Brazil, it was not considered efficient immediately after its enactment (NUSDEO, 2002; BRUNER, 2004; GAUGHAN, 2011). According to Lamoreaux (1988), 147 horizontal consolidations of at least five previous competitors occurred from 1895 to 1904. In addition, the author notes that more than 75% of these consolidations controlled at least 40% of the respective market share, and more than 45% of the consolidations reached more than 70%.

The main reasons why the Sherman Act was considered inefficient have been identified in the law's wording as well as the lack of government resources to enforce the law. Thus, in 1914, the United States Congress passed the *Clayton Act* to extend the power of the Sherman Act in an attempt to fill both gaps. As a response to the first issue, the United States government made a more explicit statement of its antitrust position, which also included a section addressed to M&A, and as a response to the second issue, the government established the FTC (NUSDEO, 2002; WESTON *et al.*, 2003; BRUNER, 2004; GAUGHAN, 2011).

Regarding the control of M&A, in 1950, the *Celler-Kefauver Act* was approved, which amended the Clayton Act to cover assets and stock acquisitions as well as vertical and

[18] Three years later, the Act was incorporated into the Canadian Criminal Code.
[19] "In the original business trust, legal title to property is vested in the trustees, who managed the property in the interests of 'beneficiaries'" (BITTLINGMAYER, 1992, p. 1703).

conglomerate mergers. The original text of the Clayton Act had failed to regulate asset acquisitions and non-horizontal M&A cases (NUSDEO, 2002; WESTON *et al.*, 2003; BRUNER, 2004; GAUGHAN, 2011). Finally, in 1976, the *Hart-Scott-Rodino Act – HSR Act* – substantially improved the merger review process because it gave to the FTC and the Antitrust Division of the Justice Department the opportunity to review proposed M&A deals in advance (GAUGHAN, 2011). Moreover, the HSR Act set transaction size requirements for filing, filing fees and penalties, types of information to be filed, and others.

In the European sphere, as a result of economic integration efforts of the member countries, the Treaty of Rome established free competition as a general rule in 1957. The idea intrinsic to this rule was to foster economic agents of the European Community in pursuit of increased efficiency and competitiveness. Three decades later, the *Single European Act* of 1986 reinforced this content when it promoted, in Articles 163 and 173, 'research and development' to enhance the competitiveness of the region (NUSDEO, 2002). Indeed, the analysis of the European Union competition policy system demonstrates its interconnection with the community industrial policy goals as well as with the integration process.

The national antitrust authorities of the country members only address local dimension events (NUSDEO, 2002; BRUNER, 2004) or if two-thirds of the revenues of each investigated firm are achieved in a single European Union country. Once one of these conditions is present, the European Commission defers to the respective national authority (WESTON *et al*., 2003).[20]

Regarding control of merger reviews, they only became a concern of the European Community after 1966. However, Council Regulation 4,064/89, which covered consolidations of European dimensions and set requirements for notifications of business combinations to the European Commission, went into effect in 1990. The main feature of this regulation, similar to the HSR Act in the United States, determined that business combinations must be reviewed before deals could be consummated (NUSDEO, 2002; WESTON *et al.*, 2003; BRUNER, 2004; BERGMAN *et al.*, 2010).

Bergman *et al*. (2010) note as follows:

[20] Nonetheless, decisions of the European Commission are revised by the German antitrust authority in cases of potential harm to competition in Germany. The so-called *German Clause* notes this exception (NUSDEO, 2002).

> "In both the EU and the US, […] the authority then makes a preliminary judgment on the likely competitive effects that stem from the merger and either allows the transaction to proceed or initiates a more detailed investigation. In the EU, this more detailed investigation is called "Phase II"; in the US, the more detailed investigation is referred to as the "second request." In recent years, both the EU and the US have fully investigated roughly 3% of the notified transactions."

Additionally, Bergman *et al.* (2010) highlight that the United States competition policy system reporting requirements are more rigorous than the European Union system requests. Another difference between the antitrust regimes is that the European Commission is not dependent on the courts to block a business combination as much as the Federal Trade Commission is (BERGMAN *et al.*, 2010; GAUGHAN, 2011).

Some of the characteristics described in the previous paragraphs can also be observed in the Brazilian Competition Policy System – BCPS which was built under the influence of both regulatory frameworks and experiences. In the next sections, the BCPS is introduced in more detail to enable the specification of the econometric models and empirical analysis in this thesis.

3.2 Anticompetitive matters in Brazil since 1934: introducing the last 20 years of merger review control

The first sign of the Brazilian government's concern about abuse of economic power briefly appeared in the Constitution of 1934 in a topic on economic order (ROCHA *et al*., 2005). In 1938, Decree-Law 869 defined crimes against the economy and punishments for practices related to market manipulation and the elimination of competition and even established some mechanisms related to the concentration of companies. In 1945, Decree-Law 7,666 was enacted, which launched the concept of abuse of economic power and later influenced the Brazilian antitrust law (NUSDEO, 2002).

However, the Constitution of 1946 actually included an explicit reference to the repression of abuses of economic power (NUSDEO, 2002; CUNHA, 2003; ROCHA *et al*., 2005). Article 148 of that Magna Carta noted: "The law shall repress any form of abuse of economic power, including unions or groups of individual companies or whatever social nature, which are

designed to dominate national markets, eliminate competition, and arbitrarily to increase profits" (BRASIL, 1946).[21]

After eighteen years of Article 148, the first Brazilian antitrust regulatory framework was enacted in 1962 with Law 4,137. As part of the same regulatory framework, the CADE was established as an organization within the Ministry of Justice (BRASIL, 1962; OECD, 2005; CADE, 2007), together with mechanisms to control mergers and other types of agreements between firms that had the potential to concentrate market power.

At that time, according to Baer (1988), the Brazilian economy was characterized by high inflation rates, little incentive to export, reduced inflation subsidies for essential imports such as wheat and oil, and direct government control of prices, including fixed prices for items of need. In structural terms, the economy was quite closed, with key sectors predominantly oligopolistic, and it was dominated by large state-owned companies (OECD, 2005; HABER, 2006). In the political sphere, an intense internal crisis gripped the country in 1962 and 1963 and culminated in the establishment of a military dictatorship in 1964.

The interventionist-concentrator profile of the dictatorial government from 1964 to 1985, which was founded on import substitution, substantially reduced the effectiveness of the 1962 Law and therefore also the CADE. The Brazilian government, in that period, decisively influenced the formation of prices in the domestic market and determined the amounts of price increases in various industries. In some sectors, firms were required by the Brazilian government to submit cost sheets so those prices could be controlled by the government (BASTOS, 1997; NUSDEO, 2002; CUNHA, 2003; BOARATI, 2013). Thus, the CADE could not execute its mission – to enforce the law, to investigate and to prosecute abuses of economic power – until the 1990s.

The return of civilians to the federal government in 1985, the promulgation of the 1988 Constitution and the country's democratization caused structural changes in the Brazilian economy in the last decade of the twentieth century. In particular, economic liberalization, the privatization of state-owned companies and the end of direct political control of prices

[21] Constituição Federal de 18 de Setembro de 1946, Art 148 – "A lei reprimirá toda e qualquer forma de abuso do poder econômico, inclusive as uniões ou agrupamentos de empresas individuais ou sociais, seja qual for a sua natureza, que tenham por fim dominar os mercados nacionais, eliminar a concorrência e aumentar arbitrariamente os lucros."

renewed the spirit of Brazil's competition policy (POPP; ABDALA, 1997; NUSDEO, 2002; COSTA NETO, 2005; OECD, 2005; GABAN; DOMINGUES, 2009; BOARATI, 2013). The first signs of these changes appeared as early as 1990 and 1991 with the amendment of certain provisions to the 1962 Law (NUSDEO, 2002). In 1994, *Law 8,884* was enacted. Since then, the CADE has been legitimized to act against firms' anticompetitive conduct or business combinations that harm the public interest (FARINA; AZEVEDO, 2001).

Law 8,884/94, among many other duties, created the BCPS, which was formed by the CADE, the Secretariat of Economic Law of the Ministry of Justice – SDE/MJ, and the Secretariat for Economic Monitoring of the Ministry of Finance – SEAE/MF (BRASIL, 1994; ROCHA *et al*., 2005; CADE, 2007).[22]

In short, the general role of the CADE during the period of the law was to decide whether an infringement to free competition has taken place and whether it was perpetrated either by enterprises or by their managers in cases involving conduct. The function of the SDE/MJ, in turn, was to formulate, implement and supervise policies for the protection and defense of the economic order regarding competition and consumers, whereas the SEAE/MF was designed to assist the SDE/MJ by preparing studies and reports that mainly focus on the economic aspects of business combinations or investigated conduct.[23]

Specifically regarding business combinations, Law 8,884/94 boosted the performance of the BCPS regarding the analysis and control of the exercise of market power due to M&A, general contracts, joint-ventures, or investment operations.

As in the United States and European Union, parameters and rules of analysis were settled for business combinations in Brazil. In addition, Law 8,884/94 introduced the so-called *fine for lateness*. The law stated that companies whose actions fit the submission criteria stipulated by the BCPS but that delayed in notifying it were to be fined.

[22] According to Ramos (2005), the BCPS, which was formed by Law 8.884/94, rested on one organizational hybridity. On one side, the SDE/MJ and its Department of Economic Defense and Protection, which are both depersonalized bodies of the Ministry of Justice, are subject to the policies of the Executive. On the other side, the CADE, as an agency bonded only administratively with the Ministry of Justice, is composed of a Chairman and six commissioners who serve a term of two years, and works with functional independence. The CADE is responsible for judgments of competition order infringements as well as concentration cases.

[23] On the 29th of June 2012, the General Superintendence of the CADE replaced both the SDE/MJ and the SEAE/MF regarding the initiation and prosecution of administrative processes and the analysis of merger reviews.

Nonetheless, under the 1994 regulatory framework, there was a permanent concern about judging related to the time the CADE took to make its decisions. In response to this issue, in 2000, major innovations in the analysis procedures were announced by the BCPS (BOARATI, 2013). For instance, it defined specific criteria for simpler merger reviews and established procedures for joint analyses by the SEAE/MJ and the SDE/MF to reduce the duplication of work as well as to allow the CADE to provide immediate verdicts on simple cases.[24]

Despite those improvements and the fact that antitrust regulation, in Brazil, had characteristics – structures and processes – that resembled the United States and the European Community's models, M&A and other business combinations were analyzed after the consummation of intercompany transactions. In other words, the companies formalized and started operationalizing their deals while the BCPS was still reviewing the case.

According to Carvalho (2011) and Boarati (2013), this characteristic of merger reviews under Law 8,884/94 generated dissatisfaction among the combining companies and government officials because of the costs and delays in the announcement of verdicts. The authors find that the economic cost to the country was huge, and, when the cases were more complex, reviews often took approximately two years to be completed. Farina and Tito (2011) also see negative effects that arose from this particular rule: significant levels of inefficiency from an economic standpoint and ineffectiveness of the reviews in protecting and defending the public interest. The authors also express concerns regarding losses in terms of knowledge retention, which revealed a lack of stability in the BCPS technical body.

After this historical overview, which introduced the BCPS and the 1994 Brazilian Antitrust Act, the next section focuses on the process and guidelines for merger reviews under Law 8,884/94. As can be deduced from the objectives as well as the intended contributions of this thesis presented in Chapter 1, the procedures used in the analysis of M&A are important references to provide a better understanding of the hypotheses, the econometric models and the results of this study.

[24] "The attributions of these three agencies are established by Law Nº 8.884 of July 11, 1994, as amended by Law Nº 9.021 of March 30, 1995 and Law Nº 10.149 of December 21, 2000" (CADE, 2007, p. 127).

3.2.1 Merger reviews under Law 8,884/94

Article 170 of the Brazilian Federal Constitution of 1988 establishes that the economic order is a legal right that should be safeguarded by the government and is founded on the concept of the dignified existence of the people according to the dictates of social justice. Within the General Principles of Economic Activity, the 4th paragraph of Article 173 specifically states that the law must repress any economic abuse that aims to dominate markets, eliminate competition, or arbitrarily increase profit (BRASIL, 1988).

In compliance with the constitutional mandate, Law 8,884 – the *Law for the Defense of Competition* – was enacted on the June 11, 1994. The statute's objective, stated in Article 1, is to prevent and repress infringements against the economic order based on the principles of free enterprise, free competition, the social role of property, consumer protection, and restraint of abuses of economic power (BRASIL, 1994). Among several duties, it defines different authorities and their respective jurisdiction, and how the competition policy should be implemented in the country thereafter.

As shown in the previous topic, under Law 8,884/94, the entities in charge of the defense of competition in Brazil, which compose the BCPS, were the CADE, the SDE/MJ, and the SEAE/MF.

In the sphere of merger reviews in particular, the CADE evaluated M&A submitted for its approval or disapproval and also specified the conditions under which those transactions could be accepted with remedies. In turn, the SDE/MJ was responsible for providing opinions about the competitive aspects of each deal submitted to the CADE based on investigations and analyses performed through administrative proceedings. Regarding the role of the SEAE/MF in the analysis of the mergers, it issued economic opinions about the effects of each case.[25] Over the years, however, the SEAE/MJ has focused more on instructions for such reviews, while the SDE/MF has addressed investigations of anticompetitive conduct, particularly against cartels (BOARATI, 2013).

[25] "With the Provisional Measure 2.055 of August 11, 2000, which was later transformed into Law Nº 10.149 of December 21, 2000, the SEAE gained further powers, among them the power to apply fines in cases of the obstruction of an inspection, in addition to other investigative powers" (CADE, 2007, p. 130).

With respect to the criteria requiring notification of transactions for the BCPS review, Paragraph 3 of Article 4 stated that if one of the merging firms controlled 20% or more of the relevant market, or at least one group of as many enterprises involved in such a transaction had a yearly gross income equal to or greater than four hundred million Reais in Brazil, it was mandatory to submit the operation to the judgment of the CADE. In addition, the notification must occur within 15 days after the combining firms signed the deal with three copies provided to the SDE/MJ. Then, the SDE/MJ should immediately send a copy to the CADE and another to the SEAE/MF as well as invite market participants, consumers and third parties to comment on the transaction through a publication of the case in the Official Gazette of the Federal Executive (BRASIL, 1994; CADE, 2007).

Under Law 8,884/94, the SEAE/MF should analyze the cases and report to the SDE/MJ and the CADE within 30 days. Also within 30 days, the SDE/MJ should analyze the case on legal and economic grounds to report to the CADE (FRANCESCHINI, 2012).[26] The CADE, with opinions from both the SEAE/MF and the SDE/MJ, should begin deliberations within 60 days according to Paragraph 6 of Article 54. Nevertheless, the deadlines could change if additional information was required by the Secretariats or the CADE from the parties (CADE, 2007).

Finally, the CADE's decisions were made in public sessions through a plenary council with a Chairman and a maximum of six Commissioners, one of whom was the Reporting-commissioner, who was responsible for the complementary investigation and reporting of the case to the other members of the panel. Each member of the decision panel, including the Chairman, had the right to one vote. The final verdict was defined through a simple majority. In the case of a draw, the Chairman cast the decisive vote. According to the law, the CADE's Chairman and Commissioners should be chosen among citizens over 30 years of age with remarkable legal or economic knowledge and an unblemished reputation, and they must be appointed by the Republic President and approved by the Senate. The mandate of the panel members was two years, and a renewal was allowed for another two-year term, which also depended on the Executive and Legislative powers' appointment and approval, respectively. The Chairman and Commissioners' positions presupposed exclusive dedication and thus did not permit the accumulation of jobs, except as constitutionally permitted (BRASIL, 1994).

[26] "[…] with the exception of cases that fall under Summary Procedure, Regulation SDE-SEAE 01/2003, according to which the Secretariats must issue a technical opinion within 15 days" (CADE, 2007, p. 130).

Thus, the CADE was the last agent within the administrative domain responsible for the enforcement of merger reviews.[27] Although under the 1994 Brazilian Antitrust Act, M&A were analyzed after the consummation of intercompany transactions, the Brazilian antitrust authority's role regarding those reviews should be characterized as preventive, and they referred to the analysis of structural market changes (CADE, 2007). Actually, the CADE's mission was, and still is, to prevent market concentration that could lead firms to the exercise of market power or, in other words, to anticompetitive effects in certain markets.

Thus, the CADE's decisions could approve a particular transaction if no harm to competition arose. Otherwise, if any likelihood of anticompetitive effects was detected, the CADE had the power to either impose obligations on the firms as a condition for approving the deal, the so-called *approval with remedies* – e.g., to determine a partial divestiture – or to *disapprove* the firms' agreement, which means the cancellation of the parties' deal (CADE, 2007).

Articles 54 to 57 of Law 8,884/94 established technical parameters for the assessment of mergers and other forms of business combinations to guide the CADE's decisions. The following topic presents a synthesis of the economic fundamentals that should orient the CADE's final judgment.

3.2.2 Merger reviews: economic and judicial fundamentals

Article 54 of Law 8,884/94 states that M&A that may limit or harm free competition or result in control of relevant markets of goods or services must provide notification for the CADE's assessment (BRASIL, 1994).

The Brazilian antitrust guidelines as well as most antitrust guidelines throughout the world provide a script for the assessment of economic and judicial fundamentals regarding the potential creation of market power by firms that serves to standardize the antitrust authority's decision-making process (OLIVEIRA; RODAS, 2004).

[27] "The CADE's decisions cannot be further reviewed by the Executive branch. However, the penalized enterprises have the right, if they choose so, to question the CADE's decision by appealing directly to the Judiciary power" (CADE, 2007, p. 133).

The review process, in terms of economic and judicial fundamentals, relies on five basic sequential steps: (i) the definition of the relevant market, (ii) an assessment of the merging firms' market share, or *analysis of dominant position*; (iii) an examination of the probability of the exercise of market power, (iv) an analysis of the potential efficiencies that can be generated due to the transaction under review, and (v) an evaluation of the costs and benefits generated by the business combination (MELLO, 2002; CADE, 2007; GAMA; RUIZ, 2007; AVELLAR *et al.*, 2012).

First, the *relevant market* concept is defined as the small economic space in terms of product and geography in which market power can be exercised by firms. The challenge for an antitrust authority regarding this matter is to determine whether there is "[…] a space in which it won't be possible to replace a product by another one, either because such product does not have substitutes or because it is impossible to obtain them" (CADE, 2007, p. 135). Therefore, as the first step in a merger review, the relevant market definition sets the unit of analysis for the other steps, which means that an inaccurate delimitation by the antitrust authority affects the assessment process as a whole (MELLO, 2002; EVANS, 2012; OECD, 2012).

After the authority's analysts define the relevant market, the second step is to identify potential suppliers for the same or substitute products and measure the players' market shares to determine the concentration level in the market using, e.g., the Herfindahl-Hirschman index. If one of the combining firms, due to the transaction, controls a significant portion of the relevant market in such a way that, deliberately and unilaterally, it will be able to alter market conditions, then a dominant position is characterized (CADE, 2007).

However, the potential occurrence of market structure concentration as a consequence of a merger is not itself illegal from the antitrust perspective. What really matters to the antitrust authority is the possibility of the creation and exercise of market power by at least one of the firms (MELLO, 2002). Thus, in addition to the dominant position analysis, an examination of the external competition and uncommitted entrants – imports and other businesses with installed capacity that can earn profits above the average – as well as an assessment of the barriers to entry are also instruments that the CADE can use to identify the extent of power of the firms in the relevant market. Likewise, the authority can also estimate the probability of the incidence of market power.

In the fourth step, an analysis of the efficiencies generated by the transaction under review is necessary. In some cases, the combination of two or more firms, due to their dominant position, may increase the efficiency of the economic agents – e.g., through a reduction in logistical and distribution costs, gains in operational scale, or cost savings resulting from producing different products with the same assets – which is good from this exclusive perspective.

Thus, when a dominant position and efficiency gains occur in the same transaction, the authority must evaluate the costs and benefits of the merger because unilateral anticompetitive practices can overlap with efficiency gains. If net negative effects prevail,[28] the CADE approves the deal with remedies or even cancels it in the Brazilian territory. The purpose of remedies, in particular, is to relieve the potential anticompetitive effects to preserve the efficiencies brought about by a transaction (WANG; RUDANKO, 2012).

Thus, market power is found if a product or a portfolio of products in a certain geographic area allows a producer or a seller to increase prices significantly and permanently, and there is no other option for consumers to obtain the product or products, even in a different region, or to substitute it for a different product or group of products (SCHERER; ROSS, 1990; MELLO, 2002; SCHEFFMAN *et al*., 2003; BERGMAN, 2005; CADE, 2007; GAMA; RUIZ, 2007).[29]

[28] Williamson (1968) suggests a trade-off analysis between efficiency gains and anticompetitive practices when a merger increases market power to assess its net effects.
[29] The dominant firm may also reduce predatory prices to stave off competition (NUSDEO, 2002).

4 THEORETICAL FOUNDATIONS AND HYPOTHESES

This thesis' general aim is to examine the influence of commissioners' personal attributes, values and interests as well as some structural and procedural issues contained in the antitrust regulatory sphere on merger review decisions, particularly in Brazil. As described in Chapter 1, the specific purposes of this study include: (i) to determine whether several factors, including commissioners' 'educational background', 'prior work experience in the public sector', 'experience on the bench' and 'self-interest' but also 'political ideology', 'size of voting panel' and others determine antitrust authorities' decisions and their level of influence on merger reviews; (ii) to measure the impact of such factors on different levels of intervention in M&A imposed by the Brazilian antitrust authority, considering also elements contained in complementary perspectives of the merger review phenomenon; and (ii) to examine the influential role of the 'Reporting-commissioner' and the 'chairman' on merger review verdicts, despite the fact that a majority of the votes on a panel of commissioners decides the future of a merger or an acquisition.

In the following sections, then, the theoretical foundations and hypotheses of this study are presented.

4.1 Levels of antitrust authorities' intervention: distinguishing remedies to establish a dependent variable

Categorically, antitrust authorities' verdicts on merger reviews always assume one of the following general responses to firms' strategic intent: *approval without restrictions*, *approval with remedies* or *disapproval*. Regarding 'approvals without restrictions', few things can be said. Supposedly, such transactions do not affect competition levels or social welfare in negative ways. The merged entity does not suffer any change, so the transacting parties move on. Conversely, both 'disapproval' and 'approval with remedies' decisions mean that the transactions proposed by the applicants might impact competition beyond the authorities' acceptable limits. In the first case, either nothing can be done to restore the market conditions prior to the transaction or the proposed solutions are somehow inappropriate. In the second case, however, at least one possible measure can be implemented to recover the pre-merger

competitive environment (WANG; RUDANKO, 2012). If the remedy is feasible, then "the government obtains antitrust relief, whereas the firm is able to consummate the remainder of the transaction" (COATE; KLEIT, 2004, p. 980).

Thus, remedies can assume diverse aspects, depending on the expected harms that a deal may cause in a specific market. Merger reviews, as mentioned previously, are a case-by-case assessment process that is full of particularities. Therefore, generalizations based on intra-group homogeneity and heterogeneity among groups provide conditions for a better understanding of the antitrust agencies' enforcement. For that reason, this thesis explores some typologies of remedies.

Merger remedies' guides or classifications worldwide essentially rely on *structural* and *behavioral* conditions. Motta *et al*. (2003), for example, define partial and total divestitures of entire ongoing businesses as structural remedies, whereas behavioral remedies are related to constraints on the merging firms' property rights, such as compulsory licensing or access to intellectual property. The authors also consider a third 'category' of intervention in deals, the so-called *quasi-structural remedy.* In the same vein, the Competition Bureau of Canada – CBC (2011, p. 13) – states that a quasi-structural remedy "[…] is accomplished through means other than a divestiture." Granting access rights to networks and removing anti-competitive contract terms are examples of quasi-structural remedies to account for anticompetitive threats. The Competition Bureau of Canada, in addition, suggests that "where other remedial measures complement a structural divestiture", a fourth group of remedies exists, called a *combination remedy.*

Kopke *et al*. (2005), in a study developed by members of the Directorate General for Competition of the European Commission, interestingly group remedies into four categories, which at first glance is a much different approach than that described above. Based on 96 cases enforced in that jurisdiction, the authors classify the conditions imposed into four types according to the intended competitive effect of the remedy, which varies from 'commitments to transfer a market position' and 'commitments to exit from a business' to 'commitments to grant access' and 'others'. However, the dissimilarity with other typologies disappears as soon as the descriptions of the types of intervention are provided. The authors list divestitures of several orders – e.g., controlling stakes, business units, and assets – as well as long-term exclusive licensing and intellectual property rights licensing agreements, to characterize

European Commission intervention between 1996 and 2000. Thus, the structural-behavioral paradigm clearly prevails.

The Department of Justice of the United States – DOJ follows the same path in its policy guide to merger remedies but also proposes something new. In short, the DOJ (2011) places in the structural group not only 'traditional' divestitures but also licensing of critical assets, which includes tangible and intangible assets – e.g., patents. The DOJ conceptualizes a critical asset as something "[…] necessary for the purchaser to compete effectively in the market in question." (*ibid*, p. 11) Regarding behavioral or 'conduct remedies', the DOJ splits the possible conditions into different categories, such as discriminatory practices, exclusivity and non-compete prohibitions, licensing of non-critical assets, measures that prevent the dissemination of information within a firm, which are very common in vertical integrations, and others. Finally, the combination of structural and behavioral remedies generates what the DOJ calls *hybrid remedies*, which are quite similar to the Competition Bureau of Canada's statement.

Considering, then, the prevalence of the structural-behavioral paradigm but also the fact that, in Brazil, during the period of Law 8,884/94, there was no specific guide to orient the application of remedies, this thesis adopts its own scale of antitrust authority intervention on mergers, which is the result of this author's analysis of all 5,091 reviews examined herein.

As Figure 2 shows, the two extremes of the enforcement scale proposed by this thesis are 'approval without restrictions' – even if, in some cases, reporting obligations/monitoring was imposed – and 'disapproval'. Between these extremes, the decisions of the Brazilian antitrust agency are grouped into three different types of conditions imposed or negotiated with the transacting firms, which means that the transactions were 'approved with remedies' in those cases. The lowest level of intervention in deals encompasses approvals conditioned to 'conduct changes'. Essentially, 'conduct changes' are those related to contractual changes such as modifications in terms or geographic or product definitions contained in non-compete or exclusivity clauses. Clearly, then, this type of intervention does not impact the market structure immediately after the authority's decision. The second level of intervention are called 'organizational structure changes', despite the fact that they also do not affect the market structure. 'Organizational structure changes' comprehend obligations related to strategic and operational aims, governance practices, and corporate structure. This group of

conditions imposed by the CADE includes the prohibition of discriminatory behavior in vertical relationships and passing rules regarding executive nominations and job scope up to the interruption of supply contracts or cooperation agreements with which some parties were engaged before the transaction. Finally, ‘approvals with asset structure changes’, the highest level of intervention in deals adopted by the antitrust authority a step-back from total prohibition, implies the partial ban on some parts of a reviewed merger. Actually, these verdicts prescribe the divestiture of tangible and/or intangible assets to third parties to reset the pre-deal competitive environment.

Figure 2 - Levels of antitrust intervention in mergers and acquisitions

Source: Thesis author

Considering, then, the discussion and enforcement scale proposed above, ‘levels of antitrust authority intervention on merger reviews’ – LV_INTER, representing CADE’s verdicts – is the dependent variable adopted in the empirical analysis. This ordinal variable includes the five categories illustrated in Figure 2 and assumes a value of ‘0’ if a merger was ‘approved without restrictions’, ‘1’ if a merger was ‘approved with conduct changes’, ‘2’ if a merger was ‘approved with organizational structure changes’, ‘3’ if a merger was ‘approved with asset structure changes’, or ‘4’ if a merger was ‘disapproved’.

4.2 Liberals vs Statists: aligning political ideology and antitrust policy implementation

> “All Presidential appointees are agents of the President […]. If termination is difficult, a President would be expected to select […] individuals with well-known opinions shared by the President.” (COATE, 2002, p. 3);
>
> “Members of the commission are political appointees of the president and, of course, tend to reflect the president’s political philosophy.” (COCHRAN *et al*., 2011, p. 60)

Although an administrative council such as the CADE is presumably autonomous from Executive or Legislative powers – as it should be, at least according to the law – it is reasonable to consider the assumption that state Presidents, over the years, have attracted

people to the government bureaucracy whose ideology is sympathetic to their own beliefs. In the Brazilian antitrust commission case, the condition of 'difficult termination of mandates' due to commissioners' fixed terms since Law 8,884/94's enactment, reinforces the interest in Coate's idea.

Prior studies have examined the influential role of political ideology in regulatory agencies. Observing the presidential impact on the FTC performance, Moe (1982) concludes that in the United States, the administrations of Republican Presidents positively impact the annual number of complaints issued, whereas, under Democratic Presidential influence, the sign is the opposite. Stewart and Cromartie (1982), interestingly, reach similar conclusions. The authors hypothesize that Republicans are more supportive of the FTC activities than Democratic Presidents based on the argument that Republicans are more pro-business and seek a fair market, thus demanding more regulation. Another study, by Coate and Kleit (1998), analyzes mergers challenged by the FTC by adopting variables to measure partisan political influences inside the Commission in addition to structural and other concepts. The association between the party of the President who first appointed the commissioner and the commissioner's ideology is an exploratory variable. The political affiliation of the FTC panelists is also tested. In short, despite the fact that the first term is not significant, the authors confirm that political representation affects merger review verdicts. In particular, the study reveals that if Democrats are substituted by Republicans, the FTC tends to be less supportive of merger orders.

The description above of a few prior studies' hypotheses, the measures adopted to capture political ideologies in antitrust commissions and their results is considered sufficient to state that parties not only have different views toward consumer protection and government regulation of markets but also seem to execute those views, which is exactly what sustains the rationale of Power and Zucco Jr. (2009). To these authors, a qualified political representation requires a party system with a reasonable level of ideological differentiation and organization. Based on these ideas, then, the authors assess the ideological placement of political parties in the Brazilian National Congress in the first five legislatures elected under democracy. The results show that, "[…] although individual Brazilian parties have clearly undergone ideological change since the late 1980s, the main parties can be arrayed clearly on a classic left-right scale and that the overall ordering has been relatively stable across time" (*ibid*, p.

219). The standard ‘left-right’ dimension, by the way, coincides with the findings of other investigations – e.g., Mainwaring and Perez-Lifian (1997).

Despite the fact that Brazil has one of most fragmented party systems in the world, particularly on presidential elections from 1994 to 2010, only the PSDB and the PT have elected a President: Fernando Henrique Cardoso for PSDB (1995-1998; 1999-2002) and Luiz Inácio ‘Lula’ da Silva (2003-2006; 2007-2010) and Mrs. Dilma Rousseff for PT (2011-2014; 2015-2018, estimated). It is also interesting that the defeated party in all five runs was also either the PSDB or the PT.

At the beginning of this rivalry, both parties were positioned on the left side of the Brazilian partisan scale, although the PSDB always has been closer to the center than the PT. However, during Cardoso’s two terms, the PSDB began to exhibit a more right-centrist character, which corresponded to the period of economic stabilization combined with the implementation of a series of social programs designed to alleviate poverty. However, it was also related to the privatization of state-owned companies and the end of direct political control of prices, as described earlier in this study. A primary budget surplus and an inflation-targeting monetary policy in addition to the adoption of a floating exchange rate became the three pillars of Cardoso’s macroeconomic policy at the beginning of his second term (MEYER, 2014; FERRAZ *et al*., 2002). Finally, the creation of regulatory agencies such as ANATEL – Telecommunications, ANEEL – Electricity, ANVISA – Health Surveillance, and ANP – Petroleum, Natural Gas and Biofuels as well as the empowerment of the CADE – established in 1962 but maintained ineffectively up to the beginning of the 1990s (NUSDEO, 2002; COSTA NETO, 2005; OECD, 2005; GABAN; DOMINGUES, 2009; BOARATI, 2013) – likewise characterize the PSDB’s presidential terms. Thus, the PSDB clearly assumed a role as promoter and defender of neo-liberal reform.

“While in opposition to Cardoso, the PT was perceived as, and perceived itself as, aggressively standing its leftist ground” (POWER; ZUCCO JR., 2009, p. 230). After Lula’s election at the end of 2002, a restructuring and the extension of Cardoso’s social programs were executed by the PT, while Lula maintained the economic stability path of his predecessor (MEYER, 2014; BARBOSA; SOUZA, 2010). The combination of those efforts was actually favored by the high prices of Brazilian commodities in the international market, which ensured the success of the PT’s first presidential term locally and globally. Thus, the

party opted to enlarge the role of the federal government in the economy over the years by using state-owned banks[30] and subsidized interest rates as complementary vehicles for its development plan. A close government relationship with some industries such as 'Engineering and Construction', motivated by the creation of the Growth Acceleration Program – PAC[31], and also with firms from specific sectors in the domestic market to create 'national champions'[32] has characterized both Lula's second term and Rousseff's first term. As a final point about the regulatory agencies, Campilongo (2009) affirms that PT administrators have been against the agencies' independence and autonomy since the beginning of the PSDB-PT government transition. According to this former antitrust commissioner, the PT did not see any importance in the regulators' actions.

Therefore, considering that the PSDB has sought an aggressive agenda of market-oriented reforms, which means that market mechanisms should be used to regulate most aspects of the economy and the state should not overtly attempt to plan the economy strategically, while the PT has adopted a more statist model in which the state plays a central role – although not usually in terms of public ownership of productive assets – and establishes substantive social and economic goals within an explicit industrial strategy centered on banks and tight business networks (DICKEN, 2011), *it is expected that the level of intervention on merger reviews by the CADE was higher the greater the ratio of antitrust commissioners appointed under Cardoso's administration was.* Thus, the first hypothesis of this paper is stated below. To measure the influence of a PN_LIBERAL explanatory variable on merger review verdicts, the ratio of 'voting panelists' appointed by a liberal president/party was calculated on a case-by-case basis.

[30] The state-owned banks included BNDES – the Brazilian Development Bank – a funding provider to enterprises, and Caixa Econômica Federal and Banco do Brasil, which were both focused on financing consumers.

[31] "PAC is a strategic investment program that combines management initiatives and public works. In its first phase, launched in 2007, the program called for investments of US$ 349 billion (R$ 638 billion), of which 63.3% has been applied. Similar to the first phase of the program, PAC 2 focuses on investments in the areas of logistics, energy and social development, organized under six major initiatives: Better Cities (urban infrastructure); Bringing Citizenship to the Community (safety and social inclusion); My House, My Life (housing); Water and Light for All (sanitation and access to electricity); Energy (renewable energy, oil and gas); and Transportation (highways, railways, airports)" (WORLD BANK, 2015). PAC 1 was launched by the Lula administration, and the Rousseff administration, after reviewing it, renamed it PAC 2.

[32] According to De Leon (2001), the 'national champions' strategy increased the degree of economic concentration in many relevant markets in Latin American countries.

H1: *The greater the ratio of antitrust voting panelists appointed by a liberal government is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

It is worth reinforcing that the variable PN_LIBERAL was not established to capture political pressure on the antitrust agency, but political ideology. Thus, the level of autonomy of the Brazilian antitrust authority is not investigated through this particular term. In sum, the PN_LIBERAL term should be considered as a possible ideological alignment between the antitrust panelists and the federal government, particularly the president's party.

4.3 Educational background: lawyers vs economists

Both Clarkson and Muris (1981) as well as Ginsburg and Fraser (2011) provide an overview of the historical and conflicting relationship between lawyers and economists in the United States' antitrust agencies. The authors show that, for a long period of time, economists were viewed with suspicion by lawyers. In particular, economists were considered to be 'case killers' by lawyers.

In addition to the fact that the competition law was not economically coherent between the 1890s and the 1970s, according to the last cited paper, the organizational structure of the Antitrust Division of the DOJ contributed to this conflict. "The economists made their recommendations either through or after the lawyers, [so they] were routinely put in the position of trying to explain why a case the lawyers said they could win should not be brought for lack of economic merit" (GINSBURG; FRASER, 2011, p. 4).

The situation described above, in addition to the conflict aspect, reveals a certain predisposition of lawyers to litigate, in contrast to economists. This difference between the academic profiles in antitrust regulation can be observed in how economists and lawyers address the regulatory commission's job. The observation from the United States antitrust regulatory system indicates that lawyers and economists are attracted by different incentives. Economists seem to be less susceptible than lawyers are to using agencies as a steppingstone to a subsequent position in the private sector, and they also tend to stay on the commissions longer (POSNER, 1969; CLARKSON; MURIS, 1981).

> "Lawyers are said to favor more litigation than do economists because court challenges increase lawyers' human capital as litigators and thus raise their subsequent returns in private practice. Even in the shorter run, heading a major investigation is required for an antitrust commissioner lawyer to advance to higher government employment grades (which also increase salaries); no such requirement applies to economists. It is the experience of trying cases, the more the better, not the social payoff from the litigation that improves the professional skills and earning prospects of antitrust agencies' lawyers." (COATE *et al*., 1990, p. 468)

Ginsburg and Fraser (2011, p. 13) reinforce the distinct profiles of the two educational backgrounds when they suggest that antitrust agencies should provide an academic environment to their economists "[…] by giving them a certain amount of time for their own research and writing." The authors insist on an association between 'commissions' and an 'academic environment' and suggest that an essential ingredient to attract PhDs in Economics could be a competition agency that is similar to 'another university', which should have a highly respected academic as a Chief Economist from whom young economists could benefit from working with.

In sum, the suggestive character of Ginsburg and Fraser's ideas, although not applied integrally to high-profile officials such as commissions' panelists, shows that high-profile economists' intrinsic motivations are quite close to academic purposes. Obviously, however, none of the general profiles discussed herein characterizes every single antitrust commissioner.

Finally, Nusdeo (2002) translates the previous ideas to the Brazilian antitrust context when she affirms that the increase in the number of economists as voting panelists at the CADE in the late 1990s substantially increased the number of 'approvals with remedies' instead of merger prohibitions. The Brazilian scholar additionally argues that merger reviews in Brazil technically became more sophisticated after the increased participation of commissioner-economists in decisions. As a consequence of the better-designed verdicts, she notes a reduction in private and public costs as well as the maximization of efficiencies generated by merged firms.

Therefore, although for the large majority of cases, the views of economists and lawyers have resulted in the same general decision – 99.2% of the CADE's verdicts contained in this study's sample were unanimously 'approved without restrictions', 'approved with remedies' or 'disapproved' – *it is expected that the greater the ratio of lawyers on the voting panel was, the higher the level of intervention on merger reviews by the CADE was.* Thus, the second

hypothesis of this paper is stated as follows. Thus, the ratio of 'commissioner-lawyers' on the voting panel was calculated on a case-by-case basis to measure the influence of the PN_LAWYER factor on merger review verdicts.

H2: *The greater the ratio of commissioner-lawyers in the voting panel is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

4.4 Motivation for public service: past work experience

Moving forward on the issue of the influence of commissioners' background on antitrust authorities' verdicts, another aspect that deserves attention is commissioners' 'work experience in the public sector prior to appointment'. According to Tate (1981), Ashenfelter (1995) and Olshfski and Cunningham (2008), previous work experiences may affect what public decision makers perceive as a problem or issue to be addressed. Individuals who join the public sector – whether as employees, consultants or partners for special projects – certainly improve their understanding of not only the state government bureaucracy but also the political environment. In addition to the 'usually' requested substantive knowledge in a policy area, the competence and sensitivity to manage a very specific context are required. Accordingly, government experience means that an individual learned about government bureaucratic and political *modus operandi*, which reduces his or her risk when addressing an implementation issue (OLSHFSKI; CUNNINGHAM, 2008). In addition, individuals' motivation for working for or with public organizations can be relevant to determining their behavior and decisions (WRIGHT; CHRISTENSEN, 2010; ANDERFUHREN-BIGET *et al.*, 2014). Cohen (1986, p. 694) notes "Commissioners seem to bring prior attitudes onto the commission and hold them throughout their tenure with little modification."

Based on the highlights above, the ongoing congressional attention to the professional experiences of state-agency nominees (MCMILLION, 2014) does not look like an accident. In addition to the legal obligation of legislatures worldwide to examine the qualifications of professionals appointed to regulatory agencies, testimonials of former antitrust commissioners

have shown congressmen's increasing interest in assessing presidential nominees.[33] Assuming, then, that the length of commissioners' involvement in state government projects – and their motivation to do so – can influence antitrust cases' verdicts, four terms were built to test the promising effects of commissioners' work experience in the public sector prior to appointment: PN_WELFARE, PN_COREFUN, PN_GENADM and PN_UTILITIES. The characterization of these variables, as set forth below, rests on concepts discussed in the so-called theory of 'Public Service Motivation – PSM'.

The PSM's supportive role in this thesis is composed of an attempt to establish a relationship between 'good personal values' – rather than 'self-interest' – and 'commissioners' decisions'. By definition, PSM is characterized as a commitment to public service altruistic values that motivate individuals to serve the public interest (BRIGHT, 2008; ANDERFUHREN-BIGET *et al*., 2014). Because some of the terms adopted in this investigation – e.g., PN_LAWYER and PN_NEND – reflect at least a shadow of self-interest founded in the public choice theory, this empirical examination shall consider both elements of commissioners' profiles.[34]

Perry (1996) is a PSM scholar who makes a prominent contribution to this empirical investigation. That author was the pioneer in proposing a classification of public service motivations, grouping beliefs, values and attitudes into four basic motivational dimensions: 'attraction to public policy making', 'commitment to the public interest and civic duty', 'compassion', and 'self-sacrifice'.

On the one hand, 'attraction to public policy making' describes agents who address political issues, such as political processes, to serve the public interest. 'Commitment to the public interest and civic duty', on the other hand, characterizes individuals who seek the common good as a mean of public interest. Achieving policy goals, for example, motivates them. The third dimension – 'compassion' – gathers professionals driven by the suffering of others, which is reflected in their desire to protect. The individuals who comprise this group sustain their motivation on understanding and empathetic feelings for the needs of others – e.g., the groups targeted by a given public policy. Finally, 'self-sacrifice' is associated with

[33] See Dutra (2009).

[34] "The PSM perspective of public officials may serve to rebut the public choice theory (PCT) that portrays the bureaucrats, though public servants, essentially, as self-interested individuals, trying to maximize their own benefits and utility as well as aiming at increasing their own personal power, prestige, and income, instead of being motivated by the high ideal of serving the state and the public (Hughes, 1994)." (YUNG, 2014, p. 416)

‘abnegation’, a “[…] willingness to substitute service to others for tangible personal rewards” (*ibid*, p. 6). The author resorts to a speech by President Kennedy to exemplify this motivational dimension: “Ask not what your country can do for you; ask what you can do for your country”.

Anderfuhren-Biget *et al*. (2014), another inspiring study for this construct, assess the relations between the four motivational dimensions above and four public policy domains – ‘General Administration’, ‘Welfare’, ‘Public Utilities’ and ‘Core State Functions’ – illustrated in Figure 3. By ‘public policy domains’, the authors mean “[…] semi-autonomous areas of state action and communities of actors who share common frames or ‘policy images’ that are composed, among other things, of particular norms and values.” (*ibid*, p. 810) To match both categorizations, then, the authors adopt three assumptions: (i) individuals tend to seek job opportunities in the public sector that are well-suited to their values; (ii) for each individual, a particular motivational orientation should prevail; and (iii) each policy domain is differently associated with one of Perry’s motivational dimensions. The authors use the ‘General Administration’ public domain as the reference category for their empirical tests. For that reason, the following paragraphs highlight relevant findings on the other three dimensions.

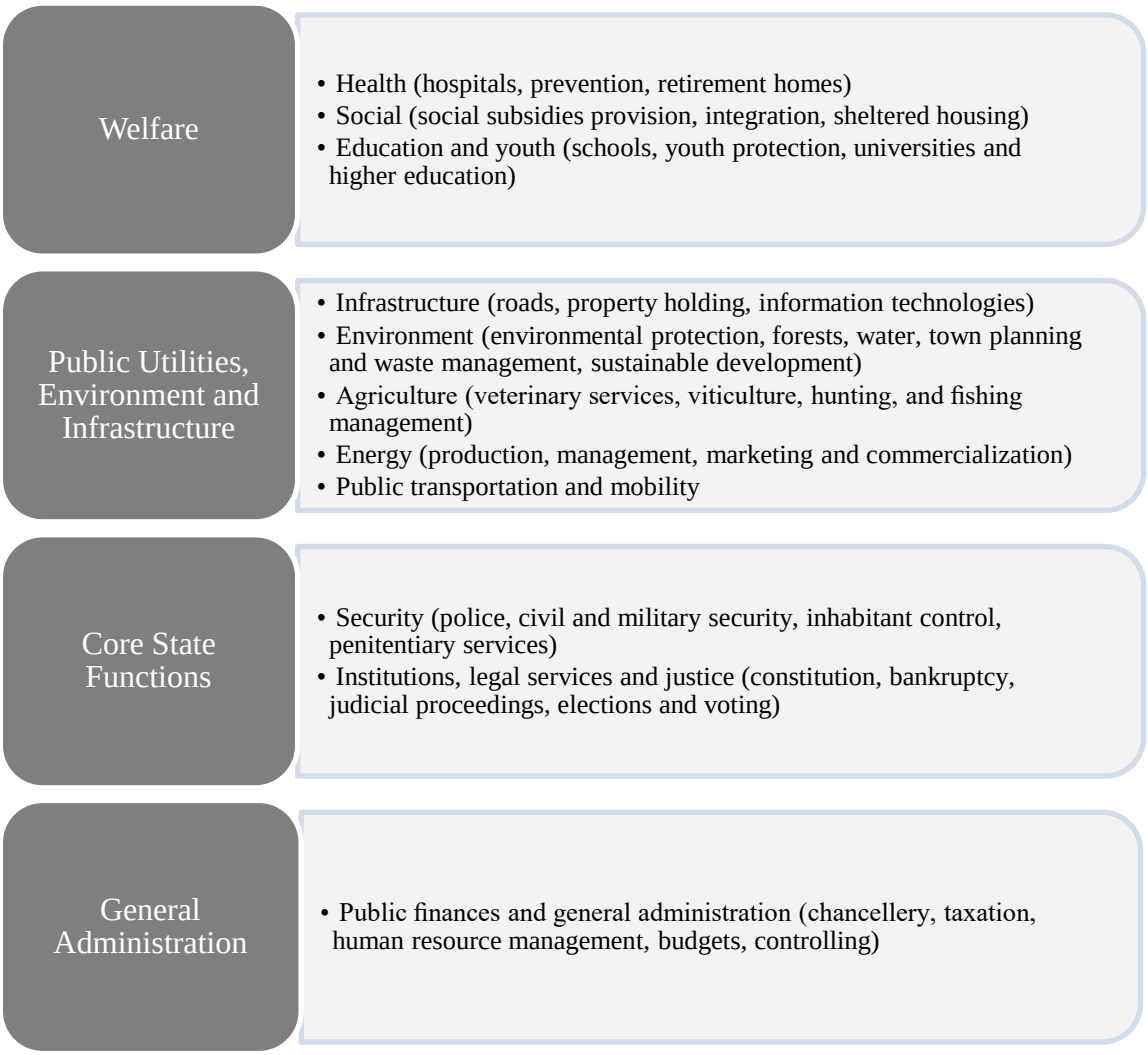
In the Welfare policy domain, which includes government organizations focused on ‘Health’, ‘Education’ and ‘Social Work’, individuals demonstrate that they are more likely to be motivated by ‘Compassion’. In addition, individuals from the same group revealed the highest levels of ‘attraction to public policy making’. Thus, compassion and a particular inclination for politics coexist in the ‘Welfare’ policy domain.

Conversely, the article notes that the ‘Public Utilities’ domain includes professionals with the highest levels of ‘Commitment to the public interest’ and ‘Self-sacrifice’. The same professionals, however, do not seem attracted by politics. In the authors’ own words, “civil servants working in the Public Utilities domain, which comprises environmental, infrastructure or public transportation management and provision, are characterized more by technical expertise than by particular driving motives.” (ANDERFUHREN-BIGET *et al*., 2014, p. 813)

Finally, turning to the outcomes that regard the ‘Core State Functions’ domain, individuals demonstrate more propensities to be reticent about empathetic feelings. Actually, compliance,

norm enforcement, legality, and rationality seem to guide those professionals in charge of ‘Security’ and ‘Institutions, Legal Services and Justice’. This conclusion can be illustrated by Ashenfelter *et al*. (1995, p. 274), who hypothesize that “[…] federal judges with prior state judicial experience are expected to adapt more quickly to the federal bench than other appointees with no prior judicial experience.” In brief, ‘Core State Functions’ are more about ‘following the rules’ than ‘putting the heart into decisions’.

Figure 3 – Categories of policy domains



Source: ANDERFUHREN-BIGET *et al*. (2014, p. 823)

Now, applying the concepts and findings related to PSM to this thesis context, it is assumed that public agents who had worked in the Welfare sector, before joining the CADE, have a higher level of ‘Compassion’ than any other group. This means that such agents may be more supportive of consumers and competitors’ claims than commissioners who had not been

associated with Welfare government tasks. Clearly, ‘compassion’ is seen as commissioners’ sympathy, empathy, concern, solicitude, sensitivity, warmth and kindness (OXFORD, 2015) to the ultimate targets of antitrust policies: consumers. In pre-commission public service, the former employee or state partner primarily acted in a manner motivated by a fellow feeling for his or her target community – e.g., people who demanded social service such as patients, students, the elderly and others – which was transferred to consumers and competitors while judging mergers. Frederickson and Hart (1985, P. 549) suggest “[…] an extensive love of all people within […] political boundaries and the imperative that they must be protected in all of the basic rights granted to them by the enabling documents.” Accordingly, it is expected that compassionate commissioners were tougher on transacting firms than were their counterparts.

In addition, ‘attraction to public policy making’ – the other distinctive characteristic of those who work in the Welfare policy domain found by Anderfuhren-Biget *et al*. (2014) – indicates the same positive effect of ‘Welfare pre-commission experience’ on the level of commissioners’ intervention on merger reviews.

The first potential explanation arises out of the ‘principal-agent compromise’. Seeking public interest, the agents play a supportive role with respect to their principals, the elective officers. To be elected, a politician depends on votes. If consumers, for instance, do not feel represented by politicians, they can change their representatives (MIWA; RAMSEYER, 2006). Therefore, this group of professionals uses its good values to influence political processes in favor of principals, responding to people’s claims instead of transacting firms’ aspirations. The second potential argument is based on an adversarial relationship between principal and agents with different views of or interests in a specific policy. In particular, the agents use their expertise and public interest motivation to develop a good policy, although it does not meet the principal’s goals. This classic principal-agent problem, discussed in Gailmard (2010), reveals its special contours in an independent agency like the CADE because the commissioners can judge against the government’s ideology and interests – note that commissioners’ terms are fixed and the state president cannot remove his or her appointee. Considering, that ‘compassion’ is paired with ‘attraction to public policy making’ in the Welfare policy domain, any political effort made by those agents includes a measure of support for consumers.

In conclusion, the variable PN_WELFARE seems to generate positive effects on the dependent variable LV_INTER. To measure the influence of PN_WELFARE on merger verdicts, the ratio of voting panelists whose work history in the public sector had been predominantly associated with 'Health', 'Education' or 'Social Assistance' was calculated on a case-by-case basis. If the ratio equals or exceeds 50%, PN_WELFARE assumes value '1', otherwise '0'. More specifically, the longest-lived association of each antitrust commissioner with a policy domain was considered on an individual basis and matched with the respective predominant altruistic value before calculating the ratio of voting panelists with such experience. By 'long-lived association', this investigation means the largest length of time working as a public employee, consultant or partner in a particular public policy domain. Finally, it is worth noting that PSM is not an exclusive characteristic of public employees (ANDERFUHREN-BIGET *et al*. 2014), which justifies the choice of pre-commission public employment, consultancy and partnerships with public entities, not merely public employment. All that said, 'hypothesis 3a' follows:

H3a: *If the ratio of antitrust voting panelists with predominant prior public service experience in the Welfare policy domain is equal or greater than 50%, the probability of high levels of intervention in deals by the antitrust authority will be greater, ceteris paribus.*

Alternatively to PN_WELFARE potential effects on LV_INTER, PN_COREFUN, PN_GENADM and PN_UTILITIES, variables related to the other three motivational dimensions, are also tested. In this case, it is expected that relative to PN_UTILITIES, the omitted category of this group of dummies, the other two terms show a weaker effect on the level of intervention on merger reviews than PN_WELFARE relative to PN_UTILITIES. Accordingly, 'hypothesis 3b' is formalized. With respect to the measure of the new variables, the statement placed before the announcement of 'hypothesis 3a' accounts for all, considering – of course – major experience in the relevant public domain.

H3b: *Relative to past work experience in the Public Utilities domain, prior work experience in Core State Functions and General Administration will decrease the probability of the antitrust authority to adopt high levels of intervention in deals than past work experience in the Welfare domain, ceteris paribus.*

4.5 Experience on the bench

The theoretical foundation and hypotheses related to commissioners' experience prior to being nominated to an agency give way to a debate about the possible influence of panelists' 'experience on the bench' on merger reviews.

Several scholars from different research fields have invested efforts to determine whether experience affects law enforcement and its direction. Tate (1981) and Meernik and Fariss (2006), for example, have observed judges, prosecutors and attorneys in courts and international tribunals, respectively. Both studies conclude that 'length of judicial experience' matters for some groups. Tate (1981) affirms that this factor accounts for part of the variance in decisions about civil rights, civil liberties, and economics in the United States Supreme Court after World War II. Meernik and Fariss (2006) reveal that in the International Criminal Tribunal for Rwanda, the total experience of the defense team increases the probability of a life sentence. In contrast, the total experience of the prosecution team, also measured as a determinant of probability of a life sentence, is not statistically significant.

Observing another context – police investigations – Meissner and Kassin (2002) focus on an 'investigation bias' that can affect investigators' ability to detect deception. First, the authors review past studies. Second, they note that relative to inexperienced individuals, investigators and trained participants tend to judge targets as deceptive rather than truthful. Based on this evidence, the authors examine the same effect and individual profiles in police samples from the United States and Canada. They find that investigators' responses remain biased toward judging suspects deceptive, with significantly greater confidence compared to the previous, inexperienced sample of students. Therefore, considering the sample of professionals, greater experience seems to lead investigators to tougher judgments against defendants.

To illustrate with one more research field interested in the effects of experience on judgments that can be classified into different levels, Garside *et al*. (2013) represent a rare representative of 'economics in public service'.[35] Those authors focus on cases of abuse of monopoly power in the area of United Kingdom antitrust law and reveal that under some circumstances,

[35] According to Garside *et al*. (2013, p. 474), "[…] despite the long-standing interest by economists in the effect of the weak constraints on public positions, we believe this is the first empirical economic study of experience of public officials."

experience matters. For example, the study concludes, "[…] replacing an inexperienced chairman with one of average experience increases the probability of a 'guilty' outcome by approximately 30% and, after chairing approximately 30 cases, a chairman is predicted to find almost every case guilty." (*ibid*, p. 475) However, when taking into consideration panel members' experience, the authors find no evidence that verdicts are affected.

Despite the last reported result, concerns about the experience level of antitrust commission panels and the influential role of experience on the level of agency enforcement deserves attention. In addition, it is reasonable to believe that this relationship has a positive direction due to the combination of 'learning by doing' and 'updating' as experience develops, according to Garside *et al*. (2013).[36]

The ultimate argument comes from an extended discussion promoted by Prendergast (2007) that comprehends the 'public interest and public choice dilemma' or alternatively, the 'principal-agent problem', to explain why experience matters. Prendergast affirms that sometimes public officials can be more biased than their principals in favor of clients. In cases in which both interests are opposed, clients generally benefit from less-informed bureaucrats. Thus, agents more closely associated with clients exert less effort. Therefore, translating this rationale to the antitrust context, if merging firms are considered 'clients' of antitrust agencies and consumers are considered 'principals', less-informed commissioners are likely 'pro-firm' rather than 'pro-principal'.

Taking advantage of the coincident conclusions of all of the research fields presented above, which relate 'more experience' to a 'higher level of enforcement', 'hypothesis 4' assumes the same direction of influence. Therefore, it is expected that the more experienced the panel of commissioners, the tougher the panel is against transacting firms. The mean of the number of days that the panel members were on the bench prior the judgment session for each case was calculated to operationalize the concept herein discussed. The respective variable, thus, is coded as PN_BENEXP.

[36] The authors do not believe that 'found guilty' was based only on learning that built experience. They mention a somewhat organizational dysfunction at the commission as a possible explanation to the expressive rate of 'guilty' in investigations under experienced Chairman. In their own words, "It is difficult to believe that all the companies coming before the CC are guilty, so we must be observing an experience effect for public officials that goes beyond learning by doing." (GARSIDE *et al*., 2013, p. 489)

H4: *The greater the mean experience of the voting panelists on the bench is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

4.6 Self-interest: posturing attractiveness for post-commission job

Until now, political ideology and commissioners' educational background, along with pre-commission and 'on the bench' experiences, have paved the way to this thesis' objectives. However, there are more aspects of authorities' capabilities to be explored that can explain agencies' verdicts on merger reviews. 'The posture of the voting panel to increase attractiveness to post-commission jobs' – or, simply, panelists' self-interest – is the next step.

Antitrust laws usually are enforced through commissioners' mandates and decision-making processes, which are sometimes criticized.[37] In the previous chapter, the description of the 1994 Brazilian Antitrust Act framework includes commissioners' appointment and the nominee-approval procedure, the length of commissioners' mandates and whether a renewal for more terms is possible, whether commissioners' dismissal is possible, the composition of the voting panel, and voting rights. These aspects are important because they simultaneously suggest antitrust agencies' level of autonomy and the interest-capture gaps that affect authorities' decisions. The following speech of a former Brazilian antitrust commissioner illustrates this issue.

> "I have been in the CADE for two terms but, despite the renewal of my first to second mandate has been noiseless, I need to say something: the mandates should, actually, be longer, eliminating the renewal prerogative. Often, the renewal comes amid an important judgment. And worse, there may be more than a panelist's first term ending. Needless to say about the bad incentive that these possibilities can bring." (VASCONCELLOS, 2009, p. 233)[38]

The concerns exposed by the former commissioner – translated as 'bad incentives' – rely on the potential political pressure exerted by Executive and Congressional powers on

[37] See note 7

[38] "Permaneci no CADE por dois mandatos e, apesar de a minha recondução ter sido tranquila, abro aqui um paréntese: os mandatos realmente deveriam ter prazos mais longos, eliminando a figura da recondução. Muitas vezes, a recondução ocorre em meio a um julgamento importante. E pior, pode haver mais de um conselheiro terminando o seu primeiro mandato. Desnecessário dizer o tipo de incentivo ruim que essas possibilidades podem trazer." (VASCONCELLOS, 2009, p. 233)

commissioners who wait for presidential reappointment and congressional approval. The hypothesis of capture by transacting firms or even other interest groups can also be formulated. Alternatively, it is also possible to believe that this former commissioner referred to his counterparts' incentives to spontaneously support state powers or third parties purely in their own self-interest.

This investigation assumes that any effective support provided by regulators, regardless of the direction of incentive – e.g., government-regulators, regulators-government, regulators-private parties or private parties-regulators – only occurs if regulators' interests are met. Otherwise, coercion prevails, which is not an outcome that is reasonable to admit with respect to a high-profile public agency composed of high-profile professionals with a fixed mandate.

Therefore, because the PN_LIBERAL term relate to politics whereas PN_WELFARE, PN_COREFUN, PN_GENADM and PN_UTILITIES relate to the influence of good values on commissioners' decisions, and capture only occurs if it coincides with commissioners' personal and professional plans, panelists' self-interest is the focal-point of PN_NEND and PN_HCME variables. This investigation, however, does not intend to assess the ethics of self-interest in public service, only to evidence whether self-interest affects merger-review decisions.

With respect to the theoretical framework that addresses this issue, there are three commonly explored approaches to the so-called 'revolving-door mechanism': 'conventional revolving door', 'human capital', and 'market expansion'.

In the regulatory context, the 'revolving-door mechanism' means a type of process founded in interest groups that pursue regulatory outcomes and whose final aim is to obtain a particular benefit. Due to the central role of regulators in this process, they are provided incentives to grant regulatory favors to interest groups. For example, job retention, self-gratification from the exercise of power, and post-government personal wealth can be achieved if expectations of interest groups are either met or at least fed by future benefits.

In practical terms, the 'revolving-door mechanism' can be verified in regulators' professional career paths through two changing moments: if a regulator's pre-commission job was related to regulated parties – the 'dynamic entry hypothesis' – or if a regulator's post-commission job

was associated with regulated parties – the 'dynamic exit hypothesis' (ECKERT, 1981; COHEN, 1986; ZHENG, 2015).

The first theoretical approach, the 'conventional revolving door', presupposes that the exchange relationship between the demander and supplier of regulation directly addresses the demander's needs. Thus, a pre- or post-commission professional connection between regulators and organizations related to certain enforcement actions would lead regulators to intervene less in regulated businesses. In the antitrust context, and more specifically within the merger-review boundaries, a pre- or post-commission professional connection leads regulators to approve transaction parties' original deals either without restrictions or with lower levels of intervention, assuming that merging firms, not competitors, constitute the interest group.

To the best of this author's knowledge, few studies test whether pre-regulatory employment affects commissioners' behavior with respect to regulated cases. Gormley (1979) and Cohen (1986), for example, observe the Federal Communications Commission and show that commissioners who previously worked in the regulated industry are more supportive of industry's demands than those without prior experience in that economic sector. Makkai and Braithwaite (1992), and likewise their theoretical statement, reveal that Australian nursing-home inspectors who have prior senior management experience in the industry seem to be less tough in terms of regulatory enforcement.[39] With respect to studies that address the 'dynamic exit hypothesis', which is significant for building the variables announced above,[40] Cohen (1986), along with Grace and Phillips (2008), find some – but not strong – evidence that the theoretical concept works. Cohen (1986, p. 695), however, admits that the 'dynamic exit hypothesis' makes sense "[…] only when the regulator is nearing the end of a government term and begins looking for a new job."

Not only because few empirical studies find even a partial signal of a positive relation between post-commission employment in formerly regulated firms and toughness of actual enforcement practice but also because few studies reveal the opposite influence (QUIRK,

[39] "There are a number of possible mechanisms to explain this [Prior Employment in the Regulated Industry] hypothesis. First, those with prior industry employment may possess attitudes favorable to the industry because of their prior service, and they may carry those attitudes into their work on the commission. Second, prior industry service may lead to greater sensitivity to and understanding of the industry position, which translates into industry support. Third, the regulated industry often plays an important role in the recruitment of commissioners (Graham and Kramer, 1976; Cohen, 1985), and the industry may try to place their own people on the commissions to ensure support." (COHEN, 1986, p. 693)

[40] Prior work experience has already been discussed.

1981), an alternative theory has been developed based on ‘human capital’. The newer theory, as announced before, held the same analogy of the ‘conventional revolving door’.

Eckert (1981, p. 120), who analyzes the biographical profiles of 174 regulators serving in regulatory and judicial bodies in the United States, suggests that the post-government job “[…] could be the return on the investment in human capital that the commissioner made by learning the details and politics of regulation during his or her tenure in office, a period of relatively low wages and on-the-job training.” Zheng (2015), though, adopts a slightly different tone to summarize the ‘human capital’ theory. According to that author, if regulators want to show their qualifications to prospective industry employers, being more aggressive toward regulated parties works as an incentive. Despite the seeming difference between the two studies, the authors agree on the main construct. Indeed, Che (1995) provides the theoretical improvements to this issue almost fifteen years after Eckert’s research, empowering that main construct.

The key contribution of Che (1995) to the ‘human capital’ literature seems to be the mutual dependence among governments, regulators and regulated parties that countered the traditional understanding prior to the mid-1990s. That author suggests that the revolving door is a natural consequence of (i) regulatory bodies' need for specialized knowledge and industry-specific expertise; (i) regulators’ need for human capital to perform accordingly; and (iii) regulated parties’ need for regulators' expertise to minimize the future costs of regulation. Therefore, if a regulator gets a post-commission job in a regulated firm, it is due to his or her expertise and the level of enforcement applied as a signal of professional competence, which is also interpreted as an enhancement of state government regulatory control.

In sum, the ‘human capital’ theory relies on regulators’ willingness to acquire regulatory expertise and to pursue government’s goals against firms.[41] This willingness, then, drives the three-tier principal-agent model, increasing the level of law enforcement. With respect to empirical papers that explicitly test this theory, deHaan *et al*. (2015) confirm the construct by analyzing fraudulent financing reporting cases prosecuted by the United States Securities and Exchange Commission – SEC. Those scholars find that SEC lawyers who had been tougher

[41] Zheng (2015, p. 1280) states that “[…] the human-capital theory concerns only the government-to-industry revolving-door, while the capture theories encompass the revolving-door in both directions, both government-to-industry and industry-to-government.”

against defendants later joined law firms specializing in defending such organizations. Other studies, such as Glaeser *et al*. (2000) and Boylan (2005), present results coherent with that construct.

Whereas the 'human capital' theory, as noted, complements the 'conventional revolving-door' theory in explaining the incentives that the revolving door provides for regulators, a third theoretical framework has been developed to enhance understanding on the same phenomenon: so-called 'market-expansion' theory. In contrast to the previous theoretical frameworks, which suggest that regulators respond to private parties' needs, 'market expansion' theory is grounded on the idea that regulators can enlarge the market for post-commission exploitation.

According to Zheng (2015), regulators' incentives to expand market demand for post-commission services can be revealed either through more aggressive enforcement actions – e.g., higher penalties – or rulemaking. Focusing on what matters to this thesis – the merger-review enforcement context – Zheng suggests the following conditions under which the market-expansion incentives are expected to be stronger: "[…] relatively large degree of regulatory discretion, enforcement targets with ample financial resources, the possession of specialized skills and knowledge by regulators, and the lack of a private right of action." (*ibid*, p. 1286) With respect to the latter issue, the author states that the antitrust regulation is the best example of how market-expansion incentives can be strong: private parties' monetary restitution or compensation for antitrust law enforcement can only occur if private actions are taken.

Therefore, in opposition to the 'conventional revolving-door' theory, as noted above, the 'market expansion' and 'human capital' theories indicate a greater possibility that regulators may engage in more aggressive enforcement to benefit their post-government careers.

Next, based on everything that has been said about the 'revolving door' mechanism, two hypotheses are formulated. The first – 'hypothesis 5a' – examines the 'conventional revolving door' theory, which associates the proximity of an end of a commissioner's mandate to a direct, positive response to private parties' interests. Therefore, it is expected that commissioners' attractiveness to a post-commission professional relationship with transacting firms increases as the end of a panelist's total mandate-period approaches, negatively

affecting the antitrust authority's level of intervention in deals. The variable used to represent this statement is PN_NEND. To measure the proximity of the end of panelists' mandate, the mean of time, measured in days, to the end of panelists' mandate at the time of the final judgment session, on a case-by-case basis, was calculated.

H5a: *The closer the mean of time to the end of voting panelists' mandates is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

In contrast, despite the fact that 'age' has long been criticized as a proxy for 'experience' (MINCER, 1974) – but supported by Aaronson (2010), who sees 'age' in conjunction with 'educational background' as a possible explanation for levels of skills and knowledge, referred to as 'potential experience' – Garside *et al*. (2013) believe that 'age' reflects the passage of time since an antitrust commissioner adjudicated his or her first case, and thus, 'human capital' and 'market expansion' theories have a proxy. 'Human capital' formation and the implementation of a 'market expansion' strategy both demand time, so the mean of age, measured in years, of the voting panelists at the time of the final judgment session, on a case-by-case basis, is also a proxy for posturing attractiveness to a post-commission job. Accordingly, 'hypothesis 5b' introduces the expected direction of the PN_HCME variable according to the theory.

H5b: *The greater the mean of age of the voting panelists is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

4.7 Size of the voting panel: Can vacancy, absence, suspiciousness or impediment affect decisions?

The 'public interest and public choice' dilemma seems to be the tonic feature in a regulatory decision-making context, which is absolutely applied to antitrust commissioners' lives at supposedly, autonomous agencies. At least in the theoretical dimension, decisions – as the prescript to this entire chapter – may be affected by 'political ideology', 'educational background', prior work experience, 'personal good values', 'experience on the bench', and 'expected post-commission rewards'. That notwithstanding, what can be said about the

influential role of the decision-making structure and process on antitrust authorities' verdicts? Can the decision-making structure and process itself influence the final verdict? Specifically, can the size of commissions' voting panels contribute to tougher or softer decisions? The answer to these questions is the new challenge comprehended by this hypothetical exercise. Therefore, from now on, in addition to commissioners' backgrounds and the influence of interest groups, the size of the voting panel is a part of this analysis of antitrust authorities' capabilities and merger reviews.

The design of the decision-making structure and process is a concern of antitrust lawmakers, as this thesis has noted. For example, the Brazilian antitrust authority's decisions under Law 8,884/94 were made in public sessions through a plenary council with a Chairman and maximum of six Commissioners. Each member had one vote and the final verdict was defined by a simple majority with the unanimous presence of four of its members. To clarify, the 'unanimous presence of four of its members' means that merger-review verdicts can be reached if four out of seven commissioners vote together even the other three panelists do not vote. Basically, five 'events' can cause the total votes in a particular case to be lower than seven: (i) if a commissioner seat is unfilled due to the end of commissioner's mandate, and a presidential reappointment or new appointment has not occurred in time; (ii) if a commissioner is absent due to vacations, representing CADE in national and international events, was invited to meet with other state government representatives like the Ministry of Justice, or for any other justified reason; (iii) if an interested party argues that a commissioner is biased – or suspected of being so, provides any necessary evidence, and the affected authority agrees with the claimant; (iv) if a commissioner reports himself or herself suspicious or prevented from voting – e.g., if there is a spouse, blood relatives or other connections with parties related to a particular review; or (v) if a commissioner has issued an opinion on the case under review as a representative of other government entity such as the SDE/MJ or SEAE/MF before assuming a panel seat. In the event of chairman absence, impediment or suspicion, the commissioner's earliest-vested or -appointed or oldest, following these criteria order, should be in charge of the voting panel.

There is a vast literature in the field of management on the influential role of executive boards and council size on diverse business issues.[42] Also available are many studies that assess

[42] E.g., Forbes and Milliken (1999); Bennedsen *et al*. (2008); Nakano and Nguyen (2012).

social decisions by associating ‘public resources use’ and ‘size of population’ and are strongly supported by game theory.[43] However, it is criminal and judicial research that can provide insights into the research on antitrust authorities.[44] The causal effects of investigators and jury size, respectively, on criminal offenses and the toughness of jury verdicts have been observed by scholars in recent decades. The main motivation for judicial scholars’ engagement on this theme dates from 1970, when the United States Supreme Court ruled that the 6-member juries referenced in the Florida State statute were constitutional instead of the 12-member jury adopted by the medieval courts of England (LUPPI; PARISI, 2013). That famous case, *William v. Florida*, centered on a robbery defendant who demanded a 12-member jury instead of the 6-member jury provided in the statute. At that time, “[…] the Court concluded that existing evidence was insufficient to demonstrate that the verdicts of 6-member juries would be different from those of 12-member juries or would operate to the disadvantage of a defendant.” (VALENTI; DOWNING, 1975, p. 655) Years later, after some trials enrolled 4- or 5-member juries, the Supreme Court reaffirmed *Williams v. Florida*, nonetheless revealing its concerns about reducing jury size to fewer than six members (MILLER, 1998).[45]

That said, the first theoretical issue to address is the dynamics of voting panels’ deliberation. According to Luppi and Parisi (2013), if deliberation occurs as a sequence of opinions in opposition to independent opinions, an informational cascade is characterized and can affect the final verdict. The authors state that individual judgments, despite original divergences, can be adjusted over time as a response to previous information provided by other jurors. For that reason, the authors categorically affirm that different panel sizes lead to different results.

The second theoretical aspect to be observed is the heterogeneity of panels. Saks and Marti (1997), along with Luppi and Parisi (2013), note the importance of minority-group representation, arguing that the size of a group affects minorities’ representativeness. Saks and Marti suggest that the smaller the voting panel, the more difficult it is to obtain adequate minority representation. Therefore, the larger the voting panel, the better the minority representation. Thus, there is an increased likelihood of a minority coalition that can influence the final verdict (HARE, 1976).

[43] E.g., Brewer and Kramer (1986); Isaac and Walker (1988).
[44] Investigations of regulatory bodies’ capabilities have not discussed the influence of panel size on the level of enforcement.
[45] Miller (1998) provides an historical review on the origins of the 12-member jury, along with tough criticism of the Supreme Court decision.

It is worth noting that although the first and second theoretical elements introduced above do not address the influential role of 'panel size' either on 'level of enforcement' or 'toughness of verdicts', both shorten the distance between criminal juries and antitrust commissions because of some similarities between the two. The 'mutual-dependent' process of deliberation and the heterogeneity of voters' profiles, which has been a fundamental issue of this thesis, justify the application of criminal and judicial knowledge in the antitrust context.

Moving forward, the richness of memories, thoughts and opinions in larger groups is greater than in smaller ones. Lempert (1975, p. 698), for example, reacting to *William v. Florida*, states: "[…] where the verdicts of six- and twelve-member juries diverge, the verdicts of twelve are likely to be of somewhat higher quality than the verdicts of six and are likely to be superior with respect to other important values."

Roper (1980) agrees with the previous statement but also sounds an alert about the collateral effect of the broader view of larger decision-making groups: larger juries hang significantly more often than do smaller ones.[46] In other words, the likelihood of divergent opinions that block a consensual verdict is higher in large juries. If this occurs in a criminal environment, the authors argue that there is no final decision and thus the judgment may be postponed or the accuser or government itself may even give up to pursue the case later (ABA, 2015). Therefore, in a criminal trial, a hung jury seems to favor the defendant. There is no verdict and the defendant remains unconvicted. Lempert (1975) suggests that consequently, charges may decrease and the defendant may increase her bargaining power.

Transposing the same ideas to the sphere of merger reviews, it is fairly reasonable to assume that the last commissioners to vote, or even the chairman's decisive vote – remembering that in case of a draw, the chairman vote defines the final verdict –, can be affected by other commissioners' deadlock.[47] Due to different opinions that lead to an impasse, the last voters may opt to avoid the error of a severe judgment, intervening less.[48] This idea coincides with

[46] Saks and Marti (1997) confirm Roper's (1980) findings.

[47] At CADE, during the Law 8,884/94 period, it was not only in the voting-sessions that the first voters' arguments could influence the last voters; the voting process was also subjected to the so-called 'Voto-vista'. If a commissioner required a 'Voto-vista', the arguments presented in the voting session either were not enough for him or her to make a decision, or some new information had affected his or her vote that was ready to be announced. In such situations, the merger under review is cancelled until the commissioner announces his or her 'Voto-vista', sometimes weeks later.

[48] Rizzolli and Saraceno (2013), along with Duso *et al*. (2007) – writing in the in criminal and antitrust fields, respectively – examine type I error – conviction of an innocent person or pro-competitive merger – and type II

Valenti and Downing's (1975) findings; those scholars experimentally test the advantages of a 6- or 12-member jury to defendants using two levels of apparent guilt. The outcomes reveal that a 6-member jury increases the likelihood of conviction when apparent guilt is high.

In sum, the application of criminal-law experience applied to antitrust enforcement suggests a negative causal effect of 'voting panel size' on the 'level of antitrust authority intervention'. Therefore, 'hypothesis 6' is formulated using the number of voting panelists on a case-by-case basis to determine the PN_SIZE measure.

H6: *The larger the voting panel size is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

4.8 The authority's budget: resources that increase capabilities for law enforcement

On August 24, 1955, the Washington Post Journal reported, "FTC's budget is called inadequate for enforcement of antitrust laws". Almost six decades later, Van Den Bergh and Ma (2013, p. 157) affirm, "The financial capacity of the enforcement authority, to a large extent, contributes to how effective the overall law enforcement will be." Using, both statements, the idea of 'budgetary adequacy' for antitrust regulatory activity seems to be correlated to the effectiveness of the respective policy implementation. Is that correct?

It is supposed that 'effectiveness of law enforcement' with respect to M&A in the United States – through a Democratic lens – means more 'disapprovals' and 'prohibitions' than it does from a Republican point of view, which is said to prefer less intervention. Following this rational, it is possible to relativize the meaning of 'effectiveness' anywhere on the planet where competition law and different ideologies coexist, is it not?

Earlier in this thesis, a debate on liberal and statist governments in Brazil generated a hypothesis to test whether a large presence of liberals associated with former President Cardoso's appointment increases the CADE intervention on merger reviews. In such a situation, this study intends to examine the type of ideological alignment between three state

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error – discharge of criminals or anticompetitive mergers. Unfortunately, however, the last paper cited does not investigate the effects of factors analyzed in this thesis. For more information, see Appendix I.

Presidents – and their political parties – and antitrust commissioners' decisions. Nonetheless, it is not this thesis' aim to assess whether the antitrust authority experiences political pressure.

In contrast, the literature that addresses the budgetary issues of antitrust agencies has been based on the assumption that state governments control antitrust activity, increasing or decreases financial support (STEWART *et al*., 1982; WEINGAST; MORAN, 1983; COCHRAN *et al*., 2011) as a mechanism. Largely influenced by the United States' funding system of the DOJ and FTC, scholars have analyzed the level of enforcement or political control under diverse federal administrations over the years. Democratic and Republican Presidents, along with congressional forces, have been assessed (MOE, 1982; KOVACIC, 1982; COATE; KLEIT, 1998; HARTY *et al*., 2012). However, in addition to past research findings that are somewhat controversial,[49] there is another consideration that causes this thesis to take a very different approach to this theme.

Firstly,

> "[Political] Committees can […] constrain agency behavior, but it is not very easy to generate the desired results. A fundamental problem here is that budgets play two roles – one that shapes the incentives of bureaucrats, one that provides a financial foundation for programmatic behavior – and these may often work at crosspurposes. Suppose, for example, that a committee wants substantially higher levels of regulatory enforcement but the agency refuses. If the committee throws money at the agency, it is essentially rewarding the agency for lack of compliance; to make matters worse, there is no guarantee that the agency will use the extra money to increase enforcement anyway. If the committee slashes the agency's budget as a punishment, on the other hand, it is simultaneously denying the agency the very resources it needs to comply with the committee's wishes. There is no clear solution. The budget is simply not a very dependable control mechanism […]." (MOE, 1987, p. 487)

The second motivation for abandoning the 'traditional approach' relies on the CADE's funding source under the 1994 Brazilian Antitrust Act, particularly after 2000: its own revenues. Despite the fact that Law 8,884/94 did not include provisions related to the antitrust agency's budget, the CADE's degree of financial independence from the federal administration has increased since 2000 as a result of the introducing of filing fees for merger review notifications.[50] The impact of the new rule was so significant that the CADE's budget

[49] Despite the ideological component contained in each political group, the empirical findings are not conclusive. To illustrate, Harty *et al*. (2012) suggest that the DOJ under the Obama administration has been tougher on vertical mergers than past Republican administrations, but under the George W. Bush administration, single-firm anticompetitive conduct was more-often investigated. Appendix I provides more details of some studies.
[50] Law 9,871/99 addressed filing fees for merger review notifications.

allocation increased 91% in one year, 171% in six years and 394% in fourteen years.[51] Accordingly, the CADE can be recognized as financially independent from the Ministry of Justice (BOTTA, 2011). In May 2000, the CADE left the Ministry of Justice's headquarters to a rented office geographically dispersed from the center of power. Since then, it has also been able to promote and sponsor conferences and seminars to increase economic actors' knowledge of competition, along with training courses for its officers.

The notification filing fees, then, provided the CADE with positive financial independence even if it has been susceptible to the vagaries of M&A waves in the economy. During periods of slow economic growth such as the world economic crisis, the number of merger notifications decreased, but this did not substantially affect the CADE's development. Its budget allocation[52] has increased since 2007; for example, the notification filing fees in 2009, the smallest in recent years, were higher than in 2006.

The third and final reason for the adoption of a new meaning of the term 'budget' is to check empirically criticism of the CADE's decisions during the first half of the 2000s. Among the aspects revealed by the literature review, the OECD (2005) affirms that politics overlapped with expertise on commissioners' presidential appointment. Therefore, 'budget control' and 'political control' do not need to be associated.

For all of the reasons mentioned – but also because (i) enforcement is some function of how much financial resources an agency possesses (MOE, 1987), and (ii) antitrust commissioners, as a public officials, want to maximize their reputation, power, patronage, commission's output and budget during their mandates (NISKANEN, 1971) – this study considers that financial resources are a determinant of commission activity (KOVACIC, 2006). The enforcement of antitrust law is costly, so the authority's financial capacity must enable a permanent update of market dynamics: both long-term investigations and the accurate assessment of corporate links among firms are increasingly global. If an authority faces financial constraints, the likelihood that it will be able to control and sanction anticompetitive strategies decreases (VAN DEN BERGH; MA, 2013).

[51] CADE Annual Reports of 2000, 2005 and 2013, respectively.

[52] 'Budget allocation' includes merger notification fees, specific government transferences, and balances retained in the so-called Fund for the Defense of Shared Rights (which is composed not only of funds from fines imposed by the CADE to conduct cases and mergers but also of other state-collected fines related to the natural environment, arts and urban patrimony penalties) and grants – e.g., from the World Bank for the creation of an electronic system for monitoring work flow.

Although the prosecution process of firms' anticompetitive conduct and merger reviews may demand different levels of resources, all that has been said in this section applies both types of antitrust activity. Therefore, a variable named AUT_BUDGET is part of this empirical analysis. *It is expected, then, that the greater the annual budget of the CADE was, the higher the level of intervention on merger reviews was.* Thus, 'hypothesis 7' is stated as follows. The CADE's annual budget allocations have been collected from annual reports for 2000 to 2013.

H7: *The greater the annual budget of the antitrust authority is, the greater the probability of high levels of intervention on merger reviews will be, ceteris paribus.*

4.9 Does enforcement activity in the prior year dissuade new transactions?

The question immediately above reveals a particular concern with the dynamics of antitrust enforcement on merger reviews. In the context of this thesis, it suggests that some voting panels can be less exposed to 'big cases' than others if a wave of 'big mergers' has just occurred. As La Noce *et al*. (2006, p. 323) note, a high frequency of enforcement actions related to mergers during a certain period may dissuade the notification of new transactions that are likely to be anticompetitive. Harty *et al*. (2012), for example, discuss the potential constraints to firms that can be imposed by a particular political administration profile. Those authors mention transaction costs, delays, and changes to deals as possible concerns of firms that can cause them to avoid new transactions, at least for a time. Consequently, then, the number of notifications likely to some kind of authority intervention may be reduced.

Joskow (2002) discusses the influence of antitrust authorities' past decisions on economic actors' future decisions. This causal relation is the so-called 'deterrence effect'. The author highlights that 'wrong' signs from the regulatory body may deter, for example, mergers with potential efficiency gains. For that reason, Lévêque (2001) argues that the antitrust authority intervention must be accurate in terms of market scope to minimize administrative and operational efficiency losses.

Based on the call of such studies, this investigation examines the influence of enforcement level in year prior to each merger notification with a specific aim: to measure the maturity of

relationship between economic actors and the Brazilian antitrust authority. It is assumed that the influence of 'waves of big cases' may affect firms' initiative to combine businesses.

With respect to this debate, studies that either measure the causal effect of prior decisions on new verdicts or – according to Nusdeo (2002) and Gaban and Domingues (2009) – assess the integration of regulators and their societies must be encouraged. The authors agree that such attention is primarily relevant to competition policy systems that are still developing in the complex field of antitrust enforcement where there is not yet a competitive culture in the country.

Therefore, the variable INTER_PRIORYR is added to empirical tests. The expectation of its outcomes relies first on its significance: if it is significant, the economic actors take the CADE into consideration when making decisions. Otherwise, an institutional distance between regulators and regulated parties will be reflected in this term. Second, if the signal of the variable is negative, it means that the more intervention in the prior year of notifications, the less intervention is 'needed' later on because 'the big deals' did not come through. Below, 'hypothesis 8a' summarizes both elements.

H8a: *The higher the level of intervention in deals one year before M&A notifications is, the lower the probability of high levels of intervention on merger reviews will be, ceteris paribus.*

The number of mergers affected by the authority in the year before the submission date, which includes conduct, organizational structure and asset changes, along with full prohibitions, is used to measure the concept presented here. To provide the most accurate results, the universe of interventions per year was extracted from the CADE annual reports. In doing so, any concern related to the correct measure of past law enforcement was removed. The database built for this thesis contains most but not all merger reviews; for example, it does not contain data from 1994 to 1999, when some notifications occurred.

Finally, the 'late notifications' are the central issue of 'hypothesis 8b', which is particularly related to the 'culture of competition' in Brazil under Law 8,884/94. Thus, it is a complementary concept of INTER_PRIORYR. Based on Bruner (2004), who states that the complexity of the laws and their subtleties make antitrust constraints one of the least well-known themes to practitioners in the business field, late-notified mergers seem to be

associated with a lack of knowledge of economic actors on antitrust matters. Extensively, they also seem to be associated with smaller business groups and non-anticompetitive transactions. But why?

Big business groups involved in potential anticompetitive deals could attempt to pressure the CADE through ‘late notification’ to approve a potential anticompetitive merger that has already been consolidated, whose reversal process would be extremely difficult – remember that notifications could be done 15 days after deal consolidation. However, those groups are more likely to influence the merger review process by using other arguments or strategies such as efficiency gains or political pressure. Additionally, ‘late notification’ as an opportunistic strategy is reasonably adopted a single time for a firm, not always. It sounds really strange that big business groups which are often engaged in new deals simply do not follow the rules and prefer to pay fines for lateness instead of filling out the forms in time.

Then, considering that in a young antitrust environment prevail a certain lack of knowledge among ‘small and medium’ firms and, at the same time, big groups can pressure antitrust authorities in different ways, it is reasonable to expected that the sign of LATE_NOTIFIED variable is negatively related to high levels of enforcement. To measure the influence of LATE_NOTIFIED, then, the variable assumes value ‘1’ if it occurred and ‘0’ otherwise.

H8b: *Late-notified mergers decrease the probability of high levels of intervention in deals by the antitrust authority, ceteris paribus.*

That said, the theoretical and hypothetical exercise ends. Table 1 provides a summary of variables, definitions, measures and expected signs while Figure 4 lists all hypotheses to be tested in this thesis. Chapter 5, in following, contains the empirical model formalization along with descriptive statistics of this thesis’ sample, which, in addition to previously shown data from the CADE, contributes significantly to the consecution of this thesis’ aims.

Table 1 - List of variables, measures, hypotheses and expected signs

VARIABLE	DEFINITION	MEASURE	HYPOTHESIS AND PREDICTED SIGN
LV_INTER	Level of antitrust authority intervention on merger reviews	'0' if merger was approved without restrictions '1' if merger was approved with conduct changes '2' if merger was approved with organizational structure changes '3' if merger was approved with asset structure changes '4' if merger was disapproved	Dependent Variable
PN_LIBERAL	Political ideology	the ratio of voting-panelists appointed by PSDB	H1 (Positive)
PN_LAWYER	Educational background	the ratio of 'commissioners-lawyers' at the voting-panel	H2 (Positive)
PN_WELFARE	Motivation for past public service work experience	1' if the ratio of antitrust voting panelists who had the predominant public service experience in the Welfare policy domain equals or exceeds 50%; '0' otherwise	H3a (Positive)
PN_COREFUN	Motivation for past public service work experience	1' if the ratio of antitrust voting panelists who had the predominant public service experience in Core State Functions equals or exceeds 50%; '0' otherwise	H3b (weaker effect relative to PN_UTILITIES than PN_WELFARE)
PN_GENADM	Motivation for past public service work experience	1' if the ratio of antitrust voting panelists who had the predominant public service experience in General Administration policy domain equals or exceeds 50%; '0' otherwise	H3b (weaker effect relative to PN_UTILITIES than PN_WELFARE)
PN_BENEXP	Experience on the bench	the mean experience, measured in days, of the voting-panelists on the bench	H4 (Positive)
PN_NEND	Posturing attractiveness to post-commission job	the mean of time, measure in days, to the end of voting-panelists' mandates	H5a (Negative)
PN_HCME	Posturing attractiveness to post-commission job	the mean of age, measured in years, of the voting-panelists	H5b (Positive)
PN_SIZE	Size of the voting-panel	the number of voting-panelists in the final judgement session	H6 (Negative)
AUT_BUDGET	Authority's budget	the annual budget of the antitrust authority	H7 (Positive)
INTER_PRIORYR	Maturity of relationship between economic actors and the Brazilian antitrust authority	the number of mergers affected by the authority in the previous year to the submission date	H8a (Negative)
LATE_NOTIFIED	Culture on antitrust matters	1' if late-notified merger; '0' otherwise	H8b (Negative)

Source: Thesis author

Figure 4 - List of hypotheses

H1	• The greater the ratio of antitrust voting panelists appointed by a liberal government is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H2	• The greater the ratio of commissioner-lawyers in the voting panel is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H3a	• If the ratio of antitrust voting panelists with predominant prior public service experience in the Welfare policy domain is equal or greater than 50%, the probability of high levels of intervention in deals by the antitrust authority will be greater, *ceteris paribus*.
H3b	• Relative to past work experience in the Public Utilities domain, prior work experience in Core State Functions and General Administration will decrease the probability of the antitrust authority to adopt high levels of intervention in deals than past work experience in the Welfare domain, *ceteris paribus*.
H4	• The greater the mean experience of the voting panelists on the bench is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H5a	• The closer the mean of time to the end of voting panelists' mandates is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H5b	• The greater the mean of age of the voting panelists is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H6	• The larger the voting panel size is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*.
H7	• The greater the annual budget of the antitrust authority, the greater the probability of high levels of intervention on merger reviews, *ceteris paribus*.
H8a	• The higher the level of intervention in deals one year before M&A notifications is, the lower the probability of high levels of intervention on merger reviews will be, *ceteris paribus*.
H8b	• Late-notified mergers decrease the probability of high levels of intervention in deals by the antitrust authority, *ceteris paribus*.

Source: Thesis author

5 DATA AND EMPIRICAL STRATEGY

5.1 Data collection

To achieve all of this thesis' specific purposes, data related to notified transactions and the CADE's resources – i.e., the CADE's decisions, voting panels' composition and the CADE's annual budget – were extracted from the CADE's written outputs such as 'merger review reports', the 'CADE's annual reports' and 'judgment minutes' – which are publicly available at www.cade.gov.br (CADE, 2014).[53] The data collection from the CADE public files was primarily done by a lawyer who participated in a competition-law research group at a Brazilian law school; the group focused on the debate on merger reviews. To reduce the possibility of personal misinterpretation, this author also provided the assistant with a list of concepts and operational definitions of variables before launching the database. After the assistant's work was complete, this author double-checked all of the inputs. In some cases, this thesis author additionally appealed to audio records of judgment sessions, also available at the CADE's website, to eliminate misunderstandings arising out of written documents.

Regarding the biographical profiles for the complete population of 36 individuals who had been appointed and worked for the CADE as a commissioner or chairman between 2000 and 2013, this author planned and executed an assembly of a complementary dataset. The list of variables and classification by individual is available at Appendix II. The sources of data were the appointees' *résumés* sent by State Presidents to the Senate, the CADE's website, and professional directories such as the CNPQ Lattes[54] and LinkedIn.[55]

[53] Written outputs of the SDE/MJ and the SEAE/MF, which are publicly available at www.cade.gov.br (CADE, 2014), were also considered when needed. As noted in the previous section, both Secretariats subsidized the CADE with economic and legal analyses before the enforcement decision until the end of 2011. Accordingly, for cases in which the CADE's final report does not contain previous assessments or relevant information in its documents, a composition of outputs from all available reports has been considered. Of course, any data documents other than the CADE's must have been convergent with the CADE's decisions or cited by the CADE commissioners as relevant to their decisions. Primarily for simpler cases, if the CADE considers enough the previous technical assessments of one or both Secretariats, it merely cites the Secretariats' reports as support for its decision.

[54] The CNPQ is a Brazilian federal agency of the Ministry of Science, Technology and Innovation. The Latte's platform, then, is a database of academic *résumés* that belongs to the CNPQ.

[55] Although ECKERT (1981) has used professional directories to access data on commissioners' profiles, this thesis author resorted to that kind of platform to double check the primary official sources: *résumés* sent by state Presidents to the Senate and the CADE's website.

5.2 Descriptive statistics

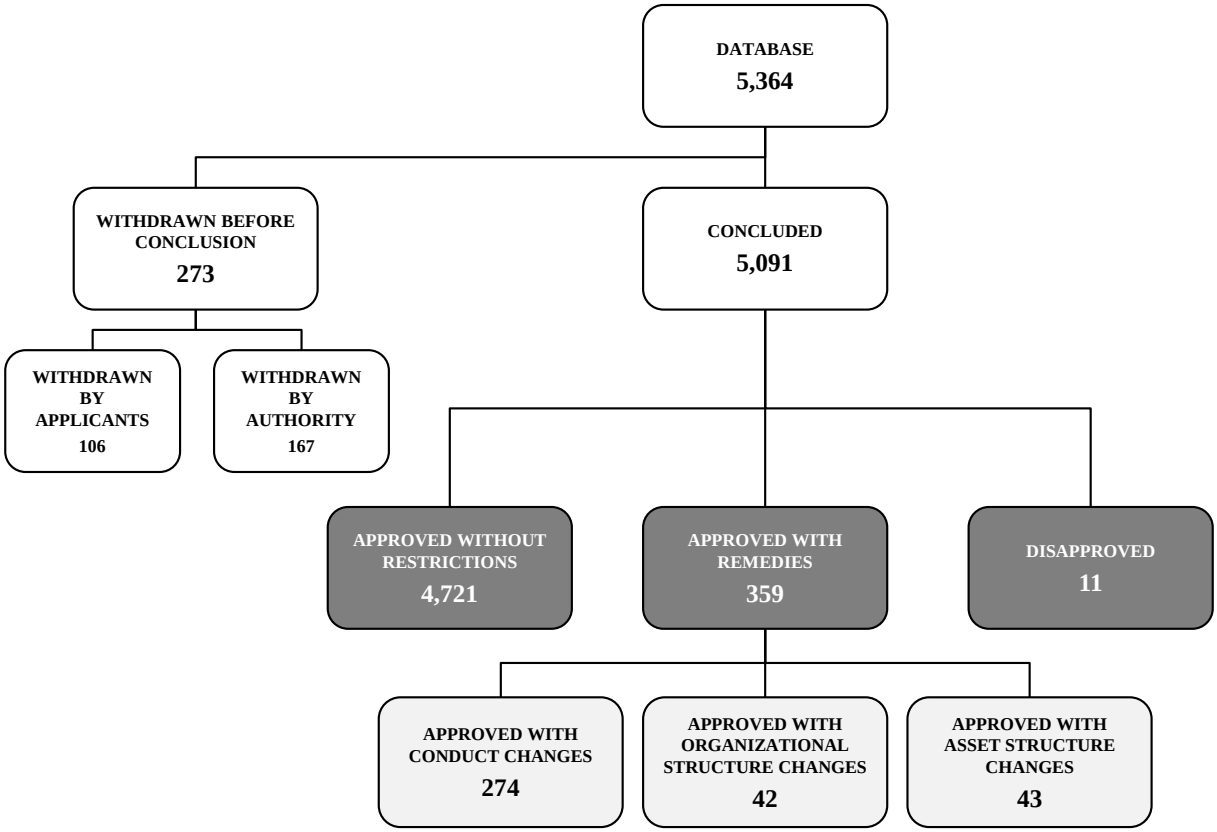
Although the empirical models of this thesis follows the 'Descriptive statistics' section, and both the dependent variable and the explanatory terms were introduced in Chapter 4 immediately following each theoretical discussion of the potential determinants of antitrust authorities' intervention on merger reviews, sub-sections '5.2.1' and '5.2.2' work as ceremonials for both categories of variables. The first subsection reveals the distribution and other characteristics of LV_INTER – the dependent variable –, whereas the second subsection addresses the explanatory terms PN_LIBERAL, PN_LAWYER, PN_WELFARE, PN_COREFUN, PN_GENADM, PN_UTILITIES, PN_BENEXP, PN_NEND, PN_HCME, PN_SIZE, AUT_BUDGET, INTER_PRIORYR and LATE_NOTIFIED.

5.2.1 The dependent variable 'levels of intervention on merger reviews'

The CADE has overwhelmingly approved mergers and acquisitions without restrictions[56]. Of the 5,364 merger reviews computed in this thesis' database, which represent more than 90% of M&A judged under Law 8,884/94 in 2000-2013 (CADE, 2015), there are 4,721 cases cleared with no anticompetitive concerns, 359 transactions approved with remedies, and 11 deals disapproved. Another 273 cases were withdrawn before their conclusion, with 106 automatically resolved when the parties withdrew their filings prior to the end of the investigation and 167 resolved when the authority closed the investigation due to the transaction profiles' lack of conformity with the mandatory notification criteria. Therefore, the final sample is composed by 5,091 cases. Regarding those cases approved with a remedy, the CADE imposed or negotiated 274 conduct changes, 42 organizational structure changes, and 43 asset structure changes. It is worth reminding that if a particular deal was subject to more than one type of remedy, it was categorized according to the highest level of intervention. Figure 5 shows the process of this study's sample composition.

[56] "Most mergers do not raise serious competitive concerns, because they link together firms with very limited competitive overlaps in a quest to develop long-run efficiencies. […] the authority will quickly clear most mergers (both conglomerate and horizontal) without investigation, because they do not violate the law." (BERGMAN *et al.*, 2010, p. 309)

Figure 5 – Sample composition



Source: Thesis author

The distribution of merger review verdicts announced per year contained in this sample ranges between 271 and 536 cases, excepting 2013, during which there were 69 judgments.[57] Approvals without restrictions, which represent 92.73% of cases, fluctuated slightly over time. In 2004 and 2008, however, the ratio dropped an average of 4.6%; the lowest level was reached in 2013, at 52.17%. The main reason for the variations in 2004 and 2008 is the number of approvals with conduct changes, which increased substantially. Moreover, in 2013, other types of remedies and even the prohibition of consolidation deals reached their highest level of the series. With respect to the transactions that were completely blocked by the CADE, this sample covers transactions subjected to Law 8,884/94 from 2000 to 2013. In addition to 3 cases in 2013, 3 mergers were disallowed in 2012, and another in 2010, 2009, 2008, 2004, and 2000. Approvals with asset structure remedies, however, can be seen every single year of this sample series, but not in 2001 and 2002.

[57] The last merger review judgment under Law 8,884/94 occurred on December 18, 2013. The number registered in 2013 is significantly lower than previous years because on May 29, 2012, Law 12,529/11 substituted for its predecessor. Mergers and acquisitions notified prior to May 28, 2012 continued to be reviewed under Law 8,884/94, although some of the final judgments occurred in 2013.

From 2004 and 2012, a range of between 2 and 5 decisions with such characteristics reveals a pattern, despite some changes in the number of merger reviews verdicts announced each year. In 2013, as noted above, approvals with asset structure changes ranked at the top, accounting for 11 transactions modified by the CADE, whereas in 2001 and 2002, there is no such level of intervention. In 2000, one more case is noted. Finally, with respect to approvals that required organizational structure changes, the lack of such decisions in 2000, 2002 and 2003 deserves attention. The larger numbers of decisions grouped in this category are seen in 2010 and 2013, respectively.

Table 2, then, provides more information about these statistics. The LV_INTER dimension presented follows the codification announced in Chapter 4, more specifically, the introduction of the enforcement scale proposed to this thesis: '0' if the merger was 'approved without restrictions', '1' if the merger was 'approved with conduct changes', '2' if the merger was 'approved with organizational structure changes', '3' if the merger was 'approved with asset structure changes', or '4' if the merger was 'disapproved'. Finally – and still regarding the usefulness of Table 2 – the preliminary analysis of every variable in the following pages uses that table as support.

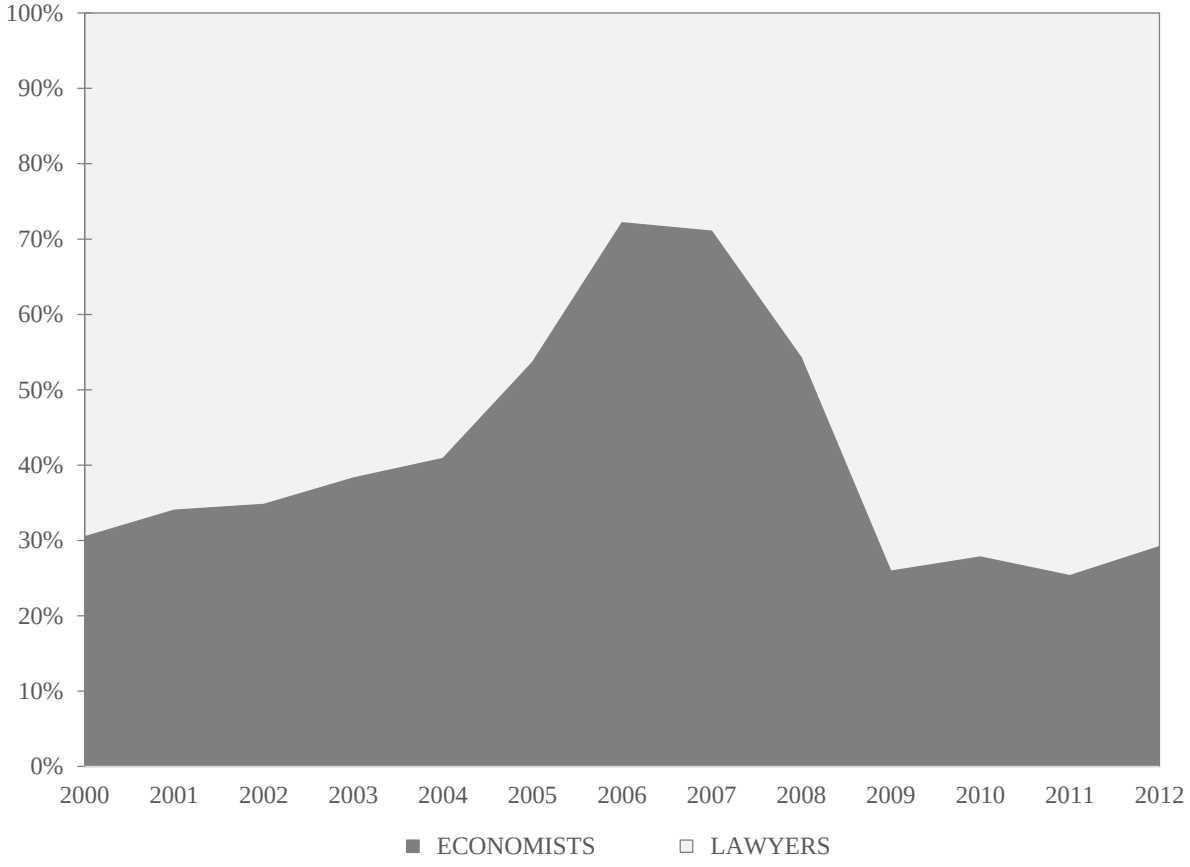
5.2.2 Explanatory variables

Table 2 and its brief description seem to anticipate some findings on the PN_LIBERAL variable, which is used hereafter to capture the influence of appointees by liberal administrations in Brazil. President Fernando Henrique Cardoso, the only representative of that political ideology during the period of this thesis' sample, left office in December 2002. Four of his appointees, thus, joined the antitrust commission up to mid-2004 due to the two-year fixed mandate. Another commissioner left the CADE in January 2004, whereas a fifth remained on the bench until October 2005 because President Lula da Silva reappointed him in 2003. Therefore, the representativeness of liberal government appointees was concentrated in the early 2000s, when the level of the CADE intervention was the lowest. Only 2 of 11 disapproved mergers and 4 of 43 asset structure changes occurred until the end of 2004. If we analyze the proportionality of the 2000-2004 period over 2000-2013, the ratio of tougher interventions in deals should be close to 35% of the 'high-profile' total changes. However, only 18% of prohibitions and 9.3% of asset structure changes occurred under the influence of

liberal government appointees. If the econometric analysis later confirms this preliminary conclusion, 'hypothesis 1' will not be consistent with expected sign.

The second exploratory term added to this empirical study addresses the antitrust commissioners' academic backgrounds. More specifically, the aim of the PN_LAWYER term is to determine whether commissioners' economic or legal backgrounds influence the level of intervention in a deal under review. This study not only assumes that 'law' and 'economics' are the only two functional inputs into enforcement decisions (FROEB *et al*., 2009) but also confirms through Figure 6 that absolutely every commissioner who worked at the CADE between 2000 and 2013 held his or her Ph.D., Master's degree or (at least) Bachelor's degree in one of those two fields.[58]

Figure 6 – Commissioners' academic background distribution over the years



Source: Thesis author

[58] In cases in which a commissioner on a voting panel has earned certificates from both academic fields, the highest degree was considered.

Table 2 – Samples' absolute and relative frequencies of verdicts per year

	LV_INTER					
YEAR	0	1	2	3	4	Total
2000	326	13	0	1	1	341
	95.60	3.81	0.00	0.29	0.29	100.00
	6.40	0.26	0.00	0.02	0.02	6.70
2001	377	11	1	0	0	389
	96.92	2.83	0.26	0.00	0.00	100.00
	7.41	0.22	0.02	0.00	0.00	7.64
2002	347	5	0	0	0	352
	98.58	1.42	0.00	0.00	0.00	100.00
	6.82	0.10	0.00	0.00	0.00	6.91
2003	345	8	0	1	0	354
	97.46	2.26	0.00	0.28	0.00	100.00
	6.78	0.16	0.00	0.02	0.00	6.95
2004	427	46	5	2	1	481
	88.77	9.56	1.04	0.42	0.21	100.00
	8.39	0.90	0.10	0.04	0.02	9.45
2005	259	17	4	5	0	285
	90.88	5.96	1.40	1.75	0.00	100.00
	5.09	0.33	0.08	0.10	0.00	5.60
2006	260	6	3	2	0	271
	95.94	2.21	1.11	0.74	0.00	100.00
	5.11	0.12	0.06	0.04	0.00	5.32
2007	333	25	3	5	0	366
	90.98	6.83	0.82	1.37	0.00	100.00
	6.54	0.49	0.06	0.10	0.00	7.19
2008	383	46	4	4	1	438
	87.44	10.50	0.91	0.91	0.23	100.00
	7.52	0.90	0.08	0.08	0.02	8.60
2009	301	15	1	2	1	320
	94.06	4.69	0.31	0.63	0.31	100.00
	5.91	0.29	0.02	0.04	0.02	6.29
2010	435	12	7	3	1	458
	94.98	2.62	1.53	0.66	0.22	100.00
	8.54	0.24	0.14	0.06	0.02	9.00
2011	500	29	3	4	0	536
	93.28	5.41	0.56	0.75	0.00	100.00
	9.82	0.57	0.06	0.08	0.00	10.53
2012	392	30	3	3	3	431
	90.95	6.96	0.70	0.70	0.70	100.00
	7.70	0.59	0.06	0.06	0.06	8.47
2013	36	11	8	11	3	69
	52.17	15.94	11.59	15.94	4.35	100.00
	0.71	0.22	0.16	0.22	0.06	1.36
Total	4,721	274	42	43	11	5,091
	92.73	5.38	0.82	0.84	0.22	100.00
	92.73	5.38	0.82	0.84	0.22	100.00

Source: Thesis author

Figure 6 shows that the average percentage of law scholars on voting panels during the period covered by this investigation's sample was 58.4%, whereas economists occupied 41.6% of seats. It was only from 2005 to 2008 that the economists occupied more than 50% of panel seats, reaching a top ratio of 72.2% in 2006. However, if we disregard this period, which includes only four of the fourteen years analyzed, the average percentage of economists in voting panels drops to 33.2%. Based on these numbers, merger reviews were predominantly decided by lawyers under the Brazilian Antitrust Act enacted in 1994, as Table 3 reaffirms.

Table 3 – Mean of lawyers per year in voting panels

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_LAWYER				
2000	.6907904	.0029717	.6849646	.6966162
2001	.6536663	.0019813	.6497821	.6575505
2002	.6813176	.002376	.6766597	.6859756
2003	.6488162	.0030172	.6429013	.6547312
2004	.5908425	.0043996	.5822173	.5994677
2005	.4621053	.0034986	.4552465	.4689641
2006	.2775962	.0022169	.2732502	.2819423
2007	.2790398	.0030784	.2730049	.2850747
2008	.4841922	.0105679	.4634745	.5049099
2009	.741131	.0038089	.7336639	.748598
2010	.7121855	.0023622	.7075546	.7168164
2011	.7334844	.0027597	.7280741	.7388946
2012	.6582864	.0043674	.6497244	.6668484
2013	.5660801	.0060302	.5542583	.5779018

Source: Thesis author

With respect to the predictive power of descriptive statistics on lawyers' contribution to higher levels of enforcement, there is nothing to say in anticipation. The analysis of Table 4, for example, is not instructive. Below, we see that the mean of lawyers on voting panels per type of decision made by the CADE – according to the enforcement scale adopted in this study – does not change significantly. Therefore, the expectation in the econometric exercise continues to follow 'hypothesis 2': *the greater the ratio of commissioners-lawyers among voting panelists is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

Table 4 – Mean of lawyers per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_LAWYER				
0	.6003213	.0024695	.59548	.6051626
1	.5723149	.010618	.5514991	.5931307
2	.5628118	.0300487	.5039033	.6217203
3	.5256921	.0277298	.4713297	.5800546
4	.6151515	.0441499	.5285987	.7017043

Source: Thesis author

The third potential determinant of merger review verdicts discussed in Chapter 4 – 'motivation for public service associated with commissioners' past work experience' – is probably the most controversial concept included in this empirical examination. For that reason, it is worth reinforcing what the PN_WELFARE variable – and extensively, PN_COREFUN, PN_GENADM and PN_UTILITIES – means and why other kinds of measures are not adopted herein.

In short, PN_WELFARE, at the same time that deals with commissioners' past work life, brings something unique to the table: 'good personal values', rather than self-interest, commonly discussed in the *Regulation Theory*. As stated before, terms such as PN_LAWYERS and PN_NEND are, in different levels, associated with self-interest. In addition, it is really difficult to operationalize the pure concept of 'past or prior work experience' in the Brazilian antitrust regulatory context due to (i) particular characteristics of the public service rules for some professionals with 'remarkable legal or economic knowledge' and commissioners' professional background, and (ii) unpleasant cases of omission of past jobs in *résumés* sent to the Senate for presidential appointees approval.

Public universities in Brazil, despite some exceptions from private sector, are still the center of bright Ph.Ds in Law and Economics. To illustrate, commissioners' resume sent to the Federal Senate reveals that, at least, 20 out of 36 professionals had a prior work experience in public universities, being most of them employees of those entities. Historically, however, remarkable knowledge and financial recognition have not been correlated in such sphere. In other words, teaching and research at a Brazilian public university is prestigious, but not financially rewarding. For that reason – of course, others also may exist –, some Professors work as consultants or advisors in parallel. The issue, in this case, is that public employment

labor regime in Brazil does not necessarily allow Professors of public schools to work, even partially, in other activities. This legal conflict, then, lead some commissioners to omit private work experience in their *résumés*, if they are Professors of public universities – while they are public employees. By the way, in 2013, four Professors of a prestigious public Law school in Brasilia, including an antitrust commissioner, signed an agreement to reimburse the respective state organization for practicing private law, violating employment contracts.[59]

Another important case of past work experience omission in *résumés* sent to the Senate was carried out by the former commissioner for two mandates and current Chairman of the Brazilian antitrust authority. The Chairman of the CADE omitted in, at least, four official *résumés* that he had worked for a PT deputy responsible for complaints who were trying to reach the rival political party PSDB.[60]

In a document sent to the Senate in 2010, for example, the current Chairman of the CADE listed his 'professional experiences' from February 2002 to January 2003 followed by others from February 2005 to February 2006. The gap between both periods is exactly the time when he worked for the PT deputy. At that moment, the current Chairman was a commissioner waiting for Senate confirmation of his reappointment by President Dilma Rousseff. The resume lists eight 'professional experiences' but is silent on the time he worked for the PT deputy's office. In 2012, when he was appointed by President Rousseff to become the CADE chairman, the list of 'professional experiences' likewise did not mention his link with PT. The current chairman sustain that "It was probably a lapse." (MATAIS; FABRINI, 2013)

Founded on these arguments, then, this thesis author opts to provide a reliable contribution related to commissioners' past work experience, associating this attribute to motivations for public service engagement, instead of resting on non-reliable findings.

With respect to the PN_WELFARE descriptive statistics, 18 of 43 mergers approved with asset structure changes were announced by voting panels largely composed of commissioners whose work history in the public sector was predominantly associated with education.

[59] http://noticias.terra.com.br/educacao/professores-fazem-acordo-com-o-mpf-para-devolver-r-11-milhao-a-unb,aa468ad7bd58e310VgnVCM10000098cceb0aRCRD.html

[60] The State Deputy affiliated to PT pointed out suspicions on overpricing and payment of bribes involving the 'state-owned' Companhia Paulista de Trens Metropolitanos under the PSDB administration and private companies such as Siemens and Alston (MATAIS; FABRINI, 2013), which characterizes a cartel.

According to the PSM theory, ‘education’, ‘health’ and ‘social assistance’ are strongly correlated with ‘compassion’ as the main motivation for public service. More specifically, in 2006, 2007 and 2013, the CADE panels had an average of more than 70% of commissioners with such experience. Adding to this group those years in which the mean of commissioners exceeded 50% – 2000, 2001 and 2012 – more than half of approvals with asset structure changes and ‘disapprovals’ are covered. Considering also that the ratio of antitrust voting panelists who had prior work experience in the Welfare policy domain increased consistent with the level of intervention in deals, it is reasonable to expect PN_WELFARE to have a positive effect on law enforcement. Table 5, then, relates the levels of intervention with the mean of ‘public service experience in Welfare domain’, whereas Table 6 sustains some of these comments.

Table 5 - Mean of ‘public service experience in Welfare domain’ per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_WELFARE				
0	.4651088	.0021265	.4609399	.4692776
1	.4937956	.0088139	.4765166	.5110746
2	.5303855	.0284637	.4745844	.5861866
3	.5558693	.0314201	.4942723	.6174663
4	.5344156	.0405809	.4548595	.6139717

Source: Thesis author

Table 6 - Mean of 'public service experience in Welfare domain' per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_WELFARE				
2000	.5154378	.0071001	.5015186	.529357
2001	.5345452	.0028329	.5289916	.5400989
2002	.4076163	.0039624	.3998484	.4153843
2003	.4580845	.0041156	.4500161	.4661529
2004	.4409365	.0048317	.4314643	.4504088
2005	.3730994	.0046074	.3640669	.3821319
2006	.7162537	.0018755	.712577	.7199304
2007	.7094848	.0026154	.7043574	.7146121
2008	.462992	.0044657	.4542373	.4717466
2009	.250119	.0042295	.2418273	.2584108
2010	.3064462	.0030784	.3004112	.3124813
2011	.4274787	.0023163	.4229378	.4320195
2012	.5087891	.0039384	.5010681	.5165101
2013	.7245342	.0160065	.6931546	.7559137

Source: Thesis author

Conversely, the PN_COREFUN and PN_UTILITIES' statistics suggest a likely negative impact on the CADE's law enforcement, but PN_GENADM leaves us with some doubts about its econometric outcomes. In any event, according to Table 7, 'hypothesis 3b' seems to be confirmed: PN_COREFUN and PN_GENADM related to past work experience in the Welfare public domain lead the antitrust authority to adopt lower levels of intervention in deals.

Table 7 - Mean of 'public service experience in Core Functions, General Administration and Public Utilities, Environment and Infrastructure' per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_COREFUN				
0	.4398311	.0028193	.4343042	.4453581
1	.4391814	.0107952	.4180182	.4603447
2	.4367347	.0308282	.3762981	.4971713
3	.3970653	.0296465	.3389454	.4551853
4	.3599567	.0612611	.2398587	.4800548
PN_GENADM				
0	.0662042	.0013117	.0636327	.0687757
1	.0510514	.0050858	.0410811	.0610218
2	.0294785	.0095255	.0108043	.0481526
3	.0470653	.0165551	.0146101	.0795205
4	.0926407	.0272975	.0391259	.1461554
PN_UTILITIES				
0	.0288559	.0009189	.0270545	.0306572
1	.0159715	.0029378	.0102121	.0217309
2	.0034014	.0034014	-.0032668	.0100695
3	0	(omitted)		
4	.012987	.012987	-.0124731	.0384471

Source: Thesis author

Moving to the statistics of voting panelists' experience on the bench, the fourth attribute analyzed, 48.2% of all cases approved with organization or asset structure changes, and 7 out of 11 blocked transactions, were judged in only four years of this study's sample – i.e., 2007, 2008, 2012 and 2013. Those years are relevant to determine whether regulators' experience matters because the mean experience on the bench of the voting panel members exceeded 730 days, which means that commissioners during the 2nd mandate occupied more seats than did the 1st-mandate commissioners. To achieve 60% of reviews solved with the higher levels of intervention, it is necessary to add the year 2010, whose panels, on average, were composed of 700 days of the commission's job, as shown in Table 8.

Table 8 - Mean of 'experience on the bench' per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_BENEXP				
2000	252.2639	12.50462	227.7495	276.7784
2001	399.5141	5.967592	387.8151	411.2132
2002	529.3509	7.016724	515.5951	543.1066
2003	599.8517	3.410493	593.1657	606.5377
2004	515.2588	17.43627	481.0763	549.4414
2005	328.7947	6.235168	316.5711	341.0183
2006	677.1089	6.505977	664.3543	689.8634
2007	1059.96	6.061433	1048.077	1071.843
2008	922.8322	28.02732	867.8866	977.7778
2009	329.4984	5.597478	318.525	340.4719
2010	700.9258	5.081807	690.9632	710.8883
2011	690.9114	8.969932	673.3265	708.4963
2012	744.4582	6.342383	732.0244	756.892
2013	831.6739	16.22552	799.8649	863.4829

Source: Thesis author

Therefore, repeating a very similar rational applied to PN_WELFARE, the expectation for the PN_BENEXP variable remains 'hypothesis 4': *the greater the mean experience of the voting panelists on the bench is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.* Table 9 preliminarily shows that it is possible to find some positive relation of that term and the level of enforcement.

Table 9 – Mean of 'experience on the bench' per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_BENEXP				
0	608.1472	4.756196	598.823	617.4714
1	680.8887	22.53021	636.7198	725.0576
2	764.8214	45.38165	675.8539	853.789
3	797.814	46.84844	705.9709	889.6571
4	753.1364	108.9873	539.4743	966.7984

Source: Thesis author

Chapter 4 discusses the 'revolving door' mechanism to provide fundamentals for a better understanding of commissioners' self-interest while judging. The proximity to the end of mandates, on the one hand, and both human capital formation and commissioners' capacity

for implementing a ‘market expansion’ strategy, on the other hand, theoretically ground two variables: PN_NEND and PN_HCME.

The PN_NEND term, first, uses the ‘mean of time, measured in days, to the end of panelists' mandate at the moment of the final judgment session’ as a proxy for ‘posturing attractiveness to a private post-commission job’. Using Table 10 to verify its relation to the CADE’s levels of intervention in deals, it is possible to find a preliminary conclusion, although not one that is definitive. The mean associated with ‘disapprovals’ is the highest among all five categories, followed by another three groups of verdicts that consistently ascend. In other words, from ‘conduct changes’ to ‘prohibitions’, the ‘mean of time to the end of commissioners’ mandate’ increases according to theoretical expectations – the further the end of panelist’s mandate, the higher the level of intervention. Nevertheless, it is also true that at the other extreme of the enforcement scale, the mean related to ‘approvals without restriction’ is not the lowest overall.

Table 10 – Mean of time to end of panelists’ mandates per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_NEND				
0	374.8817	1.782735	371.3867	378.3766
1	361.6655	8.740478	344.5304	378.8006
2	365.4525	20.94715	324.3871	406.5179
3	376.3683	21.64569	333.9335	418.8032
4	427.1294	33.1223	362.1955	492.0634

Source: Thesis author

Following the analysis of the PN_NEND’s basic statistics, if only the mean of the time to the end of panelists’ mandates’ over 400 days is taken into account, 59 conduct changes, 14 organizational structure changes, 18 asset structure changes and 4 prohibitions are covered. Therefore, 40.7% of the toughest enforcement actions against mergers and acquisitions in Brazil, which aggregate the final two groups, occurred in 2000, 2006, 2011 and 2013. Considering in addition that these four years represent only 23.9% of this study’s total cases, the theory is present. As noted earlier, this is not a categorical conclusion, but it does sustain the expectations of ‘hypothesis 5a’. Table 11, then, completes the description of PN_NEND.

Table 11 - Mean of time to end of panelists' mandates per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_NEND				
2000	415.5392	5.467013	404.8215	426.2569
2001	341.8477	2.407575	337.1278	346.5676
2002	388.9269	6.758541	375.6772	402.1765
2003	320.7548	3.022191	314.83	326.6796
2004	363.1873	8.252946	347.008	379.3666
2005	339.0695	5.183426	328.9077	349.2312
2006	414.135	8.131564	398.1936	430.0764
2007	269.1644	4.54738	260.2496	278.0792
2008	381.9933	7.985393	366.3385	397.6481
2009	374.04	4.971242	364.2943	383.7858
2010	380.2311	5.643586	369.1673	391.295
2011	433.6512	2.55458	428.6431	438.6592
2012	397.9327	6.680219	384.8366	411.0288
2013	476.0363	8.255221	459.8525	492.2201

Source: Thesis author

PN_HCME, a variable also associated with the fifth concept investigated in this thesis, adopts the 'age' of the antitrust regulators to measure 'human capital' and 'market expansion' strategy factors. Because regulators' specialized skills and knowledge demand that individuals acquire a great deal of work experience, it is reasonable to believe that the older a person is, the closer to commissioner status he or she will be. Therefore, the predicted causal effect is direct and positive: the higher the PN_HCME, the higher the level of intervention by the antitrust authority.

Resorting to Table 12, a positive effect truly does seem to exist, but between voting panels composed of younger commissioners, not older ones. From 'approvals with conduct changes' to transactions' disapprovals, according to the enforcement scale proposed in Chapter 4, the mean of age of voting panels decreases. In short, the theoretical prediction is not confirmed by basic statistics.

Table 12 – Mean of 'age' per type of decision: posturing attractiveness for post-commission jobs

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_HCME				
0	42.45382	.0866863	42.28388	42.62376
1	42.79175	.3616124	42.08284	43.50067
2	42.22229	.9197498	40.41918	44.02539
3	41.98366	.7756719	40.46301	43.50431
4	40.98384	1.432658	38.17521	43.79246

Source: Thesis author

Looking at Table 13, the inconsistency with 'hypothesis 5b' remains. From 2009 to 2013, years during which the mean of age of voting panelists was lower than ever, 72.7% of disapprovals occurred and 53.5% of asset structure changes and 52.4% organizational structure changes were negotiated or imposed by the CADE. Therefore, based on this descriptive analysis, econometric models may not confirm theoretical signs.

Table 13 – Mean of age per year: posturing attractiveness for post-commission jobs

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_HCME				
2000	50.25582	.1203535	50.01988	50.49177
2001	47.65969	.1973418	47.27282	48.04657
2002	43.82314	.2203252	43.39121	44.25507
2003	46.40826	.3671291	45.68853	47.12799
2004	46.72911	.1292091	46.47581	46.98242
2005	45.73734	.1505026	45.44229	46.03239
2006	44.43949	.0937196	44.25576	44.62322
2007	46.37241	.1314082	46.1148	46.63003
2008	40.84019	.2711738	40.30857	41.37181
2009	34.21985	.0426031	34.13633	34.30337
2010	36.26393	.0727737	36.12126	36.4066
2011	36.74501	.0495529	36.64787	36.84216
2012	37.65898	.055228	37.55071	37.76725
2013	39.81041	.1450233	39.5261	40.09471

Source: Thesis author

After five variables addressing commissioners' attributes, values, career paths and self-interest, we turn to describing statistics on other capabilities of the Brazilian antitrust authority. The statistic that opens the new list is named 'voting panel size'.

Table 14 shows the overall mean of the CADE panel voters per category of final verdict. Nonetheless, it does not provide any insight into this issue because the two highest means reside at the extremes of the enforcement scale, whereas the lowest mean is in the middle of the 5-stages ruler.

Table 14 - Mean of 'voting panel size' per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_SIZE				
0	6.010379	.0111785	5.988464	6.032294
1	5.90146	.0479994	5.80736	5.995559
2	5.714286	.1194534	5.480106	5.948466
3	5.72093	.138516	5.449379	5.992481
4	5.909091	.2845905	5.351171	6.467011

Source: Thesis author

Table 15, however, indicates that 3 of 11 transactions were blocked in years during which the mean voting panel size accounted for more than 6 commissioners. Another 13 merger reviews – among 43 cases – were approved with asset structure changes. Therefore, fewer than 30% of the toughest decisions were made by the CADE voting panels with the highest number of commissioners in this sample's series. On average, there were more voters during 2000, 2002, 2006, 2007, 2009 and 2010 than during any other year. On the opposite end of the voting panels' size ranking, 2008 and 2013 show 4 of 11 disapproved deals and 15 of 43 asset structure changes. With respect to decisions classified as 'approved with conduct changes' and 'approved with organizational structure changes', years that had an average of more than 6 commissioners represent only 90 of 316 cases. Based on these statistics, *the larger the voting panel size is, the lower the probability of high levels of intervention in deals will be, ceteris paribus*. If these results are confirmed by econometric analysis, the outcomes will be consistent with 'hypothesis 6'.

Table 15 - Mean of 'voting panel size' per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
PN_SIZE				
2000	6.44868	.0392213	6.37179	6.525571
2001	5.848329	.033368	5.782913	5.913745
2002	6.196023	.0347823	6.127834	6.264211
2003	5.618644	.039757	5.540703	5.696585
2004	5.70894	.0211473	5.667482	5.750398
2005	5.508772	.029665	5.450616	5.566928
2006	6.830258	.0251256	6.781001	6.879515
2007	6.47541	.0278047	6.420901	6.529919
2008	5.552511	.0258894	5.501757	5.603266
2009	6.475	.0393173	6.397921	6.552079
2010	6.207424	.0336708	6.141414	6.273433
2011	5.979478	.0382147	5.90456	6.054395
2012	5.656613	.0345461	5.588887	5.724338
2013	5.391304	.127634	5.141087	5.641522

Source: Thesis author

The second variable included in this study which goes beyond commissioners' attributes, values and self-interest is the 'antitrust authority budget'. In Chapter 4, where the discussion on this theme starts, political connotations were removed from the debate, permitting only a singular interpretation of AUT_BUDGET: the more resources, the more capable the authority of enforcing the law. Thus, the predicted effect of this variable on the level of intervention on merger reviews is positive. In other words, it is expected that *the greater the CADE's annual budget is, the greater the probability of high levels of intervention on merger reviews will be.*

Using Table 16 for complementary insights, it is easy to see that an increase in the mean of 'financial resources allocation' leads to an increase in antitrust enforcement activity. In addition to this argument, Figure 7 provides some support for the theoretical consistency of 'hypothesis 7', although it is not fully reasoned. For example, periods such as 2001-2003, 2005-2006 and 2010-2013 reveal that in the jurisdiction analyzed, there is a positive statistical relationship between the 'annual budget' in Brazil's nominal currency (BRL) and 'enforcement'. In other words, from 9 of the 14 years under debate, the interventionist profile of the CADE can be roughly associated with the allocation of financial resources because both variables float in the same direction.

Table 16 - Mean of 'budget' per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
AUT_BUDGET				
0	1.42e+07	62940.7	1.40e+07	1.43e+07
1	1.44e+07	317300.4	1.38e+07	1.50e+07
2	1.60e+07	849305.6	1.43e+07	1.76e+07
3	1.66e+07	883753.7	1.49e+07	1.83e+07
4	1.93e+07	2183705	1.50e+07	2.36e+07

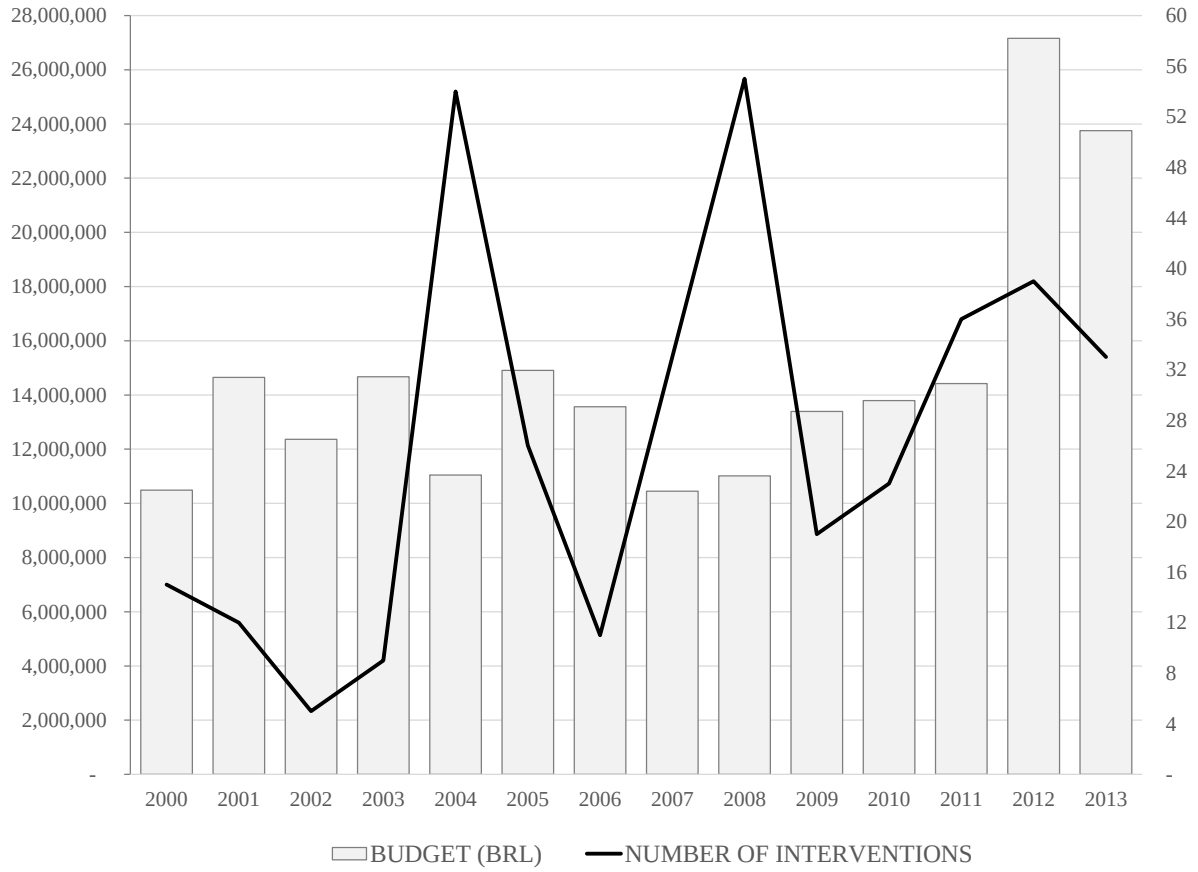
Source: Thesis author

Figure 7 also shows that the two peaks of changes to deals occurred in 2004 and 2008, which apparently contradicts the prior conclusion. However, a deeper look at the numbers contained in Table 2 provides important information: both peaks are characterized by 'approvals with conduct changes'. Therefore, despite the fact that a large number of merger reviews was affected by the CADE intervention, most of the changes imposed in deals were neither structural nor prohibitions. So, the theoretical expectation stated in 'hypothesis 7' – the positive effect of budget size on level of intervention – is reinforced by these statistics.

The third concept discussed in this thesis that relies not on commissioners' profiles but instead on the dynamics of antitrust law enforcement is INTER_PRIORYR. Guided by theory, it is supposed that 'level of intervention in deals a year before M&A notifications' has a negative impact on merger reviews' final verdicts. First, however, it is noteworthy that statistical significance, if it appears, will show that the so-called 'deterrence-effect' occurred in the Brazilian M&A market enforced by Law 8,884/94.

The analysis of only those years whose mean of INTER_PRIORYR was higher than 30 cases provides interesting preliminary conclusions. The asset structure changes imposed or negotiated by the CADE with transacting parties are more than 50% of the total sample – 25 out of 43 cases – whereas 'disapprovals' account for more than 81% – 9 of 11 reviews. Therefore, based on the descriptive statistics contained in Table 17 combined with information available from Table 2, the effects of 'prior-year enforcement' on 'big events' are positive for the subsequent level of intervention by the CADE.

Figure 7 – CADE annual budget and number of interventions per year



Source: Thesis author

Table 17 – Mean of 'level of intervention a year before M&A notifications' per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
INTER_PRIORYR				
2000	5.642229	.0826689	5.480162	5.804295
2001	9.933162	.2795879	9.385049	10.48127
2002	15.18466	.2329563	14.72796	15.64135
2003	11.9435	.1808892	11.58888	12.29812
2004	9.097713	.107868	8.886245	9.309181
2005	26.5614	1.057748	24.48776	28.63504
2006	37.8893	.449358	37.00836	38.77023
2007	23.26503	.4451945	22.39225	24.1378
2008	30.1758	.4249678	29.34268	31.00892
2009	48.35312	.6631765	47.05301	49.65324
2010	30.631	.7830776	29.09584	32.16617
2011	27.00373	.3405049	26.3362	27.67127
2012	36.69374	.4455308	35.8203	37.56717
2013	36.56522	1.37082	33.87782	39.25261

Source: Thesis author

The above conclusion is confirmed by Table 18. On average, the consistent increase of ‘interventions one year before’ seems to have led the CADE to increase the level of interference in M&A in the following judgments. Both results are a warning sign in terms of validating ‘hypothesis 8’, which suggests the opposite direction. The econometric examination in Chapter 6 is decisive as to whether there was institutional distance between regulators and regulated parties under Law 8,884/94.

Table 18 - Mean of ‘level of intervention in deals a year before M&A notifications’ per type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
INTER_PRIORYR				
0	23.78627	.2235284	23.34806	24.22449
1	24.78832	.8139197	23.19269	26.38395
2	26.14286	2.306022	21.62206	30.66365
3	26.32558	2.687636	21.05666	31.5945
4	27.63636	4.403042	19.00451	36.26822

Source: Thesis author

The fourth, and last, variable which does not belong to the group of attributes and values of antitrust commissioners is LATE_NOTIFIED. In short, late-notified mergers are associated with firms’ lack of knowledge in antitrust matters and, hypothetically, with ‘pro-competitive’ initiatives. However, a look at Table 19 combined with Table 2 does not lead to the confirmation of this hypothesis.

For example, the number of interventions in deals that occurred in 2013 is substantially greater than in 2000, but in the first year of this database series the mean of late notifications is greater than in 2013. The same absence of positive correlation is seen in 2004, in which the number of interventions is the second highest among all, nonetheless the mean of late notifications is the lowest in the total sample.

Resorting to Table 20, the descriptive statistics become more consistent with ‘hypothesis 8b’. At least among the deals on which the CADE imposed or negotiated any kind of change, the lower the mean of late notifications, the higher the level of enforcement. For that reason, predictions stated to LATE_NOTIFIED remain as ‘hypothesis 8b’.

Table 19 – Mean of 'late notification' per year

Over	Mean	Std. Err.	[95% Conf.	Interval]
LATE_NOTIFIED				
2000	.2199413	.0224635	.1759032	.2639795
2001	.1079692	.0157552	.0770822	.1388561
2002	.0710227	.0137103	.0441446	.0979009
2003	.0338983	.0096319	.0150156	.052781
2004	.018711	.0061848	.0065861	.0308359
2005	.0385965	.0114306	.0161877	.0610053
2006	.0295203	.0103008	.0093263	.0497143
2007	.0382514	.0100394	.0185698	.0579329
2008	.0388128	.0092395	.0206993	.0569263
2009	.059375	.0132317	.0334352	.0853148
2010	.0305677	.0080525	.0147813	.0463541
2011	.0298507	.0073573	.0154272	.0442743
2012	.0348028	.0088385	.0174754	.0521301
2013	.1449275	.0426896	.0612375	.2286176

Source: Thesis author

Table 20 – Mean of 'late notification' per year type of decision

Over	Mean	Std. Err.	[95% Conf.	Interval]
LATE_NOTIFIED				
0	.0559204	.0033444	.0493639	.0624768
1	.0656934	.0149942	.0362983	.0950886
2	0	(omitted)		
3	.0465116	.0324948	-.0171922	.1102154
4	.2727273	.1408358	-.0033714	.5488259

Source: Thesis author

The description of the basic statistics on 13 variables related to the CADE voting panels and other factors associated with authorities' capabilities is now over. Thus, in the next section, the main part of the empirical strategy begins: the *ordered probit* models.

5.3 *Ordered probit* models

Zikmund *et al*. (2010, p. 581) state, "As researchers become increasingly aware of the complex nature of business problems, they gain a greater appreciation for more sophisticated approaches to data analysis." According to the authors, studies that either include two or more

variables or are concerned with dimensions adjacent to many variables will require a multivariate statistical technique.

Many choices made by individuals and organizations are the type *either-or*. If a researcher is interested in explaining the reasons for particular choices and how those reasons affect such choices, the problem requires a model of discrete choices. Therefore, a variable that takes the value '1' for a possible outcome or '0' otherwise can represent this type of problem. Thus, the term to be explained – the dependent variable – by definition, is *binary* (HILL *et al*., 1999; MARTINS; THEOPHILO, 2007; ZIKMUND *et al*., 2010).

However, individuals and organizations' choices may also be the type *multiple-or,* in ascending or descending order. In other words, a variable with a nominal level of measurement, for which a relation *greater than* is applied to all pairs of levels, can indicate several possible answers to the same question (HILL *et al*., 1999; MARTINS; THEOPHILO, 2007; ZIKMUND *et al*., 2010). For example, an organization may have to decide for unrestricted approval of a certain case, or approval with conditions, even prohibition. The decision is ordered by the level of restriction, and each restriction level is higher than the previous one. Thus, the dependent variable is classified as *ordinary*.

The theoretical problem of this thesis, summarized by its specific goals, matches the second type of choice described above. Because the dependent variable LV_INTER is both qualitative in nature and defined by a scale of interventional activity, this study adopts *ordered probit regressions* as the core technique to unfold determinants of the Brazilian antitrust authority decisions on merger reviews.

In short, according to Hill *et al*. (1999), *probit* is a functional relationship used to represent the probability curve p in the range [0, 1] while it is simultaneously related to the standardized normal probability distribution. Assuming that a choice depends on standardized normal random variable Z, which is itself determined by explanatory variable x, the nonlinear *probit* function F, thus, expresses the probability p that the dependent variable assigns the value '1' as follows: $p = P[Z \leq \beta_0 + \beta_1.x] = F(\beta_0 + \beta_1.x)$. The *probit* parameters β are directly estimated using the maximum likelihood method, which requires large data samples.

The *ordered probit*, in turn, is grounded on the same statistical basis; however, as noted earlier, it specifies both a large number of possible results and an ordinal scale implicit in the dependent variable *y*. In addition, *ordered probit* functions, unlike *probit* functions, do not have an intercept. This can be explained by the presence of so-called 'cut-points' on the error term's normal distribution. However, if an *ordered probit* is used with a binary dependent variable, there will be only one cut-point with the same magnitude as the intercept, arising from the familiar *probit* with the opposite sign (DAYKIN; MOFFATT, 2002). 'Cut-points' are threshold parameters related to the average proportion of each category of the dependent variable (ANDERSON, 1984).

In theoretical terms, *ordered probit* models are as summarized below, including Figure 8. It is worth noting that four cut-points are superimposed on that curve to illustrate the particular problem addressed by this thesis.

$$y_i^* = \beta . x_i' + u_i, \text{ where}$$

i = number of cases, varying from 1 to n;

n = sample size;

β = vector of parameters not containing an intercept;

x = vector of explanatory variables;

u_i : N(0,1);

y_i^* is an unobserved term whose relationship with the dependent variable y is ruled by:

$$y = 0 \text{ if } -\infty < y^* < cut_1$$

$$y = 1 \text{ if } cut_1 < y^* < cut_2$$

$$y = 2 \text{ if } cut_2 < y^* < cut_3$$

$$y = J \text{ if } cut_{J-1} < y^* < \infty$$

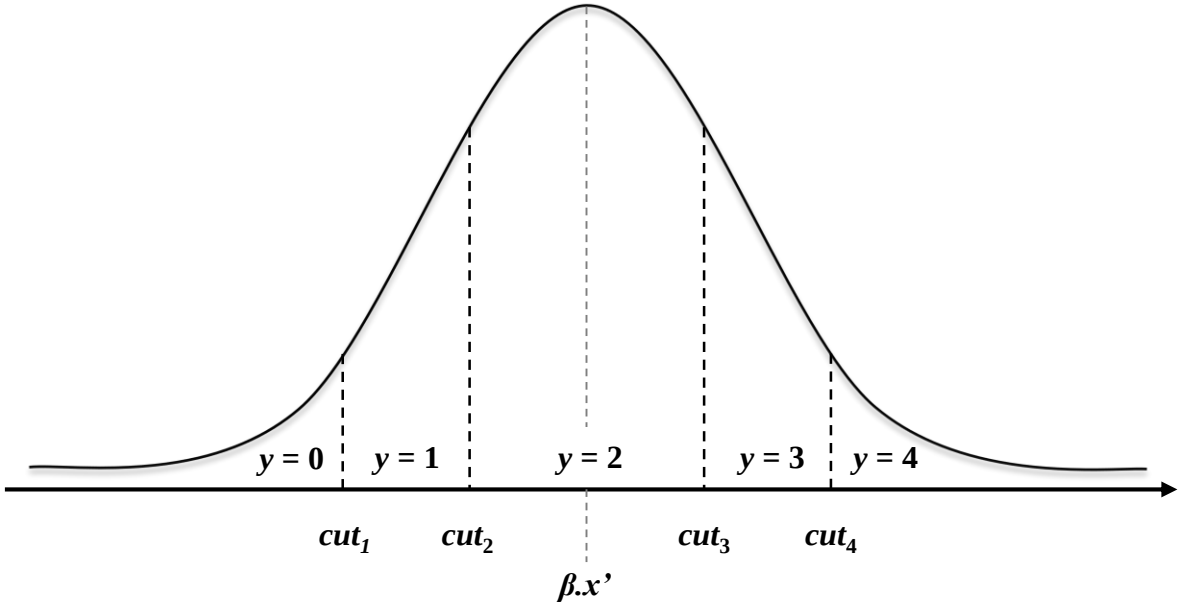
J = number of categories ordered in the dependent variable

cut_j = cut-points.

Finally, as an exercise, the theoretical aspects shown in Figure 8 are applied to this thesis problem for a better understanding: the likelihood *p*(y=4) or *p*(disapproval) is higher when the *cut-point 4* value is lower; similarly, the higher the *cut-point 1* value, the greater *p*(y=0) or *p*(approval without restrictions); the probability *p*(y=3) or *p*(approval with asset structure changes) depends on the range between *cut-points 3 and 4*; the same rationale suggests that

the probability *p*(y=2) or *p*(approval with organizational structure changes) varies with the distance of *cut-points 2 and 3*; and the *p*(y=1) or *p*(approval with conduct changes) means the range between *cut-points 1 and 2*.

Figure 8 – *Ordered Probit*: the distribution of the error term



Source: Thesis author, adapted from Daykin and Moffatt (2002)

5.3.1 *Ordered probit*: modeling this thesis' problem

The dependent variable LV_INTER is both qualitative in nature and defined by an ascending scale of interventional activity on merger reviews. Therefore, *y* assigns five possible values from 0 to 4 in every model specified:

$y = 0$ *if* $-\infty < y^* < cut_1$ – if merger was 'approved without restrictions'

$y = 1$ *if* $cut_1 < y^* < cut_2$ – if merger was 'approved with conduct changes'

$y = 2$ *if* $cut_2 < y^* < cut_3$ – if merger was 'approved with organizational structure changes'

$y = 3$ *if* $cut_2 < y^* < cut_3$ – if merger was 'approved with asset structure changes'

$y = 4$ *if* $cut_2 < y^* < cut_3$ – if merger was 'disapproved'

Regarding β and x, the vector of parameters and the vector of explanatory variables, Models I and II characterize them all. The difference between both models rests on the presence, in

Model I, of control variables related to the other three perspectives of analysis of merger reviews proposed in Chapter 2. The list of control variables, concepts, measures and respective analytical perspective is presented in Table 21. Regarding their theoretical foundations and expected signs, they are not discussed due to the accessory role they play in this thesis.

Table 21 – Control variables

VARIABLE	DEFINITION	MEASURE	PERSPECTIVE
ANALYSIS_LENGTH	Anticompetitive potential of a merger	1' if the merger review time-period, from notification to final verdict, exceeded the time-period specified on Law 8,884/94; '0' otherwise	Traditional Antitrust Economics
VERTICAL	Level of integration and relatedness between merging firms	1' if vertical integration occurred due to merger; '0' otherwise (omitted dummy variable: HORIZONTAL)	Traditional Antitrust Economics
REL_CONGLOM	Level of integration and relatedness between merging firms	1' if related conglomeration occurred due to merger ; '0' otherwise (omitted dummy variable: HORIZONTAL)	Traditional Antitrust Economics
NONREL_CONGLOM	Level of integration and relatedness between merging firms	1' if non-related conglomeration occurred due to merger; '0' otherwise (omitted dummy variable: HORIZONTAL)	Traditional Antitrust Economics
SERVICES	Macroeconomic sector	1' if the acquirer was in the service sector; '0' otherwise (omitted dummy variable: MANUFACTURING)	Political Economy
AGRICULTURE	Macroeconomic sector	1' if the acquirer was in the agriculture sector; '0' otherwise (omitted dummy variable: MANUFACTURING)	Political Economy
HOLDINGS	Type of business organization	1' if the acquirer was a holding company; '0' otherwise	Institutional Comparative
BRAZILIAN	Origin of acquirer	1' if the acquirer was a domestic firm (group); '0' if the acquirer was a foreign firm (group)	Institutional Comparative

Source: Thesis author

The idea behind the insertion of such terms is quite simple: to minimize concerns on omitted-variable bias. Although the validity of the outcomes of this study is still subject to the absence of correlation between ‘included’ and ‘omitted’ variables, as Studenmund (2000) suggests, the presence of terms besides those contained in the *Authorities’ Capabilities* perspective provide more consistent, meaningful and robust findings.

In addition, it is worth noting that another concern related to the quality of the outcomes of this investigation, the so-called multicollinearity bias, has two objective responses. Firstly, in the beginning of the next chapter, a matrix of correlations between dependent and independent terms is presented; secondly, *variance inflation factors – VIF –* are calculated for all variables included in the following regressions. The *VIF* alerts to potential bias related to variables that are substantially correlated. As O'Brien (2007) states, "The VIF indicates how much the estimated variance of the i_{th} regression coefficient is increased above what it would be if R_i^2 equaled zero: a situation in which the i_{th} independent variable is orthogonal to the other independent variables in the analysis." In sum, concerns on multicollinearity, in addition to omitted-variables, reinforces this thesis' commitment with robust results.

MODEL I

$$\begin{aligned} LV\_INTER = {} & \beta_1.PN\_LIBERAL + \beta_2.PN\_LAWYER \\ & + \beta_3.PN\_WELFARE + \beta_4.PN\_COREFUN + \beta_5.PN\_GENADM \\ & + \beta_6.PN\_BENEXP + \beta_7.PN\_NEND + \beta_8.PN\_HCME + \beta_9.PN\_SIZE \\ & + \beta_{10}.AUT\_BUDGET + \beta_{11}.INTER\_PRIORYR + \beta_{12}.LATE\_NOTIFIED \\ & + \beta_{13}.ANALYSIS\_LENGTH + \beta_{14}.VERTICAL + \beta_{15}.REL\_CONGLOM \\ & + \beta_{16}.NONREL\_CONGLOM + \beta_{17}.SERVICES + \beta_{18}.AGRICULTURE \\ & + \beta_{19}.HOLDINGS + \beta_{20}.BRAZILIAN + \mu \end{aligned}$$

MODEL II

$$\begin{aligned} LV\_INTER = {} & \beta_1.PN\_LIBERAL + \beta_2.PN\_LAWYER \\ & + \beta_3.PN\_WELFARE + \beta_4.PN\_COREFUN + \beta_5.PN\_GENADM \\ & + \beta_6.PN\_BENEXP + \beta_7.PN\_NEND + \beta_8.PN\_HCME + \beta_9.PN\_SIZE \\ & + \beta_{10}.AUT\_BUDGET + \beta_{11}.INTER\_PRIORYR + \beta_{12}.LATE\_NOTIFIED \\ & + \mu \end{aligned}$$

The results, then, are presented in Chapter 6, followed by a final discussion in Chapter 7.

6 RESULTS

In most sections of this thesis – and for a long time worldwide – much has been said about the profile of law enforcers and other features that characterize public entities where those agents are based. However, some lack of knowledge still persists in certain issues and areas. For example, particularly with regard to antitrust commissions in developing economies, the gap between ‘what supposedly occurs’ and ‘the evidence on what really occurs’ is considerable. So, it is time to introduce the main results of this thesis, because they can unfold determinants of the Brazilian antitrust authority decisions on merger reviews that potentially contribute to fill, at least, a part of those gaps.

The best starting point seems to be Table 22, which retakes the bivariate descriptive analysis presented in Chapter 5, but also provides important insights to the multivariate assessment. Thus, the achievement of the general and first specific goals of this study is on its way.

In short, the table presents correlations between the dependent and independent variables as well as between independent terms themselves, suggesting the existence of some potential problems of collinearity. The purpose of correlation analysis is to measure the closeness of the linear relationship between variables. Correlation, in fact, is a statistical measure that shows the extent to which two or more terms vary simultaneously. On the one hand, a positive correlation reveals the extent to which those variables increase or decrease in parallel. On the other hand, a negative correlation highlights the extent to which one variable increases as the other decreases. When the variation of one term reliably predicts a similar variation in another term, a frequent and serious misuse is to interpret the particular correlation as a cause-and-effect relationship (CONGELOSI *et al.*, 1983). Nonetheless, causation is not explained by correlation. If the variation of one term reliably predicts a similar variation in another term, there may be, for instance, an unknown factor that impacts both variables similarly.

Thus, assuming a correlation r moderate if it is in the range $[0.40 \leq r < 0.70]$ or high $[r \geq 0.70]$, it is noticed in Table 22 that (i) there is only one highly correlated pair of variables included in Model I, and (ii) despite moderate correlations exist, their relevance to this study disappears when the results of *VIF* is accessed in the end of Models I and II analysis. For

those reasons, a detailed correlation assessment pair-by-pair is not needed as well as the preliminary concerns on collinearity – or multicollinearity – can be discarded.

Table 22 – Correlations of voting panel variables

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]
LV_INTER [1]	1																				
PN_LIBERAL [2]	-0.08	1																			
PN_LAWYER [3]	-0.05	0.28	1																		
PN_WELFARE [4]	0.06	0.21	-0.40	1																	
PN_COREFUN [5]	0.00	-0.39	0.16	-0.50	1																
PN_GENADM [6]	0.02	0.08	-0.01	-0.05	-0.04	1															
PN_BENEXP [7]	0.09	-0.26	-0.41	0.32	-0.02	0.02	1														
PN_NEND [8]	-0.01	-0.15	0.22	-0.23	0.13	-0.06	-0.46	1													
PN_HCME [9]	0.00	0.53	-0.39	0.47	-0.36	0.03	-0.01	-0.24	1												
PN_SIZE [10]	-0.05	-0.02	-0.10	0.11	-0.13	-0.03	-0.04	0.04	0.01	1											
AUT_BUDGET [11]	0.08	-0.22	0.20	0.08	-0.26	-0.04	-0.04	0.10	-0.33	-0.18	1										
INTER_PRIORYR [12]	0.03	-0.61	-0.05	-0.13	0.18	-0.06	0.13	0.04	-0.57	0.09	0.32	1									
LATE_NOTIFIED [13]	0.01	0.13	0.03	0.05	-0.09	0.06	-0.06	0.01	0.08	0.04	-0.03	-0.08	1								
ANALYSIS_LENGTH [14]	0.16	0.43	0.07	0.15	-0.18	0.05	-0.14	-0.04	0.30	-0.04	-0.06	-0.32	0.11	1							
VERTICAL [15]	-0.02	-0.01	0.02	-0.01	0.00	-0.01	-0.02	0.03	-0.03	0.04	0.02	0.03	-0.01	-0.01	1						
REL_CONGLOM [16]	-0.08	0.05	0.00	-0.02	-0.01	0.06	-0.05	0.01	0.03	0.02	-0.03	-0.04	0.00	-0.08	-0.11	1					
NONREL_CONGLOM [17]	-0.07	-0.05	-0.02	-0.03	0.03	-0.02	0.00	0.00	-0.02	-0.01	-0.01	0.00	-0.05	-0.19	-0.10	-0.16	1				
SERVICES [18]	0.08	0.02	0.05	0.01	-0.05	-0.02	-0.02	0.00	0.00	0.00	0.06	0.00	0.01	0.07	-0.07	-0.07	-0.18	1			
AGRICULTURE [19]	-0.02	-0.06	-0.02	-0.01	0.04	-0.01	0.03	-0.01	-0.05	0.00	-0.01	0.04	-0.01	-0.05	0.02	-0.04	-0.05	-0.12	1		
HOLDINGS [20]	-0.05	-0.07	-0.03	-0.03	0.04	-0.02	0.02	0.00	-0.03	-0.01	-0.01	0.01	-0.04	-0.19	-0.08	-0.10	0.82	-0.25	-0.06	1	
BRAZILIAN [21]	-0.17	0.24	-0.02	0.04	-0.08	0.01	-0.09	-0.07	0.21	0.01	-0.13	-0.19	-0.05	0.02	0.01	0.10	0.04	-0.14	-0.03	0.04	1

Source: Thesis author

6.1 *Ordered probit* models: unfolding the influential role of authorities' capabilities on merger reviews

The analysis of Models I and II, both repeated below, starts with an exploratory comparative investigation on a particular outcome: the *Likelihood Ratio Chi-Square – Pseudo* R^2. The reason that justifies an 'exploratory investigation' rests on a lot of criticism on the real value of the total variability in the dependent variable explained by *ordered probit* regressions.[61] However, the interest herein is not in the magnitude of the *Pseudo* R^2 in each model, but in the occurrence of such variability caused by terms associated to the CADE's capabilities. Thus, being aware of the authors' warnings while interpreting this statistic, a brief comparison on the variability in the dependent term explained by both models 'with' and 'without' independent control variables provides the first evidence not only of the influence of

[61] See Aldrich and Nelson (1984), Veall and Zimmermann (1992) and IDRE (2015).

commissioners' attributes, values and self-interest but also of the panel size and authority's budget on merger review verdicts.

MODEL I

$$LV\_INTER = \beta_1.PN\_LIBERAL + \beta_2.PN\_LAWYER + \beta_3.PN\_WELFARE + \beta_4.PN\_COREFUN + \beta_5.PN\_GENADM + \beta_6.PN\_BENEXP + \beta_7.PN\_NEND + \beta_8.PN\_HCME + \beta_9.PN\_SIZE + \beta_{10}.AUT\_BUDGET + \beta_{11}.INTER\_PRIORYR + \beta_{12}.LATE\_NOTIFIED + \beta_{13}.ANALYSIS\_LENGTH + \beta_{14}.VERTICAL + \beta_{15}.REL\_CONGLOM + \beta_{16}.NONREL\_CONGLOM + \beta_{17}.SERVICES + \beta_{18}.AGRICULTURE + \beta_{19}.HOLDINGS + \beta_{20}.BRAZILIAN + \mu$$

MODEL II

$$LV\_INTER = \beta_1.PN\_LIBERAL + \beta_2.PN\_LAWYER + \beta_3.PN\_WELFARE + \beta_4.PN\_COREFUN + \beta_5.PN\_GENADM + \beta_6.PN\_BENEXP + \beta_7.PN\_NEND + \beta_8.PN\_HCME + \beta_9.PN\_SIZE + \beta_{10}.AUT\_BUDGET + \beta_{11}.INTER\_PRIORYR + \beta_{12}.LATE\_NOTIFIED + \mu$$

Table 23 shows that the *Pseudo* R^2 of Model I is 0.1419, which includes the effects of variables related to *Traditional Antitrust Economics*, *Political Economy* and *Institutional Comparative* perspectives, besides the authorities' capabilities and other interconnected factors. Nonetheless, even removing the control variables, which in fact configures Model II, the *Pseudo* R^2 reveals a probability equal to zero that the authorities' predictors do not affect LV_INTER. Just as an entry, the *Pseudo* R^2 of Model II is 0.0345. Thus, some variability in the level of intervention by the CADE in M&A is explained by terms restricted in the main group of this thesis.

Table 23 – Outcomes of Models I and II

VARIABLE	MODEL I					MODEL II				
	coef.	**std. error**	***t-value***	***p*** **> | t |**	**vif**	**coef.**	**std. error**	***t-value***	***p*** **> | t |**	**vif**
PN_LIBERAL	-0.7841	0.1379	-5.69	0.000	3.65	-0.6561	0.1284	-5.11	0.000	3.39
PN_LAWYER	0.5278	0.2801	1.88	0.060	2.63	0.5704	0.2622	2.17	0.030	2.61
PN_WELFARE	0.2353	0.0860	2.74	0.006	2.00	0.2906	0.0813	3.58	0.000	1.99
PN_COREFUN	0.0637	0.0814	0.78	0.434	2.01	0.0943	0.0756	1.25	0.212	2.00
PN_GENADM	1.0122	0.4466	2.27	0.023	1.03	1.0380	0.4151	2.50	0.012	1.03
PN_BENEXP	0.0002	0.0001	1.66	0.097	1.88	0.0002	0.0001	2.27	0.023	1.86
PN_NEND	-0.0002	0.0003	-0.68	0.496	1.49	0.0001	0.0003	0.27	0.784	1.48
PN_HCME	0.0250	0.0090	2.79	0.005	3.22	0.0241	0.0085	2.84	0.004	3.20
PN_SIZE	-0.0983	0.0398	-2.47	0.014	1.19	-0.1055	0.0376	-2.80	0.005	1.18
AUT_BUDGET	2.6900	0.0000	0.34	0.737	1.85	0.0000	0.0000	2.02	0.043	1.83
INTER_PRIORYR	-0.0003	0.0026	-0.13	0.899	2.05	-0.0025	0.0024	-1.02	0.309	2.03
LATE_NOTIFIED	-0.0409	0.1198	-0.34	0.733	1.04	0.1754	0.1119	1.57	0.117	1.02
ANALYSIS_LENGTH	0.7643	0.0696	10.98	0.000	1.36					
VERTICAL	-0.2011	0.1221	-1.65	0.099	1.05					
REL_CONGLOM	-0.4270	0.1130	-3.78	0.000	1.10					
NONREL_CONGLOM	-0.9811	0.1931	-5.08	0.000	3.14					
SERVICES	0.2210	0.0611	3.62	0.000	1.14					
AGRICULTURE	-0.3010	0.2019	-1.49	0.136	1.04					
HOLDINGS	0.6508	0.1718	3.79	0.000	3.16					
BRAZILIAN	-0.5248	0.0622	-8.44	0.000	1.13					
cut_1	2.4248	0.6476				2.7236	0.5881			
cut_2	3.1780	0.6492				3.3730	0.5895			
cut_3	3.4594	0.6506				3.6127	0.5906			
cut_4	4.1093	0.6583				4.1915	0.5979			
Measures of fit:						**Measures of fit:**				
Likelihood Ratio Chi-Square (Pseudo R^2) = 0.1419 with 20 degrees of freedom; prob = 0.0000						Likelihood Ratio Chi-Square (Pseudo R^2) = 0.0345 with 12 degrees of freedom; prob = 0.0000				
Log likelihood = -1399.7094						Log likelihood = -1574.9606				

Source: Thesis author

Moving on, then, to the explanatory power of variables listed in Chapter 4 on the level of antitrust regulation in Brazil, particularly in M&A under Law 8,884/94, (i) a summary of the main econometric outcomes contained in Table 23 follows; and (ii) the substantive meaning of econometrics is addressed right after.[62]

The empirical results suggest that 3 of 11 theoretical predictions are highly consistent. By 'highly consistent' are defined parameters' statistical significance $p < 5\%$ and expected sign endorsed by Models I and II simultaneously. PN_WELFARE, PN_HCME and PN_SIZE present such performance.

[62] See Seth *et al*. (2009) to access a discussion on 'substantive' and 'statistical' significances.

Among outcomes considered, herein, ‘consistent’ with theoretical predictions are the PN_LAWYER and PN_BENEXP ones. In these cases, predicted signs are confirmed as well as the statistical significance are, respectively, $p < 10\%$ and $p < 5\%$ in Models I and II.

In addition to these parameters, two other independent variables reveal $p < 5\%$ in both models but the sign of PN_LIBERAL and the magnitude of PN_GENADM are inconsistent with theoretical expectations. If, on the one hand, the PN_LIBERAL sign should be positive to prove theory consistent, on the other hand, the magnitude of PN_GENADM should be lower than PN_WELFARE.

Regarding non-statistically significant parameters in both models, absolutely everyone related to the authorities’ capabilities indicates a coherent direction with theoretical expectations. Thus, PN_COREFUN, PN_NEND, AUT_BUDGET, INTER_PRIORYR and LATE_NOTIFIED contribute to the variability of the dependent variable LV_INTER according to the theory. Finally, it is worth noting that AUT_BUDGET is statistically significant in Model II, but it is not so in Model I.

Considering, then, that ‘statistical significance’ refers to whether any differences observed between groups being studied are ‘real’ or whether they are simply ‘due to chance’, $p < 5\%$ means the probability of ‘not to be consistent with the real world’. For this reason, 7 of 11 variables that really interest to this thesis reveal, somehow, a potential explanatory power on the CADE’s verdicts.

6.1.1 The substantive significance of Models I and II

In order to make every expected result and correspondent empirical evidence clear to the reader, the analysis of variables and parameters, from now on, is headed by their respective hypotheses.

H1: *The greater the ratio of antitrust voting panelists appointed by a liberal government is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

The negative coefficient of PN_LIBERAL, surprisingly, suggests that the level of intervention on merger reviews in Brazil, between 2000 and 2013, was higher the greater the ratio of appointees by Presidents Lula and Rousseff in the voting panel, *ceteris paribus*. Therefore, 'hypothesis 1' and empirical outcome are not consistent regarding 'political ideology'.

A possible explanation for this 'theoretical-empirical' contradiction is related to the maturity of the CADE under President Cardoso's administration. Despite the PSDB has been the political party that empowered the Brazilian antitrust authority after Law 8,884/94 enactment, the CADE was still crawling as an antitrust agency during Cardoso's presidency. In Dutra (2009), former commissioners who served the CADE at that time, for example, point out the lack of financial and human resources as a characteristic of the Brazilian antitrust authority. In addition, Nusdeo (2002), OECD (2005), Gama and Ruiz (2007) as well as Avellar *et al*. (2012) affirm that the CADE's decisions could not be characterized until mid-2000s. It is notorious the merger between two biggest local players in the beverage market – Brahma and Antartica, consolidating AmBev – which was approved with 'mild' asset structure changes instead of prohibited, although the merging firms' market-share in beer and soft drinks had overcome 70%.[63] According to Salgado e Silva (2009, p. 61), a former Brazilian antitrust commissioner, the AmBev case was decided by "[…] one of the weakest technical panels that the CADE has already had".[64] Therefore, the maturity of the CADE may have influenced the PN_LIBERAL results.

Another possible argument to the empirical inconsistency of 'hypothesis 1' rests on the 'Contestable Markets' theory.[65] As mentioned earlier in this thesis, in the 1990's and early 2000s, privatizations of state-owned companies and the end of political direct control on prices meant a kind of liberal commitment of President Cardoso to create a more competitive domestic market in Brazil. President Cardoso, then, empowered the CADE as a signal of his commitment with competition issues while M&A increased. However, M&A consolidations occur due to less intervention when a great number of Cardoso's appointees were in the voting

[63] Some analysts suggest that another alternative to AmBev case would be a more significant asset structure change through the divestiture of the Skol brand.
[64] "É preciso salientar que o caso AmBev foi decidido em um momento em que a composição técnica do CADE era uma das mais fracas de sua história [...]" (*ibid*, p. 61)
[65] Baumol (1982) associates the concept of 'perfectly competitive market' to what he calls the 'perfectly contestable market'. According to the author, the main difference between both concepts is the fact that, in contestable markets, "[…] firms need not be small or numerous or independent in their decision making or produce homogeneous products." (*ibid*, p. 4) A perfectly contestable market, thus, is characterize by absolutely free entry and absolutely costless exit.

panel. This paradox, according to Amann and Baer (2008), can be explained if Brazilian antitrust commissioners, hypothetically aligned with the federal government, founded their decisions on firms' behavior rather than on structural factors – e.g. market-shares – as a necessary or sufficient condition for antitrust intervention.

Based on this rationale, trade and investment liberalization would have transformed the Brazilian domestic market into something closer to a contestable market. The trade liberalization, on the one hand, implied that the Brazilian market became more open to foreign competition while the liberalization of investments increased the threat to incumbents. At the same time, domestic companies became more subject to tender offers. From the perspective of Cardoso's policies, then, what really seems to have been important was the improvement of competitive performance, measured by productivity, unit costs and innovation. The pieces of evidence presented in Amann and Baer (2008) suggest that such competitive gains, in fact, occurred.

Anyway, the high significance of PN_LIBERAL confirms that Lula and Rousseff appointees were tougher against transacting firms when judging merger reviews under Law 8,884/94. Unfortunately, data from 'liberal' appointments are uniquely related to a particular period of time, so it is difficult to know which one of the above arguments prevails.

H2: *The greater the ratio of commissioner-lawyers in the voting panel is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

The second independent term, which is significant to explain the level of intervention in M&A, in Brazil, is PN_LAWYER. However, differently than PN_LIBERAL, the sign of its parameter is positive, suggesting that higher probabilities of changes in deals are related to greater ratios of lawyers in the voting panel, *ceteris paribus*. The past literature argues that higher propensity to litigation from lawyers' side with a stronger inclination to both research and more sophisticated analysis by economists can sustain the consistency of 'hypothesis 2' with empirical outcomes.

H3a: *If the ratio of antitrust voting panelists with predominant prior public service experience in the Welfare policy domain is equal or greater than 50%, the probability of high levels of intervention in deals by the antitrust authority will be greater, ceteris paribus.*

The third potential determinant analyzed herein is PN_WELFARE. Also as predicted by theory – summarized in 'hypothesis 3a' –, this variable affects positively the dependent term 'levels of intervention' relative to the PN_UTILITIES omitted-term. In other words, voting panels whose predominant prior commission experience in public projects – as public employees or partners – occurred in the so-called 'Welfare public domain' were tougher against transacting parties than voting panels mostly composed by 'prior commission experience in Public Utilities domain'. 'Compassion', a characteristic attribute of those agents who had dealt with educational, health and social assistance in public service prior to the commission job, motivates antitrust law enforcers to higher levels of commitment with customers' claims. Moreover, the 'attraction to public policy making', another distinctive feature of those associated with Welfare domain, makes this conclusion even more meaningful: antitrust commissioners who had dealt with political issues to serve public interest before getting a seat at the CADE intervened more in deals of third parties. In sum, although any 'controversy' that the operationalization of 'past work experience' variable seems to have intrinsically, as discussed in the 'descriptive statistics' section, PN_WELFARE reveals an interesting attribute of antitrust agencies' nominees that scholars and governments should pay attention.

H3b: *Relative to past work experience in the Public Utilities domain, prior work experience in Core State Functions and General Administration will decrease the probability of the antitrust authority to adopt high levels of intervention in deals than past work experience in the Welfare domain, ceteris paribus.*

PN_COREFUN and PN_GENADM, which have results reported in Table 23, are related to the other two motivational dimensions associated with the predominant prior public service experience of antitrust commissioners, besides PN_WELFARE and PN_UTILITIES. Contradicting the prediction stated in 'hypothesis 3b', on the one hand, PN_GENADM shows a stronger effect on the level of intervention on merger reviews relative to PN_UTILITIES than PN_WELFARE. It means that individuals who had the predominant experience in public finances and general administration – e.g. taxation, budgets and controlling, while judging

merger reviews, seem to be tougher against transacting parties than those associated to education, health and social tasks. On the other hand, the magnitude of the PN_COREFUN parameter, although not statistically significant, suggests that ‘hypothesis 3b’ is consistent in theoretical terms. However, considering that the theory predicted both ‘prior experiences’ effects lower than PN_WELFARE, the ‘hypothesis 3b’ is not confirmed.

H4: *The greater the mean experience of the voting panelists on the bench is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

The subsequent term in Table 23, PN_BENEXP, which captures the effects of commissioners’ experience on the bench, repeats theoretical predictions stated in ‘hypothesis 4’ in both models, although some scholars do not recognize $p < 10\%$, seen in Model I, as a robust empirical response. In Model II, however, the level of significance reaches $p < 5\%$. The variable suggests a greater probability of tough law enforcement by the CADE, the greater the mean experience of voting panelists, *ceteris paribus.* This result can be explained, basically, by two different arguments: (i) ‘experience’ means a strong competence both to distinguish pitfalls on transacting parties’ claims as well as to estimate net losses generated by particular mergers; or (ii) experienced antitrust commissioners, founded on significantly greater confidence if compared to the less experienced counterparts, create a bias toward judging the merging parties deceptive. Remember that Meissner and Kassin (2002) highlighted such kind of response while observing police investigators from the United States and Canada.

H5a: *The closer the mean of time to the end of voting panelists' mandates is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

H5b: *The greater the mean of age of the voting panelists is, the greater the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

Following up with the analysis of significant variables, 1 of 2 terms related to ‘posturing attractiveness to a private post-commission job’, specifically PN_HCME, affects positively the dependent variable LV_INTER. Based on both ‘Human Capital’ and ‘Market Expansion’

variants of the ‘Revolving Door’ theory, the effects of accumulated life experience and skills are verified through greater probabilities of high levels of intervention in deals. The rationale behind this statement is that being tougher against firms, commissioners demonstrate knowledge to minimize future costs of firms with regulation. So, the higher the level of enforcement, the greater the need of regulated parties on commissioners expertize afterwards. Thus, the consistency of theoretical and empirical conclusions let this study confirm ‘hypothesis 5b’.

Provided with a dissimilar proposal associated with a post-commission career, the PN_NEND term covers the potential influence of mandates nearing the end on merger reviews. Founded on the ‘Conventional Revolving Door’ theory, mainly supported by Cohen’s (1986) outcomes, it is expected that the closer the mean of time to the end of voting panelists’ mandates is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*. In contrast with PN_HCME variable, then, the rationale behind this statement is that being softer against firms, commissioners demonstrate a wish for firm’s post-commission job rewards. However, the PN_NEND variable shows no statistical significance despite the fact that the theoretical direction of the relational effect on LV_INTER is confirmed by the negative sign. In sum, ‘hypothesis 5a’ is rejected.

H6: *The larger the voting panel size is, the lower the probability of high levels of intervention in deals by the antitrust authority will be, ceteris paribus.*

After presenting the results of all six variables which capture the effects of commissioners’ attributes, values and self-interest on merger reviews, the group which starts with the effects of voting panels’ size on merger reviews comprehends three concepts that reflect procedures, structure and institutional level of the Brazilian antitrust agency under Law 8,884/94.

In short, PN_SIZE reveals parameters, in Models I and II, with negative signs, besides the high significance already mentioned. The negative signs, by the way, match theoretical predictions addressed by ‘hypothesis 6’, which is strongly influenced by criminal and judicial literature. Just as a reminder, experimental tests in those fields also revealed that small juries increase the likelihood of conviction when apparent guilt is high.

H7: *The greater the annual budget of the antitrust authority, the greater the probability of high levels of intervention on merger reviews, ceteris paribus.*

Another potential determinant of law enforcement that is associated with structure and procedures is the budget of antitrust authorities. Scholars, over decades, have recognized the relevance of financial resources to an 'adequate' level of intervention in firms' strategies, no matter what 'adequate' means. From the Washington Post, in 1955, to Van Den Bergh and Ma, in 2013, a lot has been said about the importance of budget, including it as a political instrument to control commissions' activities. Based, however, on the assumption that the enforcement of antitrust law is costly, so the authority's financial capacity must enable the choice of its commissioners on how to use resources, the AUT_BUDGET is examined. The positive and significant parameter of AUT_BUDGET in Model II confirms the theoretical prediction summarized in 'hypothesis 7. Nonetheless, if control variables representing other perspectives of analysis of merger reviews are included in the regression, which characterizes Model I, the result is not totally consistent, despite the positive sign. For that reason, 'hypothesis 7' is rejected.

H8a: *The higher the level of intervention in deals one year before M&A notifications is, the lower the probability of high levels of intervention on merger reviews will be, ceteris paribus.*

INTER_PRIORYR, the term which seeks a response to the influential role of past interventions on new interventions, rests on the so-called 'deterrence effect' – a high frequency of enforcement actions towards mergers in a certain period of time may dissuade the notification of likely anticompetitive new transactions. Consequently, it is possible to associate INTER_PRIORYR with the level of maturity of the relationship between economic actors and the Brazilian antitrust authority. Thus, it is reasonable to believe that significant parameters in Models I and II indicate a high level of maturity of this relationship. Nonetheless, it does not appear either in Model I or Model II. As well as PN_NEND, the sign of the INTER_PRIORYR parameter revealed by both models is right, negative, suggesting that higher levels of enforcement one year before M&A notifications reduce firms' initiative to new submissions. However, as the statistical significance is not seen, the result is not totally consistent with theoretical 'hypothesis 8a'.

H8b: *Late-notified mergers decrease the probability of high levels of intervention in deals by the antitrust authority, ceteris paribus.*

Finally, the last variable associated to the capabilities of antitrust authorities herein tested is LATE_NOTIFIED. The concept that sustains such term is quite close to INTER_PRIORYR but it is a little more comprehensive than the maturity of the CADE and economic actor's relationship: it is the 'culture of competition' in Brazil under Law 8,884/94. Resorting to the discussion of this concept in Chapter 4, an extensive association with smaller business groups and non-anticompetitive transactions define the predictive sign of this variable. In other words, as 'hypothesis 8b' states, it is expected that late-notified mergers decrease the likelihood of deals' intervention. Table 23, then, reports negative signs in Model I and Model II, confirming the direction of LATE_NOTIFIED effects in LV_INTER, which is substantive. However, the lack of statistical significance of the independent variable parameter determines the rejection of 'hypothesis 8b'.

As an extra effort still belonging to the first specific aim of this study, something needs to be said about *VIF* from Models I and II also presented in Table 23. Stine (1995), through a graphical interpretation of *VIF*, points out that most damage caused by multicollinearity in regressions is done by the time *VIF* for a single variable reaches the range [5; 10]. Despite this conclusion, the author, but also O'Brien (2007), is not categorical to affirm that there is a threshold value of the *VIF* which regressions should be changed due to multicollinearity bias. Both scholars, actually, suggest the evaluation of the research context and respective factors that influence the variance of regression coefficients. "Values of the VIF of 10, 20, 40, or even higher do not, by themselves, discount the results of regression analyses [or] call for the elimination of one or more independent variables from the analysis […]", according to O'Brien (2007, p. 673).

Thus, considering that the highest *VIF* found in both models herein analyzed is 3.65, any concern on this issue, indeed, does not make sense. The results of Models I and II are not bias due to correlations between variables included in them.

Given these points, the analysis of *ordered probit* regressions I and II means the consecution of the first specific objective of this thesis, which is to provide evidence of the influential role of commissioners' panel attributes as well as procedural, structural and institutional

characteristics related to authorities' capabilities on merger reviews verdicts. It is worth mentioning that Garside *et al*. (2013), the paper that has been closer to the focus of this thesis, fails to prove the theory while focusing on cases and companies associated with possible abuse of monopoly power in the United Kingdom. Table 24, then, closes this section comparing theoretical and empirical signs to show that the theoretical fundamentals herein used can explain a part of Law 8,884/94 enforcement in Brazil and predict antitrust laws implementation worldwide. The statistical significance reported is only about Model I. In Chapter 7, additionally, the implications of these findings to public policy are discussed.

Table 24 – Voting panel models: empirical vs predicted signs

VARIABLE	DEFINITION	HYPOTHESIS AND PREDICTED SIGN	STATISTICAL SIGNIFICANCE AND SIGN
LV_INTER	Level of antitrust authority intervention on merger reviews	Dependent Variable	
PN_LIBERAL	Political ideology	H1 (Positive)	Significant at $p < 1\%$ (Negative)
PN_LAWYER	Educational background	H2 (Positive)	Significant at $p < 10\%$ (Positive)
PN_WELFARE	Motivation for past public service work experience	H3a (Positive)	Significant at $p < 1\%$ (Positive)
PN_COREFUN	Motivation for past public service work experience	H3b (weaker effect relative to PN_UTILITIES than PN_WELFARE)	Not Significant (weaker effect relative to PN_UTILITIES than PN_WELFARE)
PN_GENADM	Motivation for past public service work experience	H3b (weaker effect relative to PN_UTILITIES than PN_WELFARE)	Significant at $p < 5\%$ (stronger effect relative to PN_UTILITIES than PN_WELFARE)
PN_BENEXP	Experience on the bench	H4 (Positive)	Significant at $p < 10\%$ (Positive)
PN_NEND	Posturing attractiveness to post-commission job	H5a (Negative)	Not significant (Negative)
PN_HCME	Posturing attractiveness to post-commission job	H5b (Positive)	Significant at $p < 1\%$ (Positive)
PN_SIZE	Size of the voting-panel	H6 (Negative)	Significant at $p < 5\%$ (Negative)
AUT_BUDGET	Authority's budget	H7 (Positive)	Not significant (Positive)
INTER_PRIORYR	Maturity of relationship between economic actors and the Brazilian antitrust authority	H8 (Negative)	Not significant (Negative)
LATE_NOTIFIED	Culture on antitrust matters	H8b (Negative)	Not significant (Negative)

Source: Thesis author

6.1.2 *Cut-points* and the probabilities of each level of enforcement

Although far from Table 23, where the 'cut-points' of Models I and II are presented, and considering the fact that any evidence on the probabilities of different levels of intervention

by the CADE is not exactly a goal of this thesis, at least a comment on this theme is somehow needed.

In Chapter 5, the discussion on structural elements of *Ordered Probit Regressions* introduces the 'cut-points'. Again, according to Anderson (1984), 'cut-points' are threshold parameters related to the average proportion of each category of the dependent variable. To put it in other way, they provide an estimation of the probabilities of each possible outcome which compose the categorical dependent variable. Thus, extracting the probabilities of 'cut-points' shown in Table 23 from the Table of the Standard Normal Cumulative Distribution Function $P\ \{Z\} \equiv \phi \leq Z_0$ (Z_0), the following results are found:

$p(y=0) = p(\text{approval without restrictions}) = p(z \leq 2.42479) \approx 99.22\%$
$p(y=1) = p(\text{approval with conduct changes}) = p(2.42479 < z \leq 3.17802) \approx 0.70\%$
$p(y=2) = p(\text{approval with organizational struct. changes}) = p(3.17802 < z \leq 3.45936) \approx 0.05\%$
$p(y=3) = p(\text{approval with asset structure changes}) = p(3.45936 < z \leq 4.10927) \approx 0.02\%$
$p(y=4) = p(\text{disapproval}) = p(z > 4.1093) \approx 0.01\%$

6.2 The impact of authorities' capabilities on different levels of intervention on merger reviews

After the achievement of the first specific purpose of this thesis, the second aim is announced again: to measure the marginal effects of authorities' capabilities and related factors on different levels of intervention imposed by the CADE in M&A.

'Marginal effects' show the change in probability of a particular outcome of the dependent variable when a particular independent term increases by one unit (TORRES-REYNA, 2014). Table 25, then, presents the marginal effects of explanatory terms included in Model I, but only for verdicts 'approved without restriction' and 'approved with conduct changes'. In the following pages, the respective results for higher levels of intervention are shown. It is also worth advertising that, in this case, the analysis of Model II is not necessary. The relevance of the findings in Model I due to the presence of control variables overlaps any result of Model II.

Table 25 – Marginal effects of explanatory variables in the lower levels of intervention scale

VARIABLE	APPROVED WITHOUT RESTRICTIONS (LV_INTER = 0)				APPROVED WITH CONDUCT CHANGES (LV_INTER = 1)			
	coef.	std. error	*t-value*	*p* > | t |	coef.	std. error	*t-value*	*p* > | t |
PN_LIBERAL	0.0728	0.0128	5.71	0.000	-0.0576	0.0103	-5.61	0.000
PN_LAWYER	-0.0490	0.0259	-1.89	0.059	0.0388	0.0206	1.89	0.059
PN_WELFARE	-0.0220	0.0081	-2.71	0.007	0.0174	0.0064	2.71	0.007
PN_COREFUN	-0.0060	0.0077	-0.78	0.438	0.0047	0.0061	0.78	0.437
PN_GENADM	-0.1989	0.1391	-1.43	0.153	0.1325	0.0775	1.71	0.087
PN_BENEXP	0.0000	0.0000	-1.65	0.098	0.0000	0.0000	1.65	0.099
PN_NEND	0.0000	0.0000	0.68	0.496	0.0000	0.0000	-0.68	0.496
PN_HCME	-0.0023	0.0008	-2.80	0.005	0.0018	0.0007	2.79	0.005
PN_SIZE	0.0091	0.0037	2.46	0.014	-0.0072	0.0029	-2.46	0.014
AUT_BUDGET	-0.2500	0.0000	-0.34	0.738	0.0000	0.0000	0.33	0.738
INTER_PRIORYR	0.0000	0.0002	0.13	0.899	0.0000	0.0002	-0.13	0.899
LATE_NOTIFIED	0.0037	0.0105	0.35	0.725	-0.0029	0.0083	-0.35	0.726
ANALYSIS_LENGTH	-0.0706	0.0067	-10.49	0.000	0.0552	0.0055	10.10	0.000
VERTICAL	0.0161	0.0084	1.93	0.054	-0.0130	0.0068	-1.90	0.058
REL_CONGLOM	0.0308	0.0062	5.00	0.000	-0.0249	0.0051	-4.85	0.000
NONREL_CONGLOM	0.0513	0.0056	9.17	0.000	-0.0420	0.0047	-8.87	0.000
SERVICES	-0.0220	0.0065	-3.37	0.001	0.0173	0.0051	3.38	0.001
AGRICULTURE	0.0219	0.0112	1.96	0.050	-0.0178	0.0093	-1.91	0.056
HOLDINGS	-0.0915	0.0333	-2.75	0.006	0.0674	0.0230	2.93	0.003
BRAZILIAN	0.0608	0.0088	6.93	0.000	-0.0464	0.0067	-6.97	0.000

Source: Thesis author

The analysis of Table 25 can be summarized in one and only statement: among commissioners' attributes and variables associated to the CADE, 'political ideology' is, by far, the factor which most affects the probabilities of 'approvals without restrictions' and 'approvals with conduct changes'. An increase of 1% in the ratio of voting panelists appointed by the PSDB increases the probability for 'approvals without restrictions' in 7.28% and reduces the likelihood of 'approvals with conduct changes' in 5.76%. The second most relevant factor that affects the likelihood of 'no intervention' and 'conduct changes' is PN_WELFARE with, respectively, a negative effect of 2.22% and a positive impact of 1.74%. In addition, the size of the voting panel and the 'mean age of voting panelists', which measures the accumulated human capital of commissioners, deserve a note. Besides the two first mentioned terms, PN_SIZE and PN_HCME are the only statistical significant marginal effects at $p < 5\%$. Finally, if p assumes values between 5% and 10%, increases in the PN_LAWYER ratio affect the probabilities of both verdicts in 4.90% and 3.88%, respectively.

Table 26, in turn, shows the marginal effects of explanatory terms included in Model I for verdicts ‘approved with organizational structure changes’ and ‘approved with asset structure changes’. Similarly to Table 25, ‘political ideology’ is the factor which marginal effects are stronger to explain the variations in probabilities of both verdicts. However, even the marginal effects of PN_LIBERAL are not so relevant: an increase of 1% in the ratio of voting panelists appointed by the PSDB decreases the probability for ‘approvals with organizational structure changes’ in 0.79% as well as the likelihood of ‘approvals with asset structure changes’ in 0.63%. The marginal effects of PN_WELFARE, PN_HCME and PN_SIZE vary in the range [-0.08%; 0.24%]. Thus, the probabilities of ‘approvals with organizational structure changes’ and ‘approvals with asset structure changes’ seem to be largely explained by other factors.[66]

Table 26 – Marginal effects of explanatory variables in the medium-upper levels of intervention scale

VARIABLE	APPROVED WITH ORG. STR. CHANGES (LV_INTER = 2)				APPROVED WITH ASSET STR. CHANGES (LV_INTER = 3)			
	coef.	std. error	*t-value*	*p* > | t |	coef.	std. error	*t-value*	*p* > | t |
PN_LIBERAL	-0.0079	0.0018	-4.35	0.000	-0.0063	0.0015	-4.16	0.000
PN_LAWYER	0.0053	0.0029	1.82	0.068	0.0042	0.0023	1.81	0.071
PN_WELFARE	0.0024	0.0010	2.50	0.012	0.0019	0.0008	2.43	0.015
PN_COREFUN	0.0006	0.0008	0.77	0.442	0.0005	0.0007	0.77	0.444
PN_GENADM	0.0279	0.0227	1.23	0.219	0.0303	0.0294	1.03	0.302
PN_BENEXP	0.0000	0.0000	1.60	0.109	0.0000	0.0000	1.60	0.110
PN_NEND	0.0000	0.0000	-0.68	0.498	0.0000	0.0000	-0.68	0.498
PN_HCME	0.0003	0.0001	2.59	0.010	0.0002	0.0001	2.54	0.011
PN_SIZE	-0.0010	0.0004	-2.31	0.021	-0.0008	0.0004	-2.28	0.023
AUT_BUDGET	0.0000	0.0000	0.33	0.738	0.0000	0.0000	0.33	0.738
INTER_PRIORYR	0.0000	0.0000	-0.13	0.899	0.0000	0.0000	-0.13	0.899
LATE_NOTIFIED	-0.0004	0.0011	-0.35	0.723	-0.0003	0.0009	-0.36	0.720
ANALYSIS_LENGTH	0.0078	0.0014	5.62	0.000	0.0065	0.0012	5.28	0.000
VERTICAL	-0.0017	0.0009	-1.92	0.054	-0.0013	0.0007	-1.97	0.049
REL_CONGLOM	-0.0031	0.0008	-4.13	0.000	-0.0024	0.0006	-4.01	0.000
NONREL_CONGLOM	-0.0050	0.0009	-5.35	0.000	-0.0037	0.0008	-4.86	0.000
SERVICES	0.0024	0.0008	2.97	0.003	0.0020	0.0007	2.84	0.004
AGRICULTURE	-0.0022	0.0011	-2.01	0.044	-0.0017	0.0008	-2.09	0.036
HOLDINGS	0.0114	0.0048	2.35	0.019	0.0105	0.0050	2.13	0.033
BRAZILIAN	-0.0071	0.0015	-4.72	0.000	-0.0061	0.0014	-4.42	0.000

Source: Thesis author

Ultimately, Table 27 presents the marginal effects of explanatory terms included in Model I for ‘disapprovals’ – totally blocked transactions. Following the same observed trend that the previous categories of verdicts reveal, factors associated to the capabilities of the CADE have weak effects on the level of intervention when this one increases. In other words, the

[66] The marginal effects of the control variables also do not indicate a great influence in these two types of decision.

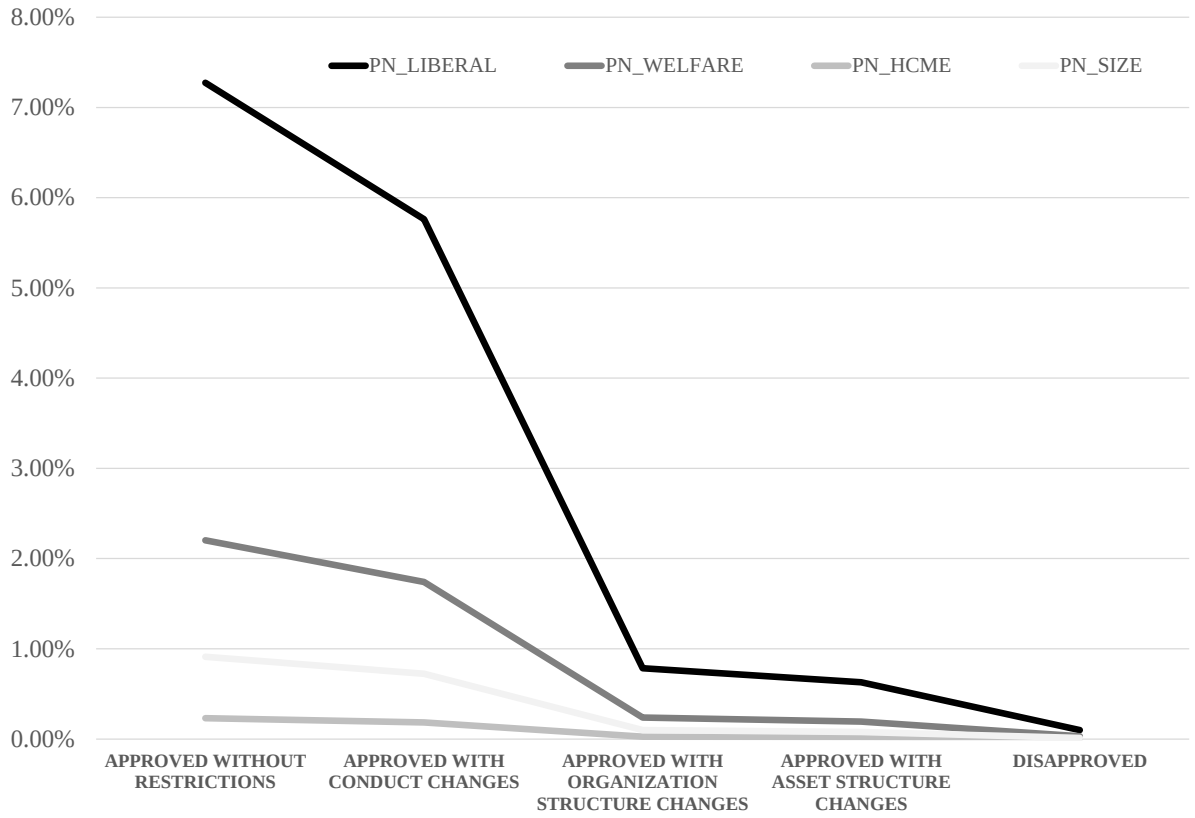
likelihood of tougher enforcement seems to be better explained by other factors rather than the authority's capabilities. To exemplify, an increase of 1% in the ratio of voting panelists appointed by the PSDB decreases the probability for 'disapprovals' in only -0.10%, and it is the stronger effect of a term associated to the CADE in the highest category of the dependent variable. The statistical significance of these independent variables also gets worse the higher the level of intervention. As an illustration of these conclusions, Figure 9 shows the fluctuation, in module, of the marginal effects of the four variables with statistically significant effects herein analyzed according to the respective level of enforcement. At the same time, Figure 9 sets the achievement of the second specific goal of this thesis.

Table 27 – Marginal effects of explanatory variables in the highest level of intervention scale

VARIABLE	DISAPPROVED (LV_INTER = 4)			
	coef.	**std. error**	***t-value***	***p*** **> | t |**
PN_LIBERAL	-0.0010	0.0004	-2.43	0.015
PN_LAWYER	0.0007	0.0004	1.55	0.121
PN_WELFARE	0.0003	0.0002	1.88	0.060
PN_COREFUN	0.0001	0.0001	0.74	0.459
PN_GENADM	0.0082	0.0106	0.78	0.436
PN_BENEXP	0.0000	0.0000	1.42	0.156
PN_NEND	0.0000	0.0000	-0.66	0.510
PN_HCME	0.0000	0.0000	1.94	0.052
PN_SIZE	-0.0001	0.0001	-1.81	0.070
AUT_BUDGET	0.0000	0.0000	0.33	0.739
INTER_PRIORYR	0.0000	0.0000	-0.13	0.899
LATE_NOTIFIED	0.0000	0.0001	-0.36	0.720
ANALYSIS_LENGTH	0.0011	0.0004	2.68	0.007
VERTICAL	-0.0002	0.0001	-1.71	0.088
REL_CONGLOM	-0.0003	0.0002	-2.38	0.017
NONREL_CONGLOM	-0.0005	0.0002	-2.48	0.013
SERVICES	0.0003	0.0002	2.02	0.043
AGRICULTURE	-0.0002	0.0001	-1.81	0.071
HOLDINGS	0.0022	0.0014	1.60	0.109
BRAZILIAN	-0.0011	0.0004	-2.55	0.011

Source: Thesis author

Figure 9 – Marginal effects: the reduction of explanatory power of authorities' capabilities on high levels of intervention



Source: Thesis author

6.3 Evidence on the influence of 'Reporting-commissioner' and 'Chairman' on merger review verdicts: distinctive responsibilities in the decision-making process

In Chapters 3 and 4, the design of the CADE decision-making structure and process under Law 8,884/94 was repeatedly described. The motivation for this annoying writing, in part, is due to the distinctive participation of two individuals on merger review decisions: (i) the Reporting-commissioner, who was responsible for complementing investigations initiated by the SEAE/MF and SDE/MJ as well as reporting the case to the other members of the panel; and (ii) the Chairman of the panel, whose vote could be decisive in case of draw, besides conducting the voting session. Therefore, despite votes of both have been accounted in panel decisions, and decisions on merger reviews have been made by panels of commissioners, the influential role of these two 'characters' on verdicts also deserves attention. For that reason, the third specific goal of this thesis addresses this issue.

To examine Reporting-commissioner and Chairman's influential roles on merger review, then, the extension of concepts and theoretical foundations applied to voting panel 'PN' terms is needed. The new set of factors which covers each one of the distinctive agents is prefixed by 'RC' and 'CH', respectively. In order to make such extension clear, Table 28 and Table 29 formalize the new groups of independent predictors added to this study and their expected signs. As noted in both tables, there is no reason to believe that the theoretical foundations of each 'PN' variable cannot be applied to 'RC' and 'CH' terms. Some of the theoretical discussions begin with 'individuals' and, then, are generalized to 'groups of individuals'. Adjustments in measures of terms, however, are necessary. 'Political ideology' and 'educational background', for example, become binary instead of continuous ratios; and 'experience on the bench' and 'posturing attractiveness to post-commission job' are based on a particular attribute of individuals instead of the mean of panelists. Another adjustment is needed due to a collinearity problem: the correlation between CH_WELFARE and CH_COREFUN is -0.9412, which affects the estimation. Thus, the categorical dummy CH_COREFUN related to 'prior work experience in the public service' is dropped from the regression, in substitution to PN_UTILITIES, which is added to the regression, then. In sum, the results of CH_WELFARE, CH_GENADM and CH_UTILITIES must be compared to CH_COREFUN.

In addition to 'RC' and 'CH' terms just mentioned, a new variable to capture the 'pre-chair experience' of the Chairman is included in this analysis. The motivations for such inclusion are quite simple: (i) the CADE has already had former commissioners who occupied the Chairman's bench after commissioner's mandates, so 'commission experience' may be relevant; and (ii) if vacancy, absence, suspiciousness or impediment did not allow the conduction of a particular merger review by a 'regular' Chairman, a commissioner in substitution, under certain criteria mentioned in section '4.7', assumed the main chair of the panel temporarily. The CH_PREXP variable, thus, suggests something interesting about 'prior chair experience'.

Table 28 – Reporting-commissioner 'RC': variables, definitions, measures and predicted signs

VARIABLE	DEFINITION	MEASURE	PREDICTED SIGN
RC_LIBERAL	Political ideology	1' if the reporting-commissioner was appointed by PSDB; '0' if otherwise	Positive
RC_LAWYER	Educational background	1' if the reporting-commissioner was a lawyer; '0' if otherwise	Positive
RC_WELFARE	Motivation for past public service work experience	1' if the reporting-commissioner had the predominant public service experience in the Welfare policy domain; '0' if otherwise	Positive
RC_COREFUN	Motivation for past public service work experience	1' if the reporting-commissioner had the predominant public service experience in Core Functions; '0' if otherwise	Weaker effect relative to RC_UTILITIES than RC_WELFARE
RC_GENADM	Motivation for past public service work experience	1' if the reporting-commissioner had the predominant public service experience in General Administration; '0' if otherwise	Weaker effect relative to RC_UTILITIES than RC_WELFARE)
RC_BENEXP	Experience on the bench	the experience, measured in days, of the reporting-commissioner on the bench	Positive
RC_NEND	Posturing attractiveness to post-commission job	the time, measured in days, to the end of reporting-commissioner mandate	Negative
RC_HCME	Posturing attractiveness to post-commission job	the age, measured in years, of the reporting-commissioner	Positive

Source: Thesis author

Table 29 – Chairman 'CH': variables, definitions, measures and predicted signs

VARIABLE	DEFINITION	MEASURE	PREDICTED SIGN
CH_LIBERAL	Political ideology	1' if the chairman was appointed by PSDB; '0' if otherwise	Positive
CH_LAWYER	Educational background	1' if the chairman was a lawyer; '0' if otherwise	Positive
CH_WELFARE	Motivation for past public service work experience	1' if the chairman had the predominant public service experience in the Welfare policy domain; '0' if otherwise	Positive
CH_GENADM	Motivation for past public service work experience	1' if the chairman had the predominant public service experience in General Administration; '0' if otherwise	Weaker effect relative to CH_UTILITIES than CH_WELFARE)
CH_UTILITIES	Motivation for past public service work experience	1' if the chairman had the predominant public service experience in the Public Utilities domain; '0' if otherwise	Weaker effect than CH_WELFARE
CH_PREXP	Pre-chair experience	the experience, measured in days, of the chairman as a commissioner	Positive
CH_BENEXP	Experience on the bench	the experience, measured in days, of the chairman on the bench	Positive
CH_NEND	Posturing attractiveness to post-commission job	the time, measured in days, to the end of chairman mandate	Negative
CH_HCME	Posturing attractiveness to post-commission job	the age, measured in years, of the chairman	Positive

Source: Thesis author

Regarding the empirical strategy adopted to deal with 37 independent variables, from 'PN' and control variables to 'RC' and 'CH' new terms, the *Ordered Probit* used herein is complemented by a *Step-down Regression.* In short, the *Step-down Regression* is a technique that starts with a full model and, then, while the least-significant term is not significant at a particular range – e.g. [0%; 5%], removes it and re-estimates (STATA, 2015). The outputs, thus, are all statistical significant variables with some explanatory power on the dependent variable. Model III, then, is the result of the *Ordered Probit Step-down Regression* with 'RC' and 'CH' terms, besides the hypothesized 'PN' variables, AUT_BUDGET, INTER_PRIORYR and LATE_NOTIFIED, and control variables.

MODEL III

$$\begin{aligned} LV\_INTER = {} & \beta_1.PN\_LIBERAL + \beta_2.PN\_COREFUN \\ & + \beta_3.PN\_HCME + \beta_4.CH\_WELFARE + \beta_5.CH\_PREXP \\ & + \beta_6.CH\_BENEXP + \beta_7.CH\_HCME + \beta_8.ANALYSIS\_LENGTH \\ & + \beta_9.REL\_CONGLOM + \beta_{10}.NONREL\_CONGLOM + \beta_{11}.SERVICES \\ & + \beta_{12}.HOLDINGS + \beta_{13}.BRAZILIAN + \mu \end{aligned}$$

A first look at Table 30 is enough to notice that Model III does not have a single term representing Reporting-commissioner's influence on merger review decisions. Therefore, besides terms that capture characteristics of the voting panel and some control variables, only attributes of the chairman seems to determine in part the CADE's verdicts.

Regarding the signs of parameters, inasmuch as all of predictors are statistically significant at p < 5%, PN_LIBERAL and CH_HCME are clearly inconsistent with their theoretical foundations. In other words, respectively, the greater the ratio of antitrust voting panelists appointed by a liberal government and the greater the accumulated skills and knowledge by the Chairman are, the lower the probability of high levels of intervention in deals by the antitrust authority will be, *ceteris paribus*. As Models I and II show, PN_LIBERAL repeated the inconsistency already explained. CH_HCME, however, is in the opposite direction of the 'theoretical-empirical' consistent PN_HCME.

Table 30 – Outcomes of Model III

VARIABLE	coef.	std. error	*t-value*	*p* > | t |	vif
PN_LIBERAL	-0.4608	0.1007	-4.58	0.000	2.45
PN_COREFUN	0.1838	0.0715	2.57	0.010	1.55
PN_HCME	0.0380	0.0084	4.54	0.000	2.60
CH_WELFARE	0.2255	0.0953	2.36	0.018	2.85
CH_PREXP	0.0005	0.0001	5.74	0.000	1.91
CH_BENEXP	0.0005	0.0001	5.90	0.000	1.63
CH_HCME	-0.0201	0.0074	-2.71	0.007	5.43
ANALYSIS_LENGTH	0.7575	0.0688	11.01	0.000	1.34
REL_CONGLOM	-0.3949	0.1124	-3.51	0.000	1.07
NONREL_CONGLOM	-0.9814	0.1942	-5.05	0.000	3.11
SERVICES	0.2248	0.0603	3.73	0.000	1.10
HOLDINGS	0.6648	0.1729	3.84	0.000	3.14
BRAZILIAN	-0.5234	0.0618	-8.47	0.000	1.12
cut_1	2.8326	0.3537			
cut_2	3.5910	0.3569			
cut_3	3.8738	0.3593			
cut_4	4.5215	0.3719			
Measures of fit:					
Likelihood Ratio Chi-Square (Pseudo R^2) = 0.1456					
with 13 degrees of freedom; prob = 0.0000					
Log likelihood = -1393.7102					

Source: Thesis author

Following with parameters that are undoubtedly consistent with theory, Table 30 reveals Chairman ‘experience on the bench’ and ‘pre-experience as a commissioner’ as well as ‘prior work experience in the Welfare Domain’. In short, the greater all of those experiences at the commission are, the higher the probability of tougher intervention will be.

As final comments, PN_COREFUN shows a positive effect on the level of intervention in M&A deals by the CADE, which combined with the non-statistical significance of PN_WELFARE, indicates some inconsistency. With regard to the highest *VIF* seen in Model III, 5.43 of CH_HCME, it is not a concern. The *VIF* is quite close to the ‘safe zone’ [0; 5] at the same time that does not mean a conceptual association between CH_HCME and most variables. It is true that PN_HCME includes CH_HCME in its measure, but there is no reason to believe in collinearity bias in this case. Tables 14 and 15 suggest an average of 6 commissioners in voting panels, thus CH_HCME accounts for only 16% of PN_HCME.

Concluding, then, the third specific goal of this thesis, despite the distinctive role of Reporting-commissioners on merger reviews, final verdicts do not seem to be affected by their personal characteristics and background. The Chairman profile, contrariwise, seems to be somehow influential. Table 31 summarizes the main features of this assessment.

Table 31 – 'PN' and 'CH' influential roles on merger review verdicts: a consolidated model

VARIABLE	DEFINITION	PREDICTED SIGN	STATISITICAL SIGNIFICANCE AND SIGN
PN_LIBERAL	Political ideology	Positive	Significant at $p < 1\%$ (Negative)
PN_COREFUN	Motivation for past public service work experience	Weaker effect relative to PN_UTILITIES than PN_WELFARE	Significant at $p < 1\%$ (Stronger effect relative to PN_UTILITIES than PN_WELFARE)
PN_HCME	Posturing attractiveness to post-commission job	Positive	Significant at $p < 1\%$ (Positive)
CH_WELFARE	Motivation for past public service work experience	Positive	Significant at $p < 5\%$ (Positive)
CH_PREXP	Pre-chair experience	Positive	Significant at $p < 1\%$ (Positive)
CH_BENEXP	Experience on the bench	Positive	Significant at $p < 1\%$ (Positive)
CH_HCME	Posturing attractiveness to post-commission job	Positive	Significant at $p < 1\%$ (Negative)

Source: Thesis author

Given the analysis exposed in this whole chapter, there is not an aim of this thesis without a proper answer. The general and three specific objectives of this study are achieved. In the next chapter, then, the last of this research, a discussion on the implications of these results to public administrations, private parties and societies as well as considerations on the limitations of this investigation and suggestions for improvements on this research field are provided.

7 DISCUSSION AND FINAL CONSIDERATIONS

Since the introduction of antitrust policies in the United States and Canada in the late 1800s, antitrust authorities worldwide have mostly adopted responses to strategic intents of firms through a case-by-case assessment method. For each qualified merger or acquisition for review, for instance, a customized analysis and a verdict have been announced.

From the firms' perspective, the most common argument for seeking M&A rely on the so-called *synergic gains*. Based on this concept, firms engaged in formal agreements are motivated by the realization of synergies that generate economies of scale or scope, respectively reducing costs due to efficiency gains or boosting benefits from the combination of products or markets (LIN, 2005; SHERMAN; RUPERT, 2006; DEVOS *et al.*, 2008; ALEXANDRIDIS *et al.*, 2010; EREL, 2011; HANKIR *et al.*, 2011). Once merging firms achieve synergic gains, they may reach profits above average, improving shareholders' wealth.

For governments, on the other hand, M&A are potential sources of anticompetitive effects. Governments usually center their concerns on the *market power hypothesis*. In other words, if merging firms are able to limit competition, for instance, by eliminating competitors, restricting other players' access to raw material sources, raising entry barriers to market, or implementing other anticompetitive strategy, it means that they exercise market power. Consequently, these firms can increase both prices and profits with the gains arising at the expense of customers (MELLO, 2002; NUSDEO, 2002; DEVOS *et al.*, 2008; EREL, 2011; GABAN; DOMINGUES, 2009; FINKELSTEIN; FINKELSTEIN, 2012; WANG; RUDANKO, 2012).

However, there is a wide range of factors and scenarios between the two apparent institutional opponents described by their extreme behaviors – (i) firms that develop and operate strategies for self-benefit no matter what happens to consumers or society; and (ii) governments that conceive rules, and impose costs and restrictions on firms that could impact positively society's welfare. One of them, for example, is based on the mutual 'dependence' that characterizes firms and governments relationship.

To illustrate, firms, seeking growth, competitive advantages or, in some cases, protection, claim for government's support. Governments, then, support firms providing privileged access to natural resources, funding, subsidies (BAZUCHI *et al*., 2013, p. 418) and, why not, a 'soft' antitrust regulation. In turn, politicians, a very important element of government capacities, are supported by firms through campaign contributions, or, even, personal benefits (COATE *et al*., 1990; COATE; KLEIT, 1998; COATE, 2002; MIWA; SAMSEYER, 2005; OLSHFSKI; CUNNINGHAM, 2008; BERGMAN *et al*., 2010). But that is not all. Non-elective public officers, other important representatives of governments' structure, can also opt to support firms motivated by self-interest. In this case, a 'kind' of reward from firms is expected by public officers due to the provided support. However, again, that is not all.

Not only self-interest motivates elective and non-elective public officers. Public interest, for instance, is a largely recognized characteristic of professionals who perform in the public service (PERRY, 1986; ANDERFUHREN-BIGET *et al*., 2014). Furthermore, personal attributes such 'educational background' and 'political ideology alignment' between public officers and state administrations may drive public officers' decisions. Finally, financial resources, decision-making process and structure, and past decisions, theoretically, can also be influential on how government bodies act. Therefore, considering only government's possible configuration, despite any public interest that might motivate firms to do business, between those two behavioral extremes mentioned above, there are a lot of possible arrangements. In the merger review context, specifically, these arrangements can be represented in a scale of public officers' intervention in private deals. From 'approvals without restrictions' to 'disapprovals', passing by different kinds of remedies, governments and firms solve their antitrust issues.

The conflictual, controversial and contentious environment just described have then inspired this research. Looking for evidence on whether the above mentioned factors related to antitrust commissions determine authorities' decisions on merger reviews, this thesis firstly reveals that the 'political ideology alignment', 'prior work experience in the Welfare public domain' and 'human capital' of voting panelists, in addition to the size of the voting panel, affect consistently merger review verdicts.

Under the PSDB presidential administration, for example, M&A were less challenged in Brazil. Two distinct arguments can explain it as seen before: (i) the CADE was not mature

enough to enforce the law in the early years of the 2000s, despite its empowerment by the PSDB; or (ii) President Cardoso's policies pursued the improvement of competitive performance of the economy in a broad sense, focusing on productivity instead of reduction of industries' concentration. For both reasons, businessmen and scholars must not only associate 'political ideology' to antitrust enforcement, but also they have to take into consideration the state of the economy and the institutional level of countries in order to have a better understanding of antitrust commissions performance. In young democracies and antitrust jurisdictions, mainly in developing economies, 'political ideology' may guide state administrations by more general goals than specific intents due to the lack of resources and capabilities. This lack of resources and capabilities, by the way, is applied to both antitrust authorities and societies. Brazil, in 2015, is one of the best examples of economies full of constrains which have to set priority reforms. To illustrate, OECD (2015, p. 152) points out some "Going for Growth 2015 priorities" to the Brazilian economy while discussing economic policy reforms. Therefore, although a contradiction between theory and 'empirical results' is noted herein, this thesis' particular finding is quite understandable.

The 'predominant prior public service experience in the Welfare policy domain' of antitrust commissioners, inversely to 'political ideology', seems to increase the likelihood of high levels of intervention in private deals. This factor is associated with 'compassion' – a value that, according to the PSM theory, characterizes professionals more supportive of consumers and competitors' claims than any other. Sympathy and concern to the ultimate targets of antitrust policies, the consumers, is correlated with kindness and empathy to people who demand social service such as patients, students and the elderly. In addition, 'attraction to public policy making', which also characterizes individuals with such predominant experience in public service, reinforces the idea that potential anticompetitive transactions are likely to be challenged if commission's voting panel is composed by more than 50% of public officers with 'Welfare public experience'. The 'principal-agent compromise' suggests that, seeking public interest, the public agents who like to deal with policies and politics play a supportive role with respect to their principals, the elective officers. As politicians depend on votes, consumers' claims need to be met, so law enforcement must be oriented by such claims. Alternatively, if there is not a compromise between agents and principals, the prerogative of fixed mandates – where part of the autonomy of an antitrust agency rests – prevails. In other words, commissioners can judge against the government's ideology and interests, motivated by 'compassion'. Given these points, the innovative character of this thesis in discussing

public service motivation in the antitrust context should be seen closely by scholars and politicians, because an unbalanced panel in terms of values that motivate people to work can be a bias on merger review verdicts. Remember that, according to the PSM theory, there are three other ‘groups of values’ or ‘groups of individuals with similar values’ besides ‘compassionate professionals’. If politics do not determine presidential appointments to antitrust commissions, the PSM can help state administrations to find the ‘best’ composition for their regulatory agencies.

Regarding the ‘Human Capital’ and ‘Market Expansion’ theories, derivatives of the ‘Conventional Revolving Door’ theory, this study reveals that commissioners’ accumulated skills and knowledge matter on merger reviews. Aaronson (2010) defines this concept as ‘potential experience’, particularly because ‘age’ is used as a proxy. So, ‘potential experience’ is an attribute of antitrust commissioners that firms seem to give value, although the expected benefits of a post-commission relationship rests in a tougher enforcement of the law by antitrust commissioners. Therefore, the tougher the public agents against firms are, the more likely the firms will be interested in a post-commission relationship with commissioners. It is worth noting that the ‘Conventional Revolving Door’ theory, which presupposes a lower level of enforcement as a posture to attract a post-commission job is not statistically significant, which sounds extremely coherent. If both terms, PN_HCME and PN_NEND have provided statistical significance to their respective theories, a deadlock would emerge. One more time, then, this research differentiates itself from Garside *et al*. (2013), whose outcomes refute ‘age’ as a potential determinant of law enforcement. The implications of this particular contribution to public administration follow the same path of public service motivation: if societies do not pressure politicians to improve public service, considering not only a remarkable knowledge in Law or Economics to appoint a commissioner, but having a broader view of individuals’ motivations and pretension, interferences between ‘concepts, principles and norms’, and ‘practice’ will continuously occur.

The last strongly consistent result related to the first goal of this study shows the size of the voting panel as an influential factor on the level of enforcement on merger reviews. The theoretical fundamentals that sustain such consistency are originated from the criminal and judicial field. This thesis, then, firstly assumed, but later provided the evidence that larger voting panels affect negatively the probability of high levels of intervention in deals by the antitrust authority. As discussed in Chapters 3 and 4, the design of decision-making structure

and process is a concern of antitrust lawmakers worldwide, and it is not different in Brazil. Rules on the number of seats in antitrust commissions as well as on exceptional cases – e.g. commissioners' vacancy, absence, suspiciousness or impediment – take part in competition laws. Nonetheless, nobody has ever tested this issue in the antitrust context. Thus, this thesis' findings deserve the attention of authorities and societies: it suggests to antitrust policymakers that wide ranges of minimum and maximum *quorum* in voting panels must be avoided. Deadlocks in voting sessions and unbalanced representativeness of different ideologies and profiles can make decisions harder and poorer. If, on the one hand, societies are, generally, "[…] reluctant to delegate state power to a single individual […]" (ARCHER, 2009, p. 77), on the other hand, they should not believe that different sizes of decision-making panels lead to the same conclusion.

After the achievement of the first specific goal of this investigation in Chapter 6, the analysis of the marginal effects of explanatory factors on different levels of intervention in M&A imposed by the CADE starts. In short, the results show that, despite the theoretical and empirical consistency of the four concepts discussed above, their effects decrease while explaining the probabilities of high levels of enforcement in 'anticompetitive' transactions. Actually, neither the hypothesized terms related to the authority's capabilities nor both the hypothesized terms and control variables are enough to explain high levels of enforcement.

The Figure 10 presents how much of the likelihood of the dependent variable varies when 1% of change is applied to each one of those 20 independent terms contained in Model I, *ceteris paribus*. To make it clear, the figure does not show the 'explanatory power of the model', because, despite criticisms, the *Pseudo* R^2 indicates such measure. Figure 10 is just an illustration of the sum of one-to-one marginal effects available in section '6.1.2', which is easier to see than 20 different lines overlapped in a chart. Clearly, then, it reveals a decrease of the influence of factors used in the main model on the probability of higher levels of enforcement, mainly with regard to 'approvals with organizational structure changes', 'approvals with asset structure changes' and 'disapprovals'.

Once this evidence is faced, it is necessary to point out the first limitation of this thesis: the authorities' capabilities, although complemented by variables which belong to the other three theoretical perspectives described in Chapter 2 – *Traditional Antitrust Economics*, *Political Economy* and *Institutional Comparative* – do not explain a substantial part of merger review

verdicts. As a consequence, if a lot of the explanatory power of antitrust law enforcement is not specified in this thesis' models, the conclusions herein exposed depend on the absence of collinearity between 'included' and 'omitted' terms as Studenmund (2000) alerts.

Figure 10 – Sum of marginal effects of independent terms by level of enforcement

Source: Thesis author

The third and last purpose of this investigation is to examine the influential role of the 'Reporting-commissioner' and the 'Chairman' on merger review verdicts. Both special 'characters', since the enactment of the 1994 Brazilian Antitrust Act, have had distinctive responsibilities in the decision-making process. However, by using a *Step-down Regression* combined with an *Ordered Probit Model*, this study provides evidence that 'Reporting-Commissioners' attributes, values and measures of self-interest do not affect decisions. In other words, there is not a singular 'RC' variable which is statistically significant when estimated with voting panel, chairman and control terms. In turn, four variables capturing Chairman effects suggest that 'prior work experience in Welfare public domain', 'pre-chair experience', 'experience on the bench' and 'skills and knowledge' of the individual who is in charge of a merger review voting session matter. Particularly, 'Pre-chair experience' and 'experience on the bench' suggest interesting things to policymaking: the appointment of a Commissioner to become a Chairman, the length of Chairman mandates and the possibility of renewal of a mandate must be analyzed with care. From one point of view, the idea that there

is a learning curve for a Chairman and, then, he or she develops skills to deal with firms claims and pitfalls over time sounds positive; nonetheless, from another point of view, if the greater the number of cases the Chairmen accumulates, the higher the probability of high levels of intervention, that can be a problem. The criminal literature shows that 'to make guilty' can be a result of bias due to significant confidence. Therefore, very short periods of time on the bench do not seem to be good, but long mandates also do not. Again, this thesis advises public administrators to have a permanent assessment of antitrust commissioners' performance in order to be able to change rules and norms accordingly. Regarding the voting panel variables which compose Model III with 'Chairman' terms, the results are similar to Model I, excepting the non-statistically significance of panels' size.

That said, the complementary discussion on the main results of this thesis as well as the implications and recommendations to public administrators, businessmen and scholars turn to the limitations and suggestions for future studies, besides the earlier mentioned 'absence' of more powerful independent variables that explain the variance of the 'levels of intervention' on merger reviews. The categorization of variables, then, is the focus of the next two paragraphs.

First, the reduction of political ideologies in a 'liberal-statist' dichotomy is subject to criticism. In the fragmented Brazilian political party system, political coalitions are needed for governing, so state administrations not rarely adopt contradictory policies in order to have political support in the Congress. In some areas, if the policies adopted are not contradictory, they are quite general due to the variety of interests. In addition, transitions between administrations of different political parties, like occurred between the PSDB and PT in 2002-2003, also can cause some trouble if the interest is to capture the effects of political ideology on a particular area. In short, in the first three years of President Lula administration, the macroeconomic policies were basically the same 'market-oriented' implemented by President Cardoso – e.g. tight control of expenditures, primary budget surplus, and granting autonomy to the Central Bank (MEYER, 2014). For those reasons, future studies can test a new classification for 'political economy' or examine sub-samples by specific time-periods.

Second, 'prior experience in the public sector' is also subject to debate due to the fact that an existing classification developed with a different purpose was adopted in this thesis instead of a new one. After this work done, it is possible to say that another classification could better

match with this thesis' problem and dataset: (i) the list of variables and classification by individual in Appendix II shows that only one commissioner had a predominant experience in Public Utilities domain before having a seat at the CADE; and (ii) hypotheses '5a' and '5b' were formulated following the emphasis of Anderfuhren-Biget *et al*. (2014) on 'Compassion' and 'Welfare public domain', making difficult empirical exercises. Truly, the dummy variables PN_WELFARE, PN_COREFUN, PN_GENADM and PN_UTILITIES – and respective 'RC' and 'CH' – have limited uses and interpretations. Thus, the intrinsic limitation imposed to this thesis by the lack of reliable data on 'past work experience of antitrust commissioners' in Brazil must be analyzed closely by scholars. Remember that, in Chapter 5, two cases are reported, describing unpleasant episodes in which commissioners omitted professional experiences in their *résumés* for dissimilar motives.

Another limitation of this study is to assume that antitrust commissioners, and antitrust commissions in a broader sense, deal with merger reviews with no distinction across markets. Although this investigation uses 'Services' and 'Agriculture', comparing to 'Manufacturing', as control variables, which is a beginning in terms of specification of industries and markets, concepts such as 'educational background' and panelists' 'experience on the bench' could reveal a stronger predictive power on the likelihood of levels of enforcement on merger reviews. Both terms in Models I and II are statistically significant at $p < 10\%$ and $p < 5\%$, respectively, while capturing their effects in decisions related to economic sectors too heterogeneous. Perhaps a tight definition of industries and markets can reveal stronger predictive power of these two concepts on the level of antitrust authorities' intervention in M&A.

Regarding the possibilities of generalization of this thesis' findings to other countries, a comment follows: to bypass this obstacle, any attempt of generalization must take into account the evolutionary path of the Brazilian institutions and economy as highlighted earlier in this chapter *vis-à-vis* the evolutionary path of other observed countries. Being aware of this issue, this thesis' findings can be useful for future research.

Additionally, new studies in the future can check whether the effects of commissioners' attributes, values and related factors on law enforcement are stable across different kinds of potential anticompetitive strategies of firms such as conduct cases and joint-ventures. The best

specification of theoretical models will be found if the authorities' capabilities are observed in the full range of cases that commissioners deal with.

Finally, it is worth reinforcing that the expected contributions of this thesis announced in Chapter 1 remains valuable. They are not repeated in these final considerations, but deserve attention of every group affected by antitrust regulation.

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APPENDIXES

APPENDIX I – LITERATURE REVIEW ON THE DETERMINANTS OF ANTITRUST AUTHORITIES' DECISIONS

APPENDIX II – COMMISSIONERS' PROFILE

APPENDIX I – LITERATURE REVIEW ON DETERMINANTS OF ANTITRUST AUTHORITIES' DECISIONS

Studies that unfold determinants and probabilities of antitrust authorities' decisions are not so abundant, as well as they belong to a select group of authors. Particularly analyzing the Brazilian scene, there is not any econometric study published with a large scale dataset, similar method and purpose. Therefore, it is worth advertising that this appendix to literature review is focused exclusively on studies that discuss variables that determine antitrust authorities' decisions which reveal predictive power of authorities' enforcement. A chronologic criterion for the introduction of earlier research is adopted due to latent link among several papers with previous datasets and findings.

Although Posner (1970) and Long *et al*. (1973) discussed antitrust enforcement with original approaches in the end of 1960's and beginning of 1970's, resorting to statistics to explain political and economic determinants for antitrust activity in the United States, Coate *et al*. (1990), actually, is the first paper found that tests the explanatory power of some variables to estimate likelihood of approvals or restrictions of mergers by antitrust authorities.

Using non-public information and a probit model with a binary dependent variable, Coate *et al*. (1990) examine 70 horizontal mergers that the FTC voted complaints in a case or authorized firms' original agreements in the period 1982-1986. The authors opt for six independent variables aligned with merger guidelines to measure the *bureaucratic influence* on the FTC decisions, such as Herfindahl-Hirschman market concentration indexes, levels of barriers to entry, chance of easy post-merger collusion, as well as a failing-firm proxy[67]. In addition, two terms are given to capture the *political influence* – visibility of merger in press[68], and number of times that commissioners or senior FTC staff were called before congressional committees to testify on their antitrust enforcement records.

Based on the elements above, the econometric analysis shows a significant influence of all bureaucratic and political variables on the FTC decisions. In sum, Coate *et al*. (1990) reveals

[67] Failing-Firm Doctrine is a principle of antitrust law that allows an otherwise proscribed merger or acquisition between competitors when one is bankrupt or near failure. For a historical overview on this theme, see Wueller (2013)

[68] According to Coate *et al*. (1990, p. 473), "The larger the merger, the more likely it is to result in job losses, plant closings or relocations, revenue losses to local jurisdictions, and thus the likelier it will be to encounter political resistance."

that the higher Bureau of Competition's market concentration index, claims for barriers to enter and claims for industry conducive to collusion, the higher probability of the FTC enforcement. Regarding the model classification of correctly predicting, it is seen significant at 46.3%.

Coate and McChesney (1992), as a continuing study of the earlier article, repeats probit model technique, dependent and explanatory variables of the 1990's investigation. However, the authors add a new binary independent term to explain the FTC decisions on merger reviews, which assumes value '1' when the Bureau of Economics claimed that efficiencies were present in the merger and '0' otherwise.

After different exercises to test the influence of efficiency factor on the FTC judgments, surprisingly or not, no statistical significance is reported to the new variable, although both the United States antitrust guidelines have mentioned the importance of post-merger efficiencies and the Commission staff has alerted for post-merger efficiency gains in some cases. Further, the empirical exam in Coate and McChesney (1992) indicates that the combination of high post-merger Herfindahl-Hirschman indexes' estimation with low entry barriers and collusion led the likelihood of a merger to be challenged by the FTC to around 21%. Thus, these results reflect a more important influence of industrial structure over efficiency factor on the FTC decisions in the 1980's decade.

As a complement, if the FTC's Bureau of Competition and Bureau of Economics registered in their analyses that the industrial concentration was not a concern, in a scenario of worrisome entry barriers and easy collusion above guidelines levels, the probability of a merger to be challenged, at that sample time, was 43%. In addition, after measuring the influence of both Bureaus on the FTC decisions, the author concludes that lawyers' analyses impacted more the Commission decisions than economists ones. Finally, the correct predictability of four probit models presented in Coate and McChesney (1992) rests on between 43.1% and 46.3%.

Also resorting to a probit model, and an original sample of 70 monopolies and merger reviews between 1974 and 1990, Weir (1992) tests eighteen binary variables – public-interests

contained in United Kingdom 1973 Fair Trading Act – in order to check the influence of each one on Commission decisions.[69]

Firstly, estimating the full sample, the author finds out significant positive parameters to *Commission attitude to overall case, competition no effect,* and *price no effect,* and significant negative parameters to *bid contested* and *harm balance of payments*. These statistical terms, in other words, address that the likelihood of the United Kingdom Commission allowing a transaction, during the sample period, rose if the Commission accepted parties' arguments for merger and the merger had no effect on competition or price, *ceteris paribus*. On the other hand, if the Commission contested the bid or the balance of payment was harmed, the probability of disapproval increased.

Secondly, the author divides the sample in two subgroups based on period – 1974 to 1984, and 1984 to 1990, because the United Kingdom Commission stated the emphasis on competition effects from 1984. Then, for the first period subsample, (i) if merger improved the balance of payments, or had no effect on competition, the probability of merger approval increased; but (ii) if the Commission accepted parties' arguments to merger, contested the bid, or merger harmed the balance of payment, the likelihood decreased.[70] After the change of the United Kingdom Commission regarding the competitive effects, Weir (1992) reports as the only significant positive parameters the *Commission attitude to overall case,* the *competition no effect,* the *price no effect,* and *the price reduction effect.*

In another article – Weir (1993) – the author splits a sample of 47 merger report decisions of the United Kingdom Commission in three different subsamples – *increase/decrease competition*, *decrease/no change in competition*, *increase/no change in competition*, expecting, firstly, that antitrust authority's enforcement would increase when competition decreased and vice versa. In addition, the author assesses some sources of competition that could influence the Commission, such as *post-merger market share greater than 25%*, *post-merger market share greater than 50%*, *efficiency*, and six other ones.

[69] Contrary to Coate *et al*. (1990), the independent variable assumes values "1" when the Commission allowed bid and "0" otherwise.
[70] Weir (1992) reveals disappointment with bidding firm arguments and acceptance by the United Kingdom Commission on its decisions. Further, in Coate and Kleit (2004), an explanation of the idea behind commission's behavior is offered.

The *increase/decrease competition* sample analysis reveals that *post-merger market share above 25%* means that competition should decline. Moreover, *efficiency*, *change in payment balance* variable, and *R&D improvement*, typical concerns of industrial policies, have no statistical significance to explain the Commission decisions in the last decades of twentieth century in the United Kingdom. Regarding *decrease/no change in competition* sample, *efficiency* and *balance of payments* resulted in significant effects to keep competition stable – *no-change competition*. The model classifications of correctly predicting are seen, respectively, at 27.39% and 47.92%. Finally, the author still reports analyses on combination of variables and their effects on competition, which were also built applying a probit model.

Khemani and Shapiro (1993), differently to the previous scholars, deal with an *ordered probit* analysis of 75 horizontal merger cases decided by the Canadian antitrust authority after the introduction of the new Competition Act of 1986. The main paper's interest is to determine whether the merger provisions, from 1986 to 1989, had been consistently applied in accordance with the economic and legal intent of the Act.

The authors, so, rank the dependent variable in four categories of authority's decision – *permitted to proceed*, *monitored*, *restructured* and *challenged* – with ascendant values from '1' to '4' –, and set a list of eleven variables to test their explanatory power, such as *market share of acquiring and acquired firms*, *presence of import competition*, *level of barriers to entry*, *acquired firm failing*, *domestic monopoly creation*, *vigorous competitor remaining*, *countervailing buyer power*, *firm or product regulated*, *presence of efficiency effects* and a residual category.

Regarding the research outcomes, in a rigid statistical significance view, just *market share of acquired firm* can be considered a determinant of the Canadian authority's decision on merger reviews, in the second half of the 1980's, based on Khemani and Shapiro (1993)'s model. *Presence of import competition* and *level of barriers to enter* cross slightly the 10% significance level line with, respectively, negative and positive estimators. Lowering statistical rigidity, it means that the bigger the presence of import competition, the greater the chance of mergers to proceed, while the higher the barriers to enter, the stronger enforcement the Canadian Commission tended to adopt. The authors also reported a model's correct predictability of 62.66%.

Due to the results of the main model, the authors argument that multicollinearity among variables can be a reason for the lack of significance of most variables, and resort to other models in order to check the explanatory power of variables separately. In short, after many exercises, the authors conclude that merger reviews were in accordance with the Canadian legal and economic frameworks.

Meaning an improvement of the same construct of Coate *et al*. (1990; 1995), Coate and McChesney (1992) rest on a sample of 144 mergers investigated from 1982 to 1992 as well as present new independent terms to try to explain the FTC enforcement under the Reagan and Bush administrations. Actually, the probit econometric approach, part of the sample, some fundamentals of explanatory variables and the dependent variable – '1' for 'FTC complaint vote' and '0' for 'agreement between merging firms moving on' – were kept from past research, but variables added and three alternative models reveal new contributions to academics and practitioners' discussion on political control.

The author introduces *anticompetitive factors BC* and *BE* variables, basing them on Herfindahl-Hirschiman industrial concentration index, barriers to entry and anticompetitive theory reported, respectively, by the Bureau of Competition and Bureau of Economics, as well as *customers' complaints* to measure anticompetitive effects of each case, and *foreign firm* as indication of ownership origin of the acquiring firm. In addition, the author changes *visibility of merger in press* (COATE, 1990; 1992) for *value of the deal* in order to capture the political size/importance of the event, *hearings*[71] (COATE, 1990; 1992) for *democratic share index*[72] as a sign of temporal political effect, and *efficiency* (COATE, 1992) for *documented cost savings*.

The paper's outcomes, so, reveal that both anticompetitive-factors variables, as well as the political variables, are positive and significant. It means that the greater the anticompetitive and the political effects, the higher the probability of the FTC challenging a transaction between 1982 and 1992. From the second model to the forth, *documented cost savings* term is included, showing significant coefficients with a marginal negative impact on the FTC

[71] "Twelve-month moving average of FTC or political staff testimony before Congress." (COATE *et al.*, 1990, p. 476)

[72] "[…] a measure of the average Democratic control of the Senate and the House of Representatives." (COATE, 1995, p. 398). According to the author, Democrats are more interested in active enforcement than Republicans, which can be a good proxy for temporal political effect.

decisions. In the authors' *full model*, additionally*, customers' complaints* and *foreign firm* are also presented, but both variables do not seem influent to explain merger enforcement. Overall, the reported models probability predictions are higher than 88%. Finally, it is worth mentioning that any statistical significance in Coate *et al*. (1995) is founded on 5% or 10% one-tailed level, which is questionable.[73]

Leaving for a while the most consolidated competition policy system of the world and moving to a very young antitrust regulatory framework, Strong *et al*. (2000) deal with data of 207 adjudication decisions of the New Zealand Commerce Commission on business acquisitions from 1991 to 1996. The most innovative element of the mentioned research is noted in its binary dependent variable – *authority assessment of market dominance* – instead of the conventional *antitrust authority's decision.* Considering that antitrust authorities' decisions, ultimately, rest on avoidance or not of market dominance for merging firms, this literature review highlights the main elements of the New Zealand research.

As explanatory variables, the authors indicate *market shares of firms, estimated market shares of competitors, height of barriers to entry*, *constraint (if any) provided by potential or actual import competition*, and other factors which might impact competition in the relevant market. After a preliminary descriptive analysis, Strong *et al*. (2000) test the responsiveness of a probit model with the combined market share of merging firms, and two dummies reflecting three levels of aggregate entry barrier – low, moderate and high, but only *market share* is revealed as statistically significant.

Aside from this exercise, in another particular specification of the model, which incorporates three interactive variables formed by *combined market share* and *the entry barriers categories*, the one with high barriers denotes significance at the 1%. In this case, it is noted that the likelihood of the New Zealand Antitrust Commission found dominance when a merged firm reached 75% of market share was 50%, in the first half 1990's.[74]

[73] The paper doesn't provide explanation for the choice of one-tailed test instead of two-tailed test. "Choosing a one-tailed test for the sole purpose of attaining significance is not appropriate. Choosing a one-tailed test after running a two-tailed test that failed to reject the null hypothesis is not appropriate, no matter how "close" to significant the two-tailed test was. Using statistical tests inappropriately can lead to invalid results that are not replicable and highly questionable." (IDRE, 2014)

[74] Although the model described is quite simple when compared with previous and next research, it is relevant, in the context of this thesis, to become closer to different maturity levels of antitrust regulatory environments. The New Zealand's Commerce Act dates from 1986, while the Brazilian Competition Policy System dates from 1994.

The debate of political control in the United States comes back in Coate (2002). The paper relies, again, on merger reviews data of the FTC, but at this time covering fiscal years of 1983 to 2000 – Regan, Bush, first Clinton and second Clinton mandates. Basically, the author proposes an interpretation of political control over bureaucracy decisions counting on five variables already used in Coate *et al*. (1995) – anticompetitive factors BC, anticompetitive factors BE, efficiency, value of the deal, and Democratic share index. Further, a Congressional index, a Presidential dummy, and a combined term of both variables were created in order to respectively catch the legislative and executive powers of influence as well as to test for the activist corner solution.[75] Finally, a *populist* term was also added to examine whether enforcement as a populist government behavior outweighs more traditional political control.[76]

As conclusive results of the decision-making model of the FTC, it is worth highlighting that Coate (2002) confirms past findings related to competitive effects and political importance of the merger. Regarding the Congressional and Presidential variables, the paper shows that legislative influence on merger reviews enforcement increased in Bush presidency, but fell during Clinton's. In addition, the parameters of the combined terms above specified and the Congressional index are both significant with the same magnitude, and opposites in sign, which means that the legislative effect during a Democratic administration did not change the Democratic President view of mergers' enforcement. Lastly, the correct predictability of three probit models tests are around 91%. Based on these outcomes, the author even develops extensive analyses on political control in the United States over the FTC, and points out complementary implications.[77]

In a different approach than the earlier articles, Coate and Kleit (2004) deal with the interacting process of an antitrust regulatory agency and acquiring firms to determine the outcomes of anticompetitive regulation. Actually, the authors handle a sample composed by 169 challenged cases by the FTC that were object of litigations, abandonment, or settlements with merging firms, covering the period of 1983-1999. Also in a distinct manner, two FTC economic utility models are used to determine relevance of factors on antitrust authority's

[75] "[…] a second Congressional effect would exist if a shift in Presidential policy resulted in an equilibrium at the activist extreme." (COATE, 2002, p. 10)
[76] According to the author, if antitrust enforcement was led by Democratic and Republican governments in the same way, the model is able to unfold that the great effect on antitrust policy would be independent of legislative and executive powers.
[77] For whoever seeks more information on this matter, it is suggested a carefully reading of Coate (2002).

decisions. The models are distinguished for binary dependent variables: *abandonment vs. compromise settle*, and *litigation vs. compromise settle*. Due to the so-called *corner solution*, which means a statistical issue of equation's estimation, the authors build outcomes and conclusions through likelihood ratios instead of regression coefficients, preferably.

In short, regarding the first model results, *concerns* with public choice outweigh merger *potential efficiencies*. According to Coate and Kleit (2004, p. 995), "[…] the Commission is more likely to prefer that efficient acquisitions be abandoned rather than move forward with a compromise settlement […]", because settlements can easily fail in the marketplace – e.g. efficiency gains do not occur or consumers' surplus does not increase as expected, thus authority's credibility can be harmed. About the second model, the authors only point out that between compromise settlement and litigation, the antitrust authority will always prefer a settlement.[78]

To again change the focus from the United States regulatory sphere to another regulatory framework, Aktas *et al*. (2004) adopt an ordered probit model to study the determinants of regulatory intervention on mergers and joint ventures in the European Union from 1990 to 2000. The sample particularity is that all analyzed merging firms should be publicly traded companies, because abnormal returns of bidders and targets shares are used as instruments for various explanatory variables, such as *outside EC* and *large EC country related to bidders*[79], *deal value*, *target size*, and *bidder/target returns correlation* as a proxy for the sector and geographical proximity of the target and the bidder. In addition to these terms, the authors also test *estimated CAR*, and *DGC experts' diagnostic* – dummy variable with value '1'; if the commissioners determine that merging firms are not in the same sector, in the same geographical area, or have insufficient sales. The dependent variable, in turn, assumes values '1', '2' and '3', respectively, in cases of total authorization after Phase I investigations, cases of authorization subject to conditions at the end of Phase I, and cases that needed Phase II assessment.

[78] In addition to *concern* and *efficiency*, variables like (i) probability of a merger would be enjoined by a Federal Court, (ii) Bush FTC Chairmen, (iii) Clinton FTC Chairmen, (iv) transactions in consumer products industries, and others included in past research also are tested by Coate and Kleit (2004) as determinants of the FTC decisions.

[79] Germany, France, Spain, Italy, or United Kingdom.

The analysis of the outcomes of the completed model reveals that *DGC experts' diagnostic* coefficient is negative, whereas *bidder/target returns correlation* and *deal value* coefficients are positive, being the only three terms statistically significant. Therefore, if the European Union commissioners determined that merging firms were not in the same sector, in the same geographical area, or had insufficient sales, the probability of total authorization after Phase I was higher in the period 1990-2000. On the other hand, the closer the sectors and geographical areas of merging firms, as well as the greater the deal value, the higher the likelihood of European Commission to impose conditions on firms or keep investigating the transaction in Phase II.

In a similar approach, but using an extensive list of independent variables[80] and binary logistic models – (i) *go* or *no-go to phase 2* and (ii) *allowed* or *not allowed in phase 2* as dependent variables, Bergman *et al*. (2005) assay a sample of 96 European Commission's merger decisions, from 1990 to 2002.

The authors main findings related to the *go* or *no-go to phase-2 issue* show a great positive influence of *market share* variables, while *national relevant market* contributed to reduce probability of phase-2 assessments at the sample time. *US firms* in merger events as well as *vertical effects* are seen in the paper with no consistent results, but in at least one model are statistically significant. In turn, the outcomes of European authority *approval or not in phase-2*, *market share* variables, *entry barriers* and *collusions* demonstrate consistent results and high positive estimators, which mean that the greater these variables, the greater the probability the EC prohibited a transaction.

Regarding the regressions' correct predictions, the *go or no-go to phase 2 model* signalizes probabilities between 79% and 91% while the *allowed or not allowed in phase 2 model* reaches a 69%-93% range. Finally, the authors dedicate one entire topic to discuss possible econometric problems and limitations of the article, from missing values to results' inconsistencies, wrong interpretation of data, and subjective data in the EC reports.

[80] Five of them have *market share* as a core; *network* takes into account telecom, transports, electricity or financial industry; dummies include: *vertical* effects; *collusion*; *entry barriers*; *world leader* firm; *national* relevant market; at least one of merging firms is from *big 5 EU country*; at least one of merging firms was from *US*; decision under EC Mario *Monti* administration; and merging parties propose *undertakings* that remove all horizontal overlap in the most problematic market.

In parallel to the European study described above, using a database created by the FTC as part of the Merger Policy Transparency Project[81], Coate (2005), Coate and Ulrick (2005) as well as Coate and Ulrick (2006) compose a new series of research on the United States mergers enforcement with new estimators for complementary analysis, but also using some terms of earlier studies. The dependent variables, in turn, assume different profiles, because diverse control variables are exercised. The models, specifically, are probit regressions in Coate (2005), but *logit* in Coate and Ulrick (2005; 2006).[82]

Focusing on main statistically significant findings, firstly, it is worth mentioning that *guidelines proxies* are confirmed as factors that matter to the FTC, alone or combined with other elements – e.g. high values for the Herfindahl statistic made a legal challenge more likely in coordinated interaction; great numbers of significant rivals in a market made a legal challenge less likely in unilateral effects cases; and more evidence against timely, likely, or sufficient entry made a challenge more probable. Secondly, *industry variables*[83] appear with positive coefficients when tested in samples with enforcement means[84], but their magnitudes generate a lesser impact on the authority enforcement than the guideline ones. Thirdly, related to *institutional terms*, the models don't show structural shifts during the eight year period of the sample, which means that "[…] neither political control of the Federal Trade Commission nor the merger wave is statistically related to the enforcement outcome" (COATE; URICK, 2005, p. 27). Additionally, *evidence proxies* – hot documents linked to the merging parties, and customer's concerns – made a challenge more likely, but also with less impact than guidelines variables. Finally, as shown before, the *background variables*[85] combined with structural factors influenced the antitrust authority enforcement in the United States.

Duso *et al*. (2007), supported by stock market responses to the EC antitrust decisions, investigate a sample of 167 merger reviews and assess the sources in which the EC has blocked a merger that the stock market regarded as procompetitive – type I errors – as well as

[81] "[…] a comprehensive review of the facts collected in all Hart-Scott-Rodino (HSR) horizontal merger matters for which second requests were issued during fiscal years 1996-2003. Tabulations of this merger information were publicly released in February 2004." (COATE; URICK, 2005, p. 1)
[82] Coate and Ulrick (2005; 2006) chose the logit because it fits better to the implementation of graphical analysis.
[83] Industry variables: indicator variable for market in oil industry; indicator variable for market in grocery industry; indicator variable for market in chemical industry; and indicator variable for market not explicitly coded above.
[84] In opposition to close means.
[85] Background variables: indicator for homogeneous industry; coordinated interaction cases; and unilateral effects cases.

the sources in which the EC failed to prevent mergers that were regarded as anticompetitive – type II errors. The authors estimate abnormal returns of merging companies' shares and, then, examine an extensive list of determinants through a bivariate probit model, including independent variables equal to '1' when a type I error occurred in a procompetitive subsample, and also equal to '1' when a type II error occurred in a anticompetitive subsample.

Summarizing the outcomes, five variables have statistically significant coefficients when tested in the procompetitive sample. According to the coefficients' signals, decisions in *Phase 1*, *National* and *European Union* geographic and product markets indicate that the probability of a type I error decreased the higher they were in the final years of twentieth century in the EC. Nevertheless, the fact that merging parts came from a *small EU country*, as well as the event to be characterized by a *full merger*, caused an increase of the likelihood of type I error.

In other words, Duso *et al*. (2007) econometric analyses suggest that (i) it was rather unlikely that the EC blocked a merger that the stock market regarded as procompetitive in phase I, because antitrust enforcements usually occur in phase II; (ii) more efficiency and competitiveness levels have been objectives of the European Treaty, as mentioned in the historical overview of antitrust regulation, which may explain why pan-European mergers tended to reduce the chance of a bad decision by the EC full mergers in small countries pressured authority enforcement action based on consumers welfare arguments.

Regarding the results of anticompetitive sample, just decisions in *Phase 1* and *transport, storage, and communication industries* can be considered determinants for antitrust authority type II error, according to Duso *et al*. (2007)'s model. In this case, the higher *phase 1* variable, the greater the probability of type II error, which the authors attribute to the short-term decisions in phase 1. On the other hand, *transport, storage, and communication industries* variable contributed to a reduction in chances of type II error enforcement. Economies of scale may explain efficiency gains and consequent increase of consumers' welfare.

Aktas *et al*. (2007), as a continuing study of the 2004 article cited earlier, examine the same dataset, but introduce a new dependent variable – *EC Intervention*, which assumes value '1' in case of authorization subject to concessions or an in-depth investigation, and value '0' in the case of total authorization, and few new explanatory terms. In substitution to the ordered

probit regression used by Aktas *et al*. (2004), because of the binary characteristic of the new explained term as well as of the endogeneity of some explanatory terms[86], the authors adopt a *two-stage instrumental variable probit model.* These changes, then, confirm old results and generate new findings.

Firstly, the *bidder/target returns correlation* and *deal value* coefficients repeat their positive significance. Secondly, the coefficient of the *non-EC bidder combined with the EC competitors' CAR* variable is negative and significant, which denotes a higher probability of an antitrust authority intervention when an EC competitor showed a positive abnormal return caused by a merger in which the bidder was not from the EC. Lastly, the *EC competitors' CAR* coefficient is also negative and significant, which indicates that the higher the abnormal return of EU competitors, the higher the probability of the EC authority increased enforcement on merging firms under the implicit argument of protection of EU firms due to stronger foreign competition.

Also taking advantage of own earlier studies' developments, Duso *et al*. (2011) use a sample of 80 concentration cases completed in phase 1 under the EC analysis between 1990 and 2002, and 71 investigated cases in phase 2, to test new predictive models to authority's decisions. The total sample, composed by 57% of full mergers, 24% of joint ventures, 13% of partial acquisitions, 11% of tender offers, and 6% of asset acquisitions, is applied in a binary logit model with a dependent variable named *action* – equal to '1' if the merger was cleared with remedies or blocked and '0' otherwise. In addition to some of Duso *et al*. (2007)'s explanatory terms, dummy estimators such as *conglomerate,* to measure conglomerate or vertical effects, and *cross border deals* are part of the fourteen different possible determinants.

As statistically significant outcomes, Duso *et al*. (2011) disagree with Aktas *et al*. (2007) regarding the protectionist character of EU enforcement, as seen two paragraphs above. The *US* variable shows a -1.314 coefficient, which means that if at least one of the merging firms was from the United States, the probability of a Commission's action was significantly lower.

[86] "At the deal announcement, investors are anticipating the potential value creation (or destruction) for the target, bidder and competitors. They know also that European Community regulation might come into play. At the same time, regulators are looking at market price reactions to assess potential monopoly rents or increased competition along with the benefits and/or harm that the proposed combination might generate for all affected parties. Clearly, the CAR and European regulator decisions are fundamentally endogenous." (AKTAS *et al.*, 2007, p. 1112)

Another variable that contributed to reduce the likelihood of remedies imposition or blocks by EU's antitrust authority is *European market wide* with a -0.844 coefficient. However, *the presence of conglomerate or vertical effects*, *the size of rival firms*, *the merging firms operation in manufacturing*, and *the fact that the merger occurred between 1995 and 2002* increased the probability of Commission intervention, with 0.955, 0.781, 0.183, and 1.034 respective coefficients. Finally, the model classification of correctly predicting is 69.48%. Due to the main objective of Duso *et al*. (2011) research, which is to check the effectiveness of European merger control, the authors also run another probability model as part of the robustness tests.

Garside *et al*. (2013), the last featured paper in this topic of the literature review, undoubtedly enrich the spectrum of possible determinants of decisions on business combination reviews, focusing on 85 case-level and 388 company-level observations of possible abuse of monopoly power between 1970 and 2003. The authors' concern relies particularly on the level of experience of the United Kingdom Competition Commission chairman as an influential factor on the level of the MMC enforcement.[87] Using *probit* regressions, the chosen dependent variable of the main model is named *guilty* and assumes, for company-level data, the value '1' if a firm is found guilty in the case and '0' otherwise. Similarly, for the case-level data, the explained term takes the value '1' if at least one firm in the case is found guilty and '0' otherwise. Regarding the independent variables, various factors are taken into account and can be seen in the following sum of Garside *et al*. (2013) results. The authors run different models based on the main above issue.

Firstly, the authors present a series of estimation for *company-level* sample which reveals that *experience*[88] is significant in four of four exercises with positive coefficient. In this sense, the more experience, the higher the probability of *guilty* decision by the United Kingdom Competition Commission. Secondly, two political terms are also significant in all models that they are tested, but with opposite coefficient signals. *Post-1979 election* dummy, which captures the effect of Margaret Thatcher's government, is a positive parameter, and *post-1989*

[87] Garside *et al*. (2013)'s study is an exception considering the predominant focus of this thesis on concentration act reviews, which papers herein discuss. The cited authors provide important insights for hypotheses formulation related to the influence of chairmen and commissioners' profile on review decisions in Brazil. Others like Carree *et al*. (2010), which provide insights to the examination of the influence of a wide range of sub-sectors and countries unfortunately is not featured in more detail. The latter authors' sample covers the EC decisions mainly on anticompetitive conduct cases since European Community Treaty in 1957.

[88] "Experience is measure as the number of times the person has chaired and submitted any type of CC enquiry prior to taking up the current case." (GARSIDE *et al*., 2013, p. 479)

dummy, which reflects period after 9 November 1989[89], is a negative estimator. Being so, these findings unfold that Margaret Thatcher's government contributed to increase the likelihood of enforcement against firms accused of abuse of monopoly power in the United Kingdom, whereas the more cases after November 1989 the fewer *guilty* decisions against firms. As the last results of the *company-level* estimations that are worth mentioning, in three of four exercises, a (i) dummy term measuring whether a firm was investigated for abuse under two separate activities, and (ii) another dummy showing if it was a repeated investigation against a firm, are statistically significant with positive and negative signals, respectively. In few words, then, the probability of guilty findings increased the more the authority investigated firms under two separate activities, but decreased the more repeated investigations the United Kingdom Competition Commission worked on.

Regarding the two models to examine the case-level sample, *experience*, *multi investigation*, *repeated investigation*, and *post-1989* terms are significant with the same signals reported above. However, the effect of Margaret Thatcher's government disappears in the only model that it is included, and *market share* is significant in one of them with a negative sign. Curiously, market share has no significance in any *company-level* sample exercises as well as *panel's experience*, *exploitative*, *age*, and *pre-chair experience* variables.[90]

So, before moving to the next appendix of this thesis, it is also worth mentioning some recent studies that are not discussed herein, but contribute to the identification of determinants of merger reviews decisions as well as to the improvement of the competitive policies debate around the world.

Bergman, Coate, Jakobsson, and Ulrick – Bergman *et al*. (2010) – compare authorities' reactions to potential harmful strategies of firms in the EU and the United States. Although a lot about both regulatory systems and the influential factors on merger reviews can be seen in this literature overview, the prominent authors shorten distances between antitrust regulatory behavior in the World when developing this kind of analysis, the importance of which the introductory chapter of this thesis and also some of past research results address.

[89] The authors point out various reasons for this cut, such as the fall of the Berlin Wall, and the Conservative Government between 1989 and1997.
[90] See Garside *et al*. (2013) to meet all variables and their definitions.

Feinberg and Reynolds (2010), in turn, move forward in another direction. The authors focus on neither transatlantic analyses nor Federal-level investigations. Rather they assess economic and political determinants of antitrust case-filing in a State law basis in the United States. It is known that the particularities of this country on legislative themes and justice behavior as well as economic dimension allow this type of approach. However, the authors explore an innovative way to discuss and advance with antitrust matters, which deserve consideration.

Lastly, less innovative but very important sources of motivation to this thesis, La Noce *et al*. (2006), Avalos and De Hoyos (2008) as well as Breunig *et al*. (2012) observe jurisdictions which little attention has been given by scholars worldwide. Respectively, the authors cover Italy, Mexico and Australia antitrust contexts. This thesis, then, also takes advantage of this debate.

APPENDIX II – COMMISSIONERS' PROFILE

Table 32 – Commissioners' profile

commissioner	political ideology (appointed by)	education	public service experience	human capital' and 'market extension' (date of birth)	1st mandate (begining)	last judgment session in the 1st mandate	1st mandate (end)	2nd mandate (begining)	last judgment session in the 2nd mandate (Law 8.884/94)	2nd mandate (est. end)
Abraham Benzaquen Sicsu	Lula	economist	welfare	8/2/1952	1/18/2006	1/16/2008	1/17/2008			
Afonso Arinos de M. Franco Neto	Cardoso	economist	utilities	2/16/1960	7/5/2000	7/3/2002	7/4/2002			
Alessandro Serafin Octaviani Luis	Rousseff	lawyer	welfare	6/15/1975	3/3/2011	7/18/2012	8/12/2012	8/13/2012	12/18/2013	8/12/2014
Ana de Oliveira Frazao	Rousseff	lawyer	welfare	5/21/1974	8/16/2012	12/18/2013	8/15/2015			
Carlos Emmanuel Joppert Ragazzo	Lula	lawyer	corefun	3/20/1977	8/12/2008	8/4/2010	8/11/2010	8/12/2010	5/23/2012	8/11/2012
Celso Fernandes Campilongo	Cardoso	lawyer	welfare	9/11/1957	7/5/2000	7/3/2002	7/4/2002			
Cesar Costa Alves de Mattos	Lula	economist	corefun	1/6/1965	11/7/2008	11/3/2010	11/6/2010			
Cleveland Prates Teixeira	Cardoso	economist	corefun	8/15/1966	7/17/2002	7/14/2004	7/16/2004			
Eduardo Pontual Ribeiro	Rousseff	economist	welfare	4/24/1969	8/16/2012	12/18/2013	8/15/2014			
Elvino de Carvalho Mendonca	Rousseff	economist	corefun	6/22/1969	4/20/2011	4/17/2013	4/19/2013			
Fernando de Magalhaes Furlan	Lula	lawyer	corefun	9/28/1968	1/16/2008	12/16/2009	1/17/2010	1/19/2010	3/23/2011	1/18/2012
Fernando de Oliveira Marques	Cardoso	lawyer	welfare	4/2/1963	7/17/2002	7/14/2004	7/16/2004			
Hebe T. Romano Pereira da Silva	Cardoso	lawyer	corefun	10/9/1950	7/1/1999	6/27/2001	6/30/2001			
Joao Bosco Leopoldino da Fonseca	Cardoso	lawyer	welfare	4/18/1939	3/23/1999	3/21/2001	3/22/2001			
Lucia Helena Salgado e Silva	Cardoso	economist	welfare	9/15/1962	5/15/1996		5/14/1998	5/14/1998	5/10/2000	5/13/2000
Luis Fernando Rigato Vasconcellos	Lula	economist	corefun	7/26/1970	7/28/2004	7/26/2006	7/27/2006	7/28/2006	7/23/2008	7/27/2008
Luis Fernando Schuartz	Lula	lawyer	welfare	7/22/1966	12/1/2005	11/28/2007	11/30/2007			
Luiz Alberto Esteves Scaloppe	Lula	lawyer	corefun	6/19/1952	9/25/2003	9/14/2005	9/24/2005			
Luiz Carlos Thadeu Delorme Prado	Lula	economist	welfare	10/15/1952	8/9/2004	7/26/2006	8/8/2006	8/9/2006	7/23/2008	8/8/2008
Marcelo Procopio Calliari	Cardoso	lawyer	corefun	3/10/1966	6/2/1998	5/17/2000	6/1/2000			
Marcos Paulo Verissimo	Rousseff	lawyer	genadm	12/17/1974	4/20/2011	4/17/2013	4/19/2013			
Mercio Felsky	Cardoso	lawyer	genadm	11/21/1949	2/6/1998		4/30/1999	6/10/1999	6/6/2001	6/9/2001
Miguel Tebar Barrionuevo	Cardoso	lawyer	genadm	10/18/1940	1/9/2002	12/17/2003	1/8/2004			
Olavo Zago Chinaglia	Lula	lawyer	welfare	5/10/1975	8/12/2008	8/4/2010	8/11/2010	8/13/2010	8/1/2012	8/12/2012
Paulo Furquim de Azevedo	Lula	economist	welfare	8/28/1965	1/9/2006	12/12/2007	1/8/2008	1/9/2008	9/16/2009	1/8/2010
Ricardo Machado Ruiz	Lula	economist	welfare	6/3/1966	1/19/2010	12/14/2011	1/18/2012	2/19/2012	12/18/2013	2/18/2014
Ricardo Villas Boas Cueva	Lula	lawyer	corefun	5/28/1962	7/28/2004	7/26/2006	7/27/2006	7/28/2006	7/23/2008	7/27/2008
Roberto Augusto C. Pfeiffer	Cardoso	lawyer	corefun	6/3/1968	8/24/2001	8/20/2003	8/23/2003	10/21/2003	10/13/2005	10/20/2005
Ronaldo Porto Macedo Junior	Cardoso	lawyer	corefun	12/13/1962	9/19/2001	4/2/2003	9/18/2003			
Ruy Afonso de Santacruz Lima	Cardoso	economist	genadm	7/23/1956	6/2/1998	5/17/2000	6/1/2000			
Thompson Almeida Andrade	Cardoso	economist	welfare	9/5/1940	7/5/2000	7/3/2002	7/4/2002	7/17/2002	7/14/2004	7/16/2004
Vinicius Marques de Carvalho	Lula	lawyer	corefun	12/5/1977	8/4/2008	7/21/2010	8/3/2010	8/13/2010	3/23/2011	8/12/2012
Chairman (regular, interim and substitute)										
Arthur Sanchez Badin	Lula	lawyer	corefun	2/1/1976	11/7/2008	11/3/2010	11/6/2010			
Carlos Emmanuel Joppert Ragazzo	Lula	lawyer	corefun	3/20/1977	5/18/2011	3/28/2012	3/28/2012			
Celso Fernandes Campilongo	Cardoso	lawyer	welfare	9/11/1957	2/27/2002	2/27/2002	2/27/2002			
Elizabeth Maria M. Q. Farina	Lula	economist	welfare	6/12/1953	7/28/2004	7/26/2006	7/27/2006	7/28/2006	7/23/2008	7/27/2008
Fernando de Magalhaes Furlan	Lula	lawyer	corefun	9/28/1968	7/7/2010	3/23/2011	3/23/2011	3/29/2011	12/14/2011	3/28/2013
Gesner Jose Oliveira Filho	Cardoso	economist	genadm	9/1/1956	5/15/1996		5/14/1998	5/14/1998	5/10/2000	5/13/2000
Hebe T. Romano Pereira da Silva	Cardoso	lawyer	corefun	10/9/1950	4/26/2000	4/26/2000	4/26/2000			
Joao Bosco Leopoldino da Fonseca	Cardoso	lawyer	welfare	4/18/1939	4/19/2000	4/19/2000	4/19/2000			
Joao Grandino Rodas	Cardoso	lawyer	welfare	9/1/1945	7/5/2000	7/3/2002	7/4/2002	7/17/2002	7/14/2004	7/16/2004
Lucia Helena Salgado e Silva	Cardoso	economist	welfare	9/15/1962	3/22/2000	5/3/2000	5/3/2000			
Marcelo Procopio Calliari	Cardoso	lawyer	corefun	3/10/1966	4/5/2000	4/12/2000	4/12/2000			
Mercio Felsky	Cardoso	lawyer	genadm	11/21/1949	5/10/2000	5/23/2001	5/23/2001			
Olavo Zago Chinaglia	Rousseff	lawyer	welfare	5/10/1975	7/13/2011	8/1/2012	8/1/2012			
Paulo Furquim de Azevedo	Lula	economist	welfare	8/28/1965	8/27/2008	6/17/2009	6/17/2009			
Ricardo Machado Ruiz	Rousseff	economist	welfare	6/3/1966	7/4/2012	12/4/2013	12/4/2013			
Ricardo Villas Boas Cueva	Lula	lawyer	corefun	5/28/1962	2/1/2006	7/9/2008	7/9/2008			
Roberto Augusto C. Pfeiffer	Cardoso	lawyer	corefun	6/3/1968	9/29/2004	9/14/2005	9/14/2005			
Ruy Afonso de Santacruz Lima	Cardoso	economist	genadm	7/23/1956	2/23/2000	2/23/2000	2/23/2000			
Thompson Almeida Andrade	Cardoso	economist	welfare	9/5/1940	2/6/2002	3/17/2004	3/17/2004			
Vinicius Marques de Carvalho	Rousseff	lawyer	corefun	12/5/1977	5/30/2012	12/18/2013	5/29/2016			

Source: Thesis author