Economic theory of public contracts: Non-linear dynamic systems; Complexity and New Legal Approaches

Marcos Nobrega
editor

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INFRASTRUCTURE AND URBANISM STUDIES

ECONOMIC THEORY OF PUBLIC CONTRACTS:

NON-LINEAR DYNAMIC SYSTEMS; COMPLEXITY AND NEW LEGAL APPROACHES

MARCOS NOBREGA

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Coordination and revision of texts:
Marcos Nobrega

Text preparation:
Juliana Vaz

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Derval Braga

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This book is dedicated to Isabele, the primary source of my happiness, and to Alfredo, Luiza and Felipe and to all who come from there.

"Here is Edward Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin. It is, as far as he knows, the only way of coming downstairs, but sometimes he feels that there really is another way, if only he could stop bumping for a moment and think of it".

Winnie-the-Pooh

"Prediction is very difficult, especially about the future."

Niels Bohr

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Acknowledgment

This book is a publication of PSP Hub – Infrastructure and Urban Studies, a think tank dedicated to the production and dissemination of knowledge on public-private partnerships, concessions and innovative solutions for the management of public services in Brazil.

As a publisher, PSP's mission is to transform applied research, practical experiences and strategic reflections into accessible and relevant publications, contributing to the institutional strengthening of the public sector and to the improvement of infrastructure policies in the country.

The work you are holding in your hands was born as part of the PSP Working Papers series, an initiative that seeks to foster technical and qualified debate around the challenges and opportunities of social and economic infrastructure. The impact of the original text and its relevance to the national context motivated this expanded edition in book format.

May this reading contribute to inspiring solutions, provoking reflections and supporting the construction of a more efficient, transparent and evidence-driven public management.

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INFRASTRUCTURE AND URBANISM STUDIES

Preface

This volume is the result of many years of research, reflection, and professional experience in the field of public contracting. It is the product of an intellectual journey marked by both theoretical inquiry and practical engagement, shaped by the insights of co-authors who share a longstanding commitment to advancing the understanding of legal and economic structures in public administration.

Rather than restricting itself to conventional topics within administrative law or infrastructure governance, this book embraces a broader and more interdisciplinary approach. It addresses themes such as information asymmetry, non-linearity, expectation stabilization, and the conditions for achieving long-term contractual equilibrium—topics that have become increasingly relevant in light of the evolving complexity of public governance.

The opening chapter presents the concept of contractual incompleteness through the lens of infrastructure projects, proposing the "Klink Boat Theorem" as an illustrative framework. This metaphor captures the inherent unpredictability and relational nature of long-term agreements, inviting a reconsideration of contract design beyond rigid formalism.

Following this, the book explores the notion of contract equilibrium as a dynamic, non-linear process. Drawing from systems theory and the analogy of mechanical resilience, the chapter suggests that public contracts require institutional mechanisms akin to "shock absorbers" and "traction" to maintain functionality in unstable environments.

A subsequent contribution addresses the impact of structural legal changes—particularly tax reform—on the economic-financial balance of long-term administrative contracts. The chapter argues for a shift away from mechanistic models of equilibrium toward frameworks that are relational, adaptive, and responsive to systemic shocks.

Theoretical discussions are further grounded in a detailed case study examining the economic-financial balance of a concession agreement. This empirical analysis demonstrates how abstract principles

translate into concrete governance challenges, emphasizing the need for flexible, context-sensitive solutions.

The book then transitions to a broader analysis of procurement systems in Brazil, offering an integrated legal and economic perspective. By evaluating the design of incentives, legal frameworks, and institutional capacities, it highlights the potential for improving procurement outcomes through interdisciplinary thinking.

The modernization of public procurement is further explored in the context of Brazil's e-marketplace initiative. This chapter discusses how digital platforms are transforming acquisition processes, facilitating innovation, transparency, and data-driven public management.

Another contribution critically examines the use of the Internal Rate of Return (IRR) in the modeling of concession and Public-Private Partnership (PPP) projects. It highlights the methodological limitations of IRR and its potential distortions in public finance, offering reflections on alternative approaches to project evaluation.

The volume concludes with a chapter that links public economic governance with environmental responsibility. It discusses the emergence of "green" banking practices as instruments of environmental economics and social accountability, framing sustainability as a central element of public and financial institutions.

This book seeks to contribute to the academic and professional discourse on public contracts by challenging static paradigms and advancing new models informed by complexity, adaptability, and long-term thinking. It is intended for scholars, policymakers, and practitioners who seek to understand and respond to the pressing challenges of public contracting in a rapidly changing world.

Marcos Nóbrega
Recife, Summer, 2025

INCOMPLETE CONTRACTING OF INFRASTRUCTURE PROJECTS: THE KLINK BOAT THEOREM

MARCOS NÓBREGA

RAFAEL VERAS

FREDERICO TUROLLA

Abstract: This theoretical essay aims to investigate the existence of general contours for an economic-legal theory of imperfect long-term contracting, within the scope of non- mature jurisdictions, in Private Sector Participation (PSP) contracts.

To achieve this objective, we follow a set of methodological steps: first, we describe the paradigm of the Arrow-Debreu World (ADW), in which long-term contracting is endogenous to opportunities, generating an ergodic environment of administrative contracting, which is no longer consistent with the economic-legal structure of infrastructure projects.

As a second step, we have relaxed the major premises of the ADW, notably regarding ergodicity, contractual completeness, rational expectations, among others; in addition, we defined a Standard Administrative Contract (SAC), in a derivative of French civil law tradition, assuming a standardized risk allocation matrix, in which the operational, investment, demand and capital risks are allocated to the concessionaire, while the public partner bears the risks of force majeure, fortuitous event and *factum principis*, and the demand risk is fully allocated to the concessionaire even when the sources of the demand variation arise from macroeconomic actions. Subsequently, we have created three scenarios for the unfolding of demand, which is the main source of involuntary results for the concessionaire: adverse scenario, *business-as-usual scenario* (BAU) and benign scenario; we evaluated the consequences of the adverse scenario, seeking to understand the incentives for contracting, *ex ante*, in view of the possibility of its materialization. We work on the distinction between the concepts of flexibility and adaptability within the scope of long-term administrative contracts.

Our essay concludes that, in a non-Arrow Debreu environment, with certain specifications on the existence of liquid markets for hedging certain risks (x, y, z), permeated by non-ergodicity, by the limited rationality of the agents, by

the opportunism of the parties, the *ex-ante* incentive to contract depends on the adaptability of the contractual renegotiation, notably for the exploration of specific assets. Full flexibility of contractual renegotiation would incentivize opportunism; on the other hand, adaptability (a pre-ruled amount of flexibility) would increase *ex-ante* incentives to contract without a dangerous increase in opportunism.

It is also concluded that, under the axiomatics and the postulates presented, the validity of Klink Boat Theorem (KBT) is a possible analytical solution to, in the face of a positive probability of materialization of events qualified as "uncertainties", still have an incentive, ex ante, for long-term contracting without the production of an adverse selection of bidders.

The KBT's statement is: "in a non-Arrow Debreu environment, with limited existence of liquid markets for hedging certain risks, in a non-ergodic environment and limited rationality of the agents, in the presence of market failures typical of strong informational asymmetry and property issues (indivisibilities à-la natural monopoly), the current incentive system will lead to actual contracting of long-term concessions if there is adaptability for contractual renegotiation in the event of the materialization of the most adverse economic scenarios to the contract". This adaptability solution can be extended to the various situations in which the uncertainties of the original negotiation (elements not contemplated by the risk matrix) effectively materialize, changing the starting conditions on which the contracting was based.

Keywords: infrastructure; contracts; concessions; public-private partnerships; ergodicity.

Acknowledgments at this stage

The authors would like to express their gratitude for the contributions made to this stage of the work, some with such enthusiasm that they encourage us to continue. Those who generously offered occasional or general contributions, however, named below with apologies for any omissions, have no responsibility for the content we develop. Carol Bueno, the Executive Director of PSP Hub, deserves a special thank you.

We made presentations of preliminary versions: a closed seminar at PSP Hub that attracted a lot of attention, participants and articles; a discussoin at the Secretariat for External Control of Infrastructure of the Federal Court of Accounts of Brazil (SecexInfra-TCU); at the Technical Chamber of Legal and Institutional Affairs, Governance and Social Control of the Brazilian Association of Regulatory Agencies (ABAR, CTJI-GCS); with the infra2038 Project; with Prof. Marcos Perez at the USP Law School; and some smaller wine-inspired sessions.

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1 Introduction

Administrative Law and the Economics of Infrastructure Contracts have been facing never imagined challenges. The evolution of long-term Private Sector Participation (PSP) contracts has not been giving rise to relationships as stable as one would like. Moreover, despite the appreciable economic, social and environmental advances brought about by PSP contracts, a non-negligible number of cases still show as the practical result the capture of economic rents by the contractual partners. On the other hand, the application of legal and economic theories to the contractual universe does not present a satisfactory predictive capacity for the progress and outcome of contractual life. As a result, the legal system and the control bodies assume unrealistic assumptions and foresee standards of results that do not correspond to those that occur in practice. In this context, the hypothesis conveyed in this article is that conventional theories have been shown to be ineffective to address the legal and economic-financial regime of infrastructure projects, giving rise to the need of further theoretical efforts to tackle the problem, especially in non-mature jurisdictions. It is in this context that this article is inserted.

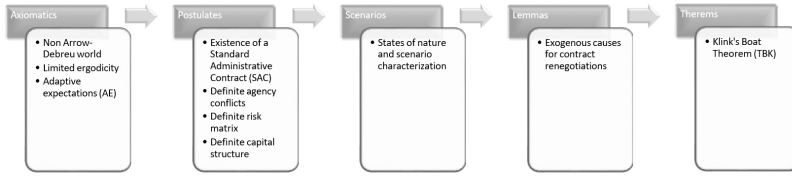
This essay aims to describe, in theory, a specific environment for contracting public infrastructure services, seeking to predict *ex post* results and predict *ex ante* behaviors under different scenarios of realization of states of nature. This methodological strategy serves the purpose of organizing the discussion, by treating analytically and in a simplified way a wide range of highly complex intertwined elements.

The high level of abstraction practiced here is a necessary condition for the proper distance from the idiosyncrasies of each real-world contract. It is, therefore, a useful analytical strategy for understanding the underlying problems and for formulating a *framework* that can provide greater operability for the economic-legal rationale of infrastructure contracts.

In the environment in which this article is considered, any resemblance to the reality of any known country will be mere coincidence or a source of inspiration – notably regarding the reality of Brazil, where the authors write from. This is because, even within the realm of each particular country, the sectoral variety can bring obstacles to any association with any specific reality with which one wants to confront the environment characterized in this article.

The logical structure of the article is summarized in the following figure:

Figure 1 – Logical structure of the article



Based on this structure, this essay aims at a concrete and specific contribution to the General Theory of Incomplete Long-Term Contracts in emerging countries. In this sense, we offer a theoretical contribution to the discussion of long-term administrative contracts, in jurisdictions such as Brazil, without restricting ourselves to it, evaluating the incentive system that prevails from the bidding process to the end of the contract. Given its essayistic nature, the writing is limited to theoretical aspects, without being linked to casuistic specificities, expressing our hope that we will not fall into this temptation throughout the paper (it was quite an effort to tie our hands). It is, therefore, a provocative and constructive reflection, now submitted to good international academic debate.

2 Delimitation of the contours of the ergodic abstract world and the real-theoretical environment

First, we will describe a paradigm for the functioning of the economy based on the general balance of markets, in an ergodic environment and with optimal contractual relations. This ideal paradigm does not account for the imperfections of the real world. Its validity depends on practical conditions that will then be relaxed, creating an abstraction of an economy that respects some of the main deviations from reality in relation to the full and automatic general equilibrium of markets.

The Paradigm of the Arrow Debreu World (ADW)

A starting point, which would be for the purpose of delimiting the regime of complex contracts, is the model of complete markets developed

in the fifties and sixties by Kenneth Arrow and Gerard Debreu (Arrow and Debreu, 1954). According to the authors, there would be a competitive equilibrium built from a concept of an abstract economy that has become popular in economic theory. In the general equilibrium model originally presented by them, all contractual relationships are optimal and identical in terms of analysis, the imposition is always perfect and without salient transaction costs, and the contracts do not present any incompleteness, always generating Pareto-efficient economic results.

If the contracts signed in this environment are always efficient, even contributing to the achievement of Pareto efficiency, they are nothing more than written indicators of the rational maximizing behavior of each agent. In fact, contracting under the ADW has an endogenous and non-exogenous nature, that is, the contracts do not have the capacity to modify the economic environment, but only arise in response to utility-maximizing behaviors that result in pacts that lead to the Paretian efficiency of the economy.

According to Turolla (2005), the paradigm of the Arrow-Debreu World (ADW) presupposes the existence of markets for insurance against any type of risk. In the context of general equilibrium with this characteristic, all individuals can obtain full protection against future uncertainties. All values are expressed in present values, so that the decisions of economic agents fully consider intertemporal flows.

ADW does not necessarily have to presuppose ergodicity, but economic results are always obtained as if the systems were ergodic. Thus, it is possible to assume that, in the ADW, the agents enter contracts under the assumption of ergodicity, a concept related to the presence of invariant dynamic systems[1]. Therefore, according to the Arrow-Debreu paradigm, the main hypothesis is that we are facing an economy governed by an ergodic stochastic process. That is, the contracting dynamics are established under invariant conditions, but whose variations can be anticipated and the present risks mitigated by protection contracts (*hedge*). There is, therefore, no uncertainty in the hiring process.

[1] For an analysis of the concept of ergodicity and its application in Economic Theory, see Cattani (2019).

Impositions of reality: relaxing the paradigm of the Arrow-Debreu World

It turns out that observation of factual reality suggests that markets and contracts cannot be considered complete or perfect. Deviations from this model are even more evident in developing countries. For this reason, the Arrow-Debreu models serve only as a preliminary base paradigm, from which it is intended to provide more realistic circumstances. In this quadrant, the characteristics of the Arrow-Debreu Paradigm (ADW) and the Real-Theoretical Environment (RTE) will be differentiated, as can be seen from the illustration below:

Figure 2 – Comparison between ADW and RTE

Arrow-Debreu World (ADW)	**Real-Theoretical Environment (RTE)**
Ergodicity	Non-ergodicity
Rational expectations	Adaptive expectations
Fully available insurance	Limited insurance offer
Infinite elasticity of the supply of players	Mature market of players
Complete contracts	Incomplete contracts
Information fully available	Informational asymmetry
Property without indivisibilities	Public goods, not rivals and natural monopolies
Automatic transactions	Transactional costs and specific assets
Opportunism absent	Opportunism absent

Source: elaborated by the authors

As can be inferred from this illustration, the Real-Theoretical Environment (RTE) is permeated by transactional frictions, by the indetermination of property rights, by the realization of several moves made in a long-term contract and by a prominent asymmetry of information between the parties. In fact, RTE is not ergodic. In long-term contracts, one cannot speak of *ex ante equilibrium*, based on the idea of *pacta sund servanta* (complete contracts), since this idea is based on the volitional element and is lost at the moment T = 0. From then on, the contract has its own dynamics, which is why the return to the initial equilibrium is a fallacy, nullifying the assumption of ergodicity.

RTE is characterized by contractual incompleteness (Hart, 2000). In his seminal text *Incomplete Contracts and Control*, Oliver Hart discusses the origin of his thinking about incomplete contracts, as well as the main foundations of his theory. Full contracts "are contracts where everything that can happen is written down. There may be some incentive constraints stemming from moral hazard or asymmetric information, but there are no unforeseen contingencies." However, in his view, real contracts are not like that, as lawyers have already realized, a long time ago. From this, a crucial issue in an incomplete contract is to know who has the right to decide on the things that are missing in the contract, a right called *residual control*, or *decision right*. In this environment, the contractor puts "adaptive costs" in his price. In this essay, we are dealing with complex, incomplete, and relational contracts.

According to Nóbrega (2009), incompleteness stems from the impossibility (resulting from limited rationality) and high transaction costs of trying to write a complete contract. In this quadrant, it is usually stated that long-term contracts have a deliberate incompleteness, which is consistent with the structure of the contract proposed here. Additionally, Marcos Nóbrega et al. (2009) assert that "These relational contracts are long-term, which can last for decades, and have a different relationship from short-term contracts, and can be described as repetitive games". According to the authors, "For this type of long-lasting relationship, there is ample evidence suggesting that contractors and public authorities generally expect a certain amount of *ex post adaptations*, regardless of how well the project was planned and executed." Egon Bockmann Moreira (2012) goes further, asserting that "in post-modern times, there is nothing more appropriate than to state that security comes from the certainty of change".

Here, we will have the following incomplete markets duly characterized: absence of the insurance market against several relevant risks, notably: inexistence of the insurance market against variation in macroeconomic projections; and insurance against GDP variations that impact demand.

In RTE, the market is mature[2] and has *players* of various natures for all relevant items (EPC, capital, operation, suppliers, etc.). The

[2] Maturity here refers to the existence of a set of players prepared and experienced in bidding for PSP contracts in their sector of operation. The alternative concept of maturity often concerns other institutional capacities, as in Casady et al (2019).

market players have extensive experience and are used to concession bidding processes, being a market that already has an important stock of contracts. These characteristics are in line with a complete market, which is a strong hypothesis for RTE, which simplifies the analysis, but which would need to be relaxed in a non-theoretical real environment – the Real World (RW) environment.

In a similar direction, for Oliver Williamson (2000), "the parties will be faced with the need to adapt to unforeseen disturbances that arise due to gaps, errors and omissions in the original contract". According to the author, "human actors are not only confronted with the need to adapt to the unforeseen (for reasons of limited rationality) but also accustomed to strategic behaviors (for reasons of opportunism)". Thus, in his view, "in this case, efforts should be in the direction of private order to design governance structures, which serve to address such situations are desirable"

Contracting agents' expectations are adaptive in nature (AE). Agents are not intentionally rational but limited in terms of knowability. This cognitive property influences the studies and bids offered by *players* in competitive processes for long-term contracts.

3 The analytical characterization of the practical elements of the real-theoretical environment

In this section, we go down a level in the characterization of the RTE. While the major assumptions (ergodicity, contractual completeness, rational expectations, among others) of the ADW have already been relaxed, we now move on to considerations about a key element of the world we imagined, that is, addressing the construction of the Standard Administrative Contract (SAC), the long-term instrument that regulates the concessions in the RTE.

The formulation of contracts: structuring and starting conditions

In practice, the Public Administration is faced with a dilemma: either prepare a more complex bidding, try to extract information from the bidders, or push the tensions to the contractual execution phase. These transactional costs of the bidding process are abstracted in this essay. There is an initial notional balance where the parties have

information asymmetries and different expectations. Thus, equilibrium occurs when the parties agree to agree with a *gap* in expectations, which presupposes the assumption of risks and, necessarily, the presence of uncertainties. The notional equilibrium would be something like the potential equilibrium of the contract, corresponding to a band of expectations within which the contracting parties expect the behavior of their counterparties to be inserted, even if such expectations are subject to uncertainty and even to a certain level of risk that is tolerated to be assumed *ex-ante*.

In a complex system, decision-making is difficult because: there is no appropriate model to describe the interaction between the variables of the system; the probability distribution does not represent uncertainty about fundamental variables of the model; and how to value the various alternative scenarios (Bayesian process). Under radical uncertainty, economic agents cannot infer: the external context of the system; how the system works and its particularities; and the possible *outcomes*.

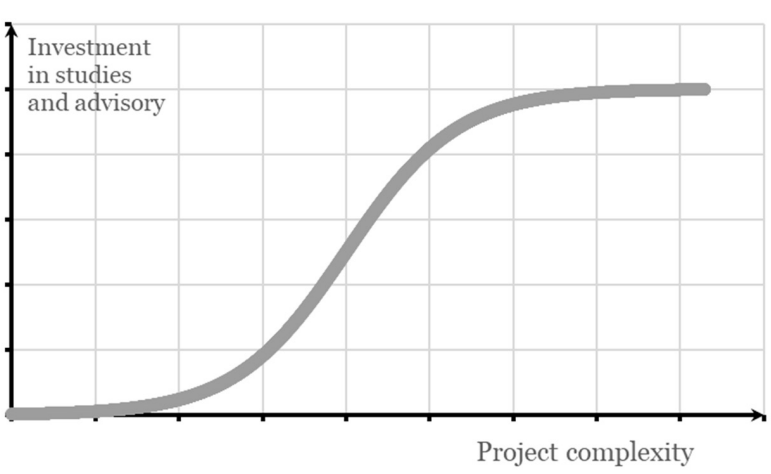
Informational asymmetries, investment in studies, ergodicity and adverse selection

In practice, the presence of informational asymmetries even influences the investment in studies by potential bidders, implying a greater power of influence of the Grantor over the offers presented by the bidders. A bidder's degree of investment in studies is a *proxy* for its risk profile: better-type bidders make adequate investment in studies, usually also reflecting their risk aversion (or risk neutrality). On the other hand, the worst type bidders ("adventurers") are those who underinvest in studies and present proposals less based on consistent estimates, usually reflecting a risk-prone profile (*risk lover*). Frequently, this last type is the one that attributes a high probability of the occurrence of flexible behavior on the part of the Granting Authority in negotiations after the signing of the contract, that is, it believes in the success of claims for economic and financial rebalancing or contractual adjustments that reduce its obligations or increase its gains in relation to the contracted scenario.

It is possible that the investment function in studies, in relation to the complexity of the project (informational asymmetry involved) presents a logistical format for risk-averse bidders. This is because investments in studies for less complex projects should remain at a

minimum level. Above a certain level of complexity, investment in studies tends to increase significantly. Very high levels of complexity tend to find a ceiling of investment in studies.

Figure 3 – Theoretical relationship between investment in studies and project complexity for risk-averse bidders



Source: elaborated by the authors

Another aspect of the discussion is that the technical and economic-financial advisors of the structuring of projects on the public side often observe that there is a variety of degrees of use by the winning bidder of the feasibility studies presented by the Public Administration, when they are made public. Clearly, the level of informational asymmetry is relevant in the evaluation of this degree of use: for technically more challenging projects (*greenfield* projects with sophisticated engineering), the informational asymmetry is higher. For *brownfield* projects, or with more consolidated and less specific technical solutions, the informational asymmetry is relatively more modest.

The following figure illustrates how, in practice or typically, the relationship between informational asymmetry and contract size implies different levels of investment in studies by potential bidders. In the construction of this figure, it is important to assume risk-neutral bidders, that is, potential bidders who do the math and rationally evaluate their participation in auctions to the extent of their capacity and do not behave like the "adventurous" type. Different levels of risk

propensity would change the very shape of the propensity curve to invest in studies of each bidder (graph shown above), while there are elements that would only shift the curve to the same risk profile, with potential relevant non-linearities in this relationship when there is no neutrality in relation to risk.

Figure 4 – Relationship between informational asymmetry (project complexity) and private investment in studies, risk-averse bidder

	Contract size	
Review of studies is the basis of the contract	High investment in studies and external advisory	Informational asymmetry
The studies themselves are the basis of the contract	Low investment in studies (usage of public studies)	

Source: elaborated by the authors

The figure above illustrates the idea that, in the case of small contracts, with high informational asymmetry, the referential feasibility studies presented by the Public Administration tend to be used by private parties as a basis for the construction of their proposal. In this way, the level of ergodicity becomes even lower, since not even the bidders will have invested in their own studies, based on the numbers that the structurer proposed – under hypotheses that admit a certain degree of methodological discretion in its construction, reflected in *ad hoc premises* that will have been adopted by the advisors. It can be proposed, therefore, that the smaller the project, the greater the deviation from reality in relation to the ADW and even in relation to the RTE, configuring a RW that is not quite ergonomic for most projects.

On the other hand, in large contracts with high informational asymmetry, the investment in studies will be high on the part of the bidders, potentially generating more responsible offers, which could lead some analysts to the proposition that the RTE would have a more effective validity, or that mainstream Administrative Law finds more application – which we contest, because the nature of the estimates does not allow the predictability of results from the *ex- ante calculation* held for the auction, also admitting numerous premises that involve not only risks, but also uncertainties.

Furthermore, even in the case of large projects with high informational asymmetry, as already mentioned above, the problem

here is different, of adverse selection, which is another real manifestation of the market failure of informational asymmetry. It is a matter of considering the risk aversion curve of each bidder in relation to the level of informational asymmetry of the project, and of predicting which bidders will be effectively selected by the Public Administration. If the object has been priced aggressively (already counting on potential efficiencies at the frontier of the underlying market), the most efficient bidders may be on the edge of the decision between bidding or not bidding and will eventually exit the process. Bidders with a greater propensity for risk and less technical capacity may win the bidding process based on aggressive estimates related to the practice of post-contractual opportunism. This gives rise to a discussion about the selection of bidders, in relation to their typical risk aversion curves. The present non-linearities, therefore, imply even more complex levels of ergodicity than the *mainstream* theory of Administrative Law would suppose when it considers that bidders are able to anticipate relevant information at economically reasonable costs for the formulation of assertive bids.

Economic Institutions of Capitalism: The Hierarchical Governance of Long- Term Relational Contracts

In Williamson's (2012) logic, organizations offer a governance logic that positions them as an alternative to the governance of markets, internalizing several decisions whose transaction costs of execution by market mechanisms (*arms' length transactions)* would make excessively expensive. Integrated contracting, in the firm's hierarchy, can produce the incentives for the construction of specific assets.

It would be very stimulating to establish, along the lines professed by Williamson, a parallel – already touched on by him in his seminal work "The Economic Institutions of Capitalism" and in previous articles, of the hierarchy of organizations with the hierarchy of administrative infrastructure contracts. In an easy analogy, long-term infrastructure contracts are a governance alternative in relation to the respective markets. In fact, in Chapter 13 of his classic "The Economic Institutions of Capitalism", what we see is precisely this form of organization, which defines one of the most powerful contributions to the understanding of the capitalist system in the way it unfolds today. Williamson described the internal power of hierarchy, typical of organizations or

corporations, in decision-making in place of the market. The decisions made, within the hierarchy, enjoy some freedom in relation to the market and, ultimately, such decisions are tested by the market at some point, determining the life and death of hierarchical organizations. The degrees of freedom of hierarchical decisions, often without any sense in terms of economic efficiency, is the aspect that attracted the attention of Williamson and a whole strand of economic literature from Ronald Coase to current authors.

It is within the scope of Value *for Money* studies, traditionally used in the choice of the form of contracting long-term PSP contracts, that the decision is made between unified governance in the form of a single long-term concession contract *versus* the bundle of contracts administered by the Public Administration, often referred to as the Traditional Model (TM), when using the Public Sector Comparator (PSC) approach. In other words, it is the essence that, within the scope of Value for Money) VfM, the two governance structures, that of the contract and that of the bundle of contracts, are effectively compared, which corresponds very much to the ingenious dichotomy of the Theory of Transaction Costs in Oliver Williamson.

In practice, it does not seem to be an exaggeration to state that VfM studies, especially in less mature jurisdictions, are quite poor and simplistic in view of the relevant analysis of the transaction costs involved. Often, these studies follow an almost financial logic, without observing economic aspects of great magnitude. This may be linked to the requirements of control agencies, which often prefer numbers that result from such simplistic quantifications to more in-depth studies whose quantitative parameters would involve high consulting costs and eventually even fieldwork. It is very easy for controllers to compare these numbers within the range of vision than to enter complex considerations that involve high abstraction and methodological discretion in their formulation3. Obviously, this situation implies sub-optimal contracts for society.

Adding the lessons of Rafael Véras de Freitas (Freitas, 2021 and Marques Neto and Freitas, 2016) and without losing this same context

[3] According to Nóbrega and Oliveira Netto (2022), attempts by control bodies and courts of auditors to rebalance complex, incomplete, and long-term administrative contracts often entail the intention that things be modified to theoretical assumptions and not the other way around.

of the Theory of Transaction Costs, it is possible to incorporate the idea that a concession contract is a model of endogenous regulation, through which a system of incentives is established that aims to balance all the interests entangled in the concessionary legal relationship (of State, of the government, of the concessionaires, of the users), within the scope of a network of connected contracts (concession contracts, financing contracts, private contracts of the concessionaires, contracts with users, among others). This idea of endogenous regulation is related to Oliver Williamson's construction, adding the proposition that this governance is established precisely to replace market governance, which, necessarily conducted by the Public Administration, faces high transaction costs that can be eliminated or significantly reduced by bringing together the entire contractual bundle in a single large long-term contract. called Concession. According to this proposition, transaction costs are passed on to the governance structure of the Special Purpose Vehicle company (SPV). It is, therefore, one of the main sources of Value for Money, curiously a source that is often ignored by the sieve of the control of the Public Administration in several non-mature jurisdictions.

The Standard Administrative Contract (SAC) agreement setup

For the purposes of this essay and the adequate construction of its results, it is necessary to describe an abstract figure that we will call from now on the Standard Administrative Contract (SAC). It is necessary to start with a hypothesis about the distribution of risks in the SAC, as well as other elements of its structure that are relevant to the *system of ex ante* incentives that it establishes, to address the *ex-post behaviors* that we can predict in the face of the prospective scenarios that will be proposed here.

The SAC under discussion in this essay is based, in general, on the golden rule of allocating relevant risks to the parties that have the best to bear them, identifying such risks and their impacts and attributing them to the party most capable of managing not only the risks, but also their impacts. However, some sub-optimal allocations are assumed to be determined by institutional aspects typical of non-mature jurisdictions.

According to Teixeira Junior, Nóbrega, and Cabral (2021), the risk matrix is a risk and safety management technique in projects that is often used to support decision-making. For these authors, "the fetish around risk matrices, especially among jurists, seems to be aggravated

by a lack of knowledge of the risk/uncertainty distinction – in law one almost never goes beyond Frank Knight (1921), who is an important reference, but is not enough to understand, with the necessary depth, the complexity of public procurement in contemporary society".

According to Rafael Véras de Freitas (2023), the definition of the risk matrix begins in the structuring phase of the project, through the analysis and detailed identification of risks, which will guide the preparation of the contract. To do so, the individual characteristics of each sector of the infrastructure must be kept in mind, which makes it impossible to try to create closed allocation models (*one-size-fits-all*). It is also necessary to consider the individuality of each contract, for example: its location, nature, assets and the services involved. Despite the foregoing criticism, the SAC provides for a SAC risk matrix that would be delimited as follows:

Table 1 – SAC risk matrix

Risks	Public partner	Private partner
Operational risks		X
Investment risk		X
Capital risk		X
"Manageable" demand		X
"Unmanageable" demand		X
Force majeure	X	
Prince Costume	X	

Source: elaborated by the authors

Demand risk was analytically divided into two parts. The first is "manageable" demand, whose risk refers to the impact of the dealership's own actions on customer attraction, such as a deterioration in quality that will lead to a reduction in demand. This distinction is neutral in this test, since both risks were allocated, in the SAC, to the concessionaire. We only present the two sources of demand variation separately in the risk matrix to emphasize our analytical choice that any variation in demand will be attributed to the concessionaire, who must assume not only the risk related to his own ability to influence the demand of his enterprise, but also the uncertainty related to national and international

economic fluctuations. This is uncertain, since macroeconomic scenarios invariably show a low predictive capacity for the future. In fact, this uncertainty present in our SAC will be the great source of involuntary ruin of the concessionaire, as well as the great source of its involuntary economic and financial success in the opposite scenario. It is interesting to note that, as ITF (2017, p. 21) observes, sovereign solvency itself can be threatened by this type of risk allocation, as occurred in the case of Portugal in 2008.

Note that the perception of risk changes over time because the distribution of probabilities changes. In the SAC established herein, the risk matrix is frozen for the entire duration of the contract, except when renegotiated bilaterally.

Capital Structure and Agency Conflicts in the Standard Contract

Informational asymmetries are market failures with a strong impact on the financing market. The standard project is funded by a variety of equity and third-party capital sources, among which agency conflicts could often be expected to occur. In the case of debt instruments, the participation of debentures is frequent, whose holders meet in debenture holders' meetings, with varied investor profiles, with low willingness to approve restructuring. However, a supermajority *of creditors mechanism is not allowed*, along the lines of the sovereign mechanism once proposed by Anne Krueger. The very design of the mechanism contains an *ex-ante* manifestation of agency conflicts: when the debenture holder enters the project, it probably evaluates it as fixed income, given that the probability of the adverse event is quite low. Such a reading stems greatly from the profile of the capital market itself, which consists of a mechanism of "breaking volumes" to sensitize the risk aversion curves in the most risk- prone range. This consideration of the capital market is relevant because it influences the cost involved in the bankruptcy of the concessionaire or in the debt restructuring itself in the event of an adverse scenario.

Independent Regulation and Verification

Regarding the choice of regulatory models, Rafael Veras de Freitas and Frederico Turolla (2021) point out that "(...) The tariff regulation of each project, instead of adopting economic or legal preconceptions,

should actually be customized considering concrete aspects, such as a mechanism design, which considers, among other aspects:

(i) the institutional capacity and neutrality of the sectoral regulatory agency, taken prospectively in terms of the robustness of its design in the face of the expected pressures in the political cycles of the relevant horizon, a topic that, in practice, is captured by the regulator's reputation.
(ii) a remuneration model for the concessionaire that is compatible with the expectations and obligations of investment and performance conveyed in the contractual instrument, as well as with the expected percentages of own and third- party resources, which will be contributed to finance the exploitation of the assets.
(iii) a dialogued procedure for economic and financial rebalancing, in which the granting authority and the concessionaire have incentives to cooperate, notably in situations of uncertainty (not priced in the structuring of the project).
(iv) a non-exhaustive risk-sharing, providing for openings for adaptability.
(v) a regime endowed with predictability regarding the discount rate, to be applied, for rebalancing purposes, as well as parameters for the disclosure of information and objective criteria for the intersection between the Originating Cash Flow (and the Business Plan) and the Marginal Cash Flow, wherever used.
(vi) the detailed characterization of the unbalancing event, leaving little room for disputes of the "Hermeneutics of economic-financial balance".

For simplicity and to leave aside the discussions about the reputation of the regulator as well as the other complexities pointed out above by Rafael Veras and Frederico Turolla, it is assumed here that the SAC has a high regulatory risk and, for this reason, the project structurer opted for the recommendation of applying the Contractual Regulation (CR),[4] or *regulation by contract*, as opposed to Discretionary Regulation

[4] According to Rafael Veras de Freitas and Frederico Turolla (2021), Regulation by Contract, in turn, takes place by establishing, *ex ante*, after the auction, the costs that will be incurred by the firm. In summary, this type of contractual regulation establishes, from the initial modeling, a variation in the price obtained

(DR).[5] In terms of two known paradigms, presented in the following Table, the SAC is inserted in the context of the French Model.

Figure 5 – French model and North American model

French Model	North American Model
Administrative Contract (pact) *Pacta sund servanda*	Capital
Economic and Financial Rebalancing	Fair Remuneration
Civil service	Public utilities
Administrative Legal Regime – administrative prerogatives	Regulation to mitigate market failures

Source: elaborated by the authors

In this contract, the remuneration was fixed *ex ante* and is valid for the entire contractual term of 30 years. According to Rafael Véras de Freitas (2021), a matrix of contractual risks and obligations is scrutinized here, using prospective and probabilistic judgments, which will make up the economic and financial balance of the contract. Hence, if a risk allocated to one of the parties materializes, but which produces economic and financial impacts on the other, the right to contractual rebalancing of the contract will arise.

This point is interesting because, as Marcos Nóbrega et al. (2009) assert, if the Brazilian case were to be taken as a reference, "although the traditional doctrine of administrative contracts originates in French law,

within the scope of the bidding procedure: (i) by the annual adjustment; (ii) the establishment of an adequate contractual risk matrix; (iii) by the establishment of qualitative levels of services; (iv) the provision of investment obligations, among other contractual arrangements. Through this modality, it is established that the formation of the "price" will take place through the exploitation of the natural monopoly, in the face of competition for the market (Competition for the Market).

[5] According to Rafael Veras de Freitas and Frederico Turolla (2021), discretionary regulation aims to establish a cost structure for the regulated agent, to be remunerated by a certain rate of return, or prices that are compatible with the underlying costs in an efficiency incentive regime. Using such a methodology, it is possible, for example, to establish a remuneration for the investments made and/or planned (Capital Expenditure – CAPEX) and for the operational costs incurred and/or expected (Operational Expenditure – OPEX). It is a type of regulation that has as its primary objective to prohibit the monopolistic agent from charging supracompetitive prices, among other behaviors associated with market failures, through the emulation of a competitive market (Competition in the Market).

the jurisprudential practice of contract rebalancing, due to the natural advance of the market, is more nourished by English and American theories". And they conclude "although Brazilian administrative law is still very much influenced by the matrices of French law, the modern concepts that are associated with the operationalization of the economic balance of concession contracts are not derived from that law". In another passage, the authors are emphatic, stating that "the concepts of North American jurisprudence are mixed in the operationalization of regulation by incentives, and this was finally adapted in the form of article 37, XXI of the Constitution with article 175 and later in Law No. 8,987/95, then also in Law No. 8,666/1993, in Law No. 11,079/04 and in Law No. 14,133/2021".

The Technical Regulation is carried out by an Independent Verifier. For simplicity's sake, we assume that this verifier, hired by the Granting Authority, enjoys the necessary independence and performs the technical, impartial verification of all parameters that involve informational asymmetry in the provision (quality, etc.) and, therefore, fully eliminates these informational asymmetries between the contractual parties in the technical aspects of the relationship. In more direct words, this aspect of the contractual relationship will not be problematized in this essay.

Regarding dispute resolution, the dispute resolution mechanisms available at SAC provide for a Contract Monitoring Committee (*dispute board*). Judicial Reorganization is not available, but out-of-court restructuring is available for adverse contractual events.

Insurance available

For Marques, Ogasavara, and Turolla (2022), "in principle, an informational asymmetry causes contractual risks in complex infrastructure projects. This is a market failure that will henceforth be identified as primary informational asymmetry (PIA), which is often associated with an agency problem. The PIA, in a complete market in the ADW, would be mitigated by instruments such as the Surety Bond, which would eliminate the PIA and allow efficient contracting". The same authors point out that "despite the fact that guarantees are a response to potential problems of moral hazard and adverse selection (Giuffrida & Rovigatti, 2019), when institutions do not offer adequate support against opportunistic behavior, transaction costs are high.

In other words, in markets where the guarantees of project completion are not effective, the Surety Bond no longer has the expected effect of generating a more complete market, deviating from the Arrow-Debreu paradigm. *Ceteris paribus* contractual opportunism, the Surety Bond is a mitigator of the PIA between the policyholder and the insured. When opportunism is inserted in the contractual environment, this mitigation of the PIA by the Surety Bond is reduced or compromised". However, the authors verify that the mitigation of the PIA through Surety Bonds is compromised by contractual opportunism in emerging markets such as Brazil and that the primary agency problem (PAP) in Surety Bonds can only be mitigated through market adjustments and governance structures.

4 Scenarios and states of nature

In this section, we specify some possible scenario *outcomes*. For simplicity, we assume diligent behavior by the contractual parties regarding their responsibilities, but we assume that the states of nature can alter their results. Therefore, we are dealing with exogenous events that affect the results of Private Sector Participation contracts. Three scenarios are assumed with equal probabilities of one-third each:

- Benign scenario: the economic scenario materializes in such a way as to increase the demand for the object of the contract and, directly or indirectly, this effect is reflected in an improvement in the concessionaire's revenues, as provided for in the Contract Risk Matrix.
- Base scenario: *business as usual* (BAU) of the contract, which not only follows exactly as agreed, but also the best economic scenario forecast available at the time of the bidding process materialized perfectly during contractual life.
- Adverse scenario: the economic scenario shows materialization of the risks allocated to the concessionaire, notably through demand, adversely and significantly affecting its revenues. In such circumstances, there is a high probability that the concessionaire will enter a situation of bankruptcy with the abandonment of the contract.

Table 2 – Scenarios (states of nature)

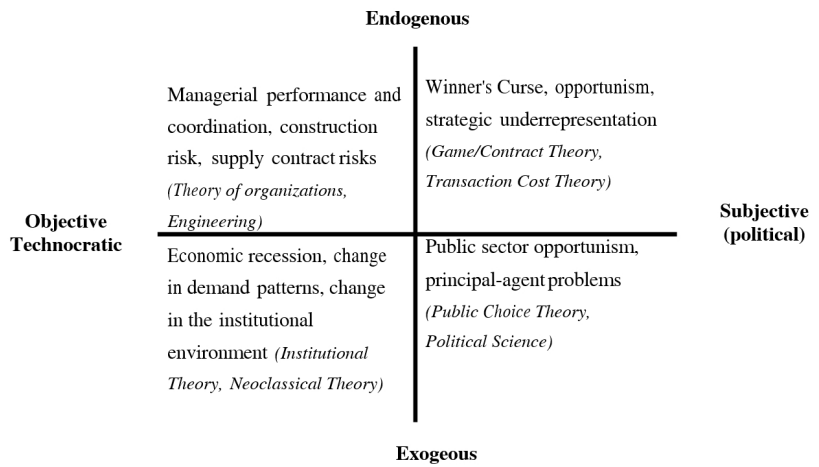
	Benign	BAU	Adverse
Financial situation	Return significantly higher than the contracted	Return equal to the contracted	Return significantly lower than the contracted
Solvency	Slack	Solvency	Insolvency

Source: elaborated by the authors

Exogenous events as causes of contract renegotiation

It should be noted that the construction of scenarios presented here concerns exogenous events. According to the ITF (2017) classification of the typical categories of renegotiation of public-private partnership contracts in a broad sense, we are talking about economic recessions, for example, or changes in demand patterns, as well as changes in the institutional environment that affect contracts, and their effects here are objective (technocratic) and the main literature treatment of these topics has been observed in the fields of institutional theory and economic theory Neoclassical.

Figure 6 – Causes of contract renegotiations and relevant research fields



Source: IFT (2017, p. 20), Chap. 1, by Dejan Makovsek, Stephen Perkins, and Bjorn Hasselgren

Consequences of the materialization of the adverse scenario

Of interest to our discussion, there is at least one scenario in which the concessionaire faces great difficulties in the face of a risk that it has consciously assumed, and the concessionaire is involuntarily led to a circumstance in which the Special Purpose Vehicle (SPV) can be taken to bankruptcy, which imposes several types of burdens on the public partner. This is the Adverse Scenario, which, evaluated *ex post*, is the main source of ex ante disincentive to potential bidders of other standard contracts. It is necessary to evaluate the *ex-ante incentives* that are established based on the probability of one third of materialization of this scenario, which is the subject of the next section.

5 Restoration of contractual stability in the adverse scenario

This section is dedicated to the issue of restoring contractual stability in the context of the materialization of the Adverse Scenario.

Amir Klink's little boat problem

The famous navigator Amyr Klink completed the first crossing of the South Atlantic, from Africa to Brazil in a 102-day trip in a rowboat, advancing more than 70 km per day[6]. The crossing required scientific rigor in the three years of planning the feasibility of the route in a rowboat, with a thorough evaluation of the favorable wind and current regimes, avoiding high pressure centers. The navigator had the information that one of the most common failures of the many previous navigators whose lives were cut short in unsuccessful attempts at a similar crossing would have been that their boats would have capsized in waves up to 10 meters high.

In addition to choosing the least risky routes, developing a dewatering-based feeding program, and avoiding shark attraction by eliminating mollusks that the vessel ends up developing, Klink reportedly sought to build a capsize-proof boat, but was advised that this approach would be fatal to his project. His academic advisor, Naval Engineer José Carlos Furia, informed him that a wave can capsize even

[6] The information in this section is based on the video "Amir Klink: 100 days between the sky and the sea", by Globo Ciência, available at: https://www.youtube.com/watch?v=99vd7MCUUJI.

larger boats. There would be no chance that a boat would not capsize in the conditions of the Atlantic crossing. The only effective way to get to the other side would be to build a boat that, when capsized, would return to its original position, a boat that could be "uncapsizing" internally without the need to go underwater to turn around, with characteristics of the toy known as Stubborn John. Ballast tanks were used to lower the vessel's center of gravity.

In an analogy with long-term contracts subjected to large waves (adverse scenarios), the theoretical devices that foresee the possibility of returning the boat to its original position are well characterized and their practical application should be based on theories of strategic interaction (Game Theory). However, institutional elements can mark this solution, in a perfect (theoretical) or imperfect way[7]. Thus, one can enunciate an initial version of Amir Klink's boat theorem: *if there is an ex-post way to return the boat to its original position, the ex-ante incentive to cross the Ocean is positive.* In other words, in situations of change from the conditions originally envisaged, there will be an impact, but it will be necessary to restore contractual resilience.

The role of the Theory of Unpredictability

The Theory of Unpredictability is an evolution in relation to the clauses of the *rebus sic stantibus type*, which only admit the termination of the contract, in the event of the occurrence of an unpredictable situation, which would result in excessive burdensomeness for one of the contractual parties. According to Rafael Véras de Freitas (2021), with the advent of the Theory of Unpredictability, it was realized that it could be less onerous to proceed with the contract – even if on new bases – than to terminate it. Thus, its objective is to minimize the effects of a contract that has had its economic support changed in relation to its conditions.

Economists in Economic Analysis of Law are interested in the possibility of "efficient breach", that is, when a contractual party prefers to pay the penalties for the breach in an advantageous way in relation to the continuity of the contractual relationship. It is possible that the nature of the *efficient breach* has a more direct application to short-term

[7] An example of an institutional device that seeks to "turn boats" of problematic contracts is that of Brazilian Law number 13,448 of 2017, which did not result in adequate rescues.

contracts and that such a provision loses potency in the direct function of the contractual term. This is because the voluntary termination of the long-term agreement has important indirect costs and can give rise to a negotiation in which the passive party finds itself in a contingency of giving in and offering a positive value whose magnitude reflects its willingness to continue the contract without a continuity solution in view of external costs to it (procurement cost of a new contract, transaction costs, reputational costs involved, etc.).

Therefore, the emphasis on long-term contracts falls on remedies for the continuity of the contractual relationship, and not on the search for a rupture in an economically efficient way for the parties. This means that there is a rationality in the preservation of inefficient contracts or those that have reached the adverse scenario. Naturally, it is expected that this finding will affect the *ex-ante behavior* of the bidding agents to the standard contract, so that they should already price, in the starting conditions, a bargaining power in the renegotiation of the contract.

Elements of empirical evidence

The *trade-off* between the gains of contractual flexibility and the risk of opportunistic renegotiations was examined by Athias and Saussier (2010), according to ITF (2017). These authors identified that highway contracts characterized by a high degree of uncertainty in traffic flow forecasts tend to be less rigid and we provide strong evidence that the characteristics of the contracting parties affect the design of the contract. In particular, an increase in the number of previous interactions between contracting parties decreases the rigidity of the toll adjustment clause used. These results confirm and emphasize the importance of trust in these agreements, between a public authority and a private operator. They also provide evidence that institutional environments impact contract design, so contracts drafted in a strong institutional environment are likely to be more flexible, or at least more adaptable. Thus, concerns related to economic efficiency, as well as those related to politics, play an important role in the design of PSP contracts.

Ex-ante Incentives for Long-Term Imperfect Hiring

The relational contract has an intrinsic connection between the parties due to *sunk costs*, which also enables opportunistic behavior. Agents act with complex strategies, creating, adapting, copying, reacting.

The objective, in this case, will be to continuously preserve the contract, considering the high transaction costs involved in the breach of contract. This is different from mere utility/profit function maximizing agents.

If this evaluation above is correct, it will be incorporated into the pricing of the *ex-ante bids* that are stipulated, based on the starting conditions perceived in your bidding. In other words, the potential concessionaire will assume that, with the probability of one third of the most adverse scenario materializing possible, there will be an opportunity for contractual renegotiation, in view of the high cost that would be imposed on the Grantor if it allowed the concessionaire to go bankrupt.

This opportunity for renegotiation does not depend on the allocation provided for in the contractual Risk Matrix, since the occurrence of an undesirable scenario will give rise, with a high probability, to a renegotiation of the contract. Thus, the idea arises that the objective distribution of risks provided for in the Risk Matrix is not absolute in all scenarios, and there is, therefore, a subjective perception of the concessionaire about the search for contractual resilience in cases of adverse scenarios. This would explain, for example, the evidence of José Luiz Guasch (2014) on the low frequency of contract cancellation or concessionaire bankruptcy in the Latin American region (less than 5%). Our hypothesis adheres to the stylized facts observed in the Latin American continent, a region that does not stand out for its greater institutional maturity among emerging countries and that typically follows the Roman- Germanic legal regime, known for its less contractual flexibility in relation to the customary law regime.

Thus, this essay allows us to state the Imperfect Contracting Stability Theorem or the Klink Boat Theorem (KBT):

> *In a non-Arrow Debreu environment, with limited existence of liquid markets for hedging certain risks, in a non-ergodic environment and with limited rationality of the agents, in the presence of market failures typical of informational asymmetry and ownership issues, the incentive system in force will lead to the ex-ante contracting of long-term concessions if there is adaptability for contractual renegotiation in the event of the materialization of the most adverse economic scenarios to the contract.*

The KBT stated above is the main construction derived from the effort made in this theoretical essay. A policy lesson derived from this conclusion is that, in line with Nóbrega (2022) and based on Klein

(2013) and Macneil (2000), long-term contracts understood as relational give rise to the need for effective cooperation between contracting parties. Relational theory seeks to analyze the factual context of each contractual relationship in an ample way, not restricting itself to the measurement of transactions considered individually. Thus, the parties, during the execution of the contract, and over time, change their strategic expectations as they acquire more experience and information. This determines the need (and usefulness) for permanent dialogue between the parties and the prospect of frequent renegotiations to align the interests and expectations of the parties.

The relational character of the contract determines a new look at the administrative contract. The classical canons also point to the idea that in the administrative contract the will of the parties is antagonistic. Now, such a contract, economically, could not and will not prosper. It is not a watertight agreement, marked by the iron will be established at the time of its execution. The contract is a dynamic instrument because economic and political conditions (the so-called "state of nature" in literature) change all the time.

Thus, adaptability in contractual management is called for, particularly in the face of adverse scenarios regarding the main contractual risks. This could imply the design of risk matrices imbued with this necessary adaptability. A simpler version, and perhaps effective in this sense, is the introduction of demand variation bands that are the responsibility of the concessionaire, particularly when the source of the demand variation stems from supervening facts in the macroeconomic, institutional or even health environment – the latter aspect considering the recent lessons of the COVID19 pandemic. Such contractual provision isolates, even with pre- established cuts at discretionary levels, the large demand risks arising from supervening facts that are almost invariably exogenous to the discretion of the concessionaire's actions, possibly leading to *ex ante offers* less subject to the adverse selection of bidders.

Of course, the contract structurer who listens to our advice should keep in mind the possibility that contractual adaptability encourages opportunism. This could be true if the proposal were for broader flexibility. However, it is proposed here that the absence of adaptability in the structuring of contracts is a self-deception, since, in practice, the costs of rupture will almost invariably lead to unforeseen renegotiation. It is better to foresee and deal with it technically than to face it without contractual rules that support such renegotiation.

We propose, therefore, that there are welfare gains in introducing, in the *ex-ante* evaluation, explicit contractual adaptability, in relation to the status quo that privileges rigid rules that are, in practice, difficult to comply with because they do not satisfy the interests of both contractual parties (and often of third parties, as financiers). This avoids uncontrolled *ex post* results which, because they are not regulated, encompass more potential for contractual opportunism of the parties than a regulated flexibility.

It should be noted that, in this article, the theoretical essay focused on considerations on exogenous aspects leading to contractual renegotiation, but a similar reasoning could be extended to other items, even endogenous, considering the relevant specificities in their context.

In the following section, we offer a discussion of aspects most applied to non-mature jurisdictions. We also discussed the relaxation of assumptions for the construction of more realistic models for more specific institutional environments, both national and sectoral.

6 Discussion of the initial implications

The incentive system described under the logical premises set forth in this article is theoretical and does not apply to any practical case. The construction carried out here draws an abstract world, in which the offer of long-term infrastructure contracts would only lead to effective contracting if it is clear to potential bidders that there is a high probability of renegotiation of the economic bases on which the contract will be based, particularly in the face of adverse scenarios. As practical evidence supporting this high probability, Guasch et al (2014) found that governments in the Latin American region do not usually cancel contracts or allow operator bankruptcy, and in this region less than 5% of the contracts observed in the authors' sample were canceled. This discussion could be brought to the reality of specific countries and specific industries in these countries, with a relaxation of assumptions.

An additional element, to be relaxed in future work, is the distribution of the concavity of the risk aversion curve of the universe of potential bidders. If the Risk Matrix contains a set of objective elements that guide the discussions during the life of the contract, in the event of an Adverse Scenario, or even lenient behavior of the concessionaire in relation to its costs or other elements of its performance, it is possible that the public partner will still be willing to "save" the contract by

giving in rebalances that are not exactly in line with the risk matrix. This possibility could be considered as a set of "subjective" elements of the Risk Matrix.

The *ex-ante* behavior of the most risk-prone bidders tends to price this possibility, even more so when the contract history authorizes this evaluation. This perception may lead to the traditional allocation of operational risks to the concessionaire may not be perceived by bidders as "writing in stone". In other words, bidders who are more prone to risk tend to consider these positive probabilities of *bailing out* in the very formation of their competitive bid, which is aggravated when there is a possibility of transfer pricing, for example, due to insufficient quality of regulatory accounting or of the contract monitoring structure itself. The project structurer and its advisors should be aware of this fact.

There are several other elements that can be relaxed to account for real situations, including those that are country-specific in nature and, within these, those that are sector-specific in nature. For example, we do not assume, in this article, the strong opportunism on the part of the Public Administration, the potential adverse selection of players, the effects of the way contracts are accounted for in the public budget, among several other issues that should be left to a future discussion.

External validity

The external validity of the theoretical framework presented here resembles, as a general idea, the applicability of the well-known Modigliani-Miller (M&M) Theorem[8]8 on the choice of capital structure: even without knowing its practical validity, much of the specialized literature starts from M&M as a paradigm and relaxes a set of practical aspects of reality to obtain scientific conclusions. We hope here to have presented the general lines of an abstract Theorem capable of formalizing incomplete long-term contracting in infrastructure markets, but aware of the limitations of the practical applicability of this Theorem without the due relaxation of strong assumptions that have been stipulated here to account for a general case.

The institutions of developing countries and the sectoral nuances in these countries constitute a true framework of *insights* into aspects

[8] See the biography of Franco Modigliani (2004) translated into Portuguese by Frederico Turolla and Marcio Ferrari.

to be relaxed for a realistic approach to contracts from a theoretical perspective. In terms of countries, Brazil's federative structure offers a unique richness compared to the unitary reality of several other countries in the same region of Latin America, as well as the national and subnational control procedures uniquely condition the development of contracts in this country. In terms of sectors, it is difficult not to notice that local contracts for urban mobility services under tires or solid waste typically present marked differences in relation to national contracts for telecommunications or electricity services. All these nuances and idiosyncrasies are objects of research that, based on the general paradigm provided, would gain more scientific treatability.

Another aspect of high relevance to be observed concerns the logical construction of this article. As an initial effort of reflection and work in progress, the arguments were presented and chained in a logical-deductive way, but without resorting to the necessary formalization. An additional challenge posed to academics, particularly those in Economics, therefore concerns the construction of the formal structure of the theorems posed here. The authors propose to move forward in this direction, but they are aware that ideas are assets that are to some extent non-rivalrous[9]9: they would appreciate that, from the preliminary publication of this first theoretical effort, it would be possible to collaboratively reach the range of increasing returns to scale in the function of knowledge production on infrastructure contracts in emerging countries.

Consequences on the contractual negotiation space

This essay has important consequences on the definition, albeit in theory, of the extent of the space of negotiating adaptability (as opposed to simple contractual flexibility) attributed to long-term administrative contracts. It is common that, in traditional Administrative Law, this space is considered null, that is, negotiation is not defined as a tool for adjusting contracts. The Brazilian jurisdiction offers an eloquent

[9] Romer (1990) reinforced the path of literature in this sense, with important developments on the understanding of the potential and limits of the non-rivalry of knowledge in the theory of economic growth. For a recent consideration of links between macroeconomic and microeconomic aspects in this theory, see Hayashi, Rothengatter, and Ram (2021), in Part V: Research and Innovation for High-Speed Rail Development in Developing Nations Part VI: High-Speed Rail for the People.

example. According to Mauricio Portugal Ribeiro[1010], "in our legal theory, because of the idea that the public interest is unavailable, everything that involved negotiation was, at least, non-legal, if not extra-legal. This contractual rigidity may serve, under certain conditions, to standardize the conditions of competition, so that the contractor does not find, in its contractual performance, a set of rights and duties different from the one that was tendered. However, it does not serve the resilience of the contractual relationship.

It must be said that this essay does not offer the means to make the space of contractual flexibility more flexible, in an indiscriminate manner. Here, the RTE presupposes a SAC in which, under an "Adverse" economic scenario, in which there is a source of extremely negative, but involuntary, results from the concessionaire, there is a situation of contract collapse.

Looking ex *ante*, the project structurer would be able to anticipate the occurrence of the scenario (subject to the probability of one third) and establish a contractual rule capable of limiting its effects. In this case, the structurer could address this risk through demand bands. In the theoretical case of the trial, in fact, the demand bands would suffice, if applied to SAC, to solve the ex-*ante problem*, avoiding the occurrence of adverse selection.

It should be noted that this is only resolved *ex ante* by the diligence of the structurer because the assumptions we use here are restrictive. We did not consider several real situations, such as the opportunism of the Granting Authority that could occur in the face of systemic risk, since adverse scenarios often affect not only the myriads of contracts signed, but even the fiscal health of the Public Administration and service users, which reduces the willingness of the Granting Authority to accept variations in tariffs and considerations. Discussing a more realistic scenario, which can be effectively applied to real jurisdictions, requires relaxing additional hypotheses belonging to the real world. Thus, by relaxing these additional hypotheses, it will be possible to propose new mitigators for adverse scenarios. We must, however, recognize that this considerably increases the complexity of the exercise, and should be left to a future theoretical effort. In this work, we will be satisfied if we have offered a work *framework* that allows these future developments until

[10] See Course on Economic and Financial Balance of Concessions and PPPs 2015 - 2 available in https://www.youtube.com/watch?v=NZzEERvYf6Q, accessed on 5/21/2023.

a more effective theory is reached for the real cases, applied to each jurisdiction and each sectoral environment.

The role of Economic and Financial Rebalancing

The bidding of the contract is a mechanism for revealing information about the concessionaire that presents the best condition to the Granting Authority, among the potential concessionaires of the desired type. The universe of potential concessionaires is defined by the bidding requirements, to restrict the bidding process to holders of certain conditions: attestation as a *proxy* for previous experience; minimum level of economic and financial capacity, proven through objective requirements; comfort of the insurance or banking market, through guarantees or bidding and performance guarantees; among others. Within the universe of bidders who meet the stipulated requirements, the bidding "informs" the Government which bidder offers the greatest advantage from the exclusive point of view of the Public Administration. In RTE, this process unfolds in a very objective way; however, in the Real World, the bidding processes (forms of auction) are designed to improve the mechanisms for revealing this information.

If the bidding is a mechanism for revealing information, the contract is an instrument for processing information, distributing it among the parties and trying to be captured by the third-party verifier (such as a court of auditors or the Judiciary). In the RTE, the Economic-Financial Rebalancing (EFR) of the contract can, therefore, be a "shock" that is given to the system to rescue it to its original entropy, trying to remove the damage that noise (limited rationality, external shocks, excessive control, etc.) can cause in the contract. Obviously, in the Real World, the presence of contractual opportunism and the information asymmetries present (such as the greater capacity to hire sophisticated legal, technical and economic- financial advice) can confer a different nature to the EFR process.

From ADW to RTE and the Next Step: The Real World

The next step of this work requires a more significant advance towards the real world (RW) of non-mature jurisdictions. These are marked by several aspects not yet foreseen in the RTE described in this work, the main one being the presence of contractual opportunism, both on the public and private side. This characteristic can make the model

less tractable, requiring an additional degree of complexity. A minimum table of elements to be contemplated is presented below.

Figure 7 – Comparison between ADW, RTE and RW

Arrow-Debreu World (ADW)	Real-Theoretical Environment (RTE)	Real World (RW)
Ergodicity	Non-ergodicity	Idem RTE
Rational expectations (RE)	Adaptive expectations (AE)	Idem RTE
Fully available insurance	Limited insurance offer	Idem RTE
Infinite elasticity of the supply of players	Mature market of players	Idem RTE
Complete contracts	Incomplete contracts	Idem RTE
Information fully available	Informational asymmetry	Idem RTE
Information fully available	Agency Issues	Agency Issues
Property without indivisibilities	Public goods, not rivals and natural monopolies	Idem RTE
Automatic transactions	Transactional costs and specific assets	Idem RTE
Absent (public) contractual opportunism	Absent (public) contractual opportunism	Pervasive opportunism
Absent (private) contractual opportunism	Absent (private) contractual opportunism	Pervasive opportunism
Missing State Failures	Missing State Failures	Present state failures

Source: elaborated by the authors

7 Policy implications: flexibility versus adaptability

In the contractual environment, the contracting parties, by engaging in the contract, renounce an important set of flexibility of their actions and constrain their behaviors to obey the contractual terms. The

nature of the competitive process that leads to the choice of the winning bidder implies determining a loss of flexibility so that candidate bidders can make their calculations and determine their bids, engaging in a contract with certain rules. In the light of theory and practice itself, it would be absurd to allow full contractual flexibility from the day after the contract is signed, which would lead to a complete distortion of the very meaning of bidding for long-term infrastructure contracts. Therefore, the consequences of the KBT should not be interpreted as a defense of full contractual flexibility. In addition, the presence of contractual opportunism could potentiate the harm of flexibility, ultimately disorganizing the entire system of *ex ante* competition for infrastructure contracts.

Thus, a central issue to the practical implications of this study concerns a possible hasty reading of its implications: it is not defended, based on the structure proposed here, pure and simple flexibility in the contractual environment. What is defended here is the **adaptability** of the contract in the face of changes in circumstances that, mainly, refer to the materialization of unforeseen states of nature in the starting conditions, that is, the materialization of unforeseen uncertainties in the risk matrix. In the analogy of marriage, the change in maturity and objectives of the contracting parties throughout the contractual life, if treated in strict compliance with the starting conditions at the time of the ceremony, will cause instability that will lead to the destabilization of the relationship. Very loosely, it may not be daring to say that the adaptability of parties to the marriage in the face of these structural changes may eventually be the secret that preserves the resilient relationship in the long run.

Adaptability serves the purpose of contractual resilience without, however, giving rise to a negotiating flexibility that allows the revision of the starting conditions of the contract without changes in the foundations of these conditions. We propose, therefore, a form of flexibility that observes structural changes, closely linked to the manifestation of uncertainties that are no longer incorporated into the risk matrix. Contractual adaptability therefore serves the purpose of dealing with the condition of contractual incompleteness, to confer resilience to the long- term contract, increasing the *ex-ante* incentives for contracting by both parties, while avoiding the adverse selection of players in bidding processes.

A contract needs to have endogenous flexibility, which in the language proposed here would be adaptability, so that it has resoluteness (along the lines proposed by the KBT). We propose the idea that the more adaptable the contract, the lower the occurrence of adverse selection, contrary to the proposal of authors such as Guasch et al (2003, 2014). The powerful idea underlying this discussion lies precisely in the apparent trade-off involved. On the one hand, flexibility in relation to the starting conditions could distort the very essence of the long-term contract. On the other hand, the absence of flexibility in the face of the materialization of uncertainties or unforeseen adverse scenarios that can destroy the contract inefficiently. Therefore, flexibility should not be ensured, unless it meets the conditions of adaptability in the face of uncertainties and incompleteness.

The theory of unpredictability and the proposal of adaptability

The theory of unpredictability is a way of bridging contractual incompleteness, as well as the proposal of adaptability based here. The idea of the theory of unpredictability, as well as the proposal of contractual adaptability, is linked to the idea that *ex post* adaptive behaviors validate the incentives for ex *ante* contracting, producing more stable contractual results. Thus, it is necessary to explore the possible correspondence between the theory of unpredictability and the proposal of adaptability.

The role of contractual balance

Does the idea of balance have an axiomatic connotation? There are two possible answers. One, the axiomatic view of equilibrium, if taken as a presupposition in an ergodic environment, Arrow Debreu, of incomplete contracts and without the imperfections that are addressed in this work, will have undesirable consequences on the selection of players in an environment in which contractual opportunism is present. An example of a real situation in which the axiomatics of equilibrium plays a relevant role, even if the assumptions of RTE – or of the real world itself – are relaxed. Because exorbitant clauses distort the allocation of *ex post risks*, this concept may be relevant to the evaluation of the world under an axiomatic view of equilibrium.

It is also necessary to explore the possibility that the idea of equilibrium does not have an axiomatic connotation. In this environment,

if the world is ergodic, Arrow Debreu, and has no incompleteness, flexibility is instrumental to economic equilibrium, but this would be irrelevant, because ergodicity makes rigid contracting fully adjustable to reality – no rigid contract will be signed for a longer term than the source of necessary flexibility manifests itself.

On the other hand, if in the real world, the contract does not bring the idea of equilibrium with an axiomatic characteristic, there is room for negotiation and flexible renegotiation that makes the contract quite adjustable to the circumstances. In this case, the advantage of the long contractual term is lost. The relational nature is lost due to a possible *arms-length behavior* of the contractual parties, which may, in practice, make it impossible to form the specific assets (in practice, large capital investments) necessary for the good life of the contract.

Figure 8 – ADW versus RTE: balance as an axiom

<table>
<tr><th></th><th>ADW</th><th>RTE</th></tr>
<tr><td>Balance as an axiom</td><td rowspan="2">The difference between relational contracts and arms-length contracts is irrelevant</td><td>The opportunity cost of the lack of flexibility is relevant.</td></tr>
<tr><td>Zero equilibrium axiom</td><td>Relational contracts have become, in practice, arms-length contracts</td></tr>
</table>

Source: elaborated by the authors

It is possible that virtue is in the middle. Equilibria with a fully axiomatic connotation, or equilibria with zero axiomatic connotation, also seem unfeasible from the point of view of the practice of long-term contracting. Thus, contractual adaptability (and not simple contractual flexibility) seems to serve the purpose of creating *the appropriate ex-ante* incentives for contractual resilience and the desired creation of *ex-ante incentives* for contracting.

A defense against a possible destructive iconoclastic character of this essay

In the biography of Fyodor Dostoevsky, the author recalls the phrase that was raised to the nth power by Nietzsche, in *Brothers Karamazov*: if God does not exist, everything is possible. When you

break the *mainstream* idea of Law and go to another level, will this generate a lot of legal uncertainty, or do we have a safe harbor so that these boats that were theoretically adrift can anchor?

This is because, here, the idea of contractual resilience could be interpreted as a source of mutability of the contract which, if the assumption of the absence of contractual opportunism is relaxed, as is often the case in the real world, could create a gigantic gap. Hence the central importance of the distinction between flexibility and adaptability.

In our defense, the proposal is not iconoclastic because it does not propose to scrap a risk matrix given in the starting conditions of a contract under conditions that will not have significant changes. The proposal that the risk matrix ceases to be valid based on circumstantial changes, provided for therein, would be iconoclastic. What we are proposing is that the original risk matrix ceases to be valid when certain uncertainties not foreseen in the risk matrix materialize – that is, when structures that supported the contractual modeling are simply no longer valid. This creates space for renegotiation on a reasonable basis, along the lines of *efficient breach*. We are, therefore, proposing spaces for renegotiation due to the incompleteness of the risk matrix that, due to the materialization of events, must be addressed throughout contractual life. It is about adaptability and not just flexibility.

Note that the structural changes in the risk matrix that make sense can be classified into two types:

- Events: a pandemic or a war, which are disruptive events whose practical consequences are not fully assessable in the evaluation of the contract.
- Structural changes in the types of contracting agents: in a long-term relationship, after decades, it is possible that the type of contracting parties will change in such a way that the allocation of risks loses part of its meaning. This is especially relevant on the public side: a government focused on increasing GDP becomes, over time, focused on an alternative concept of measuring development, considering, for example, environmental factors in its objective function. It is difficult to tell this government to remain stuck with the contract in the conditions in which it was established, and an efficient renegotiation must take place. Do the current contracts leave room for this change in the type of this contracting agent, or do they only offer exit mechanisms for the contract to be terminated because it no longer serves the public interest?

Furthermore, we are only defending the idea of making real, in theoretical terms and practical recommendations, what is effectively already verified in reality, based on the rational behaviors of public and private agents that, effectively, occur covertly or shamefully and are often accused of violating the rules in favor of vested interests (obviously without discarding the possibility that negotiations of this type have unwanted opportunistic interests).

In this essay, there is only one major circumstance of contractual renegotiation: the adverse economic scenario. In this essay, it is possible that the placement of demand bands in the structuring process is an effective remedy against the problem posed under the characteristics of the RTE designed here. But in RW the problem of opportunism can make this issue much more complex.

An ancillary discussion would be systemic risk based on the expected risk allocations, which gives rise to an important role in *the ex-ante* assessment of these risks in the aggregate scope of public finances, and national financial regulations in relation to these underlying macroeconomic risks.

8 Conclusions

This essay seeks to formulate the general contours for an economic-legal theory of long-term contracting in non-mature jurisdictions. To achieve this goal, we follow a set of steps:

(i) We describe the paradigm of the Arrow-Debreu World (ADW), in which long-term hiring is endogenous to opportunities, generating an ergodic environment of administrative hiring.

(ii) we relaxed the major premises of the ADW, notably regarding ergodicity, contractual completeness, rational expectations, among others.

(iii) we define the Standard Administrative Contract (SAC), assuming a standardized Risk Matrix, in which the operational, investment, demand and capital risks are allocated to the concessionaire, while the Grantor bears the risks of force majeure, fortuitous event and prince's fact, and the demand risk is fully allocated to the concessionaire even when the sources of demand variation arise from macroeconomic actions.

(iv) We created three scenarios for the deployment of demand, which is the main source of involuntary results for the concessionaire: adverse scenario, business-as- usual scenario and benign scenario.
(v) We evaluated the consequences of the adverse scenario, seeking to understand the incentives for *ex-ante contracting* in view of the possibility of its materialization.

We conclude that in a non-Arrow Debreu environment, with certain specifications on the existence of liquid markets for hedging certain risks (x, y, z) in a non-ergodic environment and limited rationality of the agents, the incentive to *ex-ante contracting* depends on adaptability in contractual renegotiation (Klink Boat Theorem, KBT). It is also proposed that, under the axiomatics and postulates presented, the validity of the KBT offers the only possible analytical solution so that, in the face of a positive probability of materialization of the adverse scenario, there is still an *ex-ante* incentive for long-term contracting without a serious adverse selection of bidders!

As a practical implication of this article, we assume that incomplete contracting in an imperfect institutional environment is perfectly possible as long as there is a predisposition to non-automaton post-contractual behaviors, which is related, for example, to the attitudes of the contractual agents (concessionaire and government) in the face of the fear of acceptance of the agreements by the contract control bodies. Often, public and private agents are not moved by anticipating a negative response from these control agents, for fear of their formalism or even their attachment to the institutes of short-term contracting that would not make sense in long-term contracting.

In other words, the main consequence of this article is that it is perfectly possible to develop the infrastructure of a non-mature jurisdiction, through long-term concession contracts in the face of current challenges – but advances towards perfection and completeness must be thought of and implemented to obtain the best results in terms of the economic well-being of society.

It should be noted that here we offer a Text for Discussion, emphasizing the fundamental role of Discussion and readers' criticism for its improvement. If we are successful, after strong criticism and reviews, we will have offered two relevant contributions:

1. To provide a more developed framework for the theoretical analysis of the issues of incomplete long-term contracts in non-mature jurisdictions.

2. To offer lessons for *ex ante* and *ex post* practices related to the structuring and review or regulation of incomplete long-term contracts, as an alternative to the dominant theories in non-mature jurisdictions. Please forgive us if, at any point, we have stuck to the Brazilian practice that is most familiar to us.

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SHOCK ABSORBER, TRACTION AND CONTRACT DYNAMIC EQUILIBRIUM: NEED FOR ADAPTIVE, NON-LINEAR AND COMPLEX SYSTEMS-INFORMED MODES FOR CONTRACTUAL REBALANCING.

FILIPE LÔBO GOMES

MARCOS NÓBREGA

Abstract: The aim of the current article is to present new instruments to deal with equilibrium in administrative contracts. The new bidding law seeks to establish a new model, with special emphasis on encouraging long-term planning and the sustainability of it. Aspects related to classic and neoclassical models of reality perception and its influence on the sense of equilibrium will be introduced as essential elements to review the theoretical foundations adopted, so far. Complexity theory is introduced as turning point from the classical idea to the reformulation and thought of theoretical *constructs* adjusted to an increasingly multifaceted and pragmatic reality. Therefore, it intends to foster the debate about the new regulatory framework of equilibrium in the long term.

Keywords: Bidding. Administrative contracts. Law n. 14.133/2021. Economic analysis. Contractual balance. Sustainability

1 About the current scenario

The new Bidding and Contracts Bill (law 14.133/21) provides on equilibrium as fundamental contract-structure equilibrium and shows rebalancing feasibility. It allocates risk embodiment to the risk matrix. Risk is currently understood as adjusted certainty based on science development degree.

Besides provisions on renegotiation and readjustments, the following provisions on the new Bidding Bill are worth mentioning due to their impact on the aim of the present study**:**

> Art. 6 The following are considered for the purposes of this law:
> [...]
> XXVII - risk matrix: contractual clauses to define parties' risks and accountabilities, and to act in featuring contracts' initial economic-financial equilibrium regarding the financial burden arising from events subsequent to the contract. It must hold, at least, the following information:
> a) list of likely events subsequent to contract signing, and it can have impact on its economic and financial equilibrium, and forecast the likely need for issuing an addendum upon their occurrence;
> [...]
> Art. 22. Calls may include a risk allocation matrix arranged by the contracting party and the contractor. In this case, the estimated contract value calculation may take into consideration a risk rate that matches the bidding object and the risks taken by the contractor, which must comply with a methodology predefined by the federative entity.
> [...]
> § 2 - The contract must reflect the allocation set in the risk matrix, mainly when:
> I - the hypotheses of changes aim at reestablishing the contract's economic-financial equation when losses in the risk matrix are taken as cause of imbalance, which is not supported by the party who seeks reestablishment;
> [...]
> Art. 103. The contract can identify the expected and assumed contractual risks and foresee a risk allocation matrix by dividing them between the contractor and the contracted party. It is essential pointing out the risks to be assumed by the public or the private sector, or those to be shared.
> [...]
> § 4. The risk allocation matrix defines contracts' initial economic-financial equilibrium in supervening events; it must be observed in the resolution of any claim by the parties.
> § 5. Whenever the contract conditions and the risk allocation matrix are met, the economic-financial equilibrium will be maintained, and the parties will waive requests to reestablish equilibrium among assumed risks, except for:
> I - unilateral changes set by the Administration, in the cases set forth in item 1 of *caput* in art. 124 in this law;
> II - increase or reduction in taxes directly paid by the contractor because of the contract due to subsequent legislations.
> [...]
> Art. 151. Alternative ways to prevent and solve disputes can be used in contracts ruled by this law, notably: conciliation, mediation, dispute resolution committee and arbitration.

> Single paragraph. Provisions on the *caput* of this article shall apply to disputes regarding the rights to property, such as issues related to reestablishing contract economic and financial equilibrium, non-fulfillment of contractual obligations by either parties and compensation calculations.
>
> Art. 152. Arbitration will always be legal and observe the principle of publicity.

The analysis applied to the herein addressed provisions allowed inferring that the risk matrix internalizes the foreseen and assumed risks expected to be added to the contract's endogenous structure and to turn the former externalities into participants' binding conditions. Accordingly, it is clear that public authorities and private parties can share allocation risks in order to keep the sustainability of agreements.

Thus, the law on bidding and contracts brings multi-door justice agendas that can be added to the contract as exogenous and binding elements for the parties by strengthening this ideology. It clarifies why option is made for mechanisms aimed at consensual demands, such as alternative ways to prevent and resolve disputes, notably: conciliation, mediation, the dispute resolution committee and arbitration.

The Supreme Court provides its understanding on the sense of equilibrium, although this issue tends to an ordinary and evidentiary assessment, as follows:

> HEADNOTE: EXTRAORDINARY APPEAL. ADMINISTRATIVE CONTRACT. PRINCE'S SUITE. IMBALANCE IN CONTRACT ECONOMIC CONDITIONS. ADMINISTRATION LIABILITY. 1. The grounds set out in the appeal cannot change the appealed decision conclusion. 2. As already acknowledged by the Plenary of the Supreme Court, the constitutional rule of economic-financial equilibrium applied to administrative contracts derived from the principle of legal certainty, which seeks to give stability to adjustments by guaranteeing viability to the contractor for carrying out the services, based on what has motivated contact execution (RE 571.969/DF, Rapporteur: Justice Cármen Lúcia). 3. If contract economic and financial imbalance resulted from a new and unpredictable tax incidence, it is not necessary to inquire about its excessive burden in order to justify the compensation for damages resulting therefrom. 4. According to art. 85, § 11 of CPC/2015, the amount of previously set attorney's fees increases by 10% if one observes the legal limits of art. 85, §§ 2 and 3 of the CPC/2015. 5. Procedural appeal denied. (RE 902910 AgR, Rapporteur: ROBERTO BARROSO, First Team, judged on November 06, 2018, ELECTRONIC PROCESS DJe-244 Disclosed on November 16, 2018; PUBLISHED on November 19, 2018)

Thus, constitutional contractual equilibrium is based on the legal certainty principle, i.e., on predictability. Its aim is to stabilize the adjustments, so that the contractor can carry out its services in compliance with expectations originally motivating the contractual agreement. This process is known as State of the Art, and it supports the views and propositions in the current essay.

2 From classical models to the neoclassical model - from difficulties to contract reviews within a self-deception context

It is necessary contextualizing and defining the problems to be solved before delving into contractual equilibrium itself. Analysis is an important factor regarding classical postulates' reformulations that cannot address any contractual dynamism resulting from contract incompleteness, long-term nature and relational aspect. The big question lies on: how and why do long-term contracts become unbalanced? What are the heterodox ways of thinking about the contract equilibrium issue? The outset highlights technical and theoretical myopia towards this point. The pragmatic world of contracts is much more dynamic, because it deals with complex, relational,[1]incomplete[2]and resilient contracts. Long-term contract associations deserve special attention.

The Classical (or mainstream) Administrative Law is based on four pillars that, in their turn, need to be redesigned. First, one sees the sense of public power supremacy, which needs to be re-discussed based on the increasingly dynamic and fluid relationships between the

[1] Thus, the relational contract is that whose parties do not reduce the key terms of their understanding to precisely stipulated obligations, because they cannot, or do not, want to, and they refer to informal and evolutionary ways of resolving the endless number of contingencies that may interfere with the interdependence of their interests and the development of their conduct. It is done by moving away from unrestricted legal intervention as solution to endogenous conflicts aimed at resorting to alternative forms of interests' conciliation, even those that emerge from the contractual relationship or those offered by the social-standards' framework. (ARAÚJO, Fernando. Teoria Econômica do Contrato. Coimbra: Almedina, 2007. p. 395).

[2] Regulatory contracts are classified as incomplete, as category arising from a relevant contribution from the Economic Analysis of Law to the general theory of contracts. They are incomplete because they are realistically unable to regulate all aspects of the contractual relationship, which makes them naturally unfinished and full of gaps. This profile will require a contractual technology capable of resolving the infinity of contingencies that may arise during their execution. GARCIA, Flávio Amaral. Dispute boards and concession contracts. In Administrative Law and alternative dispute resolution. Cuéllar, Leila; Bockman, Egon Bockman; GARCIA, Flávio Amaral; CRUZ, Elisa Schimidlin. 2nd ed. Belo Horizonte: Fórum, 2022, p. 166.p. 171.

State and the private sector. The sense of supremacy remains a mantra often used in Administrative Law handbooks to justify the State's extroverted powers, which are crystal clear in the so-called exorbitant clauses. This State's power reserve can (and should) be applied in exceptional situations (national security, for example), rather than as modern element between the public and the private power. Therefore, it is necessary observing that exorbitant clauses are risky in contracts signed by the private party in charge of pricing it.

The second pillar lies on the sense of unavailable public interest, mainly in present times, given the possibility of, and advancements in, alternative methods aimed at conflict resolution. At this point, it seems that the most reasonable idea would lie on taking into consideration that the State has the will to enter into contracts if it also wants to renegotiate them or to submit them to arbitration. Assumingly, this is the most appropriate direction to be taken in this discussion. However, these first two anchors have been re-discussed in current Administrative Law and they have huge repercussions on contractual relationships; nevertheless, an in-depth analysis of this topic would extrapolate the present analysis.

Therefore, public interest supremacy and unavailability must be stripped of absolutism remnants and turn to the sense of democratization of Law. Thus, just as highlighted in the Legal Security Law, or in Brazilian Legal Standards-Introduction Law (LINDB - *Lei de Introdução às Normas do Direito Brasileiro*), it is much more closely related to the concept of general interest, i.e., to seek ideal equilibrium among the State, Market and Citizens. According to this ontological shift, the State must meet its duty by composing, dialoguing and finding consensus in its ideas before the country's institutions. This process is informed by the horizontal and vertical effectiveness of fundamental rights.

The third pillar lies on the set of elements making up the so-called classic contract, which dates back to the 19th century. T his contract is complete, static, with low transaction costs and is set over short-term elements. It is linear, besides providing free and unhindered information between the parties. Incentives in it are perfectly aligned and risks are symmetrically distributed. Yet, this contract only applies to very exceptional situations, such as to short-term spot contracts, although it is difficult to be found. This way of arranging contractual dynamics remains currently taught in handbooks and in Law Schools. Surprisingly, it still underpins business and legal decision-making; thus, we are all in a world

of self-deception[3], in other words, we think that contracts are and behave in a certain way, but reality insists on contradicting these assumptions.

The fourth pillar deals with the sense of equilibrium. At this point, most Brazilian jurists remain somewhere in the past, probably in the 17th century, due to the mechanistic idea of equilibrium they have in mind. It is essential overcoming the idea that equilibrium is something like a scale or a pendulum. This idea is encapsulated by the sense of classical contracts that is typical of the 19th century and forms the Mainstream Law postulates on administrative contracts. Therefore, it is not the contract that is thought to exist in reality. This mainstream idea cannot deal with long-term contracts linked to increasingly dense and largely multidisciplinary contexts. The longer the contract, the more distortions it can assume, the more noise it creates in the contractual relationship and the less linear it is. Concession contracts, for instance, fit into this situation. They are dynamic, long-term profile, relational and deliberately incomplete contacts. This last contract type happens for two reasons; first, because it cannot foresee the future and because it increases its cost given the negotiability of events that may take place in the future. Secondly, the transaction cost becomes increasingly high in extensive contract negotiations aimed at foreseeing all the likely future contingencies. Therefore, the longer the contract, the more intrinsically incomplete it is. The most important question is: "How can one predict the future?".

Hence, one can picture the relevance of redefining the concept of equilibrium. What is equilibrium? Where is it? How is it calculated?

The doctrinal formulation in Brazil has drawn three discussion models applicable to long-term contracts' equilibrium.

The first model analyzes contract equilibrium based on classical mechanics and physics. The second approach sees equilibrium within an axiomatic dimension, and the third model lies on the sense of equilibrium as process to standardize the expectations of the parties.

2.1 Economic-financial rebalancing mechanistic model

This mechanistic model is based on a symmetrical and linear system resembling a pendulum swinging back and forth towards

[3] ARAGAO, Alexandre. *A Arbitragem no Direito Administrativo*. Revista da AGU, Brasília-DF, v. 16, n. 03, p.19-58, Jul./Set. 2017

equilibrium. It is driven by an invisible force leading to the contract's natural stability; therefore, this approach is mechanistic and predictable, in many circumstances. In other words, one can reason about the probability of a contract to be in equilibrium in the future. It is so, because time is not so important within this mechanistic approach if one has in mind that the economic agent of the future is not much different from the economic agent of the present.[4]

Long-term administrative contract legal analysis has highlighted the need for overcoming outdated paradigms. Traditionally, the adopted mechanistic approach is inspired by classical mechanic principles that assume the predictable and linear return to equilibrium. However, this approach has proven inadequate, given these contacts' complexity and non-linear dynamics.

The traditional procedure is moored on mainstream Administrative Law and widely used in Brazil; yet, it is strongly influenced by the French doctrine and by 20th century authors. Most of al, it does not meet the demands of contractual challenges observed in contemporary managerial practices. This procedure is based on obsolete concepts such as symmetry and free information, contractual completeness and extensive application of exorbitant clauses.

It is essential recalling that imbalance in long-term contracts is often seen as sign of failure in the classical doctrine. However, it is unrealistic to expect lack of turbulence in contracts that last decades, or of events leading to imbalance. Imbalance in long-term contracts should be treated as a common phenomenon; therefore, it is up to the contract designer to ensure contract flexibility and resilience.

The traditional rebalancing model is based on mechanistic economic equilibrium and holds contracts as linear dynamic systems returning to stable equilibrium, regardless of the time factor. According to this model, agents' preferences and expectations remain constant, but they cannot be held up in a non-linear contractual dynamics context.

Thus, the long-term contract equilibrium mechanistic model presents several limitations. An example of it lies on comparing different scenarios when one uses projected cash flows discounted from the present value, regardless of changes in the environment and in agents' strategies, overtime. In addition, non-linearity in contractual

[4] PRIGOGINE, Ilya. *O fim das certezas*: tempo, caos e as leis da natureza. Tradução Roberto Leal Ferreira. São Paulo: Editora da Universidade Estadual Paulista, 1996, p. 11 e ss.

relationships means that small variations in initial conditions can have strong impact on outcomes. These limitations turn the model inappropriate to deal with the complexity and dynamics of long-term contracts that require continuous changes and adjustments.

2.2 The axiomatic model of contract equilibrium

The second version lies on axiomatization, i.e., the sense of equilibrium in this second view is not a mechanistic issue, but an axiom, which regards making assumptions to the conceptual gage it is established on.[5] Therefore, this contract was herein called neoclassical contract.

This discussion is closely related to the model by Kennedy Arrow and Gerard Debreu.[6] Therefore, the mechanistic basis is no longer that observed in more sophisticated contracts, because it was replaced by the axiological equilibrium basis. Equilibrium in this model is taken as truth, which, in its turn, is based on axiomatic and mathematical foundations.[7]

The axiomatic assumption is substantiated by the general equilibrium model. According to this theory, contracts are seen as simple bargaining processes, which are devoid of content, a fact that turns them into mere formality.[8] Agents are endowed with unlimited rationality and their actions are observable, assessable, besides lacking transaction cost. These features, altogether, form the so-called Arrow-Debreu contract.

The economic transition to a more formalized and axiomatic approach has significantly influenced the analysis applied to long-term administrative contracts, mainly when it comes to contract economic financial equilibrium. This sense of equilibrium is treated as "element" to be achieved by solving a set of mathematical equations.

Mathematics underwent a significant change in the 20th century due to the adoption of the axiomatic approach, which was initially applied in geometry and in other fields. The aim of this approach is to create a logical and coherent basis linked to fundamental axioms that gave birth to theorems and mathematical results. The crises in mathematics observed in the 19th century and expressed as paradoxes

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5 PRIGOGINE, Ilya. *O fim das certezas***:** tempo, caos e as leis da natureza. Tradução Roberto Leal Ferreira. São Paulo: Editora da Universidade Estadual Paulista, 1996, p. 11 e ss.

6 ARROW, K; HAHN. F., 1971. *General competitive analysis*. Holden Day, San Francisco, CA.

7 DEBREU, G., 1991. *The Mathematization of economic theory*, Am. Econ. Rev. 81 (1), 1-7.

8 WALRAS, L.; 1874. *Eléments d´economie politique pure, ou théorie de la richesse sociale*. Verlag Wirstschaft und Finanzen, Dürsseldorf (1988, facsimile reprodution on the first edition).

in the set theory and as new non-Euclidean geometries have forced mathematicians in the 20th century to adopt 'axiomatization' to both solve these problems and organize the structure of knowledge.

Economists embodied mathematical methods in the early 20th century to formalize economic theories. The general equilibrium theory by Léon Walras, which was refined by Vilfredo Pareto, was essential for this process. Axiomatization demanded constructing models based on clearly defined hypotheses and on logical conclusions emerging from these hypotheses in economics. This process was similar to that witnessed in mathematics.

The idea of economic financial equilibrium in long-term administrative contracts follows the same axiomatization logics. Thus, equilibrium is seen as solution coming out of a set of mathematical equations that model several variables and contract conditions. This approach is deeply influenced by the general equilibrium model by Kenneth Arrow and Gerard Debreu, the so-called Arrow-Debreu model.

Gerard Debreu was a core character in this movement, and his work "Theory of Value" is a landmark in the axiomatization process applied to the economic theory. He used mathematical rigor to disclose economic equilibria by separating economic interpretations from mathematical formalisms. The approach held by Debreu highlighted economics' transformation into a discipline known for using abstract mathematical structures to analyze economic phenomena.

Mathematics and economics' axiomatization brought along new rigor and clarity levels, and it was essential for the development of formal models applicable to long-term contracts. This movement turned economics into a science aimed at mathematical theories, which also led to more accurate and structured analysis of economic phenomena, as well as ensured that economic financial equilibrium of administrative contracts can be rigorously achieved through well-defined equations.

Kenneth Arrow and Gerard Debreu played key role in economics' axiomatization through their general equilibrium model. According to them, a set of prices can simultaneously equilibrium all markets in a given economy under certain conditions. This formalization process adopts concepts found in the set theory and topology to develop economic assumptions and conclusions that must be defined and proven through mathematical clarity.

Given the consumer preferences and the production technologies, one can state that the main contribution from Arrow and Debreu lied on

showing that market equilibrium will always happen as long as certain conditions are met, namely: convexity of preferences and continuity of production functions. These preferences and technologies were taken as elements to satisfy essential axioms such as completeness, transitivity and convexity, and to ensure equilibrium achievement.

This axiomatization process has brought unparalleled formal clarity to long-term contracts' structuring. Arrow-Debreu model's solid basis aimed at minimizing risks and uncertainties by accurately defining contracts' conditions to make them efficient and stable, overtime. Risk analysis applied to different contracts has become more accurate and it allowed better understanding how changes in market conditions affect long-term contracts' feasibility and sustainability. Furthermore, the application of general equilibrium principles to long-term contracts makes them Pareto-efficient oriented; therefore, no party improves its situation without harming the other. This is a crucial aspect for the stability of complex markets.

However, by taking Vinicios Klein's well-founded criticism into account[9], it is possible observing significant limitations in the Arrow-Debreu model, because, according to it, contracts are merely formal, since goods and contingencies are accurately and perfectly described, and agents have unlimited rationality, besides presenting fully observable and assessable actions that end up ruling any transaction cost. Thus, Arrow-Debreu contracts, which are always efficient and complete, become agents' mere rational behavior indicators. However, this process does not reflect the complexity of contractual relationships in the real world.

In light of the forgoing, the general equilibrium model does not cover the reality of complex administrative contracts by ignoring information asymmetry and transaction costs. It points out that administrative contracts are repositories of asymmetries *ex ante* in the real world because contractors add adaptive costs to their prices and the government faces the dilemma of preparing more complex bids or of pushing stress to the contract execution phase. NOBREGA and SILVA argue that administrative contract rebalancing must be substantiated by information asymmetry and by the need for continuous adjustments in it. This statement highlights that solutions cannot be merely technical,

[9] KLEIN, Vinicios. *A economia dos contratos:* uma análise microeconômica. Editora CRV; 1ª edição,julho, 2020, São Paulo.

but they must comprise consensus and renegotiation[10].

Klein's core critiques to the general equilibrium model lies on its inability to deal with uncertainty and imperfect information, which are essential elements in real contractual relationships. The theory of incomplete contracts and the theory of incentives emerge as responses to these limitations. The theory of incomplete contracts takes into account contracts' inevitable incompleteness, whereas the theory of incentives focuses on aligning the objectives of the principal and the agent in an asymmetric information scenario. Both theories are significant advancements for they bring a more realistic and applicable approach to the economics of contracts.

Therefore, although the axiomatization by Arrow and Debreu has revolutionized the theoretical analysis field, its practical application in long-term contracts requires integrating approaches that encompass uncertainty and imperfect information. This integration process leads to greater efficiency, stability and trust in economic relationships, besides more realistically adjusting itself to the complexity of the current world.

Contract Treatment in the Arrow-Debreu Model

Aspect	Arrow – Debreu Model
Description of the assets	Accurate and perfect
Rationality of agents	Unlimited
Observability of actions	Full
Transaction costs	Non-existing
Contract efficiency	Always efficient
Contract incompleteness	Non-existing
Contract function	Formality

2.3 Balance for notional as stabilization mechanism expectation

The third view is the core topic of the current essay. This idea focuses on a theoretical framework to explain how things work. The

[10] NOBREGA, Marcos; SILVA, Eric Castro e. *A reforma tributária e o equilíbrio econômico-financeiro dos contratos administrativos de longo prazo*: a inadequação do modelo mecanicista; os pontos focais e a teoria dos múltiplos equilíbrios contratuais. R. bras. de Dir. Público – RBDP | Belo Horizonte, ano 22, n. 85, p. 9-47, abr./jun. 2024

first idea of mechanistic equilibrium was consolidated by laws and data. The great flaw in this model emerged from lack of relevance given to the time factor, because time would not distort the parties' interests.[11]

This thesis was refuted through contextual analysis because parties changed their strategic behavior overtime. The mechanistic model did not capture this discussion, which is the basic argument of the mainstream Administrative Law. Thus, a first question arises: is equilibrium a narrative? According to the mechanistic understanding, yes, it is a narrative, because it assesses contractual equilibrium through the formal spectrum, and gets apart from its own material and constitutionally referenced spectrum.

All relationships in the general equilibrium model are optimal and identical in analytical terms; imposition is perfect, there are no transaction costs and contracts do not present incompleteness. If the contract is always efficient, it is nothing more than a written indication of the rational and maximizing behavior of each agent. This model is based on ergodicity, in other words, on linearity.

Interestingly, time has relative relevance in this ergodicity model, because it does not change the parties' incentives and adaptive expectations. The counterpoint to this model lies on the fact that the real environment where long-term contracts are put in place in is non-linear, or rather non-ergodic.[12] Expectations are adaptive; therefore, agents adjust themselves to changes in the environment, in the "state of nature". Assuming that every long-term contract unfolds in this environment of ontological predictability is the main critique to, and failure in, the axiological model because, actually, agents strategically adjust themselves to the environment and, more importantly, they

[11] PRIGOGINE, Ilya. *O fim das certezas:* tempo, caos e as leis da natureza. Tradução Roberto Leal Ferreira. São Paulo: Editora da Universidade Estadual Paulista, 1996, p. 11 e ss.

[12] Ergodicity means a very insensitive system to initial conditions or perturbations; it details the dynamics and makes it easy to set universal statements about such systems …ANDRÁŠIK, Ladislav. Ergodic axiom: the ontological mistakes in economics. In.: *Creative and Knowledge Society - International Scientific Journal* - 1/2015, Vol. 5, No. 1, 2015, p. 32. Ergodicity in systems of agents, particles or other elements means that the system's properties and constitution do not change over space and time. So, one can relatively easily tell the system's future states. These systems may even return to earlier statuses, much like a mechanical system. ELSNER, Wolfram; HEINRICH, Torsten; SCHWARDT, Henning. *The economics of complex economies:* Evolutionary, Institutional, Neoclassical, and Complexity Perspectives. Oxford: Elsevier, 2015, p. 10.

change their wills, overtime.[13] [14] [15] [16]

Imagine a 30-year public service concession contract based on 20-year negotiation after contract signing. The parties learn a lot from the past and they will seek something different. Not to mention, all the additional components established by this mature negotiation, such as the opportunism and hold-up issues.

Thus, one must bear in mind that contracts are information processing machines that work as mechanism to inventorying and weighing information asymmetries. Their good modeling makes the adequate information processing easier, besides reducing information asymmetries.

Since classical paradigms do not account for imperfections in the real world, it is necessary building a pragmatic model.

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[13] Cf. ELSNER, Wolfram; HEINRICH, Torsten; SCHWARDT, Henning**.** *The economics of complex economies*: Evolutionary, Institutional, Neoclassical, and Complexity Perspectives. Oxford: Elsevier, 2015, p. 9.

[14] Truth lies on grasping the essential being of nature, on conceiving it as implicitly infinite, as the very process. POPPER, K. *The open society and its enemies*. Princeton: Princeton, University Press, 1963.

[15] In fact, one must be cautious about reductionist and simplifying mechanisms, since one must take into consideration the influence of the internal and external environment, face uncertainty and contradiction, and live with solidarity between existing phenomena. According to Morin, complexity has always existed and continuously expands, besides appearing where simple thinking fails. It emerges to highlight that subject and object are involved in the same process, but they do not constitute dichotomous poles. The complexity theory questions the fragmented and traditional way of picturing knowledge, and it diverges from methods used by schools of thought that see knowledge in a linear and predictable way, through reductionist and preconceived ideas. MORIN, E. **Ciência com consciência**. 4. ed. Rio de Janeiro: Bertrand Brasil, 2000, p. 132-133.

[16] The core idea of the Agent-Based Modeling lies on the sense that many (if not most) phenomena in the world can be effectively modeled based on agents, an environment and on an agent-agent description and on agent-environment interactions. Agents are autonomous individuals or objects presenting properties, actions and goals. The environment is the landscape where agents interact. It can be geometric, network-based or extracted from real data. Interactions between these agents, or with the environment, can be quite complex. Agents can interact with other agents or with the environment; agent's interaction behaviors cannot simply change overtime, but strategies can be used to decide what action to take at a given moment. These interactions consist of information exchange. Agents can update their internal state or perform additional actions as response to these interactions. WILNSKY, Uri; RAND, William. *An introduction to agent-based modeling:* modeling natural, social, and engineered complex systems with netlogo. Cambridge: MIT Press. 2015, p. 32.

3 Proposals for contractual equilibrium institutional review - complexity theory as solution mechanism

The best way to understand a phenomenon lies on having appropriate theoretical framework in the complexity theory[17], also known as disequilibrium theory.[18] This theory sees the economy as system that does not necessarily stand in equilibrium, but whose agents often change their actions and strategies in response to the 'state of nature' and to strategic learning.

Accordingly, the economy can work without an equilibrium point. In other words, it can overcome the classical postulate of perfect maximizing agents and the presence of a utility function. Nevertheless, these assumptions are not essential to the contractual dynamics analysis.

From this new approach, it is clear that one cannot speak of equilibrium *ex ante* based on the sense of *pacta sunt servanda.* It is so, because this discussion is based on the sense of contractual completeness when it comes to long-term contracts. Yet, the pact set at first is that to establish the fundamental bases.

As a matter of fact, when parties enter into agreement, they set open a gap in their expectations. The return to the beginning does not often take place within the ergodic ideal, but within a varying environment where perspectives and frustrations can be linked. Therefore, temporal

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[17] The term "Complexity Economics" was created by Brian W. Arthur, at the Santa Fe Institute (SFI); he ran the SFI's Economics Program in the late 1980s. In its most general sense, complexity economics aims at solving problems in economics' complex systems within the complexity science framework. DURMUS, Deniz. *Complexity in economics and beyond:* Review paper. Heritage and Sustainable Development. Vol. 3, No. 1, March 2021, p. 34.
Complexity economics assumes the economy constituents as constantly comprising non-equilibrium structures. B. Arthur. Complexity Economics: A different framework for economic thought. In.: *Complexity and the Economics*, Oxford University Press, 2015, pp. 1-30.

[18] Actually, a new science has emerged over the last few decades: the physics of non-equilibrium processes. This science has led to new concepts, such as self-organization and dissipative structures, which are now widely used in fields ranging from cosmology to ecology and social sciences, including chemistry and biology. Non-equilibrium physics assesses dissipative processes featured by unidirectional time; thus, it gives a new meaning to irreversibility. The arrow of time was originally associated with very simple processes such as diffusion, friction and viscosity. It could be concluded that these processes were understandable if one used the laws of dynamics. Currently, this is not the case. Irreversibility no longer appears only in such simple phenomena. It is the basis of countless new phenomena, such as eddies' formation, chemical oscillations and laser radiation. [...] Irreversibility [entropy] can no longer be identified as mere appearance that would disappear if we had access to perfect knowledge. It is an essential condition for coherent behavior in populations comprising billions of billions of molecules. PRIGOGINE, Ilya. *O fim das certezas:* tempo, caos e as leis da natureza. Tradução Roberto Leal Ferreira. São Paulo: Editora da Universidade Estadual Paulista, 1996, p. 11

trajectory of equilibrium in long-term administrative contract is a stochastic, non-ergodic and non-linear process.

Thus, the administrative contract dynamics cannot be trapped into the illusion of its structural inertia. Imbalances, by nature, are natural contingencies in the passing of time. The standard contractual model is based on predefined situations, whereas individuals follow simpler rules in a complex system, because the effect of time as constant support for expressions of one's will is its essence. There is no typology *ex post*, but rather an organic adaptability.[19]

Mechanistic or axiomatic equilibrium patterns in the Arrow Debreu model point out that individuals must satisfy economists' rationality axioms, because agents are actually known for being partially rational.

According to the classical model, agents must optimize themselves, all alone, whereas the complexity model states that they have limited information. Yet, based on the classical model, agents understand the economy they operate in, whereas the aggregate behavior is expressed by interactions between individuals in the complex model.

In light of the foregoing, the whole issue lies on information management. Classical patterns are linked to predictability in the complexity theory model; therefore, the only thing to be done is to take precautions, since certainty is relative.

3.1 How to stabilize long-term contracts expectations?

A new question rose after these premises were set. How can this new model be used? How can expectations be stabilized in an environment filled with uncertainty, non-ergodicity and lack of information?

There are several ways to do so, and these possibilities can be divided into endogenous or exogenous equilibrium propositions. Endogenous equilibrium concerns contractual design solutions leading to higher efficiency in solving imbalance cases. Exogenous equilibrium, in its turn, comes from alternatives outside the contract, but these alternatives must be promoted by an appropriate institutional environment

[19] NORTH, Douglas C.. Desempenho Econômico através do tempo. Tradução de Antonio José Maristello Porto. In.: *Revista de Direito Administrativo.* Rio de Janeiro: FGV, v. 255, p. 13-30, set./dez., 2010, p. 28.

and by mechanisms that allow the rebalancing of contracts subjected to stressing conditions.

Thus, equilibrium is a calculation to stabilize expectations in the real world. This process can endogenously happen through contractual clauses that allow contract stabilization and adaptability, or its exogenous stabilization and adaptability through renegotiation or dispute resolution methods, or even through a third party appraiser, such as the legal courts, the audit courts or a private independent appraiser[20]. The independent appraiser, or the one who intends to be called governance agent (or balancing agent), would be a technician aimed at assessing the compliance with obligations and indicators. This individual would be the technician capable of assessing the varying remuneration paid by the granting authority, as observed in long-term contracts, such as those granted for public service concessions. Remuneration, in this sense, would be the agreed targets and indicators to be achieved, and they have straight influence on pricing and on the amortization matrix of investments to be accomplished by the private partner.[21] [22] [23] [24]

[20] GOMES, Filipe Lôbo; NÓBREGA, Marcos Antônio Rios da. Por uma revisão do verificador independente. Propostas de redimensionamento funcional e padrões de governança. Não seria o caso de tratá-lo como agente de eficiência privado com poderes estatais ou agente de resolução alternativa de disputas? *Revista Brasileira de Direito Público – RBDP*, Belo Horizonte, ano 22, n. 84, p. 9-43, jan./mar. 2024.

[21] "The Independent Appraiser is an impartial entity that is not linked to the Concessionaire or to the State; it acts in a neutral manner and with technical independence, inspects contract execution and assesses the Concessionaire's performance, based on the system's measurements and performance (quality indicators), and the payment mechanism, as set out in the call." Available at: <http://www.parcerias.sp.gov.br/parcerias/docs/manual_de_parcerias_do_estado_de_sao_paulo.pdf>. Accessed on April 30, 2019.

[22] "Its duties are strictly defined in the concession contract, and they allow this contract to play the role of independent assessor, measurer and inspector responsible for calculating and using best market practices, and the concessionaire's performance rating, based on technical and objective parameters.

If any of the parties disagree with the independent auditor's assessment results, they should use dispute resolution mechanisms provided on the respective contractual instruments; neither party can unilaterally discard the assessment made and make its will prevail." SANTO, Bruno Vianna Espírito; BARBOSA, Bianca Rocha; IZAR, João Filipi. O futuro do verificador independente: as recentes decisões do TCU. *Consultor Jurídico*, Jun, 2021. Available at: https://www.conjur.com.br/2021-jun-25/opiniao-futuro-verificador-independente/ Accessed on January 6, 2024.

Therefore, the neoclassical model has homogeneous agents who have predictable strategies and behavior, overtime. According to this model, agents are different and change their strategic behavior, overtime. They change and adjust themselves to the circumstances, depending on the information they gather. It happens because this model deals with an environment of great uncertainty; therefore, the complexity theory

[23] "Much more than a simple certifier who fulfils contractual obligations, the independent appraiser must be seen as essential agent to achieve proper concession mechanism functioning. Their role is essential to help solving challenges in contract execution, to fill gaps and to integrate the grantor, the concessionaire and other stakeholders." COHEN, Isadora. SANTANA, Luísa Dubourcq. O Verificador nas concessões rodoviárias e a exigência de creditação pelo Inmetro. *Jota*, Jan. 2023. Available at: https://www.jota.info/opiniao-e-analise/colunas/infra/o-verificador-nas-concessoes-rodoviarias-e-a-exigencia-de-acreditacao-pelo-inmetro-27012023 Accessed on January 6, 2024.

[24] The regulatory discipline refers to foreseen and presumed contractual risks, based on the provision of the allocation matrix, i.e., the beneficiary will be responsible for assessing the nature and the one who will have the best capacity to manage it; the contractor must take the risks covered by the insurance companies. When it comes to contractual risks, this discipline takes them as cost, so much so that their effects are estimated in the contracting, so that extra-contractual risks will be solved by another methodology. The regulatory detail lies on creating a new economic-financial balance point, according to which, the risk matrix is inserted into the structure of the proposal's initial conditions. The independent appraiser character leads to another balancing mechanism, which is somehow exogenous, or as we argue, 'contractualized', as it will be endogenous. The appraiser would simultaneously monitor the execution, the prompt solving and prevention of any disputes at initial stage. This is very important in long-term contracts, because future risks are multidimensional and they cannot be solved by advanced techniques of escalating clauses, structured negotiations, among others.
In the case of matrix as new element for driving balance, it will influence the parties' decision for giving up the rebalancing of what was assumed by the risk matrix, except for unilateral changes determined by the Administration and by the increase or reduction hypotheses, by supervening legislations of taxes directly paid by the contractor as a result of the contract, among several other events that can have impact on the initially adjusted price matrix.
It becomes a point of balance when it is combined to the figure of the independent appraiser (or neutral regulatory agent), who can foster another mechanism to compose and solve disputes that arise over contractual execution. Information asymmetry reduction in risk matrix specification gains a dynamics in the independent appraiser, as well as a non-static means of feedback and incompleteness clarification.
Balance division into contractual and extra-contractual types is relevant in this new regulation, because the matrix reveals the limitation of rationality and embodies negative externalities that turn them into inherent elements of the contract. Other unforeseen events will be solved by the classic and usual concept of economic-financial rebalancing of contracts and/or by the simultaneous mediation of the independent appraiser combined to the possibility of offering interdisciplinary, transparent, dialogued and informed technical solutions. However, it does not reveal the synonymy of contractual and extra-contractual elements as endogenous and exogenous. Because the legal phenomenon is multifaceted, all the facts, difficulties and consequences are considered endogenous elements of any relationship, as long as they are motivated, such as the case of articles 21 and 22 of the LINDB. In GOMES, Filipe Lôbo; NÓBREGA, Marcos Antônio Rios da. Por uma revisão do verificador independente. Propostas de redimensionamento funcional e padrões de governança. Não seria o caso de tratá-lo como agente de eficiência privado com poderes estatais ou agente de resolução alternativa de disputas? *Revista Brasileira de Direito Público – RBDP*, Belo Horizonte, ano 22, n. 84, p. 9-43, jan./mar. 2024.

gains relevance at the time to understand dynamic, complex and long-term systems and those resulting from unpredictable behaviors.

Therefore, long-term equilibrium is not static, but evolves overtime. Thus, non-equilibrium systems can progress into more complex and adaptive states. They find adaptability as they learn new arrangements. This process is not captured by control because the court of auditors does not catch it and lawyers cannot perceive reality. Parties in long-term contracts autonomously adjust their interactions to optimize the sustainability of the agreement.

Accordingly, it is essential paying close attention to the initial conditions of dynamic systems at the time to formulate the expectations package.

Indeed, the search for a single, static equilibrium is unrealistic and impractical in long-term contracts, mainly in public service concessions. At this stage, intentions should be guided by a range of "multiple equilibria" that can prove the contract sustainable. This range of acceptable outcomes acknowledges the dynamic nature of long-term contracts and the inevitability of changes in external conditions and in parties' expectations, over time. Several measures can be proposed to achieve this contractual dynamism, among them:

a) rebalancing clauses, which allow preventive adjustments in response to events that may unbalance the contract;
b) Continuous monitoring and audits, which allow monitoring contract performance and compliance by timely identifying imbalances;
c) Alternative dispute resolution mechanisms, such as arbitration and mediation, which ensure faster and less costly conflict solving;
d) Rebalancing triggers, which allow contracts' automatic and periodic rebalancing every five years, for example, as well as establishing vectors or benchmarks for balancing processes;
e) Precautionary rebalancing, which allows preventive adjustments in response to events that have the potential to destabilize the contract[25].

[25] Cf. NOBREGA, Marcos e SILVA, Eric Castro e.A reforma tributária e o equilíbrio econômico-financeiro dos contratos administrativos de longo prazo: a inadequação do modelo mecanicista; os pontos focais e a teoria dos múltiplos equilíbrios contratuais. *R. bras. de Dir. Público – RBDP* | Belo Horizonte, ano 22, n. 85, p. 9-47, abr./jun. 2024

The "Klink Ship Theory" illustrates this point, because it is essential embodying renegotiation and contract adjustment mechanisms due to the complexity of long-term contracts and of uncertainties in them. In other words, just as a ship needs constant adjustments to navigate turbulent waters, long-term contracts require flexibility and adaptability to deal with unforeseen events and to maintain a steady course[26].

Two fundamental factors are observed as inflection points in long-term contracts, namely: noise and turbulence in informational relationships. Technology begins as noise and it generates turbulence. Contractual flexibility is essential in sectors that are sensitive to it. Dynamics between cooperation and competition is fundamental in complex systems[27][28] and in long-term contracts.[29] It is crucial balancing these elements to achieve sustainable relationships. If both parties reach a reciprocal trade-off position between cooperation and competition, they formulate contractual terms to open room for consensus. The first discussion on endogenous equilibrium is the basis of consensus on how to establish equilibrium. One finds room for consensus in the gap of expectations.

Therefore, not all circumstances require rebalancing. If contracts were embodied to be one hundred percent flexible, the expected legal certainty would not be accomplished.[30] The first circumstance is observed when party types and contractual incentives change. The

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[26] Cf. NOBREGA, Marcos; TUROLLA, Frederico; VERAS, Rafael. Contratação incompleta de projetos de infraestrutura. Available at: https://www.researchgate.net/publication/372401108_Contratacao_incompleta_de_projetos_de_infraestrutura. Accessed on June 03, 2024.

[27] A complex system [is] that where large networks of components without central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing and adaptation via learning or evolution." M. Mitchell, *Complexity***:** A Guided Tour. Oxford University Press, 2009.

[28] "…complex systems are those with multiple elements that adapt or react to the [aggregate] pattern. Over time, through adjustment and change, as the elements react, the aggregate changes; as the aggregate changes, the elements change again" B. Arthur, "*ComplexityandtheEconomy*," Science, vol. 284, 1999, p.2.

[29] ELSNER, Wolfram; HEINRICH, Torsten; SCHWARDT, Henning**.** *The economics of complex economies***:** Evolutionary, Institutional, Neoclassical, and Complexity Perspectives. Oxford: Elsevier, 2015, p. 59-60.

[30] Therefore, uncertainty is an inherent component of long-term contracts, so it is crucial to distinguish between ambiguous uncertainty, where the ability to predict is limited, and fundamental uncertainty, where events are unpredictable. While fundamental uncertainty can be mitigated by good contract design, ambiguous uncertainty requires flexibility to adapt to unpredictable events. Cf. NOBREGA, Marcos e SILVA, Eric Castro e.A reforma tributária e o equilíbrio econômico-financeiro dos contratos administrativos de longo prazo: a inadequação do modelo mecanicista; os pontos focais e a teoria dos múltiplos equilíbrios contratuais. *R. bras. de Dir. Público – RBDP* | Belo Horizonte, year 22, n. 85, p. 9-47, April./June. 2024.

second circumstance is the very room for renegotiations. This process is known as 'optimal bridge' in economic analysis of Law or as optimal contract changes.

At this time, the shock absorber and traction theories emerge as mechanisms to achieve contract dynamic equilibrium. This issue, at this point, is analyzed by comparing an off-road vehicle to a passenger vehicle. The impact absorption mechanism recorded for the passenger vehicle is customized for everyday and ordinary situations. On the other hand, the absorption mechanisms of off-road vehicles are equipped with variable modes, depending on the ground conditions they ride on. Long-term contracts require these impact absorption dynamic modes; therefore, we move on from traction to traction, since there is no way to predict what will happen in time and space. Traction would set the pace for changes in contracts' execution intensity or optimization. Yet, still in the analogy of four-wheel drive vehicles, there are traction gears for more unstable and less unstable terrains. These same circumstances would cause the vehicle (the contract) to achieve greater traction in a less unstable environment and lower traction in a more unstable environment. Assumingly, traction could be called contract object efficiency optimizer when it is adjusted based on the exogenous difficulties.

Therefore, the sense of shock absorber regards dimension adjustment to the three-dimensional difficulties (depth, length and traction) in order to measure the intensity contracts would adjust on, overtime: faster or slower, with more or less traction, so the shock absorption mechanisms could act in maintaining diversity unity.

Thus, circumstances set how this process works. Endogenous mechanisms, such as the Klink's ship theory, renegotiation, exogenous mechanisms like multi-door justice (arbitration, consensus, among others), and figures external to the contract, are important dynamic ways to assess the conditions setting contracts' behavior; they would be in the shock absorber dimension. From the traction side, it is essential anticipating measures, changes in intensity, quality or quantity; mutability and the levels it would evolve to. It would be something much closer to a mechanism aimed at avoiding the so-called contractual slippage, focus or purpose loss due to changes in contract execution intensity or dynamics fulfillment.

The core idea lies on having more shock absorption and traction modes to make the service flow the best way possible, with continuous

prestige. Recognizing non-ergodicity, adaptive expectations, limited insurance supply, mature market of players, incomplete contracts, information asymmetry, non-rival public goods, natural monopolies, transactional costs and specific assets is the way to unveil new theoretical postulates given to Law by the complexity theory in order to mitigate damages and losses resulting from friction and fatigue in long-term relationships. Ultimately, the aim of these elements is to guarantee sustainability to long-term relationships, i.e., shock absorption and traction seek to keep the system functional.[31]

In short, the key to sustainability in complex and non-linear contracts lies on their ability to get adjusted through multiple balancing mechanisms, constant monitoring and through their flexible approach to uncertainty. Therefore, good contract design should prioritize flexibility and long-term adaptability.

4 Through conclusion

Overcoming the classic models and understanding that long-term contracts are incomplete, complex, relational and resilient implies reformulating the balancing mechanisms in order to extrapolate the ordinary thinking. The herein advocated proposal lies on enthrone endogenous mechanisms, such as the Klink's ship theory and renegotiation, and on exogenous mechanisms like the multi-door justice (arbitration, consensus, among others). The core idea of it lies on the modalities 'shock absorbers' and 'traction', which keep services' sustainability and benefits the community.

The present conclusion analytically explores the need for a new approach to balance long-term administrative contracts, mainly through law n. 14,133/2021. It sheds light on the inadequacy of traditional models, such as the mechanistic and axiomatic ones, which fail to capture

[31] The theory of complex adaptive systems fits well the aforementioned idea: Complex Adaptive Systems (CAS) constantly review and reorder their components in response to stimuli they receive from the environment, and as rearrangements arising from interactions between agents, and even in response to random situations. According to Battram, climate is a complex system, but an organization is a complex adaptive system because it is not only complex, but also adjusts itself to its surroundings. In other words, a CAS learns every time it reorganizes itself, and the parts composing it are not entirely "free", but limited by certain links that exist between them. BATTRAM, A. *Navegar por lacomplejidad.* Barcelona: Granica, 2001, p. 35. As explained, there is a need for mechanisms to absorb and dissipate instabilities in order to maintain the unity and diversity inherent to complex systems.

these contracts' inherent complexity. Actually, the proposed approach takes into consideration both endogenous and exogenous factors to achieve contractual equilibrium.

Endogenous balancing factors refer to mechanisms intrinsic to contracts themselves. They allow contracts to be adjusted, over time. At this point, contractual flexibility and ability to renegotiate are core elements to deal with the incomplete and relational nature of long-term contracts. The Klink's ship theory is introduced as metaphor for this adaptive approach, according to which, the contract (the ship) must be able to adjust its course in response to changing conditions, overtime. Continuous renegotiation and the inclusion of contractual clauses that allow dynamic adjustments are essential to absorb shocks and to ensure contract sustainability.

On the other hand, exogenous factors refer to influences external to the contract; they can affect its stability and equilibrium. The present article emphasizes the importance of having a robust institutional environment that includes mechanisms, such as arbitration, mediation and other forms of alternative dispute resolution in order to manage contractual imbalances. These exogenous approaches are complementary to endogenous adjustments because they provide a system of "multi-door justice" that allows parties to efficiently and consensually solve conflicts without necessarily resorting to legal courts. Furthermore, the role of external characters such as independent appraisers or governance agents is fundamental to ensure that contracts will be executed in a way to meet the adaptive expectations of involved parties.

By integrating these endogenous and exogenous perspectives, the article proposes a vision of contractual equilibrium that is both dynamic and pragmatic. Rather than seeking a static and predictable equilibrium, the suggested approach recognizes the inevitability of changes and uncertainties in long-term contracts by proposing mechanisms to allow continuous adjustments and effective risk management in them. Thus, contract sustainability is not just a matter of foreseeing the future, but of creating resilient systems that can evolve and adapt to changing circumstances, over time, by seeking unity in diversity.

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TAX REFORM AND ECONOMIC-FINANCIAL EQUILIBRIUM OF LONG-TERM ADMINISTRATIVE CONTRACTS [1]

ERIC CASTRO AND SILVA

MARCOS NÓBREGA[2]

Summary: I – General aspects of the new consumption tax; II – Specific impacts of IBS/CBS on contractual relations: II.1 – IBS/CBS rate; II.2 – The non-cumulative nature of IBS/CBS; II.3 – End of tax incentives; II.4 - Specific, Differentiated or Favored Taxation Regimes. III - Tax Reform (IBS and CBS) and Economic-Financial Equilibrium of Long-Term Administrative Contracts. III .1 - General Aspects; III.2 - Mechanistic model of economic-financial rebalancing; III.4 - How to adapt administrative contracts to the tax reform. IV – Conclusion. V – References.

Abstract: Constitutional Amendment n. 132/2023 (EC 132/23) significantly overhauls taxation over goods and services in Brazil by creating the Goods and Services Tax, also known as IBS, and the Contribution on Goods and Services (the so-called CBS), whose aims are to replace taxes such as ICMS, ISS, IPI, PIS, COFINS. This reform seeks to both simplify taxation and address longstanding issues such as the "fiscal war" among federative units (states). However, it means complex implications for long-term administrative contracts that will need to be subjected to adjustments to ensure economic-financial equilibrium. The traditional economic-financial rebalancing approach based on mechanistic principles cannot handle these contracts' complexity and nonlinear dynamics. Actually, the reform fosters an environment multiple equilibria can emerge from, a fact that requires flexible and adaptive management to continuously adjust the duties and expectations of involved parties. Contractual flexibility and incorporating continuous adjustment mechanisms are essential factors to absorb exogenous shocks and ensure contacts' viability and effectiveness in the new tax environment. Therefore, it is imperative to revise long-term administrative

[1] The present text is in compliance with Complementary Law n. 214/25 from January 17, 2025.

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contracts to make sure of their economic-financial equilibrium by replacing the traditional mechanistic view by a more adaptive and dynamic approach focused on understanding their complexity and relational nature.

Keywords: Brazil; tax reform; IBS and CBS; infrastructure; administrative contracts; contract rebalancing.

1 General aspects of the new consumption tax

Constitutional Amendment n. 132/2023 (EC 132/23) was approved on December 20th, 2023 after more than 30 years under discussion. It substantially changes the taxation on goods and services that was based on value-added taxation model. It was introduced in Brazil in the 1950s and remained inforce after the 1988 Federal Constitution.

The consumption tax in force is to be replaced by the new system provided on Constitutional Amendment 132/23. For several reasons, this old system has proven to mismatch the modern economy. The rigid tax jurisdiction division among Federal Government, Federative Units (states) and Municipalities is based on the strict separation between "goods" and "services". Municipalities hold the tax on services (ISS); taxes on goods (ICMS and IPI) go to Federative Units (States) and to the Federal Government[3]. However, this system has not resisted the growing consumption "servitization" deriving from the outstanding presence of intangibles in the current economy.

The aforementioned scenario is worsened by the time of uncooperative coexistence of more than 5.500 tax authorities making up the Brazilian federation. It has proven disastrous for tax authorities (e.g. "tax war") and, most of all, for taxpayers, who are strangled by both high nominal tax burden (in comparison to GDP) and by the highest compliance cost in the world due to cumulative, complex and perennial accessory obligations set for Municipalities, Federative Units and the Federal Government[3].

Therefore, EC 132/23 seeks balance between the constitutional federative pact clause - which requires the financial autonomy of its entities, mainly through tax jurisdiction -, and the combination of the

[3] This is why EC 132/23 "constitutionalized" the basic mandate to simplify accessory duties (CF art. 156-A, § 1º, IX)

"goods" and "services" tax basis into a materially single tax. However, its jurisdiction would be shared by the Federal Government, Federative Units and Municipalities through the so-called "dual IVA", which was inspired by the Canadian taxation on consumption[4].

The Tax on Goods and Services (IBS) will be introduced in the national tax system. It will be "shared" between Federative Units and Municipalities to replace ICMS and ISS. The federal Contribution on Goods and Services (CBS) will replace the social security contributions levied on revenue (PIS/COFINS). IPI, which is also a federal tax, would be initially extinguished and replaced by the new Selective Tax (of extra-fiscal nature), but it must remain as instrument to maintain Manaus Free Trade Zone (ADCT art. 125, §4º, III, "a").

IBS and CBS must be identical in all their essential aspects under the new rules (CF art. 149-B in combination to art. 156-A, §1 and art. 195, §16). They must have the same taxable facts, calculation basis, incidence hypotheses and passive subjects to express constitutional provision (CF art. 149-B, I), as well as the same immunities (CF art. 149-B, II) and specific, differentiated or favored taxation regimes (CF art. 149-B, III in combination to art. 156-A, §1, X), and the same non-cumulative profile and crediting rules (CF art. 149-B, IV in combination to art. 156-A, VIII). Furthermore, they must have a single and uniform legislation (art. 156-A, §1, IV), including implementing the two taxes based on the same complementary law (ADCT art. 124). It must be done to avoid divergences between them at their outset. Each federative entity has the right to set these taxes rate through specific acts of law (art. 156-A, §1, V and VI).

Besides the need for a single and uniform IBS/CBS legislation, it is mandatory creating the IBS Management Committee (CF art. 156-B, caput) as administrative authority to issue a single tax regulation and standardize its legislation's interpretation and application (art. 156-B, I). It will also be in charge of centralizing the collection, compensation and distribution of its collection's proceeds with Federative Units and Municipalities (art. 156-B, II), and of deciding on its administrative disputes (art. 156-B, III). The Supreme Court will be in charge of

[4] Cf. CASTRO E SILVA, Eric Moraes de; LIMA, Bruna Maria Nunes; CARVALHO, Vitória Bárbara da Silva. *Reforma Tributária Brasileiras: uma Comparação Prática com o Sistema Canadense.* Revista Direito Tributário Atual v. 56. Ano 42. P. 177-196. São Paulo: IBDT, 1º quadrimestre 2024.

deciding on conflicts among federative entities, or among these entities and the Management Committee (CF art. 105, "J").

A centralized tax authority was implemented to charging consumption through IBS/CBS, and it was the opposite of that elected by the original Constituent Assembly, back in 1988. As aforementioned, it was one of the factors accountable for the failure of the previous system. The core question widely discussed in debates prior to EC 132/23 remains: whether such centralized tax authority has not compromised the Brazilian federative model, which is assumed to be the most decentralized in the world. It is so, because there is no record of another federation comprising as many entities as the Brazilian one.

The way to preserve the authority of federative entities and, consequently, the constitutionality of the new taxation on consumption, lies on the IBS/CBS tax rate. The tax legislation must be unique and uniform towards all essential IBS/CBS aspects (i.e. material, temporal, spatial, personal and calculation-based). The tax rate is expected to be individually set by each federative entity based on specific law (CF art. 156-A, §1º, V), which must be the same for all transactions (CF art. 156-A, §1º, VI) and charged by the sum of tax rates set by the Federative Entity and the Municipality of the transaction's destination (CF art. 156-A, §1, VII).

As understood by the Supreme Court, just like any other tax, IBS/CBS must follow the due "flow of positivity for tax authority exercise, namely: 1) constitutional authorization for tax authority exercise [EC 132/32]; 2) complementary law to establish general rules related to the tax, according to art. 146, III, and (...), to the Constitution [Bill forwarded on April/24]; and 3) ordinary law to establish the levy"[5]. Only the ordinary law of each entity set its rate in this third requirement.

The previous system's "positivity flow" took more than 55 (fifty-five) years to be progressively abolished as of EC 132/23[6]. By express determination of the Amendment, the new one must take place within 2 years because there must be IBS incidence at initial rate of 0.1% and CBS incidence at 0.9% to start the transition to the new system. The

[5] BRAZIL. Extraordinary appeal n. 1.221.330 (Tema 1094). Brasília, 2020. Available at: https://portal.stf.jus.br/jurisprudenciaRepercussao/verAndamentoProcesso.asp?incidente=5731431&numeroProcesso=1221330&classeProcesso=RE&numeroTema=1094. Accessed on: June 3rd, 2024

[6] Consumption taxation based on value added tax was implemented in Brazil in 1955 and it was constitutionalized in 1965. CF. BRANDAO JR., Salvador Cândido. Federalismo and ICMS: Estados membros na "Guerra Fiscal". São Paulo: Quartier Latin, p. 138, 2010

new system will coexist with the previous one until its final extinction by 2033 (ADCT articles 125, 127 and 128).

Deep changes in the system and lack of time to establish the necessary new IBS/CBS "positivity flow" have already caused huge legal uncertainty. Four (4) IBS/CBS items that are assumingly impactful on contractual relations were identified as way to reach the specific topic of the current study. Each of these topics will be analyzed in a separate section, below.

2 Specific IBS/CBS impacts on economic relations

2.1 IBS/CBS rate

Rate setting is the only autonomy reserved to Federative Units when it comes to IBS/CBS tax jurisdiction. The rate can be set by specific law, by each member, and, in theory, it ensures their financial autonomy, which is inherent to the federation.

The entity will be free to set the rate it sees fit, whether low or high, but it must bear the political cost of its choice, since the tax must be as simple and transparent as possible (CF art. 145, §3). This system is expected to make taxpayers precisely aware of how much tax is levied on theirs consumption. Such knowledge is currently impossible, and these changes will finally turn consumers into taxpayer-citizen-voters.

The so-called "reference rates" will coexist in the system alongside with specific rates set by The Federal Government, Federative Units and Municipalities. The Federal Senate will help setting these rates with the support from the Federal Court of Auditors, in compliance with art. 156-A, §1, XII, in combination to § 16 of art. 195 of the Constitution. Reference rates will be set in the year prior to their enactment, and the constitutional 90-day time limitation provided on the Federal Constitution (art. 150, III, "c") will not apply to them (ADCT art. 130, § 1).

Its name defines it. It was called reference rate because this index will not be mandatory for federative entities, but rather a reference for them to keep the collection levels recorded up to the EC 132/23. The entity is free to set its rate at levels higher or lower than the reference one if it does not want to keep current collection levels. Reference rate application will be mandatory if the entity does not enact its specific law (CF art. 156-A, §1, XII).

Several devices on the new constitutional provisions express entities concern with maintaining the same collection levels reached with ICMS/ISS/IPI/PIS/COFINS after enacting the IBS/CBS system. Therefore, the reference rate is the means to implement this imperative.

Accordingly, at transition time, based on art. 130 of ADCT, IBS and CBS rates correspond to reducing revenues from taxes that will be phased out (ICMS/ISS/IPI/PIS/COFINS). The same concern is seen in § 9, II, of art. 156-A, according to which, any change in federal legislation to reduce or increase IBS must be offset in reference rates, "*in order to preserve the collection of federative spheres*".

It should be noticed that the concern with maintaining revenue also stablished a "reference limit" that benefited taxpayers. This limit is understood as the mean revenue collected between 2012 and 2021, which must be applied to calculate reference rates (ADCT art. 130, §3). **The fear to be avoided due to the aforementioned "top limit" lies on the fact that IBS/CBS rates might be accurately calibrated, since it could increase the tax burden set by the new system in comparison to the previous one**.

However, all these constitutional parameters for IBS/CBS reference rate setting are not enough to immediately determine its exact percentage. It is so, because **the total revenue from the IPI/ICMS/ISS/PIS/COFINS system is known, rather than how much each of these taxes actually affects a specific good or service in the system about to be ruled out.**

Take the ICMS case, for instance. In addition to the coexistence of 27 (twenty-seven) different Federative Unit subsystems, each Unit also adopts several special regimes to reduce or increase this tax incidence based on different criteria such as merchandise type (e.g. selectivity, tax war, among others), where it is produced (e.g. tax incentives to promote or hinder the circulation of a given good, among others). It means that the same merchandise (e.g. "pen") can be subject to totally different ICMS incidences depending on where the producer/trader is located in the national territory.

The same is observed in the current PIS/COFINS system. Contribution incidence significantly changes depending on the taxpayer location in these contributions' cumulative or non-cumulative system,

rather than just due to large differences in their nominal rates (3.65% cumulative and 9.25% non-cumulative)[7].

So far, there is no consensus on the concept of "inputs" for credit calculation purposes if the taxpayer is in the non-cumulative system. Consequently, the general incidence of PIS/COFINS contributions increases or decreases, in the same proportion of the scope given to the concept of input, which is actually accurately individually determined when the taxpayer administratively or judicially litigates. However, this is absolutely not a good criterion to ensure the system's necessary legal certainty.

Consequently, it is almost impossible to set the specific incidence of taxes for each good and service consumed in the country under the system to be ruled-out. It is also impossible to specify IBS/CBS reference rates for each federative entity to be evenly levied on all goods and services. It is so, because the reference rate would have to accurately reflect the total incidence of taxes under the previous system in order to maintain the same collection level between the new and the old system, as explicitly provided on EC 132/23.

Despite the competence of its staff, the Federal Court of Auditors, which accounts for assisting the Senate in setting the reference rates, has an extremely complex task to be accomplished within a very short period-of-time, namely: setting the Federal Governments' reference rate, the reference rates of 27 Federative Units and the Federal District, and the 5565 reference rates for the Brazilian Municipalities.

As provided on CL n. 214/25[8], there will be 3 reference rates, one for the Federal Government, one for the Federative Units and the one for Municipalities. They must be calibrated after the implementation of transition rates in 2026. This process will follow a "trial and error" method until the new system reaches the collection level recorded for the old one. It will be far from meeting the particularities and divergences of each federative member, a fact that reinforces the argument that EC 132/23 actually suppressed the tax authority, mainly that of smaller entities.

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[7] Not to mention the "non-cumulativeness" technique for a tax whose materiality is not goods/services, but rather "gross revenue", which makes taxation on added value unfeasible. See CASTRO E SILVA, Eric Moraes de. Influências do Sistema Multilateral de Comércio no Sistema Tributário Brasileiro. Doctoral Thesis. 2016. Thesis (Doctorate in Law). Law School, University of São Paulo, São Paulo.

[8] Art. 19, III c/c Art. n° 19, §2°, I

2.2 IBS/CBS non-cumulative nature

Adopting the so-called "non-cumulativeness" technique means featuring taxation as "added value" in Brazil. IBS/CBS was defined as compensation for *"the tax due by taxpayers based on the total charged on all transactions aimed at acquiring material or immaterial goods, including rights, or services (...)*" (CF art. 156-A, § 1, VIII)[9].

Taxation on added value allows the tax to be levied along a multi-phase production chain to pass through it in a neutral manner[10]. In other words, the tax financial burden will be exclusively concentrated on the price of goods and services acquired by the final consumer - this is a French invention from the 1950s[11].

Brazil was one of the first countries to adopt the non-cumulative technique for consumption tax back in the 1950s. This principle was constitutionalized as principle-rule in EC 18/65, which was ruled by Delfim Netto (the Minister of Finance at the time), who was a self-declared Galicianist[12].

However, Brazil's pioneering spirit led it to a taxation on added value system totally different from that adopted in the rest of the world, mainly when it comes to three specific matters: (i) fragmented tax base between goods and services, as aforementioned; (ii) non-adoption of the destination principle; and (iii) lack of broad neutrality in taxation. These matters were materialized by the full conversion of tax debt levied in the previous phase into credit to be subtracted at the subsequent stage of the production cycle.

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[9] Actually, there are two ways to achieve added value taxation: the debit-credit technique, adopted in Brazil based on non-cumulativeness, and the base-against-base method, adopted in Japan. See. SCHENK, Alan; THURONYI, Victor; CUI, Wei. Value Added Tax: A Comparative Approach. Cambridge: Cambridge University Press. See. BRANDAO JR. Salvador Cândido. Federalismo e ICMS: Estados membros na "Guerra Fiscal". Quartier Latin, São Paulo, p. 138

[10] The principle of neutrality in value-added taxation, enshrined in Constitutional Amendment 132/23 (CF art. 156-A, §1º) has a different connotation from the "neutrality" commonly understood in economic sciences. Adam Smith already advocated that taxation should be neutral from an economic viewpoint; thus, he understood it as not being a decision-making factor for capital allocation. From a tax viewpoint, VAT neutrality means that the financial burden of the tax is entirely shifted from *de jure* taxpayers to *de facto* taxpayer, who should always be the final consumer. See ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD). Neutrality of Value Added Taxes in the Context of Cross-border trade. International VAT/GST Guidelines. Paris: OECD, 2017. Paris: OECD, 2017.

[11] Cf. BRANDAO JR. Salvador Cândido. *Federalismo e ICMS: Estados-membros em ´guerra fiscal´*. Quartier Latin, São Paulo, p. 138

[12] Cf.. Cf. CASTRO E SILVA, Eric Morase de. *Influências do Sistema Multilateral do Comércio no Sistema Tributário Brasileiro*. PhD thesis. 2016. These (Law School Doctorate). Law School, University of São Paulo, São Paulo

According to the principle of destination, which rules international trade relations (as provided on GATT – it is currently managed by the World Trade Organization (WTO)[12]), the importing country (the recipient of goods) is the tax authority accountable for imposing taxes on consumption. This rule only became PIS/COFINS (CF art. 149, § 1º, I) and ICMS (CF art. 155, §2º, X, "a") tax immunity after Constitutional Amendment 33/2001 enactment. Brazil was the only country to adopt the principle of origin for interstate trade; it left ICMS collection on the hands of producing Federative Units, which led to significant economic concentration in Southern/Southeastern Federative Units, to the detriment of other consumer Units. This process perpetuated the age-old regional inequality that weakens the Brazilian Federative Units[13].

With respect to non-cumulativeness, although the aforementioned principle has been a constitutional IPI and ICMS command since 1965, their application for more than fifty years has completely undermined their necessary neutrality. Thus, Brazil developed unique practices that successively mutilated the neutrality sought by the non-cumulativeness technique. This process has caused these taxes' financial burden to accumulate as cost for taxpayers by right, over the production chain, rather than fully concentrating on the actual taxpayer, who is the final consumer, as observed in other countries.

It is possible mentioning ICMS value inclusion in its calculation base among reprehensible practices that have mutilated this tax non-cumulative nature, the well-known "calculation within ICMS" (CF art. 155, §2, XII, "i"). It is featured by differentiation between its physical and financial credits to allow tax credit for goods that are "effectively" part of the final product; by successive and, to this day, unattainable extensions for ICMS credit use in electric energy acquisition (CL 87/96 art. 33); by indiscriminate use of progressive tax replacement without guaranteeing immediate and preferential refund in case of lack of presumed taxable event (CF art. 150, § 7º); among others. All these factors were endorsed

[13] EC 132/23 finally adopts the destination principle for interstate exchanges of goods and services, but it established a transition period of 50 more years for its full adoption (ADCT art. 131). Thus, only in 2077 will consumer States be entitled to the full amount of IBS levied on goods and services consumed in their territories. A strong mechanism for reducing regional inequalities, which is one of the fundamental objectives of the Republic (CF art. 3, III), has been diluted, overtime. By way of comparison, only 100 years after the world adopted this principle that it will be fully adopted by Brazil, since the destination principle for poor countries has been since the 1970s.

by the Supreme Court in several judgments issued over pre-EC 132/23 system validity.

EC 132/23 expressly excluded IBS/CBS from its own calculation basis (CF art. 156-A, §1º, IX) and established very important parameters to ensure prompt tax credit recognition for non-cumulative materializing purpose in order to prevent these practices' harmful effect on neutrality, which is now a constitutional principle (CF art. 156-A, §1º), from being repeated in the new IBS/CBS system.

The most important parameter is provided on §4 of art. 156-A, according to which, the IBS revenue collected by the Management Committee will only be passed on to the respective Federative Unit and Municipality after it withholds the "*total equivalent to the accumulated equilibrium of tax credits not offset by taxpayers, rather than refunded at the end of each assessment period*" . It should be done by only distributing the net balance of "*tax collection procedures [the net balance of "tax collection procedures] by withholding deduction*".

This provision reverses the burden from recognizing and using non-cumulative credits to IBS/CBS, unlike what happens with ICMS. According to the pre-EC 132/23 system, the taxpayer would first collect the ICMS total mutilated from its neutrality to the Federative Unit's treasure, to then try to recover such undue collection through a painful and often Kafkanean administrative or judicial process. If the judicial process is in favor of the taxpayer, it has to be paid through court order; but, it simply does not exist in some Federative Units.

IBS/CBS reversed this burden. The revenue does not enter the Federative Unit and municipal treasure right the way, it is then repeated by the taxpayer. According to the new system, any amount about to be offset is retained by the Management Committee, in other words, it is not available to the taxpayer or the federative entity. Therefore, the Complementary Law must set the form and (reasonable) term to reimburse credits accumulated by taxpayers (CF art. 156-A, §5, III), although the CL can set hypotheses according to which credit use will be subject to effective tax-collection checking (CF art. 156-A, §5, II).

Several questions emerge when it comes to contracts in force under both systems. First, how will the administratively or judicially return of recognized credits for taxes be replaced? Can they be offset against IBS/CBS debts? Since there is no constitutional provision on this matter, assumingly, the only alternative may lie on the failed system through court order, in yet another economic skeleton left for future generations.

As for the new IBS/CBS, what will be the deadline and compensation procedure under the Complementary Law? If the total withheld by the Management Committee is not reimbursed within the legal deadline, will it be immediately returned to the taxpayer (corrected)? If the total is returned to the taxpayer, but it is later determined that this total was owed by the Tax Authorities, how will the taxpayer be charged, by the failed Tax Enforcement Law?

2.3 End of tax incentives

Using ICMS (and, to a lesser extent, ISS) for extra-fiscal purposes, mainly to attract productive investments to Federative Units' territories - without respecting this tax national scope, particularly the rules provide on Complementary Law n. 24/1975 - was another reason leading to the failure of the previous system. This Complementary Law shows how exemptions are granted, as well as incentives and other ICMS tax benefits, as determined by the Federal Constitution art. 155, §2, XII, "g".

The well-known "fiscal war" started, and it had harmful effects on the federative pact[14] due to the so-called "race to the bottom" practiced by the Federative Units. This race was featured by the displacement of businesses already installed in a given Unit to another, only by force of ICMS incentives unilaterally granted (i.e., unconstitutionally). This process did not create new wealth for the Country.

Federative Units that had lost investments, in their turn, began to "retaliate" by mainly demanding the reversal of the non-cumulative credit fictitiously granted by the Federative Unit that had granted the benefit in interstate transactions. Actually, it would happen through the indiscriminate issuing of Infraction Reports against taxpayers who enjoyed the benefit by financially nullifying such tax gain.

Complementary Law n. 160/2017 was enacted after several STF judgments to rule on the unconstitutionality of benefits granted without observing the rules in CL 24/75. The new law enabled the remission and amnesty of tax credit listed in the aforementioned Infraction Reports, as well as the validation of unilateral ICMS benefits.

[14] It is worth highlighting the personal opinion of the authors of the current article who, as people from Pernambuco, advocated for the economic tax war justification via ICMS as the main way to attract relevant investments to poor states in the Northern and Northeastern regions, mainly as response to the adoption of the principle of origin for interstate ICMS by the previous system. See footnote o. 12.

However, a maintenance period was established for benefits that had been granted unconstitutionally upon validation. It aimed at ensuring that tax authorities and taxpayers would face a gradual and orderly transition up to the total extinction of incentives granted over the "tax war". The gradual and orderly extinction established by CL 160/17 can be summarized as follows:

Tax Benefit type	Maximum Maintenance Period	Complete Extinction	Article of CL 160/2017
Investments in Infrastructure, Industry, Agriculture and Services	15 years (by 2032)	2037	Art. 3, § 2, I
Maintenance or Expansion of Job Positions and Economic Activities	8 years (by 2025)	2026	Art. 3, § 2, II
Other Tax Benefits	5 years (by 2022)	2023	Art. 3, § 2, III

Apart from unconstitutional ICMS benefits, which were regulated by CL 160/17 (as summarized above), it should be noticed that several other constitutional Federal Unit tax benefits were also granted, because CL 24/75 requirements were observed. Furthermore, municipalities also granted valid ISS benefits.

EC 132/23 will be enacted and it would gradually extinguish ICMS and ISS, which are the object of several granted benefits. These taxes will be gradually replaced by IBS/CBS within a 10-year timeframe (ADCT art. 129), as already mentioned.

With respect to the new system, EC 132/23 was categorical in establishing that IBS/CBS "*will not be subject to the granting of financial or fiscal incentives and benefits related to the tax or to specific, differentiated or favored taxation regimes, except for cases provided for in this Constitution*" (CF art. 156-A, § 1, X).

The prohibition of any extra-fiscal type by IBS/CBS implicitly derives from the constitutional design of this new tax because federative entities will no longer have the power to change their essential aspects. Nevertheless, this is the derived constituent understood to expressly establish such prohibition, whose sole recipient is the National Congress.

The new consumption tax system is expected to be protected from the "fiscal war" virus. Yet, nobody knows what will happen to contracts signed under the previous tax system and whose execution will be extended to the post-EC 132/23 time.

This discussion is very relevant to contracts, since different tax benefits were granted by the previous system to thousands of taxpayers who, obviously, quantify them to form the price of goods and services that are the object of their contractual obligations.

EC 132/23 established in *the caput* of art. 128 of the ADCT the gradual reduction of ICMS and ISS rates between 2029 and 2032, up to their full extinction in 2033, to ensure a certain predictability (ADCT 129).

§1 of ADCT art. 128 uses the same proportion established in the aforementioned *caput* to reduce the rates and to gradually reduce tax benefits granted through ICMS and ISS, from 2029 to 2032.

§2 of ADCT art. 128, in its turn, changed the term of the other gradual reduction established by CL 160/17 to extinguish unconstitutional ICMS incentives granted over the "fiscal war" (Table 1). It sets that incentives will be fully maintained until December 31, 2032.

In short, all tax benefits, except for those specifically provided for in the Constitution, will be extinguished by 2032. After that, no more differentiated regimes will be possible under IBS/CBS, except for those expressly provided for in the Constitution (CF art. 156-A, § 6). It may also have impact on contractual relations; therefore, this subject will be addressed in the specific topic, below.

2.4 Specific, differentiated or favored taxation regimes

Although economists and the international practice in more than 170 countries have proven that value added tax should comprise the fewest exceptions possible to its general taxation rule, political issues inherent to the democratic debate introduced several goods and services in EC 132/23, in addition to some economic sectors that are subject to tax incidences different from that set for IBS/CBS.

From the equity viewpoint, the question emerging from provisions on deviations from general rules regards whether there was offense to the proto-principle of equality, which is the essential rule of any or all

legal system. The German jurist Klaus Tipke[15] teaches that the election of a comparative/classifying criterion to set the group to be subject to a certain differentiated legal regime is what materializes equality. Thus, defining the criterion is important, since the system is often responsible for explaining valid or invalid criteria for such classification purpose[16].

The idea is not to reason on the merits of validity of criteria chosen by EC 132/23 to establish differentiated legal regimes. This article focuses the three regimes provided for in the national tax system that fully or partially deviate from the general IBS/CBS rules, namely: "differentiated regimes" (EC 132/23 art. 9), "specific regimes" (CF art. 156-A, §6) and "favored regimes" (CF art. 146, III, "d"; art. 225, §1, VII and ADCT art. 92-B).

IBS/CBS is levied in the differentiated regimes, which must be uniform throughout the national territory, but the rate for some goods and services is reduced by 30%, 60% or 100%, or a presumed tax credit is granted to reduce the financial burden. Goods and services subject to the Differentiated Regime are listed in Appendix I of this article, as well as their respective rate reductions or presumed credit granting.

With respect to economic sectors subject to specific regimes, the Complementary Law can provide for taxation protocols that are completely different from those of IBS/CBS. They allow the deviation from essential aspects of the new national taxation on added value. Thus, taxation may be single-phase and cumulative for the fuel and lubricants sector, for example, and this is opposite to taxation on added value. Materiality can be revenue/turnover for financial services, real estate, health plans and forecasting contests, rather than goods and services. IBS/CBS regime or a different one provided for in the CL is allowed for cooperatives, in addition to ensuring immunity to them.

Actually, provisions for specific regimes on the Constitution set the tax authority to create new taxes that are totally different from IBS/CBS. It is so, because IBS/CBS essential aspects (i.e. material, temporal, spatial, personal and quantitative) are fully or partially different from

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[15] Cf. TIPKE, Klaus. Principle of Equality and Idea of System in Tax Law. In: MACHADO, Brandão (Org.). Tax Law - Studies in Honor of Prof. Ruy Barbosa Nogueira. São Paulo: Saraiva, 1984. p. 515-527. Our Constitution, for example, does not allow the "origin, race, sex, color, age" of a person as differentiating/classifying criterion (CF art. 3, IV), but it allow differentiated treatment based on their economic capacity (CF art. 145, §1)

[16] Our Constitution, for example, does not allow the person's "origin, race, sex, color, age" as a differentiating/classifying criterion (CF art. 3, IV), but it allows differentiated treatment based on their economic capacity (CF art. 145, §1).

those provided for economic sectors under specific regimes (CF art. 156-A, §6).

The respective economic sectors included in specific regimes, constitutional deviations from the IBS/CBS system and their respective constitutional provisions will be summarized below:

Economic Sector	**Deviation from the IBS/CBS General Rule**	**Constitutional Provision**
Fuels and lubricants	• Monophasic incidence; • National uniform rates specified by unit of measurement and differentiated by product; • Appropriation of credit for distribution, marketing or resale is prohibited; credit granted in acquisitions by a taxable person	Art. 156-A, § 6, I, a-c
Financial services, Real estate transactions, Health care plans and Contests	• Changes in tax rates, • Changes to crediting rules, • Change in calculation base; • Being levied on revenue or turnover; • National uniform tax rate	Art. 156-A, § 6, II, a-b
Cooperative associations	• Optional taxation; • Immunity in transactions between cooperatives and members; • Using credit regimes from previous stages	Art. 156-A, § 6, III, a-b
Hotel services, Amusement and thematic parks, Travel and tourism agencies, Bars and restaurants, Sports activity by Soccer Corporation, Regional aviation	• Changes in tax rates, • Change in calculation base • Change in crediting rules	Art. 156-A, § 6, IV

Economic Sector	Deviation from the IBS/CBS General Rule	Constitutional Provision
Operations covered by international treaty or convention	Specific treatment for diplomatic missions, consular offices, representations from international organizations and their accredited staff	Art. 156-A, § 6, V
Public passenger transport services (intercity and interstate road, railway and waterway)	• Changes in tax rates, • Change in crediting rules	Art. 156-A, § 6, VI

Finally, the Constitution also provides for "favored regimes," which, by their very name, impose lower tax incidence than the general one. The existing favored regime for micro and small companies (CF art. 146I, III, "d" – SIMPLES NACIONAL) and for Manaus Free Trade Zone (ADCT art. 92-B) were maintained and adjusted by EC 132/23. The Amendment expanded it to cover biofuels and low-carbon hydrogen. It was done to make sure that these sectors will be less taxed than fossil fuel sectors, which are subject to a specific regime. This rule guarantees competitive advantage biofuels and low-carbon hydrogen over the fossil fuel sector (CF art. 225, §1, VIII) (CF art. 225, §1, VIII).

3 Tax Reform (IBS and CBS) and economic-financial equilibrium of long-term administrative contracts

3.1 General aspects

Long-term administrative contracts are essential for infrastructure development and for the provision of essential public services. They regard significant financial and technical investments, in addition to coordination of different sectors and governmental spheres. They are observed in several activities that are essential to the economy and society, such as highways, harbors, airports, power generation plants, public works, medication, hospitals, schools, prisons, public buildings, among others.

These contracts will suffer from a large-scale exogenous shock caused by the tax reform in the coming years due to significant impact

on contracts themselves, as well as on society as a whole. Such impacts can be stronger depending on externalities seen in several sectors. Price elasticity on demand for impacted products may have moderate external impact on contracts, and this is part of the transmission channel to concessions based on tariffs, on other public prices or on some additional revenues, but it does not rule them out. Fiscal impact is more significant for payment contracts based on availability or on public considerations. Therefore, two priorities are essential from now on: **i) understanding impacts on each sector and shock on specific contracts, and ii) assessing how to rebalance these contracts so that exogenous shocks on contracts do not translate into negative impacts on the economy and on society.**

Maintaining these contracts' economic and financial equilibrium is essential to ensure that the targets are reached and that involved parties get the expected benefits. Traditionally, such balance has been achieved through the mechanistic approach[17], which is based on principles of classical mechanics that assume the predictable and linear return to equilibrium. However, this approach is inappropriate, given the complexity and non-linear dynamics inherent to long-term contracts[18].

Therefore, the traditional *modus operandi* for rebalancing these long-term administrative contracts takes place in the environment called "mainstream" administrative law, which is widely used in Brazil to analyze administrative contracts. It is rooted on the French doctrine and was strongly influenced by 20th century authors and handbooks. However, this theoretical framework proves to be insufficient to deal with the major contractual challenges faced by demands from modern administrative practices. It is based on outdated concepts such as symmetry and free information, contractual completeness and on the broad application of exorbitant clauses, among others[19].

Firstly, it is possible stressing the inadequacy of the mainstream model for long-term contracts. This is a more realistic vision of these contracts' management, which takes into consideration a dynamic and adaptive approach for their rebalancing.

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[17] CHEN, Ping. *Economics Complexity and Equilibrium Illusion*: Essays on Market Instability and Macro Vitality. New York: Routledge Press, 2010

[18] *ROSSER Jr., J. Barkley. On the Complexities of Complex Economic Dynamics. Journal of Economic Perspectives, v. 13, n. 4, p. 169-192, Fall 1999.*

[19] NOBREGA, Marcos. *Um olhar além do óbvio: Temas avançados de licitações e contratos na lei 14.133/21 e outros assuntos*. 2ª ed. São Paulo: Juspodvm, 2024.

The management of long-term administrative contracts is widely seen by experts and scholars as problematic. These contracts are featured by their complexity, incompleteness, relational nature and resilience. These features turn their effective management into a significant challenge. These are some of these contracts' several striking features:

1. Complexity: Multiple stakeholders and diverse interests turn contract management into a complex process full of uncertainties and interdependent variables. Each contract involves entangled interactions among contracting parties, suppliers, regulators and other stakeholders - each of whom have their own expectations and targets. Their complexity regards the need for making various parties comply with a common goal, while they navigate through regulations and operational challenges. This is certainly true in public service concession contracts, in large-scale construction projects and in many other segments.

2. Incompleteness: It is impossible to foresee all future contingencies; therefore, contracts include adaptability clauses to allow adjustments and renegotiations, as needed. Incompleteness is an inherent feature of any long-term contract, since it is impractical to anticipate all possible scenarios. Contracts must be designed with a degree of adaptability to allow adjustments in them in response to unforeseen events, to changes in economic and technological conditions, and to the evolving needs and expectations of involved parties.

3. Relational Nature: These contracts depend on an ongoing, cooperative relationship between parties who must work together to solve issues and to adjust terms as circumstances change. Mutual trust and willingness to negotiate are critical to these contracts' success. Long-term contractual relations require open and ongoing communication, as well as the ability to manage conflicts and to combine divergent interests. The relational nature of contracts is a critical element of their sustainability, as it allows parties to adapt and adjust their expectations and duties, overtime.

4. Resilience: Refers to contracts' ability to adjust to external changes and shocks, such as new regulations or economic shifts, without compromising their fundamental aims. Resilience is crucial to make sure that contracts remain viable and effective throughout their duration, despite uncertainties and variability in external environments. Contract resilience can be strengthened by including adaptation clauses and renegotiation mechanisms in it, since these factors allow continuous and proactive adjustments in response to changes in external conditions.

Accordingly, it is important recalling that imbalance in long-term contracts, based on the classical mainstream doctrine, is seen as trauma, as proof that something did not work out. But, actually, it is quite the opposite! It is impossible to think that there will be no turbulence in long-term contracts, or no events that could lead to contract imbalance. Imbalance in long-term contracts must be treated as modern phenomenon; therefore, it is up to the person who designs the contract to decide on its flexibility and resilience.

Although this topic will be further discussed, it is necessary to establish "*contractual shock absorbers*"[20] capable of absorbing turbulences arising during long-term contractual relationship. This is the case of assimilating a significant exogenous shock, such as that coming from the tax reform, which is already in its transition phase.

3.2 Economic-financial rebalancing mechanistic model

The mechanistic model is the most traditional one to understand contract rebalancing. This economic equilibrium model is based on principles of classical mechanics, which assume that contracts, as linear dynamic systems, return to stable equilibrium, regardless of time variables. In economics terms, this model takes time as irrelevant to agents' strategic behavior. It assumes that these agents' preferences and expectations remain constant, overtime.

This process lies behind the most commonly used proposals to rebalance long-term contracts. When the projected cash flow of a dealership is used and brought to the present value, one is comparing different things because contractors will be different in the future from what they are today, or from what they were in the past. It happens because, in addition to changes in the state of nature, strategic incentives and knowledge acquired throughout the contractual relationship completely change the sense of balance towards contractual relationships. The same happens when the internal rate of return is used. It is so, because, in addition to causing distortions in the present,

[20] LOBO, Filipe e NOBREGA, Marcos. *Shock absorber, traction e equilíbrio dinâmico dos contratos: pela necessidade de modos adaptativos, não lineares e informados por sistemas complexos para o reequilíbrio Contratual. R. bras. de Dir. Público – RBDP - Belo Horizonte, ano 22, n. 86, p. 33-57, jul./set. 2024*

it proves to be of little use as factor for projecting the future when one faces contracts' non-linear dynamic behaviors.

Thus, it is important noticing that the mechanistic model of equilibrium for long-term contracts has several limitations[21]. First, as exemplified in the case of using cash flow, it does not take into account the irreversibility of time and ignores that past events can irreversibly influence contracts' future states. Second, the model does not consider the non-linearity of contractual relationships, although small changes in the initial conditions can lead to large variations in results. These limitations make this model inadequate to deal with the complexity and dynamics of long-term contracts, which are marked by both continuous changes and necessary adjustments.

These long-term administrative contracts have some fundamental features[22]:

1. Dynamic Systems: Economy is seen as dynamic system whose agents change their strategies in response to new information and learning. Long-term contracts are dynamic and adaptive, besides requiring a flexible and responsive management approach. This approach implies the need for contractual mechanisms to allow continuous and proactive adjustments, expectations' matching and the duties of involved parties, overtime.

This is very important because rather than investing time and money in trying to understand the size of the observed imbalance, it is first necessary to understand why such contracts became unbalanced and what are the mechanisms assumingly capable of leading them back to rebalance.

The classical contractual doctrine fails to rebalance these contracts because it does not understand why they lost equilibrium and what forces led them to such a situation. Contracts are taken as pendulum or as a clock that, at some point, will necessarily and linearly return to equilibrium.

2. **Flexibility and Adaptability**: Long-term contracts should be treated as dynamic systems that require ongoing flexibility and adaptability to maintain equilibrium. Contract flexibility is critical to its

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[21] COLANDER, David (Org.*). Complexity and the History of Economic Thought: Perspective on the History of Economic Thought.* New York: Routledge Press, 2000

[22] ELSNER, Wolfram; HEINRICH, Torsten; SCHWARDT, Henning. *The Microeconomics of Complex Economies: Evolutionary Institutional Neoclassical and Complexity Perspectives.* London: Elsevier Press, 2015.

sustainability, since it allows interested parties to adjust their duties and expectations in response to external and internal changed conditions. Adaptability regards the ability to quickly and effectively respond to unforeseen events; it must ensure that the contract remains viable and effective, overtime.

Adaptability is the pragmatic answer to the classical theoretical rebalancing framework. Contract parties learn and change their strategic behavior, overtime. This particular feature must be understood to discuss long-term contracts that will eventually suffer from significant impact from exogenous shocks caused by the current tax reform.

3. **Time Irreversibility**: It recognizes time irreversibility and the need for constant adaptation, which sharply contrasts the static and linear profile of the mechanistic model. Time irreversibility implies that past events have lasting and irreversible impact on contracts' future status, which requires a continuous and proactive management approach to ensure that they will remain relevant and effective, overtime.

Interests of the parties and their strategic behavior change, overtime, and the mainstream contract law fail to capture such changes. This law is Cartesian and mechanistic; it assumes that future is a statistical shadow of the past.

4. **Nonlinear Interactions**: Interactions between contractual parties are nonlinear; in other words, contract outcomes can be highly sensitive to changes in initial conditions. Contractual interactions' nonlinearity reinforces the idea that small changes in initial conditions can lead to large variations in contract outcomes. This process requires a management approach capable of dealing with complexity and uncertainty in order to allow continuous and anticipatory adjustments for contract equilibrium and sustainability maintenance.

Therefore, what was initially agreed upon in the contract at its execution should not work as the arrival point for contractual rebalancing. It makes no sense to believe that it will return to what was agreed upon at time T=0, years later, or, as enshrined in mechanistic rebalancing practices, to the commercial proposal presented by bidders, by forcing the application of art. 37, XXI, of CRB, to long-term contracts.

It is known that long-term administrative contracts are often incomplete, and the bid price represents the best price "possible" within the uncertainty context, given the amount of information available to be parties at the time to prepare the bidding process. There are

accommodations during these long-term contracts' execution, so that the contract can be truly stable. Therefore, contract execution is the starting point after setting the "expectation gap" established by the parties. The bidding process, in its turn, is a sometimes flawed procedure to enable contract execution. This procedure is carried out based on premises that take into account factual situations prior to the contract itself; therefore, is it never definitive.

This scenario calls into question the secular idea of *pacta sund servanta*, which states time reversibility and the mechanistic view according to which future is just a linear projection of the present. And present, in its turn, is closer focused on the sense of justice than on efficiency production.

Accordingly, it is worth considering the ideas advocated for by Ilya Prigogine, who brought a new perspective to science through both his theory of complexity and the introduction of the concept of time irreversibility. In his book "*O Fim das Certezas: Tempo, Caos e as Leis da Natureza*"[23], Prigogine argues that time is not a simple reversible variable, as described in classical physics, but a fundamental element that provides irreversibility to natural processes. This view challenges the traditional mechanistic approach, which sees time as symmetrical dimension, wherein past and future are interchangeable. As incredible as it may seem, it cannot be seen in long-term administrative contracts.

From Galileo to Einstein, time incorporation to classical physics, dealt with time as symmetrical dimension, without distinguishing past from future. However, as for the observed reality, the arrow of time is an essential feature of natural processes. Non-equilibrium physics, which assesses dissipative processes featured by unidirectional time, gives a new meaning to irreversibility. Prigogine emphasizes that irreversibility is not a mere appearance, but intrinsic feature of unstable dynamic systems. This is the point of long-term administrative contracts; the mainstream doctrine does not take this arrow of time into account and understands these contracts as perpetuation of agents' strategies and incentives.

It is essential recalling that complex and non-linear systems can generate a wide range of possible behaviors and that it has often been difficult to develop insights into the dynamics of these systems.

[23] PRIGOGINE, Ilya. *O Fim das Certezas: Tempo Caos e as Leis da Natureza*. São Paulo: Unesp, 2011.

Methodologies applied based on the traditional contract rebalancing paradigm emerge from the optimization of some measure reflected on an objective function. It is often done by using essentially mechanical and deterministic models[24].

The non-equilibrium processes assessed by Prigogine allowed developing concepts such as self-organization and dissipative structures. According to these processes, far from equilibrium, irreversibility can play a constructive role by creating new forms of order and organization. Reactions can lead to self-organized spatial formations and to temporal patterns in chemical systems that would not be possible under equilibrium conditions, for example.

The first step towards understanding how these long-term administrative contracts can be rebalanced lies on recognizing how contractors' expectations change, overtime, and shift the emphasis from static optimization under constraints to adaptability. Given these contracts' uncertainty and limited predictability, the involved parties (and controllers, as well) must accept the need for experimenting and closely monitoring the effects of interactions on both these contracts and their likely (un)balance.

The mechanistic equilibrium model applied by the traditional administrative law has two basic features: simplifying and abstracting linear assumptions, and static models capable of offering unique and deterministic solutions to simplify the described reality. Principles imposed on the contractual theory by the Cartesian paradigm of simplification have separated reality from its formal representation.

Therefore, administrative scholars cannot properly capture the behavioral dynamics of long-term contracts and they fail to explain the new principles that would justify this inadequacy. This process sets the very basis for constructing a new interdisciplinary approach — **the theory of multiple contractual equilibria,** which will be further disclosed.

First, let's take a look at some legislative diplomas that could work as basis for analyzing balance in these long-term contracts.

Lets' learn how Complementary Law 214/25 regulates the matter.

[24] LIU, Hongliang; HOWLEY, Enda; DUGGAN, Jim. Co-evolutionary analysis: A policy Exploration Method for System Dynamics. *Model System Dynamic Review*, v. 28, n. 4, p. 361-369, 2012.

ON REBALANCING LONG-TERM CONTRACTS

CHAPTER IV

ON ADMINISTRATIVE CONTRACTS REBALANCING

Art. 373. This Chapter provides for adjustment instruments set for contracts signed prior to the enactment of Complementary Law.

§1 Provisions in this Chapter shall apply, wherever applicable, to administrative contracts signed after the enactment of this Complementary Law, whose proposal was submitted before its enactment.

§2 The provisions in this Chapter do not apply to private contracts, which remain subject to provisions in specific legislations.

Art. 374. Contracts in force, at the time this Complementary Law was enacted, that have entered into force by the direct or indirect public administration of the Federal Government, Federative Units, Federal District and Municipalities, ***including public concessions, will be adjusted to ensure economic and financial balance reestablishment due to changes in the effective tax burden borne by the contractor as outcome of impacts emerging from IBS and CBS implementation when imbalance is proven real.***

§1 For the purposes of this Chapter, the effective tax burden borne determination by the contractor must also take into consideration

a) ***non-cumulativeness effects*** *on acquisitions and costs to the contractor by taking into account the rules for credit calculations and how to determine the calculation basis for taxes referred to in the* ***caput****;*

b) ***the possibility of having the contractor passing on*** *the financial burden of taxes referred to in the* ***caput to third parties****;*

c) ***impacts of changes in taxes during the transition time provided for in articles 125 to 133 of ADCT; and***

d) ***contractor's tax or financial benefits, or incentives,*** *related to taxes extinguished by Constitutional Amendment n. 132, from December 20, 2023.*

*§2 P****rovisions of this Chapter also apply to contracts that have a provision on the risk matrix, according to which, the contractor is accountable for subsequent tax impacts.***

Art. 375. The public administration will carry out a review, ex officio, to reestablish economic and financial balance in case of decrease in the effective tax burden borne by the contractor. It is in ***compliance with art. 374 of the Complementary Law and ensures that the contactor has the right to express its views****.*

Art. 376. The contractor may request the economic-financial balance reestablishment referred to in art. 374 of this Complementary Law, which was observed ***in the transition time referred to in arts. 125 to 133 of ADCT through a specific and exclusive administrative procedure, based on the following terms:***

I – request for reestablishing the economic and financial balance may be made:

a) at each new tax change causing the proven imbalance; or

b) to cover all changes foreseen for the time provided for in articles 342 to 347 of this Complementary Law;

II – the economic and financial balance restoration request must be made during

the term of the contract and before any extension in it;

*III – the procedure referred to in the **caput** must be processed as priority;*

IV – the request must be followed by calculations and other elements that prove the actual economic-financial imbalance, in compliance with provisions in § 3˚;

V – rebalancing can be achieved by

a) reviewing contracted values;

b) financial compensation, tariff adjustments or other amounts contractually due to the contractor, even as resource input or monetary compensation;

c) renegotiating deadlines and delivery conditions or service provisions;

d) increasing or decreasing amounts due to the public administration, including concession rights;

e) transferring to one party the costs or charges originally assigned to the other party; or

f) other methods seen as acceptable by the parties, in compliance with the legislation of the sector or to that ruling the contract.

*§1 The request referred to in the **caput** must be ultimately decided **within 90 (ninety) days** from the filing date and extendable once for the same period-of-time if additional evidentiary instruction is necessary. The aforementioned period-of-time is suspended until the request is met by the contractor.*

§2 The economic-financial rebalancing will be preferably implemented through changes in contract remuneration or tariff adjustment, depending on the case. Alternative forms may only be adopted by the Administration after the contractor's agreement by observing, in all cases, the terms of the administrative contract.

§3 Legal entities composing the public administration that holds the power to decide on economic and financial rebalancing procedures can regulate the presentation of the request referred to in the caput and calculation methodologies recommended for showing the imbalance, without loss to the contractor about the right to request it in the absence of such regulation.

§4 Under the regulation terms, the economic-financial rebalancing may, at the public administration discretion, be implemented on a provisional basis when the contractor shows a relevant financial impact on contractual execution due to changes in the effective tax burden. The economic compensation must be reviewed and adjusted at the final decision on the request.

§5 The final decision referred to in §4 must include how and the instruments to collect or refund amounts paid in excess, or in part, during provisional adjustment measure application.

Art. 377. In cases of omission of this Chapter, the legislation ruling the contract shall be applied as subsidy.

Article 373 was firstly observed, it opens the chapter and deals with contracts that were in force when this supplementary law was enacted. It is important noticing that the reform will not have any impact

on contracts when the law comes into force. This impact will only be felt from 2026 onwards, when CBS and IBS will be charged at total rate of 1%. Therefore, contracts now covered by the new legislation will have one more year to get prepare for the impact from this new rate, if such initial rate causes any imbalance in them.

The same applies to contracts signed after this Complementary Law came into force, but whose proposal was submitted before it came into force. The wording in article 373 of this law is not perfect. What would be that proposal? What is the price proposal during the bidding process? Is the price awarded to the winner? Actually, it seems to refer to the price set out in the contract signed by the winning bidder, which does not consider any new tax in its price proposal. It seems unreasonable to require bidders to have any expertise or diligence to anticipate the rules regarding the new tax system in price proposals prior to this Complementary Law if there was not even any guarantee of Complementary Law Bill approval.

Article 373 also provides on private contracts that will not be ruled by the new rebalancing provisions in this supplementary law. They will be subject to specific legislation. It has been done in the Brazilian Law if one bears in mind that administrative contracts are peculiar contract types subject to the Administrative Legal Regime and to several exorbitant clauses.

According to the *caput* of the following article (Art. 374), rules one deals with at this point cover contracts in force at the time this Complementary Law came into effect and entered into by the direct or indirect public administration of the Federal Government, the Federative Units, the Federal District and Municipalities. In this case, it is essential asking whether contracts entered into by Mixed Economy Companies and Public Companies of any federated entity will be subject to rules that are currently under review. Assumingly, they will not. For the best of our knowledge, they are private contracts and are ruled by law 13.303/16 (State-Owned Companies Law). Furthermore, they must be ruled by the State-Owned Companies Law and by any other applicable civil legislation in parts regarding their rebalancing.

However, it is clear that - as rules of this complementary law are quite detailed - it does not prevent it from being analogously applied at the time to analyze specific imbalance cases in contracts of these state-owned company types.

Article no. 374, still in its *caput*, establishes that administrative contracts will be adjusted to ensure economic-financial balance reestablishment due to changes in the effective tax burden borne by the contractor due to impact of IBS and CBS' institution on cases whose imbalance is proven real.

At this point, there is a first issue. Imbalance must be proven and, in order to do so, the contractor's claims must be prepared based on a consistent and appropriate calculation methodology. It is also necessary to pay close attention to both transaction costs and inefficiency due to the complex and time-consuming procedure applied to process contractual amendment terms for economic-financial rebalancing.

Therefore, article 374 deals with the likely impacts the new IBS and CBS implementation will have on contracts. Obviously, it regards deferred execution contracts, which will remain in force after the new tax order is enacted.

Although short-term administrative contracts should also be changed, it is important focusing long-term contracts such as public service concession contracts, Public Private Partnerships, technology, public works, among others.

Three conditions are necessary to request rebalancing, namely: rebalancing calculation must have the effective tax burden as reference point in addition to the tax change borne by the contractor. The effective tax burden is the one referring to the tax duly paid by companies, which is responsible for the effective economic effects caused by the tax system. After all, imbalance is, in fact, proven. Accurately determining the impact of the new taxes' incidence on a specific contract is a difficult task to be accomplished, but it is not impossible.

With respect to determining the tax burden, article 374 establishes the aspects to be included in the contractor's request, and they are precisely those analyzed in the first part of the present article, namely: non-cumulativeness effects, the possibility of passing on to third parties, impacts from changes in taxes during the transition time, and the end of tax and financial incentives.

Firstly, non-cumulativeness effects on acquisitions and costs of the contractor must be taken into account by considering the new rules set for credit calculation and how to determine the tax basis for taxes referred to in the *caput*. As seen in topic II.2, the way applied to implement the amendment in the Federal Constitution, §4 of art. 156-A is essential to determine such effects. This new system reverses the burden in order to

recognize and use non-cumulative credits for IBS/CBS.

According to the new constitutional provision, it is up to the Complementary Law to set a reasonable reimbursement form and term for credits accumulated by taxpayers (CF art. 156-A, §5, III). The only way to make contracting parties aware of the real effect of non-cumulativeness on their acquisitions and costs is to implement this constitutional provision and to achieve the effective fulfillment of such responsibility by the Management Committee.

This Complementary Law must also assess the possibility of having the contractor passing on the financial burden of taxes referred to in the *caput* to third parties. This procedure is the very materialization of the new constitutional tax-neutrality principle, which was also analyzed in the first part of the current study. This assessment mainly affects contracts paid by public fees or prices (typically, it refers to common concession of public services), and it may also affect some contracts such as administrative concessions, whose ancillary revenues also arise from prices of goods and services processed on the market.

It is essential to determine the price elasticity of demands for goods set as contract subjects in order to find out the total of tax economic effect the contractor will be able to pass on to third parties[25], according to the neutrality principle. It happens because economic agents react with different intensities to price variations observed for different products. This elasticity is "the quotient between percentage variation in amounts demanded for a good or service, and that in their respective price"[26].

There are extreme cases of elasticity[27]. First of all, it is important addressing total inelasticity or total rigidity, when elasticity is equals zero. It highlights that any price variation is insufficient to change the demanded amount. In these cases, the taxpayer (the one who, by law, controls taxes' incidence) will be able to pass on the whole tax increase to the consumer[28]. These are rare situations.

Differently, infinite elasticity, or totally elastic goods, is observed when a subtle price raise can drive all consumers away. In this case, due

[25] MANKIW, N. Gregory. *Princípios de microeconomia*. 6ª ed. São Paulo: Cengage Learning, 2013.

[26] ARAUJO, Fernando. *Introdução à Economia*. 3ª ed. Coimbra: Almedina, 2000. p. 177.

[27] VARIAN, Hal R. *Microeconomia: uma abordagem moderna*. 9ª ed. Rio de Janeiro: Elsevier, 2015.

[28] BIDERMAN, Ciro; ARVATE, Paulo (Org.). *Economia do Setor Público no Brasil*. São Paulo: Elsevier, 2015.

to tax increase, taxpayers will have to bear the whole tax raise, and it impairs the process to pass it on to final consumers.

It is clear that it only regards few cases because the elasticity of the vast majority of goods fluctuates between these two extremes.

Elasticity measuring and price variation impacts on individual demand are difficult variables to be measured. Furthermore, the contract can comprise several goods and services, and the way to calculate this incidence can also change, overtime, because of changes in markets.

Impacts from changes in taxes during the transition time provided for in articles 125 to 133 of ADCT, of the Federal Constitution, must also be taken into consideration. In this case, the impact of such changes in taxes will reflect on contracts that were already in force when the tax standard changes.

Finally, it is important to take into consideration the end of the contractor's tax or **financial benefits or incentives related to taxes to be extinguished by this complementary law**, under the terms set forth in items II.3 and II.4 of the current study. This process will require great measurement effort because a tax benefit or incentive leads to positive and negative externalities in the production chain. Furthermore, it is obvious that the reform impact will not be limited to just one contract, but to several contracts comprising this productive universe.

Federative Units will lose an important tool to attract companies and to foster the generation of new job positions and income due to the end of ICMS at state level, namely: tax benefits. As general rule, it will be forbidden to grant these incentives in order to ending the so-called 'tax war'. However, the Tax or Financial-Fiscal Benefits Compensation Fund will be implemented to honor commitments made before the tax reform. In addition, the National Regional Development Fund (FNDR) will be created to allow the poorest Federative Units to develop.

§ 2 of article 374 provides on its economic-financial rebalancing discipline, which also applies **to contracts that already have a provision for the risk matrix regarding subsequent tax impacts.**

Every contract has two main economic functions: aligning incentives and sharing risks. In theory, if a certain risk is allocated to one of the contracting parties in any contract and the event whose risk becomes true, such party will not have the right to rebalance, since it had assumed the risk. On the other hand, the party the risk was not allocated to, but that was also impacted by risk realization, will have the right to rebalance.

Tax increase risk is often allocated to the government when it comes to administrative contracts. If taxes increase, the private contractor will be compensated if it proves to have faced the harming effects of such tax increase, as provided for in art. 9, § 3, of law no. 8.987/1995. According to this law, "Except for income taxes, the creation, change or extinction of any tax or legal charge, after the proposal's presentation, whenever its impact is proven, will imply upward or downward fees' reviews, depending on the case". Based on the Administrative Law, this dynamic is an administrative risk known as prince's act or as economic risk - the well-known theory of unpredictability. In both cases, by legal attribution, it is up to the government (which often bears tax change risks) to compensate the private contractor who faced the impact of any tax change. However, nothing prevents the opposite from happening; in other words, imbalance in favor of the public administration that, in this case, should be benefited from economic rebalancing.

Therefore, § 2 of article 374 points out that, even if there is a risk matrix heading towards the impacts of tax increase on one of the parties, these contracts must be subject to analysis aimed at the possibility of economic-financial rebalancing. It happens because of major exogenous shock that is far beyond the tax impacts emerging from current and specific changes to any particular tax.

Yet, it is worth recalling that the classic idea ruling the Brazilian Administrative Law lies on the risk matrix as basis for contracts' economic-financial rebalancing. However, there is an intrinsic problem that needs to be subjected to in-depth assessment, namely: the sense of **risk correlation**. This whole theoretical assumption is based on the understanding that risks are not correlated, but, in fact, they are. The classic idea advocates for the theoretical proposition of using the risk matrix as proxy for rebalancing. Therefore, assumingly, risks are isolated, i.e., they are independent; and this is not the case.

Nevertheless, it is worth bearing in mind that the original risk allocation of long-term contracts is nothing more than a proxy for anchoring contractors' long-term expectations. These risks will certainly change overtime and the risk matrix will have to be further updated.

Article 375 of the herein addressed bill establishes that the public administration must review the contract, *ex officio,* to reestablish economic and financial balance in case of reduction in the effective tax burden borne by the contractor. This procedure is in compliance with Article 374, as well as points out the guarantee of contracts' right to

question the value presented by the public administration – it also has the right to adversarial proceedings and to full defense.

Even if the provision did not cover this commandment (the original project did not contemplate it), the contractor would obviously always have the right to adversarial proceedings and to full defense in order to question the numbers found by the public administration. Furthermore, how will these calculations be made? What are the adopted premises and the final numbers? These are matters that must be treated with utmost transparency.

The value proposed by the administration, as well as the amount presented by the contractor, by the control or even by the Judiciary are only "**focal points**" limiting the balance to be accepted by the parties. In the long-run, it is impossible guaranteeing a single balance in the future for complex, relational and non-linear contracts. However, it seems acceptable that there will be more than one balance (or none!) and that values presented by the parties are, in fact, anchor points to limit subsequent bargaining.

Article 376 opens room for procedural issues to fill out balance request when it mentions the transition time referred to in articles 125 to 133 of ADCT of the Complementary Law. It states that this administrative procedure must be carried out in a specific and exclusive manner.

Subsection I sets when and how this administrative rebalancing procedure must be carried out. It states in item 'a' that a new administrative procedure may be carried out for each new tax change causing the proven imbalance. This is an important statement, because it determines these procedure's uniqueness (for each new tax change), as long as the desired outcome is proven.

This will be a very important action over the transition stage because seven taxes will coexist from 2026 to 2033, during the transition time; five old taxes about to be phased out and the new CBS and IBS. CBS and IBS rates will increase in a yearly basis (starting at 1%) and the rates of the old taxes will decrease until their full extinction in 2033. Thus, it will certainly have impacts caused by the new taxes from 2026, onwards, and the frequency of these impacts are already known, they will happen on a yearly basis during the transition phase. If these new rates lead to imbalance in contracts' economic-financial equation, the right to claim the agreement rebalancing is guaranteed under contract.

However, as an alternative, the contractor can wait for the whole transition phase to end (paragraph b) and only then request the contractual amendment to address the economic-financial imbalance equation. It is clear that this request will only be successful in case of proven imbalance, which may only be determined after a longer observation period.

According to Clause II, the request for economic-financial equilibrium reestablishment must be made during the term of the contract and before any extension. As for the rule, if the impact of the new taxes leads to contracts' economic-financial imbalance, the request must be made before extending the agreement. Will the contractor's right to request rebalancing be foreclosed? A shallow interpretation of this provision may lead to such a conclusion. However, contractor's right remains and they will have the right to this rebalancing at any time, even if the contract is already finished.

A similar rule is set forth in law 14.133.21, which regard public bidding and contracts. Article 130 of the governmental procurement provision states, in the same amendment, that the Administration must reestablish the initial economic and financial balance if there is a unilateral change to the contract that increases or decreases the contractor's responsibilities. Article 131 of law 14.133/21 states that "Contract termination shall not be an obstacle to economic and financial imbalance recognition; in this case, compensation shall be granted by means of indemnity agreement". However, the problem lies on what is set forth in the single paragraph of Article 131, which states that the economic and financial balance reestablishment request must be issued during the term of the contract and before any extension, under the terms of article 107 of law 14.133/21. This provision is unreasonable and unconstitutional, because it cannot create an administrative preclusion by hindering contractors' rights. However, it is somehow worrisome that this bizarre interpretation can also benefit claims for financial and economic rebalancing due to increased taxes.

This rebalancing request must be processed as priority (item III). It is necessary to define what is meant by priority. It will likely be a priority among all requests related to a specific contract, and it seems reasonable.

Section IV of article 376 states that this request must be guided by a calculation and by other elements that prove the economic-financial imbalance as provisions in § 3. This is the very core of the matter.

In most cases, there is no doubt about imbalance in a given contract and the parties often agree on it. However, the magnitude of such imbalance is the problem, and whether there was causality between tax increase and its impact on the contract. This particular topic will be further addressed.

Finally, and still based on article 376, article 134 of the law on tenders and contracts (law 14.133/21) also deals with this matter:

> Art. 134. The contracted prices will be changed, up or downwards, as the case may be, if there is any tax creation, alteration or extinction, legal charges or legal provisions supervening, with proven repercussions on the contracted prices, after the proposal's submission date.

Article 134 deals with specific tax changes, whereas the discipline of the complementary law provides for rebalancing due to exogenous shocks caused by changes in tax structure and by its impact on contracts.

Subsequently, item V exemplifies how balance can be achieved, namely:

a) reviewing contracted values;
b) financial compensation, tariff adjustments or other amounts contractually due to the contractor, including the contribution of resources or monetary consideration;
c) renegotiating deadlines and services' delivery or provision conditions;
d) increasing or reducing amounts due to the public administration, including concession rights;
e) transferring costs or charges originally assigned to one party to the other; or
f) other methods seen as acceptable by the parties, in compliance with the legislation set for a given sector or ruling the contract.

As the list of possible solutions is illustrative, it is up to the parties to find solutions to make contract continuation viable due to an imbalance shock. This is the case of exogenous shocks caused by the tax reform. Thus, contract centrality is the most important thing, as well as to finding solutions to save it.

It is worth reflecting a little on the economic theory of contracts. Why do contracts are signed? To avoid one's need to constantly go to the market, so contracts are an alternative to the market.

Think of a buffet that has a relatively large list of customers. A construction company starts constructing a building on its corner and makes it the proposal to provide 100 meals a day for its workers for a

project expected to last three years, minimum. The restaurant owner will deal with a trade-off: by rejecting the proposal, it accepts the market risk regarding daily attendance at his buffet; by agreeing to the construction company's proposal, it leaves the market and gets stuck into a long-term contract. It chooses certainty over the risk of future profits/losses.

The example above is very simple. Infrastructure contracts, such as concessions and PPPs are much more complex. As a rule, they are subject to high sunk costs, asset specificity and lock-in. With respect to lock-in, think of a 30-year concession contract. Then, think that this contract has to be renegotiated 15 years after its signing. The parties are intrinsically linked at this point and strategically tied to each other (lock-in). If the contract is finished, the Public Authority will have to assume the service provision, without having the technical capacity, nor the interest, to do so. The concessionaire, in its turn, must look for another customer; in other words, for another concession, and it does not happen overnight. Therefore, it is necessary to review the contract in light of the new circumstances, move away from strict legality and from the traditional canons of the administrative contract to focus on "contract centrality" to make its maintenance viable.

Let's take the sanitation case. Despite this sector's effort to raise awareness of both the government and congressmen about its importance and impact on the population's health, this sector was left out of any special treatment in the tax reform. It will have immediate impact on contracts currently underway and in future ones, so it is impossible agreeing with this decision.

This sector will be subject to a 18% new tax rate, minimum. The impact of it will be huge if one bears in mind that most concessions are exempt from ISS and will no longer be able to count on it. The same applies to ICMS.

Therefore, contracts will be heavily impacted and it is essential to find a way to balance them. It is essential to start thinking about a strategy to equalize these contracts now, since the first impacts of the tax reform will be felt from 2026, onwards, due to the 1% IBS and CBS test rate.

In this case, it is important taking into consideration the likely implementation of contractual **equalization**, which encompasses both economic-financial rebalancing itself and administrative contract resizing. Its relevance lies on the fact that administrative law purists believe that administrative contracts cannot undergo changes capable of affecting its structural bases, under penalty of distorting it and of

violating the principle of equality, which features bidding and conferred processes both in the bidding law (law no. 14.133/21) and in the Federal Constitution. (Art. 37, XXI).

This specific topic was the subject of debate during ongoing proceedings Secex Consenso scope at TCU. Take the case of request for consensual solution (SSC) formulated by the National Land Transportation Agency - ANTT (ACORDÃO 1996/2024 - PLENÁRIO)[29]. The request by ANTT sought a solution to a controversy involving the *concession contract for Eco101 highway, which was signed in April 2013 to explore 478.7 km of Highway BR 101 in Espírito Santo State. The discussion concerned impairments to execute the investments provided for in the contract, as well as the financial unfeasibility of the asset, which resulted in rebidding request (amicable return) by the concessionaire. Overall, the consensual solution request aimed at enabling the immediate implementation of necessary investments in the concessioned section*.

The discussion of whether or not a substantial contract modification is viable was addressed in this agreement, as shown in the excerpts below:

> "29. *The tariff is recalculated in order to maintain the contract's economic balance, the inclusion, exclusion of investments and other changes the inclusion, exclusion of investments and other changes, in ordinary contract adjustment procedures and in procedures provided for by regulation.* ***Considering changes in the extraordinary risk situation does not mean upsetting contract balance and disconnecting it from the bidding process.***
>
> *30. Accordingly, the prevailing orientation in the Supreme Court lies on the principle of binding to the notice as not absolute. Modern law takes binding to the notice as* ***instrumental principle****, as means working for a greater public purpose rather than as an end in itself.* ***It must be respected to the extent that the essential core or essential content of the contract is preserved – this core is preserved in the proposed solution."*** *(our emphasis)*

With respect to the case submitted to Secex Consenso about the interface between mutability and equality, the question regards the third party participating in the original auction, which could claim that its proposal would have been different given the possibility of changes to

[29] The debate can be followed by the progress of the process that generated the DECISION 1996/2024 - PLENARY. https://pesquisa.apps.tcu.gov.br/documento/acordao-completo/3344420234.PROC/%2520%2520/DTRELEVANCIA%2520desc%252C%2520NUMACORDAOINT%2520desc/0

the contract. However, TUC concluded that such an argument would not hold up in this case because the circumstances making the current contracts unfeasible are of circumstantial and exogenous nature. In practice, it would have impacted any company that had assumed this concession.

Therefore, according to TCU, there was a modernization to adjust the contract, the so-called **contractual equalization**.

Current sanitation contracts must be equalized to withstand exogenous shocks caused by the tax reform. This process demands immediate effort by public authorities and concessionaires to find a solution to keep the contract efficient and to meet the population demands.

*§1 Article 376 states that the request referred to in the **caput** must be ultimately decided within 90 (ninety) days from the filing date, extendable once for the same period-of-time if additional evidentiary instruction is necessary. The aforementioned term must be suspended until the request is met by the contractor.* The rule is positive, but, depending on the complexity, contract term can be extendrd up to 180 days. In some cases, this wait time can cause irreversible damage to the concessionaire's financial health. Therefore, leaving the precautionary balance can be essential if one bears in mind the *periculum in mora* and the *fumus boni juris*.

However, it is worth asking, what would be the procedure if the 90-day (or 180-day) deadline is not met by the administration? Apparently, the procedure was to do nothing. It is so, because provision enforcement is weak, and the only hope is that common sense prevails and measures are taken within a reasonable timeframe.

§2 states that economic-financial rebalancing will be implemented, mainly through changes in contract remuneration or through adjustment in fees, as the case may be. Alternative forms can only be adopted by the Administration after the contractor agrees with them. In all cases, the terms of the administrative contract must be observed. This process merely ratifies the idea that, despite the traditional contract rebalancing forms, there is room for new ideas and solutions. The idea is to always seek the very core of the contract and its economic function.

The regulation must provide rules for the administration to request rebalancing (§3), as well as calculation methods, without any loss to the contractor's right to request it in the absence of such regulation.

Although it is a specific standard for public construction projects' rebalancing, the Brazilian Institute of Public Construction Projects (IBRAOP) issued Technical Guidance OT – IBR 009/2024 on the Contractors' Economic-Financial Rebalancing for Construction Projects and Engineering Services[30]. Here are some of its items:

> 1 - The evidence of excessive burden must be based on objective criteria, assessed through mathematical analysis to unequivocally show the financial unfeasibility of continuing the contract as it was initially agreed upon;
>
> 2 - It is necessary to set an objective criterion to determine when the overall financial impact of extraordinary variations in input costs becomes excessively high, to the extent of making it impossible to continue the contract as originally agreed upon;
>
> 3 - If BDI constituent parts are used as criterion for the previous item, the adopted BDI reference must be the one specified in the base budget of the bidding process;
>
> 4 - The possibility of having future adjustment compensating losses caused by contractual imbalance;
>
> 5 - The likely granting of rebalancing taking place from the day the contract economic-financial balance was disrupted, as long as it is validated by the Administration;
>
> 6 - Up to the effective analysis, it is mandatory assessing whether there were variations in inputs' costs that have favored the Administration before the generating factor and/or after that claimed by the contracted company, as well as their impacts on claim analysis, in order to inhibit likely targeted-time cut in the company's request;

§4 of article n. 376 shows that economic-financial rebalancing may, at public administration discretion, be provisionally implemented in cases whose contractor proves relevant financial impact on contractual execution due to changes in the effective tax burden. The economic compensation must be reviewed and adjusted at the request's final decision.

This precautionary balance was first implemented in São Paulo State and it has spread to other areas in the Federation. This topic will be further addressed.

Finally, §5 closes art. 376 and deals with precautionary rebalancing. It states that the final decision referred to in §4 must include

[30] Available at: https://www.ibraop.org.br/orientacoes-tecnicas/ and accessed on December 27, 2024.

the form and instruments to collect or return amounts paid in excess or underpaid when provisional adjustment measurements are taken.

The final article (art. 377) determines that legislation provisions ruling the contract shall apply as subsidy in cases of omission dealt with in Chapter IV of the Complementary Law. This is an obvious and important provision because, according to it, there are several aspects related to contracts' economic-financial rebalancing, mainly in the long-term ones. Thus, these regulations will also work as basis for these contracts' rebalancing.

3.3 Multiple Equilibria and Adaptive Dynamics

The recent tax reform in Brazil (mainly the creation of the new IBS and CBS taxes) accounts for an exogenous shock that imposes new dynamics on long-term administrative contracts. The mechanistic contract rebalancing approach based on cash flow and on internal return rate analyses is not enough to capture the complexity and adaptability required to deal with the changes to come. The reform creates an environment where multiple equilibria can emerge, overtime, and it requires a more flexible and adaptive approach[31].

Tax reform could result in significant increase in some industries' operating costs, whereas others may benefit from a reduced tax burden. This process creates a complex scenario where contracts must be continually and proactively adjusted to make sure that they remain viable and effective.

It is recommended to include standard rebalancing clauses in existing contracts to detail clear and pre-defined procedures and to minimize transaction costs during these adjustments by reducing the need for extensive negotiations. In addition, implementing continuous monitoring systems and periodic audits based on technology using can track contract performance and compliance, and reduce supervision costs. Alternative dispute resolution mechanisms, such as arbitration and mediation, should be used to ensure fast and less costly enforcement.

The analysis of reform implications must take into account not only direct financial impacts of, but also changes in **involved parties'**

[31] MOSINI, Valeria (Org.). *Equilibrium in Economics: Scope and Limits*. New York: Routledge Press, 2007.

expectations and behaviors, as well as the need for continuous adjustment mechanisms to maintain contracts' balance and sustainability.

The non-linear and adaptive dynamics introduced by the tax reform means that contracts can find multiple equilibria, overtime. These equilibria can be defined by the contracting parties, by audit courts or by the judiciary. They represent focal points that set the limits of the three-dimensional space housing the equilibrium accepted by the parties. This scenario requires a management approach capable of dealing with complexity and uncertainty to allow continuous and proactive adjustments aimed at maintaining contracts' viability and effectiveness. One could consider creating renegotiation committees comprising contractors' representatives, contractors and regulators in order to manage this complexity. They should meet regularly to discuss and adjust the terms of current contracts, if necessary. This is an important point, as shown in the graph below:

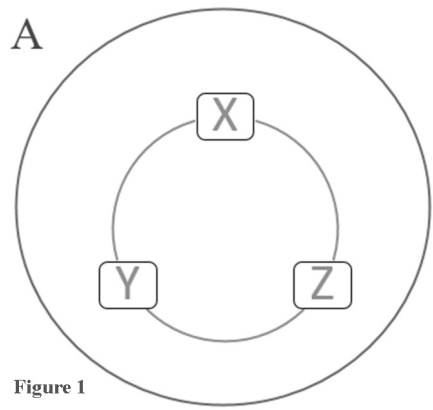

Figure 1

If one assumes that there is no simple balance, what is the purpose of values established by the parties through analyses, audits and expert reports? According to the graph, there is a universe of possibilities determining contract balance (set A), but not all of them are viable. Therefore, it is essential setting the limits of this universe. Suppose that the contracted company establishes a value X for its rebalancing; the public administration, in its turn, advocates for value Y and for the control, and the court of auditors or even the judiciary set a value Z. Who is right? The answer is "everyone", because this last question is not a logical impossibility.

Results from simulations are, in fact, "focal points" that anchor elements by setting the limit to a subset 'A' which shows multiple equilibria. This is the essence of the "theory of multiple equilibria". Focal points are seen by the theory of games as relevant indicators for the success or failure of negotiations, depending on the number of possible equilibria. This X-Y-Z space is where bargaining, renegotiation and arbitration take place, and where control action or jurisdictional provision must unfold.

As a matter of fact, when the contract is signed, an "expectation gap" is set and it will be preserved throughout the contract execution. There is a natural fluctuation within or outside this band, overtime. The aim of the rebalancing system is to ensure that contracts remain within this equilibrium band, where there may be one or many equilibria.

From this perspective, the widespread idea that the risk matrix is the "operational side" of economic-financial rebalancing does not hold up in the long term. Firstly, because no one has ever been able to explain what "operational side" means and, secondly, because using the risk matrix as rebalancing proxy means crystallizing the linear and predictable sense of contract behavior and risks in the future. **The risk matrix is important, very important, mainly for short-term discussions, but it is not the deciding factor for relational, non-linear and intrinsically incomplete contracts, based on a long-term approach.**

This is justified by the fact that the "state of nature" changes, overtime, and the risk matrix must also adjust to it[32]. It is important referring to Knight [33](1921) to make a clear distinction between risk and uncertainty. Risk concerns situations that allow inferring a probability distribution for a given event. One can infer the demand risk and the probability of having other common event types, such as collection point deterioration or technological obsolescence in a highway concession contract, for example, based on previous experiences and economic circumstances.

There is no way to predict whether an event will happen or not in case of uncertainty, and it makes it impossible to infer a probability

[32] NOBREGA, Marcos. Risco e incerteza nos contratos do setor elétrico. JOTA Info, 27 jul. 2020. Available at: https://www.jota.info/opiniao-e-analise/colunas/coluna-da-abde/risco-e-incerteza-nos-contratos-do-setor-eletrico-08052020. Accessed on June 31st, 2024.

[33] KNIGHT, F. *Risk, Uncertainty and Profit. London*: Houghton Mifflin, 1921. (second edition 1933).

distribution. When it comes to fundamental uncertainty, it is not even possible to imagine the impact it would have on a contract.

It is irrational, costly and prohibitive, for example, to include an estimate for highly improbable events, such as a large meteor falling on Earth or an earthquake in Brazil, in the contract risk matrix. No one would do such a deal because these events cannot be predicted or estimated, since they extrapolate Brazilians cognitive skills.

However, it is important differentiating ambiguous uncertainty from fundamental uncertainty. With respect to ambiguous uncertainty, Brazilians do not have cognitive skills to estimate these events, and they are seen as uncertainty rather than risk. Imagine a contract entered into 50 years ago, when the economic and technological conditions available for predictions were much more limited.

As for fundamental uncertainty, predicting events and their impacts on contracts becomes unfeasible. In these cases, one faces a clear *force majeure* situation protected by the theory of unpredictability.

Risk is defined by a probability distribution; therefore, this distribution can change, overtime. What was once a fundamental uncertainty can become a risk and, eventually, loose both profiles. Consider COVID-19 and the advancement of its vaccine technology. It is important bearing in mind these differences at the time to design contracts and risk management strategies.

This risk-matrix mutability seems obvious and it has been gaining theoretical and practical endurance[34]. This same logic was incorporated to risk allocation matrix regulation by the State Secretariat of Infrastructure of Mato Grosso, through Normative Instruction 004/2023/SINFRA4. In addition to defining a procedure for risk matrix elaboration, NI 004/2023 also establishes that the matrix must be dynamic and systematically reassessed. "*Art. 12 12. The risk allocation matrix will be dynamic, and it must be systematically reassessed through a continuous risk monitoring process and by documenting new risks and/or new data on already documented data*". (our emphasis).

Actually, contract economic-financial balance mechanisms aim at keeping the expectation gap parties had agreed upon when they signed the contract, rather than at keeping the risk matrix intact. The premise

[34] ALBUQUERQUE, Caio Felipe. A Matriz de Riscos dinâmica: Uma solução para incertezas contratuais. Available https://ronnycharles.com.br/a-matriz-de-riscos-dinamica-uma-solucao-para-incertezas-contratuais. Accessed on June 03rd, 2024

that the economic-financial rebalancing of long-term contracts is the "operational side (sic) of the risk matrix does not hold up in the long term if one deals with contracts presenting non-linear and unpredictable behavior.

Rebalancing mechanisms depend on risk matrix stability in the short term, although there are considerations between these risks' cross-dynamics, which are often seen as independent. This approach provides security and predictability to contractual relationship; in other words, substantiating rebalancing by the risk matrix in the short term means implementing a contract.

However, in the long term, when it comes to long term contracts, it would be an absurd to support rebalancing on a risk matrix that is likely to become obsolete. Major phenomena, such as a pandemic, wars or even floods (like those in Rio Grande do Sul State) and, assumingly, the Tax Reform itself, makes this matrix obsolete much faster, but they are not the only factors leading to its change.

In light of the Klink Boat Theorem, the risk matrix must be adjusted in the long term to account for relational contracts. This theorem suggests that the market-failure nature requires the risk matrix "freezing" to induce socially desirable behaviors, which are, by nature, a second-best nature; however, the matrix must be adjusted. There is still no operational breakdown in this proposal for risk matrix adjustment purpose, but it assumes a contractual design to anticipate planned changes (never affecting rebalancing before 4 or 5 years, at most on basis *ex ante*, but rather reviewing the risk allocation based on major changes). It must be done to avoid casuistry, but mutability should be considered key element for long-term contracts to avoid the naivety (or consultants' interest) to treat this instrument as operational side frozen in time, oblivious to major changes in circumstances and in types of participants[35] in the contract.

[35] Nóbrega, Turolla and Veras (2023) pointed out that one source of change in the risk matrix lies on "structural changes in the types of contracting agents: in a long-term relationship, after decades, it is possible that the type of contracting parties changes in such a way that the allocation of risks loses part of its meaning. This is especially relevant on the public side: a government focused on increasing GDP becomes, overtime, focused on an alternative concept of measuring development, considering, for example, environmental factors in its objective function. It is difficult to tell this government to remain bound by the contract under the conditions in which it was established, and an efficient renegotiation should take place. Do current contracts allow for this change in the type of contracting agent, or do they simply offer exit mechanisms so that the contract can be terminated because it no longer serves the public interest?"

At this point, it is worth reinforcing that, in order to deal with the uncertainty and adaptability of ongoing contracts, it is essential to include regular adjustment clauses to allow systematic reviews that reflect changes in economic and regulatory conditions. Furthermore, creating contract review panels can ensure that contract terms are regularly reassessed based on changes in the external and internal environment. Scenario modeling should also be used to predict likely future impacts on, and to prepare proactive adjustments to, contracts.

Thus, contract design is essential to ensure the effectiveness and sustainability of long-term contracts. Good contract design should take into consideration the execution of non-linearity administrative contracts and embody mechanisms that allow continuous and proactive adjustments. Therefore, it is much better to invest in adequate contract designs than in several consultancies that will only deliver numbers and that are unable to understand this process' dynamics.

Finally, it is essential to work towards building and maintaining trust between contracting parties even in existing contracts. Mechanisms such as joint workshops, training programs and team-building initiatives, with regular reporting on contract status and on any emerging concerns, are worth practicing.

3.4 How to adjust administrative contracts to the tax reform?

Whenever a contract is signed, it establishes an "expectation gap" that must be maintained over contractual execution. Therefore, from this perspective, balance becomes a calculation that stabilizes the expectations. Administrative contract balancing can be endogenous or exogenous to the contract itself. The present study is limited to the first one, endogenous. Endogenous factors regard intra-contractual rebalancing mechanisms herein called the Klink Boat Theorem, as well as renegotiation between parties.

Exogenous mechanisms, in their turn, would be alternative dispute resolution methods or even decisions made by a third verifier party, such as the judiciary or audit courts, whether in administrative or judicial proceedings, or even in the conventionally called 'consensualism'.

From the endogenous equilibrium viewpoint, the first option lies on creating mechanisms in contract themselves to stabilize exogenous shocks arising from the tax reform. In other words, it is important to

create **"bump absorbers"** to withstand pressures that will affect the contracts.

It is essential adding flexibility and adaptation clauses to the contract to allow adjustments in contracts, overtime, without the need for full further contract renegotiation. The so-called "Klink's Boat Theorem" is a good concept set out in the pioneering study by NOBREGA, TUROLLA and VERAS[36]. According to these authors, a long-term contract suffers so many impacts, overtime, that it is impossible for it not to become unbalanced. The same thing happens when a small boat decides to cross the ocean. It is impossible for this boat to sail unscathed in the vastness of the ocean with its huge waves and all sorts of bad weather. This boat will inevitably sink.

This is what happened to Amir Klink during his pioneering crossing of the Atlantic Ocean in 1984, when he had the diligence to build a boat with such a center of gravity that, whenever it would capsize due to the waves, it would quickly turn around, given its internal ballast mechanism that allowed it to do so.

In an analogy to long-term administrative contracts, it is necessary to create internal mechanisms that "turn" the contract around and that allow it to return to equilibrium without trauma, under low transaction costs. The complete definition of the Klink's Boat Theorem is shown below:

> • *Klink's Boat Theorem (KBT):*
> *"Within a non-Arrow Debreu environment, with limited existence of liquid markets for hedging certain risks, in a non-ergodic environment, with limited rationality of agents, in the presence of market failures typical of information asymmetry and ownership issues, the current incentive system will lead to the* ***ex ante*** *contracting of long-term concessions if there is flexibility in contractual renegotiation in the event of the most adverse economic scenarios for the contract materialized".*

Therefore, what could materialize these internal "rebalancers"? A good idea would be to create "rebalancing triggers" as mechanisms to allow automatic and systematic contract rebalancing every five years, for example. These triggers would provide a structured way to adjust contracts in response to changes in economic, technological and regulatory conditions. Rebalancing periodicity ensures that

[36] NOBREGA, Marcos; TUROLLA, Frederico; VERAS, Rafael. Contratação incompleta de projetos de infraestrutura. Available at: https://www.researchgate.net/publication/372401108_Contratacao_incompleta_de_projetos_de_infraestrutura. Accessed on June 03rd, 2024

contracts remain in line with the current reality and avoids imbalance accumulations, overtime.

Another idea lies on allowing Precautionary Rebalancing as established in São Paulo State legislation[37]. This approach enables preventing adjustments to contracts in response to events that may unbalance them. Precautionary rebalancing acts as proactive measure to avoid contractual crises by allowing a quick response to exogenous shocks before they cause significant damage to contracts.

Accordingly, Resolution n. 19 of the Secretariat for Investment Partnerships of São Paulo State (5/29/23) established logical criteria for contracts' precautionary rebalancing and provided that this measure must correspond to 80% of the estimated imbalance impact. Resolution 19/23, as provided for in the items of art. 3, determined that precautionary rebalancing measure assessment will be mandatory whenever it is observed:

(i) risk of compromising the public service continuity, and it includes compromising the concessionaire's solvency or the early maturity or acceleration of commitments contracted with financiers; or

(ii) indicative of regulatory balance subsistence in view of the remaining contractual term; or

(iii) economic and financial imbalance with projected significant impact. The metrics for determining the impact involves measuring additional costs or gross revenue loss.

Article 6 of this same Resolution, in its turn, states that, after the statement referred to in Article 5 of the Resolution has been received, or the time indicated in this provision has elapsed without having been presented, the Secretary of Investment Partnerships of São Paulo State, based on the best information available, must decide on applying a precautionary measure to mitigate economic-financial imbalance, which will be mandatory in cases where

I – the occurrence of an imbalance event has been definitively recognized by the competent body or it can be presumed, in compliance with § 2 of article 3 of this resolution;

[37] NOBREGA, Marcos; TUROLLA, Frederico; VERAS, Rafael. Contratação incompleta de projetos de infraestrutura. Available at: https://www.researchgate.net/publication/372401108_Contratacao_incompleta_de_projetos_de_infraestrutura. Accessed on Jube 03rd, 2024

> II – it is possible adopting any of the precautionary measures provided for in items "c" or "d" of section III of article 2 of this resolution;
>
> III – there is no proven unavailability of resources to fulfill the State's budgetary and financial duties or to preserve the financial autonomy of the regulatory agency responsible for overseeing the contract execution".
>
> The precautionary rebalancing institute is indisputable proof of the Klink's boat theorem viability. This mechanism should certainly be extended to several contract types as instrument to amortize the tax reform effects.

Thus, both the rebalancing triggers and the precautionary rebalancing work as contractual shock absorbers. They absorb exogenous shocks and maintain contract stability, which allows continuous and adaptive adjustments in response to changes in the external environment. These mechanisms ensure that contracts remain viable and effective, overtime, even in face of uncertainty and variability.

Another possibility to allow these contracts' endogenous rebalancing lies on promoting renegotiation between parties, which will certainly happen quite often. At this point, however, some aspects must be taken into account.

First, there will likely not be a single equilibrium point, but rather several equilibria delimited by values established by contractors and the contracting party (and the control) when the renegotiation begins (space X-Y-Z - Figure 1). Results found in contract simulations can be seen as focal points that anchor elements around which one finds multiple equilibria. These focal points set the space limits where bargaining, renegotiation, arbitration and control action or jurisdictional provision should unfold. They set the limits for likely equilibrium points the contracting parties, audit courts and judiciary can take into consideration when they seek solutions to maintain contract viability. Assumingly, there will be some equilibrium vector type in this renegotiation environment to sign that the acceptable equilibrium is the closest to a X, Y or Z proposal.

But renegotiations also present problems. Perhaps, the main one is moral hazard, which happens when one party can act opportunistically by knowing that the costs will be borne by the other party. The concept of "holding-up" in long-term infrastructure contracts refers to situations when one of the parties, usually the private party, takes advantage of

the asymmetry of information in long term contracts or of negotiating power to seek contractual renegotiations that favor its interests, often to the detriment of the other party, which is usually the public entity.

The term "hold-up" is often associated with opportunistic practices, according to which, the private party seeks to extract greater benefits or advantages after contract execution starts. This process may regard seeking price increase, reducing investments or other contractual revisions that were not initially foreseen. This scenario can compromise projects' effectiveness and lead to higher costs and suboptimal results due to lack of accountability and information asymmetries.

There are several opportunism types in long-term contract context. The opportunism of private partners stands out, but the possibility of opportunistic behavior by public authorities and third parties is also observed.

Private opportunism happens when the operator seeks to renegotiate contractual conditions in order to increase its profits in long-term contract agreement. It takes advantage of power negotiation asymmetry towards the public party due to greater expertise, information control and resources.

Lack of knowledge and skills are highlighted in the public sector, especially in smaller entities. It makes it difficult to effectively supervise long-term contracts, which contributes to information asymmetry.

Introducing rigorous oversight and monitoring mechanisms in the contract can help mitigating moral hazard by increasing transparency and holding parties accountable for fulfilling contractual obligations. Similarly, creating incentives in compliance with the interests of both parties can be an effective measure to avoid moral hazard by making sure that both parties are accountable and committed to the projects' long-term success.

The threat of private partner withdrawal often leads to renegotiation acceptance, although it is potentially detrimental to the public sector. It compromises competition efficiency and expected benefits in long-term contract awarding.

Public authorities may also act opportunistically by using long-term contracts for purposes unrelated to economic efficiency, such as electoral objectives, circumventing short-term budgetary constraints and seeking reelection. Likewise, on the other hand, one should not disregard the possibility of public authorities who react to voters' perception or who, for their own purposes, avoid opportunism to preserve or build

the public partner's reputation. It shows that the search for reputation building (by the government itself, or by the incumbent politician who wants to show off as responsible character) is an important moral hazard mitigating tool.

Finally, there is evidence of political cycles in long-term contract renegotiations, mainly before elections, and it points out final price manipulation to maximize reelection chances.

4 Conclusion

The transition to a complexity-based model is essential to address challenges associated with managing long-term contracts. This approach acknowledges the relevance of continuous adaptation and renegotiation to maintain the economic equilibrium of administrative contracts, and preserve their short-term stability. The aim of the present study was to propose endogenous and exogenous rebalancing mechanisms adopted as practical and effective solutions to deal with these contracts' dynamics. The recent tax reform works as clear example of the need for moving away from the mechanistic model and of adopting approaches that take under consideration these contracts' complexity and non-linear dynamics.

The Complexity-based theory approach provides a more realistic and adaptive view of long-term contract management by recognizing time irreversibility and the need for continuous adaptation. Contract flexibility and adaptability are fundamental factors to contract sustainability because they allow continuous and proactive adjustments in response to changing external and internal conditions. Using endogenous and exogenous rebalancing mechanisms is the path to a holistic and integrated approach applicable to contract management in order to ensure that contracts remain viable and effective, overtime.

Multiple equilibrium points are likely to be found in long-term administrative contracts and they are determined by values set between the contractor and the contracting party at the beginning of the renegotiation stage. Rebalancing simulations for these contracts often generate focal points that set the limit for bargaining, renegotiation, arbitration, control actions or jurisdictional provisions to unfold. These focal points guide the likely equilibria considered by parties, audit courts and the judiciary to find ways to maintain contract viability. An equilibrium vector in renegotiation environment may point towards

the acceptable point closer to an X, Y or Z proposal. Therefore, it is necessary reinforcing the relevance of automatic contractual rebalancing mechanisms such as precautionary rebalancing or systematic rebalancing.

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ECONOMIC-FINANCIAL BALANCE OF CONCESSIONS IN THE LIGHT OF A CASE STUDY: CONTRACTUAL INCOMPLETENESS, NON-ERGODICITY AND STRATEGIC UNCERTAINTY

GUSTAVO KAERCHER LOUREIRO

MARCOS NÓBREGA

Abstract: The paper intends to debate about the traditional theory of economic-financial equilibrium (TTEFE) and its main aspects in opposition to the normative and economic dimensions. Our purpose is to demonstrate that TEFE differs from sectoral regulation (electrical industry), the Law of public service concessions and the economic rationality of the concession contracts. The research had as a starting point a case study, the sectorial regulation of the first concession (distribution) contract of the electric industry celebrated into according to Brazilian Law nº 9.074/1995. We demonstrate that TTEFE is just a theory, a prescriptive and non-descriptive discourse of the Law.

Thus, the neoclassical economic theory behind the idea of financial economic equilibrium of complex and relational contracts in Brazilian law is incapable of offering adequate answers. This is because the fallacy of restoring a primeval equilibrium established at T0 is fallacious and ends up spreading a plethora of inefficiencies and distortions through contractual execution.

Keywords: Concession contract. Traditional theory of economic-financial equilibrium. Brazilian Law.

Introduction

This article examines some elements of the *economic-financial regime* (REF) of public service concession contracts for electricity distribution. This examination is done by means of a case study from

which we intend to generalize some reflections about such contracts[1]. It is the Concession Contract 01/95 (Contract 01/95), held between the Union and Espírito Santo Centrais Elétricas - ESCELSA. The Contract 01/95 was first of its type celebrated (at least in part) under the aegis of the general and sectorial legislation that started to appear from 1995 (Laws 8.987/1995 and 9.074/1995).

Contract 01/95 and its vicissitudes will be analyzed and evaluated against the background of two related but distinct parameters. The first is what we will call the *Traditional Economic-Financial Equilibrium Theory (*TTEEF). The second is the *general rules* (non- sectorial) that govern the REF of public service concessions in *Brazilian positive law*. These two parameters are at least conceptually distinct in that it is possible that a theory does not adequately mirror the positive law it deals with. Confirming this possibility of mismatch between the theoretical level and that normative (between the TTEEF and positive law) is also one of the conclusions that we intend to establish in this study.

With respect to the relationship of Contract 01/95 with TTEEF it is expected to show that, the economic and financial regime adopted by it does not follow, to a substantial extent, its dictates. It is also stated that such circumstance is not a failure or "rebellion of facts against the Law", which induces nullity of contracts and rules.

To justify this last statement is that the second parameter of analysis, the non-sectoral positive right (Constitution and Law 8.987/1995 and also Laws 11.079/2004 and 8.666/1993) comes into play. Here, the relation of Contract 01/95 with the general rules that govern the REF of concessions serves a double purpose: in the first place, to show to what extent the case under examination followed these general rules - or privileged a specific economic-financial discipline, or even, if applicable, violated legal commands. Second, to indicate how the TTEEF is little reflected in Brazilian positive law, contrary to what is commonly held. In fact, we understand that TTEEF is fundamentally a discourse that is not exactly *descriptive*, but *prescriptive*, which has little ballast in positive law and lends itself, rather than describing states of affairs, to prescribing states of affairs. TTEEF is, in short, a *policy* discourse of

[1] In what follows, the reader will notice that numerous extrapolations have been made from the base case to "the concession contracts for electric power distribution". They are justified by the partially exemplary nature of Contract 01/95. Its specificities will be noted and highlighted when appropriate.

law[2]4 with very precise historical origins, managed still in the first half of the twentieth century and that intends to *impose* itself to the current normative devices, to *conform them* to a certain vision of what should be the economic-financial regime of public service concessions. **It is also a *theory* that has a certain economic rationality that *can be criticized* in light of recent reflections in this literature.**

These very broad considerations unfold into more specific conclusions involving the three axes on which this study is based (the base case, the TTEEF and Brazilian positive law).

- It is understood that the legal-regulatory discipline of the REF of concessions does not require the identification of an original economic-financial equation - which correlates, in a simplistic and economically naive manner, "tickets" and "exits" of the concessionaire (as would be required by TTEEF). In fact, from an empirical point of view, the identification of this equation in public service concessions is a non-trivial task and conditioned by choices about which elements to consider as components of the equation and which methods to use to measure them, choices that involve controversies and doubts.
- It is also understood that this normative discipline does not determine that such equation, if identified, is "photographed", "frozen" and "preserved" for the entire duration of the contract. Quite the contrary. In the Brazilian electricity sector, there are tariff mechanisms that deliberately destroy previous states of affairs (the ordinary tariff revision, the clearest expression of an incentive tariff policy).
- The evolution of the time-based case did not follow (all) the "orthodox" consequences that should have come from the qualification of an event as an ordinary alea, if TTEEF was observed: there are ordinary aleas whose effects were and are neutralized in favor of the dealer (tariff adjustment) as well as there are ordinary aleas whose effects were and are appropriate by the user (efficiency gains). Similarly, the normative and regulatory developments to which the Contract 01/95 was submitted did not follow precisely the consequences that would come from the identification of an event as an extraordinary

[2] In the sense that Guastini understands "politics of law". GUASTINI, Riccardo, *Trattato di Diritto Civile e Commerciale - Interpretare e Argomentare,* Milano: Giuffrè, 2011.

aleas, given the traditional theory: Numerous and profound unilateral changes in the concession contract did not give rise to extraordinary revisions (the constant changes in the service conditions throughout the implementation of the "sectorial models"), as well as extraordinary economic aleas, unpredictable, gave rise to economic and financial measures that have little to do with what TTEEF recommends (example is the set of measures of "rationalization" and "rationing" of the years 2001-2002).

- We are also of the opinion that the Brazilian positive law does not fully welcome TTEEF. In particular: (i) TTEEF has no constitutional basis; **(ii.)** the legal provisions on the economic-financial regime do not fully reproduce the strict division of the aleas, as recommended by TTEFF; **(iii.)** these same provisions favor, instead of general and abstract discipline (constitutional and legal), contractual and regulatory discipline, with increments and changes over time. Thus, the economic and financial regime of the distribution concession contracts, discrepant as it is of TTEEF, is not incompatible with Brazilian positive law. Incompatible (partially) is TTEEF.
- The neoclassical economic theory behind the idea of equilibrium is unable to offer adequate answers to complex and relational contracts where, as a rule, there is no possibility of returning to a T=0 equilibrium. In fact, there are multiple equilibria throughout the execution of the contract. From an economic perspective: (i) the identification of an original economic-financial equation (different methodologies, innumerable variables, etc.) that should be sought (or rescued) throughout the execution of the contract is quite problematic; (ii) the initial equilibrium serves only as a theoretical anchor for the formatting of the contract, but probably returning to this moment T=0 is impossible. (iii.) Throughout the execution of the contract there will be multiple equilibria that must be considered in the analysis of the EEF claims; (iv.) the premises on which the TEEF is based are questionable; (iv.) in their place, the incompleteness of the contracts must be recognized in *view of* their complex dynamics, especially in situations of non- linear equilibrium. (v.) we need to find another "legal technology" to rebalance these contracts.

What follows is thus organized. Section I brings the first element of confrontation against which to analyze the base case, i.e. TTEEF. Section II makes a narrative of the formation, content and development at the time of Contract 01/95. Section III formulates the conclusions regarding the confrontation between TTEEF and the 01/95 Contract. Section IV presents the second element from which to analyze the 01/95 Contract, that is, the normative texts and the norms that are extracted from them, relative to the general REF of public service concessions. Section V, similarly to what Section III did for the first confrontation establishes the conclusions relative to the comparison of the 01/95 Contract with the (general) rules in force and, incidentally, examines the relationship between TTEEF and these rules. Section VI collects the presentations made in Sections I, II and IV and the reflections launched in Sections III and V to launch an economic look at the empirical assumptions of these contracts and their dynamics (such as incompleteness, lack of ergodicity) and also to suggest ways of well dealing with these characteristics.

Section I - The Traditional Economic-Financial Equilibrium Theory (TEEF)

There is, in Brazilian administrative law, a widespread *dogmatic theory* about how the economic-financial regime of public service concession contracts should be conceived. This theory has well-defined cultural and historical origins, already outlined in other studies[3][5]: French administrative law, as it was first developed (first half of the 20th century) by the jurisprudence of the French Council of State; and, secondly, as this fragmented jurisprudence was interpreted and systematized by the doctrine of that country, notably by Gaston Jèze, Louis Rolland and André de Laubadère, exponents of the School of Public Service. In spite of the clear (and not denied) attachment to a foreign legal tradition and of past periods, TTEEF, among us, does not intend to be simply a *theory* (*de lege ferenda*), but posits to be the very narrative of the current normative state of affairs, that is, it understands to be

[3] On the cultural and historical premises of TTEEF, see KAERCHER LOUREIRO, Gustavo, *Studies on the Economic-Financial Regime of Concession Contracts,* São Paulo: Quartier Latin, 2020, especially Chapter I, entitled "The origins and commitments of the figures of economic-financial balance in the concession of public services and the fair remuneration of the capital employed in public utility activities.

based on the interpretation of provisions of our current positive law, in particular, on provisions of the 1988 Constitution[4]. In its basic lines, this theory postulates the following.

First: the existence of a certain *economic-financial equation* established in the concession act, fully identifiable (and effectively identified by legal imposition). This *original equation* - conceived in the form of onerous and signagmatic bilateral contracts[5] of civil law - would oppose the set of all the "tickets" expected from the concessionaire (under the initial conditions of the concession), with the set of all the "exits" also expected from the concessionaire (under the initial conditions of the concession). More sophisticated versions of this equation include here, in addition to tickets and exits (as conceived), other elements, such[6] as the term of the agreement. In essence, however, the equation continues to be conceived as[8] the French Council of State will conceive it, more than 100 years ago.

Second: this *original equation* (or Equation of the moment T0 - "equation T0"), once fixed, should be *protected throughout the whole duration of the concession contract*, in the face of certain supervening events that would shake it (undo it).

Third: these supervening events in face of which the equation T0 should be safeguarded would be species of the genus "extraordinary alea", notably: a.) unilateral alterations to the contract promoted Grantor; b.) facts of authorities other than the grantor - or even of the grantor authority acting in the garb of public power and not of the opposite ("*factum principis*"); c.) events independent of the will of the parties and out of their control, of an unpredictable and extraordinary character (with variations on these last two notes), configurators of

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4 On the importance of the study of the history of Law (French) for the understanding of Brazilian legal theory, v. Kaercher Loureiro, Gustavo *on Administrative Law, History and Theories - A Replica to Maurício Portugal,* available at https://portaldisparada.com.br/direito-e-judiciario/direito-administrativo-historias/.

5 Or administrative of the "common regime", that is, governed by Law 8.666/1993.

6 "It is the essence of any concession contract to seek to achieve, as far as possible, equality between the advantages attributed to the concessionaire and the loads imposed on him (...). These advantages and loads must be balanced in order to form a counterpart to the likely benefits and losses foreseen. In every concession contract is implied, as a calculation, the honest equivalence between what is given to the concessionaire and what is required of him (...). This is what is called 'financial and commercial equivalence', the financial equation of the concession contract". *Arrêt du Gaz de Bordeaux,* available at https://www.legifrance.gouv.fr/ceta/id/CETATEXT000007629465/.

the extraordinary *economic alea*. Residually (by denial), one obtained the complementary class of the "ordinary alea" whose effects on the (supposed) equation would not be neutralized, for good or evil. The doctrine usually lists as typical events of the "ordinary alea" the effects on the equation of efficiency/inefficiency of the concessionaire, normal and everyday economic events, etc.

Fourth: in the face of the occurrence of some events leading back to the extraordinary alea, it would be up to the grantor to neutralize[7] its effects for the concessionaire, restoring the original equation T0 - or avoiding the shaking beforehand. The ordinary alea would not have this legal effect and should be supported by the concessionaire. The main, though not the only, mechanism by which this neutralization would occur would be the change - to more or less - of the tariff.

Fifth: postulates the traditional theory that these elements are solidly fixed in the Constitution, particularly in its art. 37, XXI and that the EEF is irrevocable, because it serves the hygiene of public service, even if it is established as the right of the concessionaire.

It is not difficult to see how much classically *contractual* (*pacta sunt servanda*) there is in this theory. And how much it incorporates the assumption that contracts are complete in terms of risk discipline, at least in conceptual statements - which, in fact, are endowed with extreme vagueness when analyzing concrete cases. The real contractual incompleteness is then, under the classical model, remedied by the idea of financial economic rebalancing, which should go back to the moment of initial equilibrium, T=0 (but it fails to do so, as we shall see).

On other occasions we have already demonstrated reservations about the usefulness of traditional theory in rebalancing contracts, scoring the following aspects: (i.) the absence of a constitutional basis for most of its elements[8]; (ii.) the need to distinguish, for the purpose of defining legal effects (if total or partial recomposition), between the different species of extraordinary aleas, in particular, the need for better treatment of the theory of unpredictability and the *factum principis*[9]; (iii.) the absence of a correspondence between the *theory* and the *Brazilian*

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7 For better or for worse, but let us just focus on the problems.

8 KAERCHER LOUREIRO, *Studies on the Economic-Financial Regime of Concession Contracts,* cit., Chapter II, "Does the economic-financial balance of concessions have the same constitutional basis? For a flexible model of the economic regime of public service concessions".

9 *Ibid.,* Caps. III and IV.

infra-constitutional positive law, especially the laws that regulate public service concession contracts (as we will have occasion to study further, many legal provisions and regulatory praxis go in the exact opposite direction of many teachings of traditional theory - the ordinary tariff revision and the way certain extraordinary tariff revisions have taken place are proof of this); (iv.) the impracticability of determining the equation fixed at T0, in the absence of specific and explicit elements of regulation that would stipulate it. In complex contracts such as concessions, there is no "equation"; there are countless ways of verifying, perhaps, the "value of the concession" or its "profitability" (expected, projected, note well); (v.) the economic inconvenience, in terms of efficiency, of sticking to an original equation, to which one must return at all times. Instead of immediately deepening these criticisms - which will be taken up again later – let us see how the main elements of the REF of a distribution concession contract behaved.

Section II - The Concession Contract 01/1995 and Its Development

2.1 Introduction

As stated before, Contract 01/1995 was the first of the New Model of the Electric Sector. It was signed on July 17, 1995, a few months after Law 8.987, of February 13, 1995, and a few days after Law 9.074, of July 7, 1995[10]. In this period, the traditional theory we outlined above was at its zenith. One would expect its main elements to be reflected in regulation.

In terms of new regulations that are of interest to our theme, there was little at the time. As we will see in more details later, article 9 of Law 8.987/1995 sought to position the very broad and vague bases of a new tariff policy[11] by stating that "[t]he tariff of the public service granted will

[10] The Concession Contract still mentions, with prominence, the norms of what would come to be, later, the *ancien Règime* of the electric sector. It said that the adjustment would be governed by "Decree No. 24.643 of July 10, 1934 (Water Code) with the amendments introduced by Decree No. 852 of November 11, 1938, Law No. 8.987 of February 13, 1995 and Law No. 9.074 of July 7, 1995, Decree No. 41.019 of February 26, 1957 (Regulation of Electrical Energy Services)".

[11] By providing that "[the] tariff of the public service granted **shall be** fixed by the price of the winning bid", the *caput* of art. 9 almost *necessarily* unbinds the tariff from the actual cost of the

be fixed by the price of the winning bid", while article 10 of the same law launched a (at the time) not well understood provision according to which "[t]he undertaking that the conditions of the contract are met, its economic-financial balance is considered maintained"[12]. At the level of the sector itself, Law 9.074/1995 was limited to enumerating some very important elements of the future juridical-regulatory conformation of the sector - at that time, obviously, not yet developed anywhere[13]. The whole *normative* (laws, decrees, normative administrative acts), *institutional* (ANEEL, MAE, ONS, etc.) and *regulatory* (contract regime, network use discipline, formulation of tariff policies and methodologies, etc.) apparatus was to come. In short, in this environment, what we had was an enormous regulatory uncertainty.

With this background occurred the privatization of ESCELSA, in the form of auction of the highest bid for the shares of the company[14]. Together with the transfer of control, a new concession contract was signed[15]. It should be noted that the auction did not take place according to the criterion of "the lowest value of the public service tariff to be provided" (art.15, I of Law 8.987/1995), which would directly allow the application of tariffs obtained "for the price of the winning bid" (art. 9, *caput* of Law 8.987/1995)[16]. In the privatization of ESCELSA, the tariffs had been previously fixed by the granting power (National Department of Water and Electric Energy - DNAEE) and incorporated in the Public Notice. As a consequence, the bidder's proposal, relative to the value of the company's shares, would have no effect on them. According to the legislation in force at the time, the tariff policy under which the distribution tariffs were built was that of *service at cost* (Water Code, art. 178 et seq.).

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service. In fact, if the tariff were to reflect such costs, it would not always be possible simply to compete for the concession by means of lower tariff bids.

12 See Celso Antônio Bandeira de Mello's critique of the device in successive editions of his *Manual*: BANDEIRA DE MELLO, Celso Antônio, *Curso de Direito Administrativo,* 32. ed. São Paulo: Malheiros, 2015.

13 To include: a.) introduction of the figure of the Independent Energy Producer (Art. 11 and following); b.) a generic forecast of the existence of (future) free consumers (art. 15 and 16); c.) an indeterminate mention of free access (art. 15, § 6); d.) a reference to the integrated operation of certain transmission installations (art. 17) and little or nothing else. On the formation of the New Model for the Electricity Sector, see KAERCHER LOUREIRO, Gustavo, *Instituições de Direito da Energia Elétrica - Volume I,* São Paulo: Quartier Latin, 2020, p. 213 et seq.

14 Article 15, II of Law 8.987/1995.

15 Art. 27 et seq. of Law 9.074/1995.

16 Or, to put it another way: if there were an auction for the lowest rate, this would allow the application of the *revenue cap*.

In this scenario that mixed regulatory uncertainty and tariffs for the cost of the service fixed unilaterally, the (new) concessionaire solemnly stated, in a contract, that "[t]he values of the tariffs referred to in the *caput of* this Clause are recognized by the CONCESSIONARY as sufficient for the adequate provision of the services granted and the maintenance of the economic-financial balance of this Contract". (Cl. 6, Sc. 4). We will return to this subject later, but we may already ask: would it be possible to identify the original economic-financial equation of such a contract, in such an environment? If so, what kind of equation would have been signed under such circumstances? And would it be mandatory to maintain exactly *this equation* obtained in a phatic (economic) scenario known as "bad" performance of the (until then) state-owned company, and built on bases that would be deeply altered (rejection of the service method by cost)? Let us leave, for now, only the questions.

2.2 The clauses of Contract 01/95

The first notable circumstance - understandable, given the previous industrial organization, but aberrant in view of the coming trends in the organization of the electrical industry - is in the compound object of the concession. It was a complex concession, with three legally distinct elements: (i.) public generation services[17]; (ii.) public transmission services[18]; (iii.) public distribution services[19], with coupled commercialization (without exclusivity for the free consumers identified in articles 15 and 16 of Law 9.074/1995[20]). This legally fundamental circumstance (verticalization) raises important questions about how precisely to configure the economic-financial balance of the contract, but in what follows we will stick to the distribution service - assuming that the objects are legally separable, the content of what the contract itself determined[21].

As already noted, for the distribution, the tariffs were not fixed by the price of the winning bid, as recommended by Article 9 of

[17] Cl. 1ª, Sc. 1ª. Note: *public service* and not independent energy production, as would already be possible, given the devices (arts. 11 and following) of Law 9.074/1995.

[18] Cl. 1ª, Sc. 2ª.

[19] Cl. 1ª, Sc. 3ª.

[20] Cl. 1ª, Sc. 5ª.

[21] Cl. 10ª, Sc. 4ª.

Law 8.987/1995. In any case, it was in their sight that the concessionaire should provide the electricity supply services according to the standards and conditions existing at the time (generically disposed in the contract and sparse in the legislation then in force, notably Decree 41.019/1957 and Ordinances of DNAEE[22]). Moreover, it assumed a somewhat defined list of obligations[23] and was subject to the conditions then in force of supply contracts (Law 8.631/1993)[24]. These and other elements, due to their generality and low regulatory density, could hardly provide the exact size of the charges and costs of the concessionaire (the "exits", so that they could be comparable with their pre- established "tickets", as TTEEF dictates). Under these very imprecise assumptions[25], which had little concrete, the concessionaire made the statement previously reproduced, about the sufficiency of the tariffs for the provision of the service and maintenance of the economic- financial balance of the concession[26].

In any case, if any economic-financial equation T0 existed, it should be extracted from here, *at that moment and under these conditions.* And this is something that seems to be not only unreal but inadvisable, both for the novel concessionaire and for the Grantor, considering the gestation of a new tariff policy that would manifest itself right ahead. However, this would be the orthodox procedure, required by TTEEF; this would be a legal procedure to be protected for the entire term of the concession, *ad omnia saecula saeculorum*.

More imprecision - uncertainty? - was in the clauses dedicated to disciplining the mechanisms of tariff changes. In this regard, there was very little in the legislation then in force, apart from the dictates, not used, of the Water Code, Decree 41.019/1957 and Law 8.631/1993. In the newer laws one could only count on generic dictions that "the contracts may provide for mechanisms for revision of the tariffs in order to maintain the economic-financial balance" (art. 9, paragraph 2 of Law 8.987/1995),

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22 Cl. 3ª "Of Expansions and Expansions". Cl. 4 - "General Conditions of Supply".

23 Cl. 5ª "Obligations of the Concessionaire".

24 This law had as principles of tariff construction the service for the cost and the absolute absence of freedom of contracting.

25 See, illustratively, the content of the *caput of* Cl. 4ª: "The execution of the service resulting from this Contract presupposes quality, regularity, continuity, efficiency, security, timeliness, generality, moderation of tariffs and courtesy in the provision of services to users".

26 Cl. 9ª, Sc. 4ª.

some empty references to "readjustments[27][29]", and the discipline of some hypotheses of extraordinary alea (*factum principis*, but only in tax matters, cf.). Nothing more[28]. And the clauses of Contract 01/1995 have not improved this panorama:

> *Clause 9 (...)*
> *Sub-Clause One. The rates dealt with in this Clause may be readjusted, at the discretion of the CONCEDENT, by request of the CONCESSIONARY, with the objective of guaranteeing the economic-financial balance of this Contract.*
> *Sub-Clause Second. The CONCESSIONARY rates may be revised, at your request, at the discretion of the CONCEDENT, if there is a relevant change in the cost structure or market, ANNEX III, that modify the initial economic-financial balance of this Contract.*
> *Third Sub-Clause. The CONCESSOR shall, regardless of the CONCESSIONARY's request, review, for more or less, the CONCESSIONARY's rates, every three years, counted from the date of signing this Agreement.*

This, and nothing else was in place to guide the behavior of the tariffs throughout the 30 years of the concession: (i.) an adjustment clause without any formula or parameter, applied "at the discretion of the Grantor"; (ii.) a revision clause, also "at the discretion of the Grantor", in the event of a non-better qualified "relevant change in cost or market structure...that modify the initial economic-financial balance of this Contract"; (iii.) a clause of periodic revision, mandatory, without, absolutely, any objective mark or purpose: "the Grantor shall (...) proceed to the revision, for more or less, of the rates of the CONCESSION, every three years".

What exactly did the parties contract, given this situation of complete uncertainty, coming from two "fronts", so to speak: the laconism of the regulation and the contract, and also the prospect of imminent regulatory changes, inaugurated by Law 9.074/1995 (which was only the spearhead of the sectorial reforms)? What equation has been established here (T0) and what would be the behavior of the tariff over the next 30 years? And what could TTEEF help in such a scenario? Your answer,

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[27] Article 9, § 5; Article 18, VIII; Article 23, IV; Article 29, V of Law 8.987. Art. 15, IV and §§ 2 and 3 and 30 of Law 9,427. Decree 5.163, passim.

[28] One could envisage the application of Law 8.666/1993, but, as we have already said on another occasion, this solution does not seem to be admissible and would still be of little help. V. KAERCHER LOUREIRO, Gustavo, *Imprevisão, Equilíbrio Econômico-Financial and Fato do Príncipe in Public Service Concessions - Part I,* Rio de Janeiro: n.º], 2020.

most likely, would be to suggest the nullity of the contract, because in this state of affairs, the assumptions were missing so that TEEF could work. But let us follow the sector history to see how things were changing for Contract 01/1995.

2.3 The vicissitudes of Contract 01/1995

2.3.1 The profound regulatory changes in the initial years of Contract 01/95 (1995-2004)[29]

If the normative history of the sector that took place between 1995 and 2004 is read with the lenses of TTEEF, what was witnessed was an incessant avalanche of events of extraordinary alea, especially in the modality of unilateral alterations of the contract promoted by general and abstract acts from different instances[30]: laws, decrees and administrative normative acts of the recently created regulator, the National Agency of Electric Energy - ANEEL, the National Operator of the System - ONS, the Wholesale Energy Market - MAE, the National Council of Energy Policy - CNPE and the (only existing entity in 1995), Ministry of Mines and Energy - MME, to stay in the most relevant. In a partial list only of the norms of superior hierarchy, we can list Law 9.427/1996 and its Decree 2.335/1997, Law 9.648/1998 and its Decree 2.655/1998, Law 10.438/2002 and its numerous Decrees, Law 10.848/2004 and its Decrees 5.163/2004, 5.081/2004, 5.177/2004, among others, Law 12.783/2013 etc.

As an illustration, it is worth recalling some notable changes over time, especially sensitive for electricity distribution services:

- The possibility of the Grantor to expand the universe of free consumers, beyond the original cast already established at the time of signing the Contract 01/1995 and previously delimited in articles 15 and 16 of Law 9.074/1995 - which was effectively done not only with the creation of special consumers[31], but

[29] For the detailed history of this period from 1995 to 2004, see KAERCHER LOUREIRO, *Institutions of Electric Energy Law - Volume I,* pp. 211-254.

[30] Let us not forget that any abstract normative measures are automatically incorporated in the concession contract. One thing is the *instrument of* the contract, the written document that may remain unchanged or be amended. Another is the *contract, which* has a legal relationship that lasts - and changes - in time.

[31] Article 26 of Law 9.427/1996.

also with gradual reduction of technical requirements for free consumers[32].

- The successive changes in the distributor's relationship with these consumers: a.) originally, the company could negotiate with them on a free basis[33], then this was forbidden to them[34] and later recognized again, but then under certain conditions[35]; b.) the discipline of the consequences of the exit of these consumers: before the regulation allowed the distributor to review the supply contracts in proportion to the consumption of the outgoing consumer and request an extraordinary tariff review (extraordinary economic alea)[36]; after this review was expressly prohibited[37].
- New investment requirements and the establishment of goals of universalization and qualification of the distribution service[38] brought about by subsequent legislation and regulation of ANEEL, variable over time.
- The deep and successive changes in the regime of supply contracts[39], in particular: a.) replacement of the freedom of purchase announced in art. 10 *caput of* Law 9.648/1998, by the obligation to purchase energy in ACR, under new and strict conditions (art. 2 of Law 10.848/2004). b.) the prohibition of *self-dealing* c.) different regimes for passing on the price of the energy purchased to the captive consumer of the distributor[40]; d.) introduction, in 2004, of the requirement of contractual ballast for 100% of consumption, instead of the admission of a certain percentage of exposure to the short-term market[41].
- The creation of a "market of leftovers and differences[42]", non-existent in 1995.

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32 It is still expected a total release of the commercialization market from the horizon of 2024.

33 Article 15, § 1 of Law 9.074/1995, in its original wording.

34 Article 4, § 5 of Law 9.074/1995, as amended by Law 10.848/2004.

35 Article 4, § 13 of Law 9.074/1995, as amended by Law 13.360/2016.

36 Article 15, §§ 5 and 7 of Law 9.074/1995 in its original wording.

37 Article 15, paragraph 5 of Law 9.074/1995 as amended by Law 9.648/1998.

38 Arts. 14 and 15 of Law 10.438/2002.

39 From art. 10 of Law 9.648/1998 to the provisions of Law 10.848/2004 and its regulation, Decree 5.163/2004.

40 Art. 10, § 2 of Law 9.648/1998.

41 Articles 2 and 3 of Decree 5.163/2004.

42 Art. 12, 14 et seq. of Law 9.648/1998.

- The introduction and successive improvements of the ordinary tariff revision[43], with the important innovation of sharing productivity gains of the concessionaire[44], and the various changes in methodology of this revision (remember: in Contract 01/95, the tariffs were fixed unilaterally by the grantor based on the cost of the service and not the price of the winning bid; moreover, there was no precise reference to the ordinary revision, much less the requirement of sharing productivity gains).
- The demand for deverticalization and the consequences it brings to some important business of the distributors[45].

To these few examples**,** many others could be added. We are not able, of course, to list all the significant and profound changes that these and other rules have brought to the legal and regulatory system of the sector. But it does not seem unreasonable to imagine that, in light of the state of affairs established in Contract 01/1995, we are in the throes of countless and relevant reconfigurations in the conditions for providing distribution services and tariff principles and mechanisms, with evident impacts on the (supposed or imagined) equation T0 or, more broadly, on the economic-financial arrangement of the concession contract. Readers familiar with recent sectoral history are aware of the extent and magnitude of the changes, and are also aware of the oscillations, comings and goings, that the regulatory discipline has suffered. Most, if not all, of these changes have brought economic and also financial consequences for the services covered by the concession contracts.

In view of this, it would not be too much to ask: in the light of TTEEF, how should the concessionaire of Contract 01/95 and all the others who, like it, have gone through several "sector models" and regulatory variations that, at least *prima facie*, typify true unilateral changes of the contract, extraordinary aleas? As a matter of fact, one can speculate that the optimal functioning of the machinery of this theory would have simply prevented the development of novelties. What would

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[43] About it, see KAERCHER-LOUREIRO, Gustavo, Periodic Tariff Review - its Introduction to the Brazilian Legal System and the Role of Law in its Construction by the Regulator, *in*: DA ROCHA, Fabio Amorim (Org.), *Relevant Topics in Electric Power Law (vol. III),* Rio de Janeiro: Synergy, 2014.

[44] Art. 14, IV of Law 9.427/1996.

[45] Article 4, § 5 of Law 9.074/1995, as amended by Law 10.848/2004.

be the point of changing the discipline of services if the obligation to safeguard the old economic-financial equations remained? It is suspected that the purpose of the changes is precisely to avoid calcifications of this kind. That is: TTEEF did not work here. And it did not work in relation to another category of extraordinary alea.

2.3.2 The 2002 rationing and its economic repercussions. Other hypotheses of extraordinary tariff revisions

Between July 2001 and February 2002 part of the national territory was under "rationing" while another part was under "rationing" of consumption (South Region, mainly). The difference between rationing and rationalization was (above all) formal: in the first case, there was a positive declaration of the Grantor and, as a consequence, a compulsory program of measures involving, among other things, reduction of consumption, penalties, incentives, etc. In the second case, in the absence of this declaration, the measures to contain consumption were merely suggested and encouraged. At the origin of both phenomena, however, was the same fact: the shortage of energy supply. Although the causes of such scarcity could be - and were - debated, the perception was eventually consolidated that an extraordinary event, unpredictable and inevitable for the sectorial agents, of strong economic repercussions throughout the industry chain (generation, transmission, and distribution) was taking place.

On this episode, it is interesting to note, first of all, that although the material cause was the same, the legal treatment was different for companies under rationing from those under rationalization. The object of subsequent compensatory measures (below) were only the companies under rationing. Without going into the merits of this decision, one might ask if such difference in treatment would make sense under TTEEF. Wouldn't it be, in one case, before *factum principis* and, in another, of an extraordinary, unpredictable event, etc.? Both hypotheses are inside the extraordinary alea, with the consequences of style.

In the more restricted scope of rationing, it is also worthy of note that aid from the Grantor was addressed not only to the holders of public service concession contracts, but also to independent energy producers who, in light of the doctrinal understanding, would not be

public service providers, but economic agents *stricto sensu*[46], "mere" authorized or concessionaires for the use of public goods. A series of aid and economic stimulus measures have been implemented for all the sector agents, provided for in some laws and regulations, including Law 10.438/2002. In this universe of measures there were additional tariffs (yes, only for public service providers)[47], BNDES financing to the sectorial agents under facilitated conditions, "renegotiations" (mandatory) of supply contract clauses and the "Extraordinary Tariff Recomposition - RTE" (art. 4 of Law 10.438/2002). Once again, it is worth asking, in the light of TTEEF, what kind of aid from the Union was granted to subjects who, according to the prevailing opinion, are economic agents and not public service providers.

Restricting even more the focus of the examination, even for the distributors, effective public service concessionaires, the measures did not exactly pray for the TEEF booklet. A prominent example of this was the "extraordinary tariff *recomposition*" promoted by art. 4 of Law 10.438/2002. An examination of the provisions of this article clearly shows that the recomposition, on many points, of the traditional mechanism of extraordinary tariff *revision* (the non-use of the term "revision" does not seem to have been accidental) has been removed. Right, on the basis of the TEN was an event recognized as an extraordinary (economic) alea. But it is enough to read the set of conditions, limitations, mechanisms and requirements made by the 17 paragraphs of art. 4 to realize that we are not faced with measures to simply neutralize the effects of rationing and restore the original economic-financial equation of the concession contract. At each step one stumbles

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[46] See DE ARAGÃO, Alexandre Santos, A natureza jurídica da geração de energia elétrica, in: DA ROCHA, Fabio Amorim (Org.), Temas relevantes no direito de energia elétrica (vol. II), Rio de Janeiro: Synergia, 2013; DE ARAGÃO, Alexandre Santos, A regulação de insumos à geração de energia elétrica e a Resolução ANEEL 583/2013, in: DA ROCHA, Fabio Amorim (Org.), Temas relevantes no direito de energia elétrica (vol. III), Rio de Janeiro: Synergia, 2014; CALASANS JÚNIOR, José, Temas polemicos do novo direito da eletricidade, in: DA ROCHA, Fabio Amorim (Org.), Temas relevantes no direito de energia elétrica (vol. I), Rio de Janeiro: Synergia, 2012., MARQUES, Márcio Pina, O uso do potencial hidráulico para produção independente de energia eléctrica: uma concessão mista para exploração de atividade econômica, in: KAERCHER LOUREIRO, Gustavo; DE CASTRO, Marcus Faro (Orgs.), Direito da Energia Elétrica no Brasil, Brasília: ANEEL e UnB, 2010. For a criticism to this position, from the idea that any "electric power service or installation" (art. 21, XII, *b* of the Constitution) cannot be a simple economic activity (*stricto sensu),* although it does not always need to be a public service, v. KAERCHER LOUREIRO, Electric Power *Law Institutions - Volume I.,* Part IV, Chapter 1.

[47] Article 1 of Law 10.438/2002.

upon a "heterodoxy" about which one does not judge merit or demerit, but only notes its distancing from what the theory advocates.

In short: little has worked as in the manuals of administrative law.

2.3.3 The Terms Additives to the Contract 01/1995

In spite of all these changes, the (instrument of the) Contract 01/1995 has undergone only four amendments[48][50], to introduce a few, but important, innovations (it should be said *en passant* that it would be interesting to check the criteria used by the Regulator to decide what supervening circumstances arise - and what circumstances do not arise - amendments to the concession contracts).

The first one occurred in 2005 - when most of the regulatory changes had already taken place some time ago, see above. Its purpose was "to meet the conditions of effectiveness set forth in §§ 2 of arts. 36 and 43 of Decree 5.163 of July 30, 2004, and in the form of the changes made in the wording of the Contract of Concession of Generation, Transmission and Distribution of Electric Energy n. 01/1995-ANEEL of July 17, 1995, established in Clause Two of this Term.

The provision of § 2 of art. 36 of Decree 5.163/2004 made reference to contractual additives to legitimize the inclusion of (new) methodologies that would ensure "neutrality in passing on the costs of acquiring electricity[49]". Paragraph 2 of art. 43 also alluded to the need for contractual additives to include in the "compensation mechanisms dealt with in Provisional Measure no. 2,227, of September 4, 2001, the variations resulting from electricity acquisition costs not considered in the tariff adjustment promoted in the previous year[50].

So or more important than the theme versed in the provisions of Decree 5.163/2004 was the radical change that, by Additive 01, was established in the tariff clauses of Contract 01/1995. Through the reformulation of Clause 9, a new arrangement was established. The generic indications, seen before, were exchanged for more complex

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[48] We obtained this information from the ANEEL website database, http://app.aneel.gov.br/web/guest/contratos-de-distribuicao?p_p_id=contratos_WAR_contratosdeconcessaoportlet_INSTANCE_1sLA88A4t0k0&p_p_lifecycl e=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_pos=2&p_p_col_count=6.

[49] Art. 36, § 1º of Decree 5.163/2004.

[50] Art. 43, *caput* of Decree 5.163/2004.

mechanisms – but not without vagueness and opportunities for administrative discretion, as we will see.

As for the readjustment, which was previously absolutely undetermined and at the discretion of the Grantor (cf. above), it now has the following structure: a.) the costs of the concessionaire would be separated into two large groups, depending on whether they were (considered by the regulation) to be "unmanageable" or "manageable": respectively, "Part A" and "Part B"; b.) annually[51], in order to obtain the so-called Required Revenue, Tranche A would be updated, incorporating to its amount the cost variations effectively verified during the year (*pass through*[52]), while Tranche B would be obtained by applying to its value established in the previous year an Inflation Variation Index (IVI)[53]subtracted from the "X Factor", an index established by the regulator to "pass on to users the productivity gains (...) and results resulting from incentive mechanisms[54]" (we will see below).

As for the extraordinary tariff review, it has undergone some minor adjustments.

New was the discipline of Cl. 9ª, Sc. 3ª. The tariff revision constant there was absolutely generic (possibly impracticable for lack of parameters). Since 2005 it has been disciplined in greater detail. Because of its importance, we will see it separately.

The second additive term, from December 2008, was very important. It acted the (new) requirement of deverticalization of activities, instituted by Law 10.848/2004[55]. For the Additive 02 remained "suppressed the Sub-Clauses First and Second of the Primary Clause (OBJECT) of the Concession Contract of Generation, Transmission and Distribution n. 001/1995-ANEEL, of July 17, 1995, that disposes on the concessions of exploitation of hydraulic potentials and transmission of

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51 Except when there is ordinary tariff revision.

52 Strictly speaking, this is not an authentic *pass through*: there are limits for passing on energy acquisition costs, established, among others, in art. 10, § 2 of Law 9.648; art. 1, § 8 of Law 10.848; art. 2, § 4 of Law 10.848. Decree 5.163/2004 (passim).

53 In the Contract 02/2019 the IVI is obtained by the division of the IPCA indexes of the IBGE and index of the last tariff repositioning.

54 Contract 02/2019, Cl. 6ª, SC. Interesting to note that in Contract 01/1995 the number established for the X Factor could be not only *subtracted* but also ***added*** to the readjustment index.

55 Art. 20 of Law 10.848/2004 and new wording of §§ 4, 5 and 7 of Art. 4 of Law 9.074/1995.

energy not linked to the public service of electric energy distribution".

Additive 03, of February 2010 had as its object new changes in the construction of tariff change mechanisms, more precisely, "[the] object of this Term Additive is to change the procedures for calculating annual tariff adjustments, aiming at the neutrality of the Sectoral Charges of 'Part A' of the Annual Revenue of the Concessionaire...".

Finally, Additive 04, of December 2014, provides for the incorporation of certain financial indices in the calculation of indemnity, when the concession ends, under certain conditions.

To conclude the examination of the case study, we will see in more detail the new tariff revision that Contract 01/95 incorporated in 2005. In fact, it is a complete substitution of one mechanism of tariff variation for another and, it could be said, of tariff *policy*. The importance of this new mechanism is such that it deserves a separate examination.

2.4 The ordinary tariff revision introduced in the Contract 01/95

As stated in Contract 01/1995, every three years the Grantor should perform a "periodic review" of the rates. Such reviews occurred (or should have occurred) in 1998 and 2001, still without any established methodological basis. For the year 2005, by virtue of Additive 01, it was sought to follow some standards.

The tariff review procedures brought by Additive 01 are complex and deeply innovative in relation to what was contained in Contract 01/95 and, more generally, in relation to the tariff policy prior to 1996. Moreover, the Periodic Tariff Review - RTE (or Ordinary Tariff Review - RTO [56]) was not a peculiarity of this contract, but a sector innovation that was soon considered as an extravagant element - and perhaps legally null - in view of our tradition. In short, we were faced with a (apparently[57])

[56] Defined in art. 2, LXIX of REN ANEEL 414/2010 as: "periodic tariff review: ordinary review, provided for in concession contracts, to be carried out taking into account changes in the distributor's cost and market structure, the tariff levels observed in similar companies, in the national and international context, and incentives for efficiency and tariff moderation".

[57] We have dealt with this topic in two previous works: KAERCHER LOUREIRO, Gustavo, *A Indústria Elétrica e o Código de Águas - O Regime Jurídico das Empresas de Energia entre a Concession de Service Public e a Regulation of Public Utilities,* Porto Alegre: Fabris, 2007. In fact, this periodic review was nothing new; it had been foreseen since 1934, for the electricity sector tariffs, in articles 178 et seq. of the Water Code. What happened was that our most recent doctrine simply ignored this figure, as well as all the constitutional tradition of our

new figure, which a lot of excitement created in the legal environment. In this section, we will just describe the RTE, to further verify how discrepant it actually is, in relation to what the TTEEF recommends.

In general, the RTO consists of two mechanisms: 1.) the ***tariff repositioning***; 2.) ***the determination of the X Factor*** (to be used in the annual adjustment formulas). It happens with certain periodicity, fixed in the concession contract - in the different contracts, the periods vary between 3 and 6 years. In the case of ESCELSA it was originally 3 years.

The tariff repositioning defines the "optimal revenue" of the concessionaire, in view of a certain quality of service required by regulation. In a very simplified way, it involves: a.) measurement of efficient operating costs (service costs, irrecoverable revenues, etc.); b.) determination of fair remuneration: b.1.) remuneration of prudent investments; b.2.) definition of reasonable rate of return (WACC); b.3.) depreciation (note the use of qualifiers such as "efficient", "fair" remuneration, "prudent" investments and "reasonable" rate of return. There are different ways of giving concreteness to these vague concepts that explain the different *methodologies* of measurement of costs, investment (the base of remuneration), rate of return (applied to the base of remuneration), etc., methodologies that have varied along the different Tariff Cycles (below).

Factor X establishes the efficiency targets for the next tariff period, which will be expressed in the tariff. It is intended to carry out the command of art. 14, IV of Law 9427/1997 and share with the consumer the productivity gains expected by the regulator, over the period between periodic reviews. Normally, it works as a reducer of the readjustment index[58].

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republican history on which it was based, and preferred to adhere, without more and without much questioning, to the experience of French law.

58 In the words of ANEEL, the X Factor is "an index fixed by ANEEL at the time of tariff revision. Its function is to pass on to the consumer the estimated productivity gains of the concessionaire resulting from market growth and increased consumption by existing customers. There is a trend that in the long term the distribution concessionaires increase the quantity of the market and improve their management practices in order to increase the gains. The factor X seeks to pass on part of these gains to consumers. The factor X works, most of the times, as a reducer of the rates readjustment indexes charged to consumers. It is a percentage that will be deducted from the IGP-M* (index defined in concession contracts for the monetary updating of manageable costs) in the annual tariff readjustments after the periodic review. The X Factor is composed of 3 components: 1. The Pd Component measures the productivity gains of the electricity distributors; 2. The Q Component evaluates the quality of the technical and commercial services provided by each distributor to its consumers. The T Component adjusts, over a defined period, the observed operating costs of each utility to the efficient operating cost". Available at https://www.aneel.gov.br/metodologia-distribuicao/-/asset_

These few indications, on the other hand, allow us to verify that this mechanism is not intended to ensure the maintenance of an original economic-financial equation, obtained at the moment T0. It is precisely the opposite: to destroy the original equation (and the successive ones to the original one), in its place, to cyclically institute a new economic arrangement, consistent with the economic and business conditions in force for the period under examination.

In any case, as important as the novelty of the RTO is the way it was introduced and is still being treated.

After the period of pure empiricism, but still without certainty as to the best methodologies for gauging important elements such as the X Factor, the determination of "prudent" costs, "adequate" investment, "fair" remuneration, etc., ANEEL decided to institute the figure of the Tariff Cycles. Such Cycles are nothing more than predetermined periods, within which certain methodological and procedural premises are valid for the stipulation of the RTO elements, premises presented by the regulator for discussion (in public hearings) of subsequent deliberation. The First Cycle took place between 2003 and 2006; the Second, between 2007 and 2010; the Third, between 2011 and 2014, and so on. The methodologies, procedures and evaluation criteria of numerous factors such as remuneration basis, cost allocation criteria (by Reference Company or *benchmarking*), asset evaluation, etc. vary substantially in each one. Consequently, the results achieved vary considerably. It is, in all evidence, a learning by experience.

In the face of all this history, what is to be retained?

Section III - The Confrontation Between TTEEF and Contract 01/95

Throughout Sections II and III we have already pointed out some discrepancies between what advocates the traditional theory, on the one hand, and the content and successive changes of Contract 01/95, on the other. In this section we will only collect and order those indications.

- It seems that *no equation T0 was fixed at the time of the conclusion of Contract 01/95.* At least, it did not remain expressly and clearly established - which is a fundamental assumption of TTEEF's operation.

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- The Contract 01/95 was born under the validity of the tariff policy of the service for the cost, with the values unilaterally fixed by DNAEE, without any relation with the "price of the proposal" that would allow it to establish, *ab origine*, the policy of the service for the price or the tariff regulation by incentives (art. 9 of Law 8.987/1995). Over time, the original way of designing and building the tariff – something absolutely fundamental to determine the basic elements of the REF of the contract - was replaced by the model of regulation (tariff) by incentives, completely different from the previous one in its assumptions and results. This change, a true unilateral alteration of the contract in the "heart" of the REF of the concession, did not give rise to any plea from the concessionaire or remedy from the Grantor.
- In fact, this type of remedial action would be an evident contradiction from the point of view of sector regulation because, precisely, the change in tariff regulation - especially the RTO - was aimed at *deconfiguring and reconfiguring*, from time to time, the previous economic-financial situation of the concessionaire, and not at maintaining the equation T0 (assuming that it was fixed when the contract was signed, which apparently was not the case). It is a matter of seeking *different and varied "balances"*. Moreover, one of the fundamental objectives of the RTO was to provide the users of the service with the appropriation of (part of) gains in concessionaire productivity, something that TTEEF would qualify as an *ordinary alea, and* therefore not likely to be exploited by third parties. In other words, once again, and for several reasons, it appears that the mechanisms and prescriptions of TTEEF did not operate here.
- From the point of view of the determination and completeness of the basic elements of the REF of the concession, another basic premise from which TTEEF departs, it can be seen that even the formula of readjustment established in the contract had. This and other circumstances of the content of the contract, as well as the imminent "avalanche" of regulatory news that was to come suggest that the parties contracted in a scenario of absolute uncertainty and incompleteness, a scenario that contradicts the foundations on which TTEEF was built.

- If the *original* uncertainty and incompleteness were not enough, Contract 01/95 was affected by a series of events that TTEEF would qualify as unilateral alterations of the contract and extraordinary aleas, which, however, did not receive the "orthodox" treatment advocated by traditional theory. It should also be noted that many of these changes, of undeniable impact on the economic and financial regime of distribution concessions, seem difficult if not impossible to quantify for the purposes of triggering traditional mechanisms such as extraordinary tariff review (which would conceptually apply to them in the light of TTEEF). Most of the changes institute states of affairs and new structural circumstances, phenomena that challenge quantification. Many changes are not one-off events that can be identified, isolated, valued, and "priced". So, for example, how do we calculate the shock that a distributor had because he was forbidden to negotiate on free terms with free consumers (excuse the repetition)? How to calculate the economic repercussion of the change in the contracting regime of supply, which passed, in the case of Contract 01/1995, from the regime of service cost (Law 8.631/1993), to the free negotiation (Law 9.648/1998) and then to the regime of ACR (Law 10.848/2004). How to calculate the impact, over the entire concession term, of the introduction of mini and micro distributed generation? The examples could multiply. Trying an account that counterpoints "revenues" and "income" in each of these situations is simply meaningless economics.

In short: instead of a rigid *pacta sunt servanda* as required by TTEEF what has been, *from the beginning,* was a state of affairs marked by uncertainty, incompleteness and a disregard (at least in large part) for the "canonical" functioning of TTEEF. We have said it: nothing came out like in the administrative law manuals.

In view of this, would the history of Contract 01/95 be the narrative of constant and profound violations of Brazilian positive law? The answer should be sought in the examination of the texts and norms. It is possible that the theory does not correspond to the normative reality. To try to answer these and other questions, we will move on to the third thematic axis of this study, after having already seen the TTEEF and the 01/95 Contract.

Section IV - Brazilian Positive Law

4.1 Introduction

The object of our examination here are the more general texts and rules concerning the REF of public service concessions. Would the relevant rules have required the existence and precise identification of an original equation T0 (would this equation be the *legal good protected*)? Would they impose the maintenance of this equation for the whole duration of the contract? Do they design such standards, as provided by TTEEF, a specific theory of the aleas and a necessary division of them between the parties to the concession? Would any division of the clauses be complete and not admit any gaps to be filled over time? Would they have, at last, the Contract 01/95 and what came after it violated Brazilian law? In short, we are at the same time, with the most abstract relationship, which confronts TTEEF and Brazilian law, and with the most concrete relationship, which confronts Brazilian law (general, non-sectoral), with Contract 01/95.

Let us start with the Constitution, because it is rooted in the idea that it would already be there not only the base, but all the machinery of TTEEF[59].

[59] See, for all, Celso Antônio Bandeira de Mello, speaking of the relationship between the theories of French law and the Brazilian legal discipline, especially the constitutional one: "Certainly, it is appropriate to invoke the mentioned theories, but with some adaptations. It is that French solutions cannot be fully extrapolated to Brazilian law, since they do not fully adjust to our Positive Law. The latter, as we will see below, has been oriented so as to offer the concessionaire a broader guarantee than the one dispensed to him in France. In French law, the ordinary alea, i.e., the risk to be faced by the concessionaire without assistance from the Public Power, involves not only cases in which the concessionaire, due to inefficiency, negligence or incapacity, suffers losses, but also cases in which its patrimonial deterioration results from normal oscillations of market prices, insufficient influx of users, or the adoption of general measures, issued by the Public Power, which indiscriminately affect the whole community, without special repercussion on the concessionaire and without making the exploitation of the service ruinous. Among us, however, the notion of an ordinary alea - that is, the risk that the concessionaire must bear - is more restricted, so that it benefits from greater protection. On the other hand, as far as the economic alea is concerned, when the theory of unpredictability can be invoked, the dealer's protection is complete, and not only partial, as in French law. In short: in Brazil, the notion of economic-financial balance of the concession and the protection that should be granted to it is more generous to the concessionaire. In fact, it is understood as excluded from the ordinary alea (that is, from the risks that the concessionaire must assume) the variation in the prices of the inputs components of the tariff, since this intellection is in line with the broad protection arising from the aforementioned articles 9, § 2, 18, VIII and 23, IV, which require revision and/or readjustment. The ordinary alea also excludes economic damages resulting from general measures of the Government that have a serious impact on the tariff price, even if these are not measures specifically levied on the concession, since, as seen, art. 9, § 3 determines tariff revision even in the face of the occurrence of taxes (except those

4.2 Constitution

Unlike the (almost) *communis opinio doctorum*[60], we understand that the 1988 Constitution has little or nothing to contribute to clarify the REF of public service concessions. As one would expect from a Constitution, it does not answer any of the questions posed above - nor others. The reasons for this divergent understanding, which sees the Charter as a movement of "constitutional self-restraint", were presented in another specific study on the problem, to which the reader is referred[61]. They revolve around the examination of two articles of the Constitution, art. 175 and art. 37, XXI.

With regard to the first provision, which would be the natural *headquarters materiae* of the REF theme, the following is basically to be noted: this provision *deliberately* broke an uninterrupted constitutional tradition since 1934, which expressly indicated the fundamental objectives of any tariff policy that might be adopted by the ordinary legislator. Our previous Constitutions enshrined either the requirement of "fair remuneration" linked to the American tradition of *public utilities* regulation (1934, 1937, 1946 and 1967) or the requirement of "economic-financial balance", linked to the French tradition of *public service concession* (1967). Breaking this tradition, in art. 175 there was a *conscious, explicit and justified*[62] refusal to set parameters (as can be seen in the final wording of the text and the debates of the Constituent). He preferred to allude only to the need for the existence of *some* tariff policy and refer its conformation to the legislator (general or sectoral).

As if recognizing the laconism of Art. 175, the hegemonic

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of income tax) or legal charges that prove to have repercussions on it. On the other hand, in cases where the theory of unpredictability, which is accepted without the extreme rigour of French law, is accepted, the losses of the concessionaire are entirely covered up and not - as occurs in France - shared by the grantor. *Such solutions are mandatory in view of our Positive Law, since art. 37, XXI, of the country's Constitution states that works and services (both purchases and sales) will be contracted 'with clauses that establish payment obligations, maintaining the effective conditions of the proposal'".* Bandeira de Mello, Celso Antônio, *Curso de Direito Administrativo,* 32ª ed., 2015, São Paulo: Malheiros, p. 765-767 (Grifou-se).

60 Exceptions to this are Maurício Portugal and Letícia. RIBEIRO, Maurício Portugal, *Concessions and PPP's: Best Practices in Bidding and Contracts*, [s.l.: s.n.], 2010, DE ALENCAR, Letícia Lins, *Equilíbrio na Concessão,* Belo Horizonte: Forum, 2019.

61 The already mentioned *Studies,* Chapter II.

62 There have been numerous attempts to include in its text references to "economic-financial balance of the concession" and "fair remuneration of the capital employed" in these concessions. All of them rejected the argument that the matter was in the sphere of ordinary legislation.

doctrine shifts the debate around the theme to Art. 37, XXI of the Charter. Here, too, there is not much that can be extracted from the topic. Our conclusions from the above-mentioned study point out that neither does it lend itself to consecrating a minimally dense principle of protecting the economic-financial balance of public service concessions, as traditionally understood; much less does it harbor an entire theory for dealing with these legal affairs. The justifications we have given for this understanding basically revolve around two points: a.) the inapplicability of art. 37, XXI to concessions (which are disciplined in art. 175). Its hypothesis in fact (*fattispecie*) is the universe of "works, services, purchases and disposals" contracts, not only because this is the express reference of the text[63], but also because the rationality of the device makes sense only for this type of legal business; b.) the content of the device. Regardless of its field of application, the thin strip in which TTEEF clings to the Constitution (a group of words that does not even have syntactic autonomy, the "maintaining the effective conditions of the proposal") does not advocate the need to maintain an initial economic-financial equation, established between the "outputs" and "inputs" of the dealer. The "maintenance of the proposal" there present is in no way equivalent to "maintaining throughout the contract and under any circumstance, the original economic-financial equation that effectively derives from the proposal". As we have already had the opportunity to explain, the proposal referred to in item XXI of art. 37 may contemplate, exactly, periodic undoing and remaking of a supposed equation T0 - an equation that is easier to be configured in commutative administrative contracts of the general regime than in concessions. This possibility will depend on how the public notice, which marks the proposal, has conformed the economic-financial regime of the contract. If the public notice so provides, the proposal will have been maintained whenever these deconstructions and remakes occur. In case it is desired to apply subsection XXI of art. 37 to the

[63] "The 1988 Constitution, although it contains an analogous provision regarding the concession, does not repeat the rule on tariffs, referring to ordinary law the task of providing on tariff policy (art. 175, sole paragraph, III). It only establishes, in a very vague manner, that contracts for works, services, purchases and disposals will be contracted through clauses that establish payment obligations, 'maintaining the effective conditions of the proposal, pursuant to the law' (art. 37, XXI). This rule is usually interpreted as referring to the economic-financial balance; however, it is a guarantee of restricted scope, since it does not cover all types of contracts of the Administration". DI PIETRO, Maria Sylvia Zanella, *Partnerships in Public Administration*, 10th ed. São Paulo: Atlas, 2015, p. (...).

concessions (which is denied *sub* a.), above), this understanding must prevail, under penalty of rendering unconstitutional the whole tariff policy of the service for the "price", or the regulation by incentives (in particular, the ordinary tariff revision would clearly be unconstitutional if the intention was to read the provision as forbidding changes in the original economic-financial equation).

In the absence of arts. 175 and 37, XXI, to provide support to the TTEEF, it would remain to investigate the existence of a principle implicit in the Constitution. We do not intend to advance on this issue, but we note that, if such an endeavor is successful, we must take the rule not expressed for what it is: a precept endowed with a high degree of indetermination and lacking a specific process of implementation, the weighting[64]. Principles, taken in themselves, are not ordered sets of specific precepts, much less condensed of whole theories. They are orientations, "optimization orders" that are carried out in different ways and with different intensities in each case in which they are used, in the confrontation with other principles of equal hierarchy and "opposite sign".

In short: the Constitution left ample room for the conformation of the ordinary legislator and did not receive, as either part of the doctrine, the TTEEF. As for our contract, it seems to contribute little to pass sentence.

4.3 General laws on concessions

The most recent general law on concessions, Law 11.079/2004, made ample use of this freedom in the face of the Constitution and profoundly innovated in the subject of REF. Symptom of this is that it does not even use the expression "economic-financial balance". It is quite evident that it is opposed to countless canons of the TTEEF and, although it was applicable to common concessions (such as Contract 01/95), it has no objections to the way things have gone. Its main contribution to this study, therefore, is to indicate how positive law departs significantly from the theory that is usually played on its shoulders.

The central aspect of Law 11.079/2004 is in the way it conceived and distributed the "aleas", especially "fortuitous case, force majeure,

[64] GUASTINI, *Treaty of Civil and Commercial Law - Interpretation and Arguments,* especially Part III, Chapter V.

factum principis and extraordinary economic alea" (art. 5, III). Or better, how it *did not distribute*: he left the decision about it to the concession contract. Under the terms of the *caput* of art. 5, the contract *must* provide for the distribution of these (and other) risks.

This decision by the legislator allows great flexibility and endows the subjects responsible for the preparation of public notices and PPP contracts with the ability to adapt, so that the specificities of each economic segment and even of each undertaking granted are adequately addressed. However, it is not desired to enter into the merits of the discussion on the mechanism for sharing these risks (the "matrices[65]") or on the criteria to be used to impute them to the parties. The only thing to note here is that *if TTEEF were constitutionalized,* this solution would simply be *unconstitutional,* since it violates basic theoretical prescriptions regarding the distribution of the aleas (see Section I)[66]. Once again, Brazilian law does not pray for the theoretical orthodoxy.

Different, in part, is the panorama of Law 8.987/1995. This law is not only based on the expression "economic-financial balance" but

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[65] There is a certain incongruity in some risk matrices present in concession contracts. Some of them allocate the risks partly by appealing to the *nature of the event*, partly to the "*impact zone of the event*" and partly to the *nature of the effect of the event*. Thus, the same risk matrix may stipulate that (i.) unforeseeable event (or regulatory risk) will be borne by the concessionaire (ii.) that demand risk will be borne by the concessionaire and that (iii.) extraordinary effects of great magnitude on the contract economy will be shared between the parties. Well: what to do when a fortuitous event affects the "demand variation" impact zone and produces an extraordinary effect of great magnitude? Neutralize the dealer's loss, impose the entire imbalance or share the burden? How can this be solved, since in principle there is no hierarchy between these allocations? Several answers would be possible, but all would depend on the "theories": it could be said that the risk of the demand is the dealer's, *unless it* comes from force majeure, something that would make the risk matrix useless, by affirming a banality: that the dealer supports the ordinary alea. Or it could be said that, by attributing to the concessionaire the risk of demand, by definition (and *modus operandi* of risk matrices), the risk of occurrence of events of any kind is imputed to him, which would make the force majeure clause operate in "impact areas" not foreseen in the contract (and they will exist). In summary: risk matrices that allocate them by superimposing different criteria - events, areas of impact of events and effects of events - are likely to create enormous difficulties in interpreting the contract in certain hypotheses. There is a gap or antimony, depending on how one sees it. And the theory of the alea **surreptitiously** enters into what should be free of it, that is, the "objective distribution of risks".

[66] Barbara Sena said. The author also made a similar comment regarding art. 9 of Law 8.987/1995 (but only invoking the inapplicability of art. 37, XXI to concessions, and not their content). It is noted: "If art. 37, XXI were the rule applicable to concessions, art. 9 of the LGC would be unconstitutional, to the extent that guaranteeing the same conditions of the proposal or of the **signagma** identical or equivalent to that established at moment T=0 presupposes the incidence of regulation by cost. Since there are no contradictions between constitutional rules and it is known that the Constitution conferred powers on the ordinary legislator to establish tariff policy, it would not make sense to confer this bias on art. 9 of the LGC". SENA, Barbara Bianca, *A Arbitrabilidade Objetiva nas Concessões de Transmissão de Energia Elétrica*, IDP, 2020, p. 58, nt. 57, for the first point and p. 83.

also adopts elements of the TTEEF. But not with the intensity and extension that is normally assumed. And as for Contract 01/95, Law 8.987/1995 has, in effect, things to say.

In the first place, the topic of risks and the discipline of events that occur after the celebration of the public service concession finds treatment in the very *definition* of the legal figure. Article 2, II of the Law states that the concession is "the delegation of its" [i.e., of the public service] "the provision, made by the granting authority, through a bidding procedure, to the legal entity or consortium of companies that demonstrates capacity for its performance, at **its own risk** and for a determined period of time" (emphasis added). Apart from elements that are more specific to the legal regime and merely circumstantial choices of the legislator than to the definition of the institute[67], in the end, what characterizes a concession is the idea of *delegating the exercise of a public service to a specific subject, at its own risk*. And it is understandable that the idea of generalized imputation of risks to the concessionaire is the core element of the concession: it is such imputation that characterizes or gives meaning to the modality of indirect execution referred to in art. 175 of the Constitution. In principle, therefore, the concessionaire bears the risks of events or acts that may have an impact, negative or positive, on the economic arrangement of the concession.

About art. 2, II, we are interested in two issues. The first: does generalized imputation admit exceptions? Or, to put it another way, does *any supervening event* run to the dealer's account? The second: if it is admitted that the "at your own risk" includes exceptions, would it work as a "closing clause" or "completion" of the contract, in such a way that everything that is not excepted should be taken to the dealer's account?

We do not intend to fully answer these questions, but only to explore them to the extent that they serve the present study. As for the first inquiry, it should be noted that, at the very least, there are *legal exceptions* to the rule[68] already contained in Law 8.987/1995, which we will see in due course (§§ 3 and 4 of art. 9). Then, it seems possible for the contract to specifically dispose on the subject, the content of

[67] Such as, for example, the reference to "bidding in the bidding modality" or the forecast of "consortium".

[68] Or is the norm in question a *principle*, in which case we would talk about *compression* in its scope?

what is advocated by art. 10 of the same Law (below). In any case, when admitting *prima facie* these openings, due account must be taken of the need not to dilute the rule to such an extent that the concession ends up being confused with disguised modalities of direct execution, in which the Grantor becomes substantially a "partner" or "universal guarantor" of the concessionaire. This would completely denature the very idea of concession and indirect execution. In selecting these hypotheses and exceptions TTEEF may have something to help, with its typology of aleas. But it should not pretend to *impose* itself on the legal command by introducing, in a monolithic way, its menu of partitioning responsibilities (cf. Section I, above).

Assuming that, *prima facie*, there may be exceptions to the rule that the concession runs by (total) account and risk of the concessionaire, the second issue assumes even more importance. What to do with undisciplined risks? Would they be covered, then, by the general rule? The question is a delicate one and can assume extreme contours[69]. A positive answer without qualifications ("art. 2, II brings a peremptory rule of closure for risks not expressly treated") would be to recognize that the contract, although it may be incomplete in *fact* or from an *economic* perspective, is not so from a legal perspective. This is a possible alternative, since the law often fails to take into account empirical findings (de facto incompleteness) that should (well) guide normative decisions (legal incompleteness) and opts for a solution that may not be the best from a given perspective. On the other hand, a full negative answer ("art. 2, II does not bring any closing rule") seems to be against the text of the rule and the idea of concession (see above). The question, as has been said, is not an easy one to answer. At this point, it is convenient not to close the understanding of the problem and only to suggest one of the possible interpretations of the text, one that allows exploring a certain distinction that comes from the economic literature on contracts. For the purposes of this study, specifically, it is suggested that art. 2, II of Law 8.987/1995 be interpreted in light of the (economic) distinction

[69] An extreme modality of this question involves the possibility of changing the very risk distribution that the parties made at the beginning of the concession. Would it be possible to invoke a kind of "super unforeseen", that is, an event with such abnormal qualities (in its occurrence or its effects) that could, for example, question the very imputation of "unforeseen events" to one of the parties? About this, see Egon Bockmann Moreira "Concession contracts, extraordinary force majeure and revision of risk matrix", available at https://www.jota.info/paywall?redirect_to=//www.jota.info/opiniao-e-analise/artigos/contratos-de-concessao-forca-maior-extraordinaria-e-revisao-da-matriz-de-riscos-30042020.

between *risk* and *uncertainty*[70] . With this suggestion, the subject of (in) contractual completeness gains in complexity and possibilities, which will be explored in Section VI.

The second provision of Law 8.987/1995 that should be called for the examination of TTEEF and Contract 01/95 is its art. 9. As we have already observed, its *caput* was apparently not "used" in the Contract 01/95, as the tariff was not obtained based on the "price of the winning bid", but resulted from calculations about the cost of the service. It is worth saying that the opportunity of a tariff regulation not (necessarily) adherent to the cost of the service was not implemented at the origin of the ESCELSA concession.

Of greater relevance to our study is § 2 of the same art. 9. There it is stated that the concession contracts "may provide for mechanisms of tariff revision, in order to maintain the economic-financial balance". Would he be embracing the idea of an original equation that should be preserved over the term of the concession under the terms recommended by TTEEF? We understand that it is not. First of all, there does not seem to be a *duty* to preserve this original equation. Unlike what is found, for example, in paragraph 4 of the same article (below), the text provides a *possibility*[71], that is: depending on the regulatory choice, the contract may or may not have as its goal and reference this constant return to the T0 moment (something that seems to us empirically unrealistic and not recommendable in terms of regulatory "good practices", see below). In the electricity sector, for example, the ordinary tariff revision does not allow this eternal return. The "may" is not, therefore, idle or mistaken but makes regulatory choices possible. Secondly, the provision - and Law 8.987/1995 - at no time define what is "economic-financial balance" (the legal good protected). The expression can mean the equation T0 as well as any equation reputed, at some point, to be "balanced", because it guarantees a compromise that can always be revised between tariff modality and fair remuneration of the entrepreneur; or it can refer to a generic situation of financial hygiene of the company, rather than to a specific contractual state of affairs (economic-financial balance "of the business" as opposed to economic-financial balance "of the contract")

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[70] Other elements, these yes legal elements, could also be invoked to contextualize art. 2, II of Law 8.987/1995. Among them the principles of continuity of public service, prohibition of unjust enrichment, abuse of rights, etc.

[71] And, about this, also little clarifies art. 23, IV of the General Law of Concessions.

and *così via*. In summary: § 2 of art. 9 *can* but *should not necessarily* be read as advocated by TTEEF.

Paragraph 3 of the same article 9 reads as follows: "[e]xcept the income taxes, the creation, alteration or extinction of any taxes or legal charges, after the presentation of the proposal, when its impact is proven, will imply the revision of the tariff, more or less, as the case may be". As one of the authors of this study also had the opportunity to say on another occasion, the provision may be pointed out as conveying one of the express exceptions to the clause of Article 2, II (above), when recognizing a subspecies of the known species of TTEEF, the *factum principis*. The interpretation of the text requires, however, attention and care. First of all, the de facto category of the *factum principis* is not being recognized to its full extent. The state acts provided therein are only changes, to a greater or lesser extent, of (i.) taxes and (ii.) "legal charges". The text does not give an answer on how to deal with other manifestations and actions of the public authorities that, not configuring the exercise of the competence of unilateral alteration of the contract (§ 4, below) and not typifying (i.) or (ii.), end up being levied on the economy of the contract. Secondly, the provision, in order to be operational, needs to compare the alteration caused by the state act with the *proposal*, to identify and measure its *impact on it*. Also from this perspective, it does not inform anything about how to deal with changes in taxes or legal charges that may have an impact not on the proposal (which may not even have existed), but on the REF of the concession. We understand that, in this hypothesis, it can also be used, but from an analogical interpretation, something that requires justification and adaptation. In any case, on paragraph 3 of art. 9 it must be said that it has partially adopted a specific category of events recognized as *factum principis* and gave him harmonic treatment with what advocates the TTEEF. Even closer to this theory seems to be the next device.

Paragraph 4 of Article 9: "[i]n case of unilateral alteration of the contract that affects its initial economic-financial balance, the granting power shall restore it, concomitantly with the alteration". In this second express exception to art. 2, II, we speak of economic-financial balance and, more precisely, refers to the *initial economic-financial balance*. And a classic law is contemplated, that of "unilateral alteration of the contract" (by exercise of the *ius variandi* of the Grantor). And, finally, it is also a classic treatment: the Grantor *must* restore the initial economic-financial balance concomitantly with the change promoted in the service

granted. At least in a first reading, not only is a typical portion of TTEEF reproduced, but it seems that the development of the Contract 01/95 has systematically persisted in denying the validity of this device.

The last device that deserves examination is art. 10 of Law 8.987/1995. Its text is syntactically simple, but its interpretation presents complexity: "[w]henever the conditions of the contract are met, its economic-financial balance is considered maintained".

The first question that stands out is: what "contract conditions" are we talking about? Are the circumstances of fact and law the *objective basis of the business*? Or are they, more directly, the very clauses that manifest the content of the concession contract?

Whatever it is interpreted, one thing seems certain: the stipulation therein positive has a decidedly *formal* character (similar to art. 37, XXI of the Constitution) that highlights the fundamental normative data of art. 10: the centrality of the contract to discipline issues related to economic-financial balance. At this point, art. 10 seems to anticipate the "micro-regulatory" tendency of Law 11.079/2004. Hence, in itself, the text, prudently, brings nothing of substance, of external to the contract and that incises in it, as already recognized Maurício Portugal[72] . In short, we do not find any material elements in it.

Thus, regarding Law 8.987, we have the following overview:

> *"Unlike the PPP Law, Law 8.987/1995 is based on the concept of economic-financial balance of the concession contract, but in a manner somewhat different from that usually presented in doctrine. Synthetically: (i.) establishes a general rule according to which, in principle, the concessionaire performs the service "at his own risk" (art. 2, II); (ii.) in partial derogation from this general rule, recognizes that some of the aleas must necessarily be transferred to the grantor (art. 9, §§ 3 and 4); (iii.) in the case of the concessionaire, the general rule is that the concessionaire must be the owner of the service (art. 9, § 2, II).) also accepts the possibility of some contractual variation in relation to the normal distribution of the aleas established in art. 2, II; and (iv.) engenders a formal notion of economic-financial balance, through which it reaffirms, now like Law 11.079/2004, the importance of the contract in the discipline of the subject (art. 10)".*[73]

[72] The answer also, in this case, is quite simple, particularly for common concession contracts or PPPs: the law does not establish any limitation or requirement in relation to the configuration of the system of recomposition of the economic-financial balance; it only states the need for a system of recomposition of the economic-financial balance. Article 10 of Law 8987/95 makes this quite clear, stating that 'Whenever the conditions of the contract are met, its economic-financial balance is considered maintained'. RIBEIRO, Concessions and PPPs - Best Practices in Bidding and Contracts, cit. p. 98.

[73] KAERCHER LOUREIRO, *Estudos* cit., p. 166.

It remains to see one last device commonly invoked by TTEEF, art. 65, II, *d* of the General Law of Tenders and Contracts, Law 8.666/1993.

4.4 Article 65, II, *d* of Law 8.666/1993

Provides art. 65, II, *d*:

> *"Art. 65. The contracts governed by this Law may be amended, with the appropriate justification, in the following cases: (...);*
> *II - by agreement between the parties: (...);*
> *d) to reestablish the relationship that the parties initially agreed between the contractor's charges and the management's retribution for the fair remuneration of the work, service or supply, aiming at the maintenance of the initial economic-financial balance of the contract, in the event of unforeseeable or foreseeable facts, but of incalculable consequences, delaying or hindering the execution of the adjusted, or, still, in case of force majeure, fortuitous event or* factum principis *configuring extraordinary and extra-contractual economic alea".*

Although relatively clear in its consequence (negotiation to restore the "relationship that the parties initially agreed between the contractor's charges and the management's retribution ... aiming at maintaining the initial economic-financial balance of the contract"), the text brings numerous challenges for its interpretation. A first order of problems lies in the *qualification of* the relationship originally agreed upon: the provision seems to assume that such relationship has provided a "fair remuneration for the work, service or supply". *Quid iuris* if such relationship has no such property? Does it not promote its re-establishment? Should, for example, the institute of *injury* (art. 157 of the Civil Code) be applied in favor of one or the other party? Secondly: more complex than the consequence predisposed by the norm is its antecedent, the supposed phatic: in art. 65, II, *d a* myriad of events that trigger the duty to negotiate, if they occur in "work, service or supply" contracts, are somewhat confused. In these contracts there is talk of "unpredictable or foreseeable facts, but of incalculable consequences, delaying or hindering the execution of the contract, or even, in case of force majeure, fortuitous event or *factum principis*, configuring extraordinary and extra-contractual economic alea". *If* such events occur in the referred contracts, *then* the determined consequence follows. Given the narrow purposes of this study, we do not need to

answer these questions, but only highlight them, to show that although *prima facie one is* facing the discipline of a classic alea catalogued by TTEEF, its treatment presents hermeneutic difficulties.

Difficulties of understanding aside, one thing seems clear: the text does not expressly mention *sui generis* public service concession contracts. And this brings us to the question of their applicability to such legal transactions. On this point, there is controversy[74] and some distinctions should be made that will take us a little beyond the object of our analysis (Contract 01/95 and the electric power distribution concession contracts).

The first discretion involves the apartment between concessions governed by Law 11.079/2004 and concessions governed by Law 8.987/1995. In relation to the former, there seems to be no possibility of any kind of application of art. 65, II, *d* or, more generally, of Law 8.666/1993. This conclusion is reached considering, on the one hand, the *"road map"* established by art. 3 of the PPP Law that only admits subsidiary application of Law 8.987/1995 (and not of Law 8.666/1993) to the business figures that it regulates[75]. And of another, the requirement, made in art. 5, III, that *the contract disciplines the* same hypotheses of fact that are mentioned in art. 65, II, *d* (above). In other words: both for a general and for a topical reason, the device does not fit in PPPs[76] .

[74] For All, BOCKMANN MOREIRA, Egon, Long-Term Administrative Contracts: The Logic of its Economic- Financial Balance, *in*: BOCKMANN MOREIRA, Egon (Org.), *Treaty of Economic-Financial Balance - Administrative Contracts, Concessions, Public-Private Partnerships, Internal Rate of Return, Early Extension and Relicitation*, Belo Horizonte: Forum, 2019.

[75] For further information, see the above-mentioned *Studies,* p. 163 et seq.

[76] Maurício Portugal was emphatic, in an understanding that he later reviewed: "It should be noted that, as a result of the culture on economic-financial balance created around Law 8.666/93, especially around its article 65, and the confusion among us, particularly in the doctrine of Administrative Law between risk allocation and the system of economic-financial balance of the contract, there is the risk of understanding, in our opinion, in a very mistaken manner, that any unpredictable or predictable facts, however of incalculable consequences, delaying or preventing the execution of the adjusted, or even, force majeure, in case of chance or *factum principis* are risks of the Granting Power non-transferable to the private partner, by virtue of the article. 65, item II, paragraph "d". We have already criticized this understanding in previous work of our authorship. Here we will only remind the reader that: (a) article 10, of Law 8.987/95, establishes that the economic-financial balance of the contract will be maintained when the concession contract is obeyed, which means that it is the concession contract that establishes the hypotheses, criteria and methodology for the realization of the economic-financial rebalancing; (b) even if the incidence and scope of article 10, of Law 8.987/95 is discussed, it is necessary to remember that article 65, of Law 8.666/93 establishes that the mentioned risks are of the Granting Power only in the cases that its occurrence configures 'extraordinary and extra-contractual aleas'. This means that the allocation of risks foreseen in article 65, item II, item 'd' of Law 8.666/93 is only applicable if the contract does not provide

In relation to the latter, the "common" concessions, the discourse is more nuanced, since it does not refute Law 8.987/1995 *a priori* the employment, in the abstract, of Law 8.666/1993. And, besides, there is art. 124 of Law 8.666/1993 itself, according to which "the provisions of this Law that do not conflict with the specific legislation on the subject apply to bids and contracts for permission or concession of public services. For these "common" concessions, then, the question of the incidence of the General Bidding Law becomes a topical problem: specifically, art. 65, II, *d*? We understand that not for a series of reasons that we have listed in a summarized manner.

In the first place, the supposed operation of art. 65, II, *d is* missing, which is the "relationship that the parties initially agreed between the contractor's charges and the management's remuneration". This lack is evident from several perspectives: (i.) in concessions, it has already been said, there is no such equation as is proper to commutative contracts[77]; (ii.) in them, there is also no counterpart to the

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for an allocation different from these risks. That is, if the contract explicitly provides for the allocation to the private partner of events falling within the categories provided for in article 65, II (d), it must be understood that the allocation provided for in the contract prevails. (c) With regard to PPP contracts, article 5, III of Law 11079/04 clearly established the possibility of sharing the risks between the parties, including those related to unforeseeable circumstances, force majeure, the *factum principis* and extraordinary economic interest. **Therefore, in relation to PPPs, there is no doubt that art. 65, item II, item "d" is not applicable to the definition of the allocation of these risks**". RIBEIRO, *Concessões e PPP's: Best Practices in Bidding and Contracts,* cit. Pages below, he adds: "It is quite true that there is still a discussion among us about the applicability of article 65 of Law 8.666/93 to common concession contracts or PPPs for the provision of public services. In particular, there is a discussion about the applicability of art. 65, item II, item 'd', which we reproduce below: (...). It should be noted that the condition for the assessment of the provision is that the events described therein configure 'extraordinary and non-contractual economic aleas'. However, in order to configure an extra-contractual alea, the risk of the occurrence of the event must not be specifically dealt with in the contract and there must be no clear rule on the distribution of residual risks. Therefore, without discussing the applicability of the provision, what is clear is that if the risks are clearly allocated by the contract, and if there is a rule in the contract on the allocation of residual risks, one could not speak of a non-contractual alea, so that this provision, art. 65, II, 'd', could not apply.
In addition, art. 10 of Law 8.987/95 is a special rule for common concession contracts and PPPs for the provision of public services, and should therefore prevail over the rules of Law 8.666/93. By the way, it should be noted that in relation to the way the economic-financial balance is made, article 10 of Law 8.987/95 could not be clearer in its task of delegating to the common concession contract or PPP the definition of how the economic-financial balance of the contract is made up, so that it did **not leave, in this particular, any space for supplementary or subsidiary application of Law 8.666/93**", op. cit., p. 98. For the author's current opinion, see: http://www.direitodoestado.com.br/colunistas/mauricio-portugal-ribeiro/-atribuicao-ao-contratado-da-administracao-publica-de-todos-os-riscos-nao-tratados-no-contrato-e-nula-perante-a-lei-8-666-93.

77 BOCKMANN MOREIRA, Long Term Administrative Contracts: The Logic of your Economic-Financial Balance.

administration, but a fragmented and variable myriad of counterparts on the part of public service users, expanded and fluctuating over time (over 30, 35 years); (iii.) sectoral legislation *conflicts* with the general law on bids, in that the tariff policy of service for price and incentive regulation provides for mechanisms that periodically destroy previous states of affairs (cf. supra[78]), which makes any attempt to reestablish this equation vain and contrary to law, perhaps if you had identified it at the beginning of the concession (and it is not good to forget, empirically, that this equation was not left in Contract 01/95 – and in so many other public service concession contracts whose companies went through the same privatization process).

Secondly, and in close relation to point (iii.) of the previous paragraph, the maintenance of this original equation seems *undesirable from the* point of view of the adequate provision of the public service. As one of the authors of this article said on another occasion, "supposing it is empirically possible to identify the 'relationship that the parties initially agreed between the contractor's charges and the management's remuneration', it is desirable from some economic, social, etc. perspective to maintain, for 30, 35 years, the original economic-financial equation, as required by art. 65, II, d? Do the concessionaire, the users and the granting power wish this equation to remain unchanged? Take the example of the electricity distribution concessions obtained through privatizations of state companies in the 90s and 2000s when the bidding criteria was the highest bid for the shares of the concessionaire. What was the 'original equation'? Where was it stuck as the 'stone clause' of the concession, so that we can consult it? Is it agreed to mummify it? This is what art. 65, II, d demands[79]".

In conclusion: we understand that art. 65, II, *d* does not apply directly, that is, as such to our basic case. And we understand that its use to extract a distinct rule, by analogy, for him (and for concessions

[78] Since 2000, one of the authors of the present study has been talking, in the electric sector, about the existence of an unsolved methodological syncretism in the concession contracts of electric energy distribution, derived from an inconsistent mixture between the French and the North American tradition in the regulation of concession contracts. KAERCHER LOUREIRO, Gustavo, Legal Considerations on the Economic Aspects of Electricity Distribution Concession Contracts, *Revista Jurídica,* v. 276, 2000; KAERCHER-LOUREIRO, Periodical Tariff Review - its Introduction to the Brazilian Legal System and the Role of Law in its Construction by the Regulator.

[79] https://portaldisparada.com.br/direito-e-judiciario/direito-administrativo-historias/.

in general), seems a not simple undertaking[80]. In view of this, *for concessions,* it also seems that Brazilian positive law does not have a rule that faithfully mirrors the TTEEF. The events dealt with by the theory of unpredictability or well are covered by the closing clause of art. 2, II of Law 8.987/1995 or should be analyzed in light of principles such as continuity of public service, unjust enrichment or - as we suggest - in light of the distinction between *risk* and *uncertainty*[81].

After this passage through the positive right, we are able to approach both the Contract 01/95 and TTEEF.

Section V - Confrontation Between TTEEF, Contract 01/95 and Positive Right

As occurred in Section III, here we are just collecting some reflections that have already occasionally emerged throughout the previous exhibition.

From the examination of the general rules on the REF of public service concessions, there is a *lacunae, fragmented* and, to a large extent, *flexible* (because generic) regulatory framework. It is to say: Brazilian positive law is much less complete, systematic and compact than TTEEF makes one suppose. For sure, its texts employ a vocabulary or typology of events[82] known from tradition (it could not be different), but this circumstance is not in the least sufficient to conclude that the legal system has reproduced the meanings, concepts, institutes,

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[80] In particular, the question of what should be protected or protected with this rule, built by analogy for the REF of concessions, is particularly important, starting from art. 65, II, *d.* Should the revision of the contract seek, instead of the original equation, the **complete neutralization of the impacts** of the event considered extraordinary, or should it only provide the concessionaire with what is **necessary for the preservation of continuity to the satisfaction of the public service?** Although both formulations are quite abstract and subject to different approaches, the differences in results (and methodologies) are not negligible.

[81] To develop this new rule, we should initially distinguish between (a.) return to equation T0 (direct command of art. 65, II, *d*); (b.) neutralization of effects of certain events that fall under the concepts of art. 65, II, *d,* and finally (c.) the needs of preserving public service. Each of these objectives could lead to different results in the application of the theory of unpredictability.

[82] In the laws we find: a.) tax measures and legal charges (art. 9, § 3 of Law 8.987/1995); b.) unilateral contract modifications (art. 9, § 4 of Law 8.987/1995); c.) "fortuitous case, force majeure, *factum principis* and extraordinary economic awe" (art. "force majeure" or "fortuitous event" (art. 65, II, d of Law 8.666/1993); f.) *factum principis*" (art. 65, II, d of Law 8.666/1993). And, more generally, g.) "extraordinary economic and extra- contractual alias" (art. 65, II, d of Law 8.666/1993).

and precepts of traditional theory to its full extent. At no time is the "economic-financial balance" defined; the maintenance of the equation T0 is not postulated; the same treatment is not always given to different aleas (ordinary and extraordinary); the use of mechanisms that continuously reconfigure the economic arrangement of the concession, etc., is not prohibited. There are many blank spaces, to be filled by choices and the good use of the Regulator's discretion. At most, what can be said is that Brazilian positive law has accepted (or constituted), in a timely manner, *partial aspects of* the TTEEF (such as the case of § 4 of art. 9 of Law 8.987/1995); or that the theory serves - for those who agree with it - as a hermeneutic guideline, to suggest - never impose - this or that possible interpretation of a certain device.

If this is the case in terms of the relationship between rules and theories, we must also conclude that the terms of Contract 01/95 and its successive evolution - guided by sectoral rules - although they "substantially disprove" TTEEF, do not violate the precepts of more general positive law applicable to concessions. About the Contract and its development, one can perhaps speak of better or worse regulatory conduct; better or worse economic-financial solution to a given problem, etc. However, there does not seem to have been, throughout its vicissitudes, a systematic and substantial violation of the legal order. Gaps, incompleteness (normative), vagueness and fragmentary character are not such bad properties of a law that it must be constantly dealing with long-term relationships, dynamic by nature and that need constant adaptation.

To conclude these summary considerations, and how to confirm them, mention is made of an important manifestation of the National Electrical Energy Agency (ANEEL) in a recente episode, regarding a postulated extraordinary tariff review of the distribution utilities, in the face of the Covid-19 Pandemic.

Without going into the merits of the discussion, what we want to emphasize here is the methodical and hermeneutical posture adopted by the Agency in Opinion 262/2020[83]. In that document, ANEEL took distance from several relevant "canons of orthodoxy". Among the elements worthy of note, there is in the Opinion a determined refusal to lend too much weight to constitutional issues, in favor of the centrality

[83] This is Opinion 00262/2020/PFANEEL/PGF/AGU, pronounced in the bulge of the Public Consultation 35/2020 (NUP 48500.002846/2020-21) promoted by ANEEL.

of the regulation closest to the case (e.g, There is a realistic and legally consistent understanding of the impracticability[84] (and undesirability) of working with the "paradigm" of the T0 equation[85], in favor of assessing the case in light of the need to preserve and continue public service[86]; there is also a bold methodical proposal to replace the "speech of the aleas", as understood by TTEEF, with the "speech of the risk matrices", in the bulge of employment of the idea of the *objective basis of the business*[87]. These and other proposals to deal with the REF of electricity distribution concessions could not have been formulated if we were stuck with preconceptions and dogmatisms, idealizations and assumptions - which find no support in positive law, the only limit to appreciate choices and regulatory alternatives.

If we are right in everything we have said before, it is time to move on to the other order of reflection.

Section VI - Economic-Financial Balance in Relational Contracts: no Ergodicities; Risk *versus* Uncertainty and Fallacy of Rebalancing Complete Contracts

4.1 Introduction

Much has been discussed over the years about the nature, scope and prospects of the financial economic rebalancing of administrative contracts, especially those more complex contracts such as public service concession contracts or Public Private Partnerships. These contracts are deliberately incomplete and relational, that is, there is an intrinsic correlation of incentives between the contracting parties. They are also long-term contracts of execution and assign risk matrices and, not exceptionally, permissive for mediation and arbitration.

For the analysis we propose, two issues are important:

1 - How to conceive the economic-financial regime of concessions and other delegation contracts *vis-à-vis* typical administrative contracts?

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84 §§ 14 et seq.

85 §§ 21 et seq.

86 §§ 21 et seq. and § 64.

87 §§ 32 et seq. and §§ 42 et seq.

2 - Which are the mechanisms of economic-financial balance recomposition? What is wrong?

Point 1 - How to conceive the economic-financial regime of concessions and other delegation contracts *vis-à-vis* typical administrative contracts? This question is important because surely there is something wrong in the way we deal with a good part of long-term contracts, especially when we rebalance contracts, but what?

First, we have to admit that there is a disharmony between the doctrine of Brazilian administrative law taught in the manuals and practiced by the control and by the Courts (judicial or accounts) in comparison with the real dynamics of the contractual relationship of complex contracts. In theoretical terms we still refer to the 19th century where the canons of discipline were established and brought to Brazil in the sequence, meandering by manuals and sticking two "iron pillars" of Brazilian administrativeism, namely, the supremacy of public interest over private and the unavailability of public interest.

This, however, is a more apparent part of the problem. In fact, the intellectual matrix is based on the idea of contractual completeness, unlimited rationality, complete contracts, free information and no transaction costs. These assumptions are outdated paradigms and refer to a neoclassical nineteenth century logic that underpinned the economic perception of the dynamics of the then contracts, including those of longer duration. In the specific case of the idea of equilibrium, the theoretical reference goes back to the 17th century with Newtonian mechanics and the idea of linear flow of movement and equilibrium.

These are the ideas behind the insistence to find a unique and achievable balance in long-term contracts.

In fact, we must register that the contracts that interest us here are those that present some particularities. In the foreground are, as we have already said, long-term contracts whose duration goes beyond a decade. Moreover, they are intrinsically incomplete contracts, that is, contracts in which the establishment of all the contingencies of the future cannot be expressed in clauses because of the imponderable passage of time and the difficulty of negotiating each clause per se, which would lead to prohibitive transaction costs[88]. Furthermore, they are

[88] NOBREGA, Marcos. Infrastructure Law. São Paulo, ed. Quartier Latin , 2011.

relational contracts, contracts in which there is the presence of *sunk costs, which* means a mutual dependence between the contractors[89] on account of the large investments made *ex ante* in the goods affected to the contract execution with limited alternative use. Here there is a striking difference in relation to the simpler contracts, known as commutative contracts.

4.2 Break with the classic (or neoclassical) contractual model and new theoretical paradigms to understand complex contracts.

1 - Economy of complexity versus neoclassical economy.

What lies behind the idea of financial economic rebalancing of complex contracts in Brazilian law is the mantra of rebalancing them by seeking the balance that was established at the time when the agreement was signed. Faced with inevitable imbalances during the execution of the contract, this assumption of equilibrium is consistent with a neoclassical view of the contractual relationship but is often insufficient and incapable of capturing all the dimensions and dynamics during the years of the relationship.

There are a number of reasons to discredit the neoclassical economy and its corollary of economic rebalancing of contracts as appropriate for the complex contracts we are analyzing in this text.

In the foreground, the neoclassical *mainstream* economy excludes the hypothesis of interdependent agents, that is, they are independent and make decisions without considering the actions of other agents. Thus, the neoclassical economy believes in the hypothesis of perfectly informed agents that can maximize their utilities in complete isolation, being dependent only on one type of external factor, basically the price vector.

This case cannot prosper in long term and relational contracts. The contracting parties make decisions based on the amount of information they possess and taking into consideration the information they acquire about the strategies of the other party during the execution of the contract. Therefore, in a long-term and relational contract, the parties have a **strategic interdependence** and will make decisions

[89] MacNeil. Ian. Contracts: Adjustment of long-term economic relations under classical under classical, neoclassical, and relational contract law. 72 Nw. U. L. Rev. 1977-1978. Available: https://heinonline.org/HOL/LandingPage?handle=hein.journals/illlr72&div=46&id=&page=

based on a sequential Bayesian learning. Thus, in the neoclassical model, agents can decide with total autonomy and isolation and are only indirectly dependent on each other, in the sense of being tied to aggregate decisions in the market.

Another important assumption of the neoclassical model is that the model is linear, based on the economic idea of general equilibrium. In neoclassical theory agents are maximizers of their utility, submitted to some kind of budget restriction. However, the assumption of maximizing agents is flawed because (as behavioral economics insights have shown) real economic agents move away from the standard neoclassical model. Thus, as Richard Thaler says[90], the "*homo economicus*", maximizer and rational is only an ideal type and far from the real decision-making mechanisms where aspects of heuristics and asymmetry of information are used.

It can be seen from the outset that the neoclassical idea of maximization and general equilibrium is behind the fetish of the financial economic equilibrium of the administrative contract in Brazilian administrative law. This is a clear example of a problem that comes from the theoretical anchoring of Brazilian administrative law in the nineteenth century assumptions.

It is clear, however, that we are concerned in this text with more sophisticated contracts, such as concessions and PPP. In simple contracts, the basic ideas of *mainstream* administrative law (as well as Newtonian mechanics for people's everyday lives) work perfectly. Of course, more complex approaches to service outsourcing contracts or even to building schools in small municipalities do not make sense. In these contracts, the classic rules work and we can try to rebalance these contracts in a simple way. Brazilian law solves these problems. In other words, the notion of agent as "perfect maximizer" can only act in a perfect information environment[91][93].

The problem is whether perceiving the problems and getting out of the comfort of neoclassical assumptions (and administrative

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[90] THALER, Richard. Inadequate Behavior: the construction of behavioral economics. Current Edition, Lisbon, 2015.

[91] It is also in the assumption of neoclassical theory that the utility function of consumers and profit of the offerors should be the same. This means that the utility function must **be convex**. In this case, we would be faced with a **function that can be** differentiated twice from a variable in an interval if and only if, its second derivative is greater than or equal to zero throughout the interval. If its second derivative is strictly positive then the **function** is strictly **convex**.

law manuals) that support the idea of balance in long-term contracts in Brazil would be generating legal insecurity. In other words, are we thinking of heterodox ways out of the real problems, opening the "Pandora's box" of administrative law in a doctrinaire movement that is daring, dangerous and without return? That is the question.

When jurists and courts are trying to rebalance complex contracts that are relational, incomplete, and long-term, they are intent on shaping things to theoretical assumptions and not the other way around. That is, they follow a model and want it because they want reality to fit into it. It is a problem of *wishful thinking* or even self-deception. And in this regard, academics, lawyers, entrepreneurs and society suffer the consequences of inefficient decisions that end up increasing the distortion of contracts.

Does it make sense, for example, judicial and control decisions to change the internal rate of return - IRR of contracts simply because the previous number was not "reasonable" or would hurt the public interest? Although LINDB tries to correct these problems (art 25), the question is much broader. It is an inability to advance in the understanding of reality and the lack of theoretical tools (and excess of voluntarism) to find the best solution.

What is the way out, then? Let us take a look at the idea of complex systems.

4. 3 Complex systems

In these complex systems, such as more sophisticated concession and PPP contracts, the actions and behavior of the system vary over time and are intrinsically dynamic, giving rise to inherent instability, characterized by complex evolutionary movements, with a high degree of unpredictability. Thus, seeking "an equilibrium" anchored in the will of the parties established at the time of the celebration of the agreement is fallacious. Sometimes, **the system does not have an equilibrium, but many balances throughout the contractual execution**. The parties' intrinsic strategic uncertainty makes them learn with time and change their behavior and negotiation strategies.

In fact, what usually occurs is that the contract "accumulates" multiple imbalances and when these imbalances are quantitatively or qualitatively relevant, the rebalancing of the contract is requested. However, these contracts are subject to permanent uncertainty.

Economy of complexity and the neoclassical economy.

In recent years, there has been more consistent criticism of the assumptions of neoclassical economic theory and many of these questions have been produced at the University of Santa Fe in California. While many of the findings of the studies presented are controversial and divide economists, one thing is certain, many of the critiques to the *mainstream* economic model are pertinent and well reveal the difficulties we have in rebalancing complex contracts.

Let us look at some differences between the neoclassical economy and one of complexity theory for economic problems:

1 - In the neoclassical economy there is no strategic interaction (only indirect interdependence) between agents, this interaction occurs through the market and by the equilibrium prices based on the sum of all the supply and demand curves of the market. Thus, each agent can ignore the other and pretend to be isolated when making its decisions.

In fact, things do not work that way in the relational contractual relationship, which is a common model for long-term contracts. The parties develop direct interdependence, establishing "strategic" interaction. Thus, as we know that the *sunk costs* are high, it is better to try to preserve the contract to the maximum, minimizing the damages (and the high opportunity costs) of the contract termination.

When the judiciary or control simply has contracts annulled out of "public interest," this often leads to tremendous inefficiency. The theoretical model based on the supremacy of the Public Power and the unavailability of the public interest does not pay attention to the strategic challenge of the relationship between the parties. In general, it is left to the citizen- user.

2 - In the neoclassical economy (and in Hely Lopes Meirelles' book!) there is the idea of perfect information, while in a complex economy (and in the contracts that are signed there) there is strong strategic uncertainty, with "limited rationality" or "barriers to rationality". Information is therefore released through many decentralized bilateral interactions, which take time and require monitoring efforts. In fact, the parties learn with time and adapt their strategic behavior. Thus, it seems unreasonable to try to balance the contract, seeking the rationality of the parties at T0 moment. The strategic incentive at the first moment was another, with another dynamic.

3 - The neoclassic assumption that we deal with is that the system inevitably requires a static general equilibrium, in other words, a single global attractor for the system. In this context, the rules are clear and to put the system in its due equilibrium is, most of the times, just a problem of bringing to the present value the cash flow. In reality, a complex contract is executed in a complex evolutionary system with research, learning, imitation, adaptation, differential replication. The system is not ergodic, as we will see further ahead.

4 - The agents (the contracting parties) act with complex strategies, creating, adapting, copying, reacting. This is different from mere utility maximizers, as is the neoclassical pattern. This explains why the use of mediation and arbitration rules is so important, because the behavior, expectations and incentives of the agents are different from those when the contract is signed. It seems reasonable to assume that during the long execution of a contract, the parties will change and the economic environment will also undergo relevant transformations (state of nature).

We can see, from now on, that there is a need to think differently, to promote a break with the classic parameters of Brazilian administrative law used to try to rebalance the contracts.

Non-Ergodic Systems and the Problem of Re-balancing Contracts.

It is very important for us to have a clear differentiation between the concepts of risk and uncertainty when defining the balance of the contract. The confusion between these two concepts that is commonly made in administrative law. Using the typology of Frank Knight (1921), risk would be that to which a probability distribution could be imputed. In this sense, we can estimate what the chances of rain in a given area in a given period of the year are. Rainfall cycles are relatively regular, so getting a certain probability to the event does not seem complicated.

There are situations, however, that we are dealing with the imponderable, so establishing a probability distribution sounds unreasonable. Thus, it is clear that the neoclassical economy that serves as the basis for the analysis of contracts in Brazil cannot give satisfactory results when complex, incomplete and relational contracts are analyzed.

The neoclassical economy therefore starts from the assumption that we can define a probability distribution for each event and that

we could in theory do it also for uncertainty, because we would be facing processes that would be repeated in the future with a certain probability distribution. In other words, it is assumed that **the future would be the statistical shadow of the past**. The idea of the *mainstream* economy is that we would be facing a stochastic ergodic process.

An ergodic process would take place when the rules that govern the system are immutable in time and then it would be possible to define a probability distribution for them. See, for example, the movement of the planets. It is an ergodic system because you can predict where the planet Jupiter will be in 2, 10 or 100 years. You also know exactly when Halley's comet will return. Every 22 months, the Earth makes its maximum approach to Mars and during a period of time a window of opportunity opens for us to send ships there.

The rules of the card game (whatever it is), or the dice game are completely specific and what remains unknown is the final result, but the rules do not change. The same goes for poker where you have no idea where the roulette will end up, but the rules are permanent. Therefore**,** it will be forever.

Another important neoclassical postulate is the hegemony of the idea of optimization as a method for decision making.

As it is impossible to establish a statistical sample on all future events, neoclassical economics invokes the hypothesis of ergodicity as an assumption of system behaviors. Thus, in an ergodic environment, stochastic processes generate immutable objective probabilities that govern all past, present and future. Invoking the ergodic axiom means that the result at any future date is merely a statistical shadow of events that have already occurred (Davidson[92]). This is the theoretical assumption behind the creation of the risk matrices elaborated in these contracts.

According to Davidson, for neoclassical economists, the whole model of rational expectations presupposes an ergodicity axiom as the basic logical foundation. This induces the logical condition that all relationships are "natural laws" that were pre-existent when the system was created. For this model, the market could provide enough information to establish a probability distribution for the future.

[92] Davidson, Paul. Financial Markets, Money and the Real World. Edward Elgar Pub , Setembro, 2002, Pag 50.

Thus, if we base our decisions on ergodic systems[93], we assume that the future is already statistically predetermined. Therefore, it is enough to calculate the probability distribution considering future prices and expected results and build a reliable inference about the future. In an ergodic economy, according to Campos and Chiarini, the fundamental structure of the economy is constant, that is, *timeless*.

Therefore, the ergodicity axiom establishes that the future is determined by existing parameters, available statistical data and current market information. At this point, the decisions of the economic agents are estimates calculated on the *ex ante* behavior of the variables that are relevant for taking a position. This is based on probabilistic calculations[94].

FERREIRA FILHO mentions Paul Davidson's typology to list the economic scenarios in which agents make their decisions:

a) In the first point, an environment of "objective probabilities", that is, the past would be statistically reliable, without bias, guiding the decisions of the future;
b) Another hypothesis would be a "subjective probability environment", that is, the probability that the agent estimates in the present governs his decisions in the future.
c) Situation of "fundamental uncertainty", in this case, regardless of the occurrence of objective relative frequencies that can be confirmed with data from the past and that subjective probabilities exist in the present, there is absolute ignorance of the future. It is the idea that "I don't know that I don't know". An environment of total impossibility to predict the future, therefore.

In the latter case, we must remember that Frank Knight[95] was the first to make the distinction between "true" uncertainty and probabilistic risk. In the latter, a probability distribution can be gauged for events, while in fundamental uncertainty this is not possible. Thus, for Knight, true uncertainty is neither predictable nor insurable.

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93 Davidson, 2002

94 FERREIRA FILHO, F; ARAUJO, J. P. Chaos , Uncertainty and Post-Keynesian Theory. FEE essays, Porto Alegre, v. 21..n° 2.

95 KNIGHT, Frank. Risk, Uncertainty and Profit. Available at: https://cdn.mises.org/Risk,%20 Uncertainty,%20and%20Profit_4.pdf

In the same way, rational expectations models (which have as a corollary the neoclassical model) assume that people are able to process past information and use it together with the present signals given by the market and create an objective probability function describing the external reality that governs future events. This is because probability is not a property of the object

These models are perfect, but the problem is that reality imposes itself.

By accepting the existence of a complex system (Campos and Chiarini[96]), we are breaking with some canons of the neoclassical economy. Thus, points such as no ergodicity, irreversibility of historical time, uncertainty, informational unknowns, limited rationality of agents, preference for liquidity and expectations must be considered.

In a non-ergodic system, on the contrary, the system or economic model does not behave with rigid and predictable rules. In these models there is no balance that works as a "**center of gravity**" of the contract. Therefore, there is a way to seek an equilibrium established **ex ante**.

If the system is not ergodic, there is no way to establish a reliable probability distribution

The hypothesis of non-ergodicity puts in check the traditional parameters of Brazilian administrative law and opens new investigative expectations about the nature of these short- term contracts and how to rebalance them.

In this context, trying to rebalance complex contracts based on the idea of an initial and theoretically immutable balance cannot work in the face of the complexity of the environment in which the contracts are executed. It is, in fact, a narrative[97], in the sense that it has always been so and the parties involved, including Courts and Control, feel comfortable following this path. The comfortable idea was created that we should seek such a balance and we pretended to find it and managed to rebalance the contract.

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[96] CAMPOS, Marcelo Mallet Siqueira and CHIARINI, Tulio. Revista Economia Política, vol 34, n°2, pp 294- 316, April-June 2014.

[97] SHILLER, Robert. Narrative Economics: How stories go viral & drive major economic events. Princeton University Press, 2019, US.

5 Conclusion

The neoclassical economic theory behind the idea of financial economic equilibrium of complex and relational contracts in Brazilian law is incapable of offering adequate answers. This is because the fallacy of restoring a primeval equilibrium established at T0 is fallacious and ends up spreading a plethora of inefficiencies and distortions through contractual execution.

Contracts of this order, as is the case of the concession contract analyzed in this work, end up promoting multiple balances throughout its execution that must be considered in the analysis of the Financial Economic Balance claims. Thus, under the economic perspective, the identification of an original economic-financial equation (different methodologies, countless variables, etc.) that should be sought (or redeemed) throughout the contractual execution is quite problematic. This is because the initial balance serves only as a theoretical anchor for the contract formatting, but probably returning to this moment T=0 is impossible.

Thus, it remains to be concluded that the premises on which the TEEF is based are questionable, and in their place, the incompleteness of the contracts *aimed at* their complex dynamics must be recognized, especially in situations of nonlinear equilibrium. Therefore, we need to find another "legal technology" to rebalance these contracts.

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ECONOMIC ASPECTS OF PROCUREMENT IN BRAZIL: A LEGAL AND ECONOMIC APPROACH

MARCOS NOBREGA

1 Introduction

Many important issues involving public contracts by the public sector in Brazil stems from the misunderstanding, inadequacy and implicit inefficiency established by our Procurement Law (ordinary act # 8666/93) and especially, by the Public-Private Partnership Law (ordinary act # 11074/04). To investigate such inconsistencies by means of analytical mechanisms such as transactional costs and information asymmetry seems to be a pressing task in the Brazilian doctrine. This is most evident after the approval of the new Hiring Differential Regime ('Regime Diferenciado de Contratação – RDC'), which will regulate hiring for mega events in Brazil in the coming years.

There is a permanent tradeoff between efficiency and legality; how ready the legal system is to deal with such dilemma is also a theme of great practical impact. In this context, themes like Moral Hazard, Adverse Selection and Hold Up gain an important dimension and try to reveal the Government's and the bidders' incentives in major procedures in Brazil, especially when two mega events approach: the 2014 World Cup and the 2016 Rio Olympic Games. Moreover, we should observe the particularities of PPP (Public-Private Partnerships) in projects that involve permanent renegotiations, generating insecurity and high transactional costs.

Hence, part 1 will present a general view of the Brazilian Government purchasing system, making a parallel between the Procurement Law (ordinary act # 8666/93) and the Public-Private Partnership's Law (ordinary act # 11074/04). The basic parameters of Procurement will be discussed in item 2, and themes such as Adverse Selection, Moral

Hazard and Hold Up are to be analyzed in the following part. Part 7 will deal in more detail with the causes and outcomes of renegotiations of infrastructure contracts by means of the presented framework, followed by the conclusion.

1 Procurement and Public-Private Partnerships in Brazil

A relevant point in the Public-Private Partnerships model in Brazil is the choice of the private partner by means of Procurement, being up to the conceding part to format the Procurement process by making adequate requirements in terms of economic and financial qualification, in order to choose a private partner that can supply the service most satisfactorily.

Due to the existence of transactional costs and by considering the aspects involved in economic efficiency, we come to the conclusion that the procurement process is not always the best option, although Brazilian tradition is very attached to other values, such as legality and unavailability of public interest. Therefore, even though we are supposed to admit some intrinsic inefficiency, the constitutional rule is clear when it compels all federated entities to elaborate the procurement process. Thus, the major challenge to adequate the bidding documents and subsequent administrative contracts so that they may be as efficient as possible remains. Thereby, aspects such as risk sharing, information asymmetry, contractual renegotiation rules and control instruments are extremely important (SALANIÉ, 2005).

The Brazilian Procurements are regulated by the general rules established by the ordinary act # 8.666/93 and are still strongly biased towards the process rather than the outcome, culminating in an expensive and complex event of little flexibility, which not rarely chooses proposals that do not suit the Public Administration needs. This happens due to the inability to perceive the intrinsic costs of the procedure itself. For the applicants, for instance, the costs involve the employees, travel, certifications, samples, administrative and judicial appeals, etc.; for the Administration, huge costs related to training, staff, equipment and hours spent on producing the bidding documents and discussing the contractual clauses. Hence, the higher the transactional costs, the more costly the process. Therefore, those costs will be absorbed somehow and most times passed on the company's proposals. The exact amount

of those costs is unknown; however, in case of PPP constructions, the amount may be considerably high. On account of that, the bigger the bureaucratic procedures and the uncertainty of the process disclosure, the higher the transactional costs involved will be. How to define and reduce such costs? This is one of the greatest challenges for those involved in governmental purchases.

Some authors defend that, for complex constructions, procurement could be abolished as long as experienced companies were contracted, by means of transparent and severe negotiations in order to reach best price agreements. Such measure, though it may seem more pro-efficiency – which it certainly is -, slips in the constitutional obstacle of mandatory bidding contest, as well as in the risk of corruption and benefits inherent to such practice.

2 Procurement: Basic Principles

The Procurement Law (ordinary act # 8.666/93) establishes seven basic principles that should be followed during the procurement process in Brazil, namely: legality, impersonality, morality, publicity, objective judgment, administrative probity and adherence to the invitation document. The first four are presented by the Federal Constitution (article 37), where the basic principles of Public Administration are presented.

The other principles are sectorial and therefore established by article 3 in the Procurement Law (ordinary act # 8666/93). The administrative probity principle is an open concept which demonstrates the need for the Administration to act with ethics and justice.

In addition, we will see that inefficiency and incoherence of our purchasing system create perverse incentives that culminate in unethical behaviour. The objective judgment principle reveals the need for clear rules to reduce the judge's discretion in the decision-making, so that the technically viable proposal actually prevails. As for that matter, unfortunately it is not always that the procurement process leads to a 100% technical judgment, opening room for high levels of discretion. Such thing occurs mostly in procurements having both technique and price as criteria.

Finally, the principle of adherence to the invitation document signals for the need to commit strictly to the rules established *ex ante* by the Administration. In that case, the deficiency and incompleteness

of the bidding invitation documents end up resulting in badly designed contracts that may cause severe problems to the proper disclosure of the procurement.

Besides those sectorial principles, there is also the public advantage principle (present in the Brazilian Constitution, article 37, XXI), which determines that the Administration should find the most suitable proposal. However, it is also true that in the search for the most suitable proposal, we cannot consider only the best price or just any combination with technique. Factors such as the organizational aspects of the supplier, their structural costs, internal control and quality mechanisms of their procedures must also be taken into account. Thus, legal requirements such as technical and economic qualification presented by the Procurement Law (ordinary act # 8666/93) are not sufficient to reveal the true capacity of the enterprise at stake to best serve or supply the object contracted. There is then a major issue in terms of information asymmetry *ex ante* which could certainly culminate in a bad contractual execution.

The classic model of contracts and hiring for the public sector does not show the existence of relevant transaction costs, which, in general, are determined by: a) limited rationality, b) uncertainty and complexity; c) opportunism and asset specificity (KUPFER e HASENCLEVER, 2002: 269).

Limited rationality defines that there are limits to the human capacity of processing information, as well as language limitations to transmit it. This is an alternative approach to the substantive rationality of the neoclassical theory. It is evident that in a context where all parts' decisions were totally predictable, there would be no specific worry about the question of rationality. Nevertheless, in real life we deal with complex environments in which the described situation does not occur and decision-making is extremely hard. Hence, it is also hard to have an accurate assessment of the economic scenario and estimate the odds of the occurrence of events precisely.

Aside the rationality, the opportunism and asset specificity are fundamental components to define the dimension of the transactional costs. The opportunism leads to the distortion of the transmitted information (KUPFER e HASENCLEVER, 2002: 270) and to promises that the parts know beforehand will not be fulfilled. In that case, following the neoclassical model, the parts are provoked by self-interest

and use their informational advantages to earn income, which could even lead to breaking the contract.

Such opportunism emerges due to the informational asymmetry between the contracting and the contracted parts. In Procurement cases, for example, the contracting part has no suitable information about the operational capacity, or even about the structural costs of the winning company. The only information at their disposal is a signal on the minimum requirements for economic and technical qualifications in the Procurement Law.

What happens, in fact, is that the Administration cannot evaluate those requirements properly, that is, those criteria are often not enough to signal the real capacity of the company to execute the procurement object or even to deliberate about its operational capacity to the Administration. In construction procurements, this is not an uncommon situation. The winning enterprise usually sets a price below the one which would enable them to execute the object and as soon as the problems start, they request a contract review based on financial-economic balance criteria, claiming fortuitous event or force majeure, configuring the "spreadsheet game", to be examined later in this paper.

Those characteristics implicit in the procurement processes are to be analysed along with the concepts of Adverse Selection, Moral Hazard and Hold Up.

3 Adverse Selection

Prior to examining the topic 'Adverse Selection' itself, it is important to define the concept of overpricing, which according to the DITEC Technical Instruction – 04/06, can be considered as damage to the Treasury, characterized by:

a) the overpricing of amounts, incompatible with the effective service executed or supplied;
b) the bad quality of construction and engineering services executed, which result in reduction in quality, life cycle or safety of the product;
c) the overpricing of the work, goods and services in comparison with the average market established prices or incompatible with those established by the competent official organs, as well as the practice of unitary prices above the central market tendency;

d) not maintaining the economic-financial balance of the initial contract to the detriment of the Administration, by means of quantitative alterations (spreadsheet game) and / or price alterations (changes in financial clauses) during the construction execution;
e) changing financial clauses, thus generating anticipated contractual payments, distortions in the physical-financial chronogram, unjustified extension of the contract term or irregular readjustments.

A fundamental question is to be discussed: why is there overpricing? Who is to blame: transactional costs, informational asymmetry, project changes, Adverse Selection? What is the solution to those issues?

The modern Procurement theory (TIROLE, 1993) uses mechanisms to design models as from the premise that there is informational asymmetry *ex ante*, in other words, the bidding companies have much more information about an eventual contract than the Government itself. In general, the winner has information about production costs (governance as well) that the purchaser does not have access to.

That opportunistic behaviour can either occur before or after the contract. If before, it configures an Adverse Selection situation in which the agent has privileged information before signing the contract and the contracting party knows about that. However, since he cannot assess this informational asymmetry, a "contract menu" is offered so that the contracted party may disclose it. It is the case of car insurance contracts, for example. It is expensive (and sometimes impossible) for the insurance company to know the characteristics of each consumer, so the company offers a number of contract options and the consumer will reasonably choose the most suitable one.

This phenomenon occurs in many procurement procedures, mainly when the object is rather complex. As mentioned earlier, the Administration cannot establish beforehand the real possibilities to have the contractual object executed. The technical and economic qualification criteria are insufficient to reveal secure information on the real capacity or interests to properly fulfill the contractual object by the contracted part.

In procurement, the situation is even more complex, given that the "contract menu" which would make the other part spontaneously disclose information is not an option. The signed administrative contract has a nature of adhesion contract, the minute being already assigned in

the public invitation for proposals document of the event. Therefore, bargaining is not an option, but just a "take it or leave it" sort of contract.

In this case, owing to the Adverse Selection, many problems emerge during procurements. In constructions, for example, it is not uncommon for the winner to sign a contract knowing beforehand it will not be fulfilled, or that part of it will be done and then interrupted under allegations of economic-financial unbalance by fortuitous event or force majeure.

The Administration gets caught in a delicate dilemma, which in many cases can even paralyze the construction. If that occurs, the Administration may contract the second placed company in the bidding process according to art. 24 of the ordinary act 8666/93, without another procurement process, to end the construction. The problem in that case is that the second place will be called to execute the contract under the same conditions as the first one, which would certainly be inviable. It seems clear then that many contracts involving PPP's face this Adverse Selection issue and mechanisms to disclose information on the contracted part should be established.

A quite common issue regarding *ex ante* informational asymmetry is called the "spreadsheet game", characterized by proposals based on cost spreadsheets apparently advantageous for presenting a final price below those of other competitors. Nevertheless, the bidder gets this result by understating or even omitting costs of other materials. Later, during the execution phase and based upon the Procurement Law's lenient possibility of "exceptional situations", they claim the occurrence of such situations and the impossibility to fulfill the contract as it is, thus requiring the contract rearrangement on the basis of financial-economic rebalancing.

Even though the Procurement Law tries to discourage those opportunistic behaviours, it is still considered common practice in Brazil. Therefore, the previous definitions of well-designed executive projects, as well as the acceptance of global prices with unitary prices being used as subsidiary measures are important tools (Procurement Law, art. 40). As regards accepting unitary prices, the law establishes that they cannot exceed the market price. Moreover, the law determines that the companies' costs spreadsheet should contain all unitary costs in both basic and executive projects (Procurement Law, II, § 2nd and § 4th of art 7th). However, *ex ante* difficulties many times arise from the Administration's own lack of definition of the object or service to be contracted.

Price definition below market price is a strategy of the bidding company to achieve good results through renegotiation, based on the financial-economic rebalancing, as soon as the contract starts being put into practice. It is a "game", where the company bets on the odds to achieve *ex post* profit. Should the Government give in easily, or at least have the reputation to do so, the prices obtained in the procurement process will surely be distorted during the contract execution. Data on concession contracts in Latin America point to a high renegotiation rate at 73% in the first two years of contract (GUASCH, 2004:12). Though if there are efficient control actions, such as decisions by the Counts Union Court (Tribunal de Contas/TCU) to combat the "spreadsheet game", the bidding company's strategy will surely be different in order to avoid omitting their real cost spreadsheet.

As for the contractual incompleteness, it can be felt in different stages of the implementation of the infrastructure contract. It most often appears in the operational phase of the project, although it is not uncommon to show in the construction stage. This is due to the frequently poorly designed basic and executive projects, with their imperfections and ambiguities. Two different forms of contractual incompleteness may therefore be defined: intrinsic and extrinsic. The former evidences the incapacity of the Government to define the contractual object accordingly, whilst the latter arises from the classic limited rationality hypothesis, cognitive problems or even the contract design costs.

As for the intrinsic problems, the control mechanisms are not effective, since even though the invitation for proposals should be analysed by right, much of the content of the instrument comes from the management discretion power granted to the Administration by the Brazilian Administrative Legal System. Indeed, the *ex ante* control action, criticized by some as bureaucratic, is in fact an efficient instrument to save transactional costs during the contractual execution.

Those inefficiencies are more common in expensive contracts, especially during the construction phase, and mainly in contracts of "Built Operate and Transfer" type, where risks are higher. Hence, a harmful combination shows in this stage, namely intrinsic incompleteness, high risks and transaction costs. Concerning the latter variable, there are even higher costs when the disputes reach the Judiciary Courts. That is indeed a fundamental difference between the Brazilian Legal System and the North-American Common Law System, as in Brazil the

majority of conflicts go to the Courts. Therefore, the inefficiency and corruption of the Brazilian Judiciary raise the transactional costs of the system exponentially. There is undoubtedly a rational expectation from the parts that the problem at stake will occur during the contract design and that part of the transactional costs will be "dumped" onto the bad contractual execution by trading good quality for bad quality materials.

It is important to notice that the current doctrine points to *ex post* contractual asymmetries (Moral Hazard) to be also an important problem in the procurement process, whereas the *ex ante* distortions are basically due to contractual incompleteness. That equivocated analysis stems from the partial understanding about the institutional environment in which procurement processes take place. From the neoclassical point of view, that environment is an *ad hoc* variable. Nonetheless, understanding the motivation of those involved - the Government, bidding companies, controlling institutions and the Judiciary - is fundamental to reduce distortions in that system.

4 Moral Hazard

Another problem concerning Government construction contracts is the Moral Hazard issue. In this case, the information advantage appears after signing the contract. It is, for example, the case of a company which starts to execute the contract and then lowers the quality of the material used in order to reduce costs. Like in the Adverse Selection, Moral Hazard is a clear example of information asymmetry in procurement processes.

Concerning the Moral Hazard problem, it is important to centralize attention to eventual changes to the original project after signing the contract and to the costs resulting from that situation, which is an important object of investigation to the modern doctrine. Thus, the main problem refers to quality, as the company reduces the quality of the service or does not even execute it.

This is reflected in a situation affecting the public services concessions in Latin America, which is the constant renegotiation of public contracts. If that happens at the very beginning of the execution, the advantages achieved by the Administration during the procurement process are mitigated. The Moral Hazard also occurs largely by the accumulation of transactional costs present in the pre-contractual period, culminating with those costs being 'relieved' by poor execution.

A possible alternative to address those costs would be using the private rules of conflict resolution, i.e., arbitration. Even though the issue has been predicted in the Brazilian PPP's Law, there is still a great concern about using that instrument by argument that it would offend the principle of "public interest unavailability". In addition, the parts involved tend not to use arbitrational alternatives owing to the high costs, although they usually ignore the transactional costs when those conflicts are solved by the Judiciary.

As for contract types, there are "Fixed Price" (FP) or "Cost Plus" (C+) contracts. High cost contracts in Brazil are usually of the former type, when the price is set before the contract is signed. For the C+ method, the payments should compensate eventual costs. In the Brazilian tradition, the Fixed Price is usually applied, which encourages cost reduction during the contractual execution. Therefore, the more incomplete the contract, the higher the renegotiation costs. If the criteria were to be changed to C+ for some particular kinds of objects, the renegotiation probability would tend to be reduced, even though a more efficient control mechanism to avoid abuse would be necessary.

In addition, companies respond strategically to contractual gaps, expecting "adaptive costs" of renegotiation and/or legal disputes. Thus, the classic model of procurement (such as Auctions, for example) can work for goods and standard services; however, for customized, unique and specific goods, it is hardly a model that would work efficiently due to the specificity of the goods and the contractual incompleteness issues.

The bidding procedure is complex, thus its goals are not always achieved. When the company's proposals are sent, there should be a method to clarify them without the possibility of changing. It is also important for the Administration to be able to keep contact with the companies without the possibility of disclosing information to other participants. This has been done in the European Union under the name of "participative dialogue", which, for the Brazilian situation, would certainly demand a high level of transparency and accountability. Some legislation in other countries allows bidding companies to modify their proposals, which is not that bad if the final outcome is improved.

The Latin America examples show that most problems from PPP contracts are generated during the execution phase. The contracted part often fails to fulfill their contractual obligations, resulting in a high incidence of renegotiation or even in the abandonment of concessions. As examples of such problems, we can mention poorly designed

contracts, bidding procedures that encourage indiscriminate quest for the "lowest price", the difficulties involving the *enforcement* of rules by the Government and the weak control of assessment of the results achieved by the contracts.

All those problems are aggravated by the legal uncertainty arising from the difficulty for the Legal System to understand the nature and peculiarities of infrastructure contracts, as well as from the poor regulatory stability. The private partner in PPP infrastructure contracts through concessions will also be required to constantly inform about the performance of the programme and both the Government and control mechanisms must be able to assess the results. A good contract should deliberately point to possible renegotiations and changes during the execution period. The Brazilian law sees the contract renegotiation via financial-economic rebalancing as an anomaly rather than as a natural result of changes, including market and legislation. Contracts must be designed in order to contemplate such negotiations. Finally, control mechanisms that acted more pro-efficiently by using Performance Audit methods would certainly be a key part in maximizing the results of such contracts.

5 Hold Up

The greater the specificity or the peculiarity of the applied asset, the greater the possibility of the 'quasi-rent', i.e., the difference in return of applying the asset to that activity or any other alternative activity. Likewise, the greater the specificity, the more the contract and the contracting part will relate exclusively or almost exclusively. There are several types of asset specificities that must be considered (Williamson, 1986: 43). The first is the *site specificity*; some assets should be allocated in pre-established areas, considering transportation, communication and material costs.

The second is the *time specificity*, characterized by the synchrony of the productive process for saving costs. Other important specifications are the specific fixed assets and the dedicated (complementary) assets. The former happens under transactional specific characteristics, when the assets cannot be used in alternative or feasible ways, whereas the dedicated assets represent all materials (not necessarily fixed assets) used only to that specific contractual relationship and which have little or no alternative use. Finally, there is also the specificity that comes

from the continuous using and learning processes (cognition costs or *human-asset specificity*).

That is the case of high cost contracts, especially in public service concessions and PPP's. That specificity of big constructions leads to what the doctrine calls "hold up", making it possible for one part to exploit the fragility of the other in *ex post* renegotiations (after signing the contract). That shows clearly in infrastructure contracts due to the *sunk costs* involved (there are many specific costs without alternatives for them). This gives contracts a high dependence level and opens doors to opportunistic behaviour. Thus, the parts are encouraged to take ownership of any extra benefit during contractual execution.

The great challenge in that matter is to find an alternative use for the asset involved (*second best*) in order to reduce the appropriation of income, which is called *salvage value*, i.e., its residual value. The proposed solution is mostly not possible, as in order to solve the *hold up* problem, the asset specificity would have to be reduced. Another solution would be more accuracy in the contract design. If the contract is extremely complex or even highly incomplete, the problem could remain. Therefore, it is important to find mechanisms for disclosure of information during contract execution so that opportunistic gains would be mitigated. A good suggestion would be to impose effective control mechanisms, such as the analysis prepared by TCU on public works. Therefore, the more effective the control mechanisms, the bigger the possibility of reducing the *hold up* and the smaller the possibilities of low performance.

In this respect, by analyzing the performance (ANGELO, 2005) of the federal public works inspected by TCU in 2005, it was found that the more a piece of work is inspected, the less likely it is to have low performance and consequently the lower the risk of *hold up*. Indeed, the role of control mechanisms in the reduction of information asymmetries is a powerful tool to maximize the effects of public expenditure (Nobrega, 2008).

In summary, it would be necessary to find governance mechanisms to deter the possibility of *ex post* profitability. More effective control to assess the quality and completeness / incompleteness of contracts can be a useful tool, in addition to disclosing the necessary information during the execution of the contract in order to reduce the informational asymmetries and minimize the *hold up* effects. Therefore, the correct systematic bidding and subsequent hiring should consider choosing

the best type of contract, considering their degree of completeness / incompleteness, incorporating mechanisms for sharing the "quasi-rent" in the contract and instruments that lead to efficiency as far as the amount to pay is concerned.

6 Renegotiation

Adverse Selection, Moral Hazard and Hold Up problems end up in the early need to renegotiate the contractual relationship (GUASCH, 2010: 43). However, other variables should be added to those factors, such as the poor attention paid to political and institutional aspects of the procurement process. Firstly, little attention has been paid to structural aspects due to the euphoria caused by the current virtuous cycle of the country. In addition, the inefficiency of Brazilian institutions, such as the Government, the Judiciary, the administrative control mechanisms, ONG's, etc. cannot guarantee high levels of accountability and transparency. Should that not be enough, there are also tax aspects to be considered in order not to pressure the country's public accounts. All the aforementioned aspects lead to early renegotiation.

Another point that forces the early renegotiation of the contract is the Government's tolerance to bidders' aggressive proposals, those that set lower prices than the expected in order to win the bid and force renegotiation (as in the spreadsheet game). The bidder's strategic behaviour is shaped by the probability of the Government to refuse the proposal or give in to requests for renegotiation. The company should also consider the odds to succeed via Judiciary and the transactional costs to do so. The more specific the asset, the bigger the chance for the hired part to obtain extra income from the Government.

The difficulty to design contracts properly also favours renegotiation, especially for the fact that, in the Brazilian situation, the contract is already attached to the bidding invitation for proposals, which gives it the nature of a contract of adhesion.

Weak enforcement powers both of the Government and the Judiciary, as well as the poor participation of control mechanisms in all the process are also sensitive points that force the continuous contract renegotiation. The Government has few tools to force a good service execution and is reluctant to use the ones they have, such as contractual guarantees and the imposition of fines, which, depending on the *hold up* level, will be of little or no use. Besides, the Judiciary in Brazil is slow

and not very efficient, imposing considerably high transactional costs. The control factor, finally, has difficulty to impose their decisions, as well as to find the best way to act. The weaker the institutions, the bigger the probability of contractual renegotiation and opportunistic behaviour.

7 Conclusions

In the Brazilian bidding procedure there is an intrinsic inefficiency caused by various aspects. Firstly, there is a tradeoff between efficiency and legality principles. Our legal system, unfriendly to new approaches, requires the procurement process to be fulfilled, which implies in inefficiency and difficulty to choose the best partner to execute a contractual goal.

On the premise of systemic inadequacy, a series of distortions come up and the challenge is to find a second best situation in order to minimize the inefficiencies. Those inefficiencies occur due to several aspects, such as limited rationality, transactional costs, information asymmetry, Adverse Selection, Moral Hazard and Hold Up issues. The three last issues are a consequence of the first ones and vary in intensity according to the degree of intrinsic and extrinsic incompleteness of the administrative contract celebrated by the Government and the winning company.

The Adverse Selection and Moral Hazard are distinguished basically by the fact that the information asymmetry may happen before or after the contractual bond by the parts, respectively. The problem of Adverse Selection in the Brazilian case is strengthened by the practice of the so-called "spreadsheet game", although the control organs have been quite effective in deterring such practice. In any case, the ex ante asymmetry still finds its core in contractual incompleteness.

Therefore, it is necessary to better design the contracts and establish improvements to the Procurement legislation in order to provide better conditions for competitiveness, thus determining the proposal that can actually best meet the precepts of advantageousness and efficiency.

As regards the Moral Hazard, the contractual gaps and information asymmetry is even more evident and leads to the use of products below the specification, poor implementation and constant contract renegotiations. Frequently based on the economic-financial rebalancing principle, absurd transactional costs of construction procurements are

imposed in Brazil, which are increased with administrative costs when disputes reach the Judiciary. Indeed, excessive legal demands put the efficiency of the Judiciary system into question in Brazil.

It is clear that there are several problems and information asymmetries in our system of partner selection in infrastructure projects, either due to the anachronism of the Procurement Law (8.666/93) or even to the inability of the specific legislation (8.987/95 and 11.074/04) to discipline aspects such as transactional costs, information asymmetry and contractual incompleteness.

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THE NEW PROCUREMENT IN BRAZIL AND E-MARKETPLACE: THE TURNING POINT OF INNOVATION IN PUBLIC ACQUISITIONS

MARCOS NÓBREGA

RONNY CHARLES L. DE TORRE

Summary: This article will deal with the New Procurement Law Bill, recently approved by Congress, analyzing the consequences of the approval of the aforementioned text in relation to the possibility of building efficient electronic purchasing environments, in e-marketplace modeling. We go over the use of application rules, as elements that induce information disclosure (signaling) and are relevant for modeling an electronic public procurement platform, based on artificial intelligence, market design and dynamic prices. Thus, the use of the qualification process for "fluid markets" allows procurement resulting from this ancillary procedure to take place without prior prices being defined, which induces the acceptance of "dynamic prices" by the Administration.

Keywords: Public bidding. Public procurement. New Procurement Law. Economic theory. Transaction costs. Application process: E-marketplace.

1 Introduction

Recently, the new procurement law (law 14.133/21) was approved. It had been discussed in its legislative houses for a long time (1995)[1].

[1] GARCIA, Flávio Amaral. MOREIRA, Egon Bockmann. The future new Brazilian procurement law: its main challenges, reviewed individually. R. de Dir. Público da Economia - RDPE | Belo Horizonte, ano 18, n. 69, p. 39-73, jan./mar. 2020. Original publication in the CEDIPRE Revista de Contratos Públicos (Universidade de Coimbra).

The approved text, obviously, is different from the one drafted in 1995. During all this time, several other legislative initiatives were added, alternating periods of almost euphoria, which seemed to indicate the imminent approval of a new procurement law, with periods of inertia in the processing of legislative proposals.

The sluggish and limping legislative process to which the successor to Law No. 8,666/93 was subjected is proof of the difficulties for the Legislature to complete the production of a general diploma on the subject. To illustrate, it is enough to remember that, between December 2013 and February 2017, the Senate had already analyzed a version of the Bill (PL 559/2013), having forwarded it to the House of Representatives, which approved a substitute and returned it to the Senate in October 2019[2], which was actually received by the Senate only in November 2020.

During this time, while the Bills created by Parliament formatted the text for a new law on procurement and public contracts, starting from a "legal platform" similar to Law No. 8,666/93, which already repeated the maximalist model and analytical of Decree Law No. 2,300, of 1986[3], the truth is that the market has undergone constant changes, driven by new technologies, new social formats and also by the increasing expansion of information exchange in the internet environment. A true revolution took place; The world has changed, resulting in new forms of contracting, new services and even new needs to be met by the administrative machine, not always consistent with the routines conceived under the traditional legislator perspective.

In 2020, a year in which the traditional model of public procurement was called into question, requiring the emergency approval of provisional legislation to safeguard the necessary efficiency of this administrative action (through Law No. 13.979/2020 and the various provisional measures that expanded the regime exceptional contractual law to combat COVID-19), when most legal scholars were already demanding the need to envisage a new procurement law with a focus more on economic elements, detaching ourselves from a merely

[2] See didactic summary of the proceedings in the legislative houses, made by professor Victor Amorim, in a post published on the Portal "Observatório da nova lei de licitações": http://www.novaleilicitacao.com.br/2019/12/04/perspectivas-de-tramitacao-do-projeto-da-nova-lei-de- licitacoes-em-seu-retorno-ao-senado-federal/.

[3] ROSILHO, André. Licitação no Brasil. São Paulo: Malheiros, 2013, p. 29-30.

dogmatic understanding and restricted to positive norms[4], a strategic moment experienced in the relationship between the Executive and the National Congress, enhanced by several favorable nuances, drove the rapid approval of the Bill, with little more than a week between the publication of having been received, by the Senate, and the approval of the text of Law[5], for subsequent submission for presidential sanction.

The Bill approved by the Federal Senate, maintaining the structure defined by the House of Representatives, has a very analytical content, with almost 200 articles, mixing rules from Law No. 8,666, of 1993 with rules from Law No. 10.520, of 2002 (reverse auctionLaw) and Law No. 12,462 of 2011 (RDC), in addition to excerpts from federal infra-legal regulations, including those identified in Normative Instructions. Although an in-depth debate about the best global practices for bidding and contracting efficiently would be recommended, with the establishment of flexible procedures adaptable to innovations, in general, the draft finalized in the Senate was extensive, keeping most of the Bill sent by the House of Representatives, with more than 180 articles and, in principle, "goes against the simplification of the national acquisition system"[6].

The result was an analytical rule that did not opt for simplifying the procedure and changing the procedural structure already defined in previous legislation, but for consolidating past experience, through the aggregation of rules already in force, "adding to them some tones of novelty and incorporating court decisions"[7]. A law text that seeks to regulate the Administration's bidding and contractual environment with its eyes focused on the last 20 years that have passed, not on the 20 years that we will follow after approval.

On the other hand, the text advances at several points, mixing a certain margin of discretion in the modeling of the bidding process (which rivals the format of static categories) and including "tools" and

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4 NOBREGA, Marcos. *Direito e economia da infraestrutura.* Belo Horizonte: Ed. Fórum, 2019.

5 See procedure, at the following address: https://www25.senado.leg.br/web/atividade/materias/- /materia/145636.

6 NÓBREGA, Marcos. JURUBEBA, Diego Franco de Araújo. Assimetrias de informação na nova Lei de licitação e o problema da seleção adversa. R. bras. of Dir. Público - RBDP | Belo Horizonte, ano 18, n. 69, p. 9-32, abr./jun. 2020.

7 GARCIA, Flávio Amaral. MOREIRA, Egon Bockmann. The future new Brazilian procurement law: its main challenges, reviewed individually. R. de Dir. Público da Economia - RDPE | Belo Horizonte, ano 18, n. 69, p. 39-73, jan./mar. 2020. Original publication in the CEDIPRE Revista de Contratos Públicos (Universidade de Coimbra).

provisions that have long been demanded in the bidding environment. From this perspective, the normative set of rules undoubtedly represents advances in relation to the general bidding regime of Law No. 8.666 of 1993.

In short, the objective of this article is to analyze the possible consistency or inconsistency of the aforementioned legal text with the format of an environment with greater agility and lower transactional costs, getting closer to what would be the dreamed adoption of a public *e-marketplace*[8]. If it is true that the new legal text did not expressly envisage this format of relationship between supplier and consumer, would it have generated setbacks or allowed progress in relation to this claim to optimize the public procurement format?

2 Public Administration and Supplier Selecting Process

Since Decree-Law 2,300/86, later followed by Law No. 8,666/93, Brazilian legislation has been establishing procedural rites full of controls for the qualification the supplier capable of meeting the contractual requirements[9], without any concern with the transactional costs arising of such procedures and the low efficiency and shortcomings of such requirements. The factual result is that "Brazilian adjudicatory processes tend to generate extraordinary transaction costs and inhibit competition"[10].

Even in the doctrinal field there was little debate about the evident shortcomings of our traditional bidding system, as an economic analysis that attempted to "explain, predict and understand the behavior of the actors involved in public procurement processes was rarely in-depth."[11]

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8 NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/. Accessed on: 12/24/2020, at 4:16 pm.

9 Contractual intention is the formalization of the solution necessary to meet the administrative need to be met, through an activity to be carried out by a third party (or third parties). Vide TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. P. 47.

10 GARCIA, Flávio Amaral. MOREIRA, Egon Bockmann. The future new Brazilian procurement law: its main challenges, reviewed individually. R. de Dir. Público da Economia - RDPE | Belo Horizonte, ano 18, n. 69, p. 39-73, jan./mar. 2020. Original publication in the CEDIPRE Revista de Contratos Públicos (Universidade de Coimbra).

11 NÓBREGA, Marcos. JURUBEBA, Diego Franco de Araújo. Assimetrias de informação na nova Lei de licitação e o problema da seleção adversa. R. bras. of Dir. Público - RBDP | Belo Horizonte, ano 18, n. 69, p. 9-32, abr./jun. 2020.

With recent technological and market changes, the lag in the traditional bidding and contracting format, with its clearly analytical, bureaucratic and detail-oriented character, has become increasingly evident, which has blown up even more with the difficulties experienced in 2020, due to facing the pandemic resulting from the Coronavirus. The need for efficient and quick hiring, in the face of a moment of turbulence in the market, has increased evidence of the shortcomings of the Brazilian government purchasing system[12].

For years, these changes in the market and technology have been generating a gradual shift in legislation, either through modifications to Law No. 8,666/93, or by issuing secondary or supplemental normative norms, such as Law No. 10,520/2002 (reverse auction Law), Law No. 12,462/2011 (Differentiated Contracting Regime) and Law No. 13,303/2016 (State-Owned Entities Law), in addition to countless infra-legal regulations. However, with commendable exceptions, the changes in bidding legislation in Brazil departed from "the myopic classic prescription that we have symmetric information, absence of transaction costs and informational symmetry", bringing together "archaic parameters under the cloak of the fetish of the lowest price and with large doses of bureaucracy and irrationality", which made it "unable to see the real incentives of agents in a given transaction"[13].

It is worth highlighting, even when the legislator sought to reduce such bottlenecks, contrary to the best doctrine[14], the state machinery moved to maintain a conservative position, as occurred with the auction category, in which, although the Law has defined a simplified qualification and flexible system, the regulations and administrative practice chose to define a subsidiary and integral application of

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[12] FIUZA, Eduardo; SANTOS, Felippe Vilaça Loureiro; LOPES, Virgínia Bracarense; MEDEIROS, Bernardo Abreu de. Compras públicas centralizadas em situações de emergência e calamidade pública. Available at: https://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=36397. Accessed on 12/20/2020.

[13] NÓBREGA, Marcos. CAMELO, Bradson. O que o prêmio Nobel de Economia de 2020 tem a ensinar a Hely Lopes Meirelles? O modelo de licitações que temos no Brasil é eficiente?. Available at: https://www.jota.info/opiniao-e-analise/colunas/coluna-da-abde/premio-nobel-economia-2020-ensinar- hely-lopes-meirelles-15102020. Accessed on 12/24/2020, at 12:07.

[14] Among the scholars who took a stand on the specificity of the enabling system prescribed by the Auction Law, we can highlight Jacoby Fernandes and Joel de Menezes Niebuhr. See: JACOBY FERNANDES, Jorge Ulisses. Regras de habilitação em pregão eletrônico e presencial. Available at <http://201.2.114.147/bds/bds.nsf/6E51620E811C5224832574C6007 63E8C/$File/NT00038E7E.pdf>. Accessed on August 8, 2015. NIEBUHR, Joel de Menezes. Licitação Pública e contrato administrativo. 4ª ed. rev. e ampl. Belo Horizonte: Fórum, 2015. pg. 397/398.

the qualification requirements of Law No. 8,666/93, in an evident hermeneutical mistake, which disregarded the legislative option, treating it as an inadequate omission and gap[15].

The various transaction costs involved in the bidding procedure greatly impact the selection of suppliers, generating a model in which this bureaucratic transactional cost[16] consumes resources greater than those spent on the future contracts[17]. This reality supported a commendable study conducted by the Federal General Comptroller (CGU), according to which 85% of electronic auctions in federal bodies would be "deficient", with the expenditure of resources to carry them out greater than the alleged savings provided by the competitive procedure.[18]

The new procurement law repeats some of the old bidding formula, as a procedure full of control steps that begins its external phase with the publication of a notice, for the knowledge of potential interested parties. Unfortunately, contrary to our expectations[19], the legislator created a model based on the previous legislation platform, with its bureaucratic and formalistic logic, without reflecting on the technological and social innovations that have impacted and will continue to impact the forms of communication and contracting. Most likely, the National Congress made the same mistake as before, that is, legislating "looking backwards" and not forwards, when conceiving the legal model for public contracts.

While in real life people and companies carry out their routine contracting in a few clicks, via the computer or even a smartphone, with immediate price research and "ranking" of suppliers, according to their positive or negative history (signaling)[20], in tenders qualification a supplier, even for the acquisition of simple goods, requires a cumbersome and costly process of planning and defining the contractual intention,

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[15] TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. P. 1148/1149.

[16] FIÚZA. Eduardo P. S. LICITAÇÕES E GOVERNANÇA DE CONTRATOS: A VISÃO DOS ECONOMISTAS. Available at: https://www.ipea.gov.br/agencia/images/stories/q12_capt08_Fiuza.pdf.

[17] Available at: <http://www.valor.com.br/brasil/5438381/decreto-vai-atualizar-valores-de-licitacao-congelados-ha-20-anos>. Accessed on: 04/12/2020.

[18] Available at: <https://www.gov.br/cgu/pt-br/assuntos/noticias/2018/04/cgu-propoe-mudancas-para-melhorar-eficiencia-das-compras-governamentais>. Accessed on: 04/12/2020.

[19] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/.

[20] NÓBREGA, Marcos. Direito e economia da infraestrutura. Belo Horizonte: Fórum, 2020. P. 25.

publishing a notice and holding a session for proposals to be presented. While corporations and governments debate the evolution of *smart contracts,* with execution through *blockchain* [21] and reduction of transactional costs that facilitate exchanges, our contractual regime requires a formal, signed instrument, with necessary clauses and "extraordinary" prerogatives, even when you want to hire the "ordinary".

The bureaucratizing zeal ignores that the various control steps, formal procedures, extravagant clauses and verification routines increasingly impose more costs on the process, affecting the entire chain that precedes contracting, with transactional costs that end up restricting the competitiveness of public tenders and increasing the price reached in the bidding.[22]

The text has several advances in relation to the general bidding system. By adding to the provisions of Law no. 8,666/93, rules of Law No. 10,520/2002 (Public Auctions Law) and Law 12,462/2011 (RDC), increased the general bidding regime with relative flexibility and interesting "tools", already approved in the use of the RDC or even in foreign legal provisions.

The legal provision on some interesting governance rules, the expansion of the electronic format to all categories, the confidential budget, the expression of interest procedure (PMI), integrated and semi-integrated contracting, variable remuneration, modes of dispute, the possibility of a resumption clause *(step-in right),* competitive dialogue, pre-qualification (permanent), among others, were interesting provisions, which could allow for an increase in efficiency in the supplier selection procedure and in contractual execution.

In any case, these rules (tools) were coupled to a formalistic procedural platform, incompatible, at first glance, with the vaunted dream of implementing a public e-marketplace for public contracts in Brazil. For this apparent incompatibility to be overcome, a new legislative change will be necessary or at least a different, innovative legal understanding, less concerned with procedures and more concerned with efficiency.

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[21] CAVALCANTI, Mariana Oliveira de Melo. NÓBREGA, Marcos. Smart contracts ou "contratos inteligentes": o direito na era da blockchain. Available at: https://ronnycharles.com.br/smart-contracts- ou-contratos-inteligentes-o-direito-na-era-da-blockchain/. Accessed on 12/13/2020, at 12:47.

[22] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/.

3 Public Procurements and E-Marketplace

A large part of the contracting routine today is carried out via the internet, in the so-called *e-marketplace,* a virtual space where potential hires are offered and agreed upon. Contrary to popular belief, the e-marketplace is not adopted only in the supply of goods and services to the final consumer. This type of platform is used for a variety of negotiations "Business to Business" (B2B - *Business to Business),* "Business to Consumer" (B2C - *Business to Consumer);* "Consumer to Consumer" (C2C - *Consumer to Consumer);* "Business to Government" (B2G - *Business to Government)* and "Government to Citizen" (G2C - *Government to Citizen)* [23].

If citizens and companies have found a favorable environment for their transactions in the virtual field, what prevents the Public Administration from adopting this *locus* for at least part of its contracting? As we noted previously[24], governments and public administrators cannot ignore the changes that occur with the use of information and communication technology[25].

The implementation of electronic platforms for the relationships established between the Public Administration and those administered (E-Government) can bring advantages to the public procurement process, including: greater efficiency, cost reduction and savings; time saving; better communication between governments, companies and citizens; online access to services; transparency and less bureaucracy[26]. With the use of platforms, exchanges between suppliers and public bodies and entities can be facilitated, with an exponential reduction in transactional costs and consequent expansion competitiveness[27].

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[23] https://blog.olist.com/o-que-e-b2c-b2b-b2e-b2g-b2b2c-c2c-e-d2c-como-funcionam/. Accessed on: 04/13/2020, at 4:06 p.m.

[24] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/.

[25] RAO, Krishna Prasada. A study on e-governance in India: problems, and prospectus. International Journal of Management, IT & Engineering. Vol. 8 Issue 6, June 2018. Available at: http://www.ijmra.us. Accessed on: 02/24/2020.

[26] JOSEPH, Sethunya Rosie. Advantages and disadvantages of E-government implementation: literature review. In International Journal of Marketing and Technology. Vol. 5, Issue 9, September 2015. Available at: http://www.ijmra.us. Accessed on: 02/24/2020.

[27] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/.

Furthermore, they can facilitate communication between public authorities and businesses, fostering a more open market[28].

There are two main areas of benefits: improvements in process costs and reduction in purchase price, establishing that there is a significant reduction in costs associated with the purchasing process and greater compliance with the process and approved contracts[29]. Electronic public procurement affects the local economy and the way the market relates to the State, reducing transaction costs and time spent, increasing competition, transparency and, therefore, combating corruption.[30] Along these lines, Engström, Wallstrom and Salehi-Sangari corroborate the existence of benefits such as: cost savings, increased contract fulfillment and improved expense control, in addition to the environmental advantage.[31] E-marketplaces present themselves as multilateral market platforms that enable greater and more efficient interaction between supplier and purchaser, with dynamic performance and facilitating exchange[32].

In summary, advantages such as: reduction in transaction costs, greater speed in meeting administrative requirements, broad competitiveness, better compliance and standardization of purchases, greater control over expenses, less bureaucracy and reduction in repetitive procedural costs.

On the other hand, thoughtless conversion, although it allows the reduction of transactional costs, may not generate the expected increase

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[28] RAO, Krishna Prasada. A study on e-governance in India: problems, and prospectus. International Journal of Management, IT & Engineering. Vol. 8 Issue 6, June 2018. Available at: http://www.ijmra.us. Accessed on: 02/24/2020.

[29] CROOM, Simon.; BRANDON-JONES, Alistair. Impact of e-procurement: Experiences from implementation in the UK public sector. Journal of Purchasing and Supply Management, v. 13, n. 4, p. 294-303, 1 Dec. 2007.

[30] FERREIRA, I.; AMARAL, L. A. Public e-Procurement: Advantages, Limitations and Technological "Pitfalls". Proceedings of the 9th International Conference on Theory and Practice of Electronic Governance - ICEGOV '15-16. Anais... In: THE 9TH INTERNATIONAL CONFERENCE. Montevideo, Uruguay: ACM Press, 2016. Available at: <http://dl.acm.org/citation.cfm?doid=2910019.2910089>. Accessed on: 02/25/2020.

[31] ENGSTRÖM, A.; WALLSTROM, Â.; SALEHI-SANGARI, E. Implementation of public e-procurement in Swedish government entities. 2009 International Multiconference on Computer Science and Information Technology. Anais... In: 2009 INTERNATIONAL MULTICONFERENCE ON COMPUTER SCIENCE AND INFORMATION TECHNOLOGY. oct. 2009.

[32] MEDEIROS, Bernardo Abreu; ARAÚJO, Thiago C.; OLIVEIRA, Rafael Sérgio de. Marketplace à brasileira: entre o R$ 1,99 e 'Adeus, Lênin'?. Available at: https://www.jota.info/opiniao-e-analise/artigos/marketplace-a-brasileira-entre-o-199-e-adeus-lenin-24112020. Accessed on: 12/24/2020 at 4:11 pm.

in competitiveness if the supply market is not able to operate in this new environment. This difficulty can be even more pronounced in small towns, where "local commerce" is not prepared for this competitive environment. In Brazil, for example, the use of electronic auctions has generated a reduction in contracting values, but, on the other hand, it has accentuated problems in contractual execution and weakened policies to benefit local commerce[33]. Most ME/EPPs are not involved in e-commerce. Gurakar, citing Rasheed[34], considers that small companies experience significant difficulties in accessing government procurement markets, as most of them do not have the necessary information technology infrastructure and trained employees to participate in electronic tenders[35].

Another problematic issue may be the adoption dilemma of private e-marketplace platforms. It is an interesting solution, with advantages and disadvantages[36]. Given the continental size of Brazil and the differences between the federative units, it is a model that seems to be propitious, as long as certain precautions are taken to avoid problems such as, for example, concentration that encourages "abuse of dominant position"[37] by the platform owner.

3.1 Theory of Competition under Uncertainty

When we analyze the issue of using e-marketplace platforms, we have to take into account the potential of this structure to mitigate the constraints of competition in markets, violating antitrust rules. This is relevant since the installation of a public e-marketplace, considering the

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[33] TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. P. 63.

[34] Rasheed, H. S. 2004. Capital access barriers to government procurement performance: Moderating effects of ethnicity, gender and education. Journal of Developmental Entrepreneurship 9 (2): 109-26.

[35] GURAKAR, EsraCeviker.; TAS, Bedri KamilOnur. Does Public E-Procurement Deliver What It Promises? Empirical Evidence from Turkey. Emerging Markets Finance and Trade, v. 52, n. 11, p. 2669-2684, nov. 2016. DOI: 10.1080/1540496X.2015.1105603.

[36] Amazon's Next Frontier: Your City's Purchasing. Available at: https://ilsr.org/amazon-and-local- government-purchasing/. Accessed on: 02/28/2020, at 9:25 pm.

[37] Abuse of a dominant position is a practice restricting competition that results from the illicit use by a company (or a group of companies, in the case of a collective dominant position) of the power it has in a given Marketplace. See: http://www.concorrencia.pt/vPT/Praticas_Proibidas/Praticas_Restritivas_da_Concorrencia/Abuso_de_pos icao_dominante/Paginas/Abuso-de-posicao-dominante.aspx.

size of the public procurement market in Brazil (16% of GDP) and the heterogeneity of the goods market, will have considerable impacts on the size of companies and competition between them.

In terms of market concentration, a first argument is that these platforms have monopoly power. This seems reasonable to assume because a public e-marketplace created and managed by the Federal Government would have the power to manage the purchases of all federated entities and thousands of suppliers of goods. It is argued for monopoly power, considering the following aspects:

a) They have a relevant share of the goods and services market: This platform would be created and managed by the Federal Government and would initially have great importance in direct purchases, by substantiating the electronic waving rules. The market for this type of purchases is large, representing more than 50% of all purchases made by the Federal Government, States and Municipalities.
b) High barriers to entry. In this type of market, the barriers to entry refer to the large investments in technology to create a reliable and efficient platform. In the case of a public e-marketplace, the platform created by the Federal Government would serve all purchases made by this sphere of Government and would be made available to other federated entities to also use it. There would, however, be no legal impediment for other federates to develop their own e-marketplace platforms. It seems unlikely that the other federated entities will do so, especially due to the great technological barriers to developing the tool and the power of scale and operability of the federal platform.
c) Lateral integration. It is possible that this e-marketplace platform, considering the immense data structure it will process, will be used for other purposes, from research and studies on the real conditions of the market for goods and services, all the way up to activities such as microcredit or education platforms.
d) Strong network effect. In this case, a platform will only be attractive if there is a large number of participants and this number scales relatively quickly. This should not be a problem for an e-marketplace platform set up by the Federal Government because most transactions, especially direct contracts, can quickly be processed using this instrument.

This monopoly power leads to some interesting questions. What is the criteria for developing the search algorithm? Will the participating bidder have the right to have access to the rules for creating these search systems? This is important because it is relevant to note that companies that come up at the beginning of search lists have a much greater chance of having their goods sold on the e-marketplace. One argument is that these companies and their products would show on the top of the list based on the rating of a large number of previously prepared contracts. It turns out that they are on top because they were already on top, which induces the looping effect, harming other companies.

Furthermore, nothing prevents the Government from collecting more accurate information about a given market based on data generated by the platform and being tempted to manipulate it.

These are classic arguments that explain why an e-marketplace created by the Federal Government can induce monopoly power for the government. Although these arguments are convincing in the light of neoclassical microeconomic theory, other aspects need to be considered, based on the argument that traditional rules on monopoly do not apply to these platforms, as they do not submit to the classic criteria for measuring monopoly against price, quantity and innovation.

It is possible, therefore, that we are facing something completely new in microeconomic terms: a "moligopoly". In this case, we live with monopolists and oligopolists in an environment of uncertainty and economic dynamism.

For Petit[38], large technology players can, increasingly with more ease, participate in different levels of the value chain of sectors related, or unrelated, to their main lines of business, while benefiting from their market power to compete in these sectors. Thus, these companies force us to reconsider the scope of basic concepts such as the definition of "market", "market power", "exclusionary practices" or "efficiency". The fundamental pillar for understanding the economic behavior of online platform actors is related to indirect multiplier effects ("indirect network effects"), which condition the definition of the relevant market on these platforms.

Therefore, there is still no way to predict the impact that this e-marketplace platform will have on the different markets and the

[38] PETIT, Nicolas. Big Tech and Digital Economy: The Moligopoly Scenario. Oxford University Press. Oxford. 2020.

consequent repercussions on the competitive environment. The topic needs to be better studied and a detailed analysis of the microeconomic impacts of adopting a public e-marketplace goes beyond the scope of this text.

It is key, however, to reflect on the impact of electronic purchases on buyer-seller relationships, since the use of information technology does not in itself improve the levels of trust between these parties[39], nor does it do away with the risks arising from informational asymmetry or opportunistic behavior, which may result in breach of contract.

In any case, around the world, the Public Authorities have been advancing in the use of e-marketplace for their contracting. Countries such as the United States, the Philippines, Spain, Turkey and India, among others[40], have already adopted e-marketplace platforms for their public purchases and Brazil should not be left out of touch with these changes.

On the other hand, without any doubt, the biggest obstacle to the adoption of e-marketplace for public procurement, in Brazil, resulted from the conservatism of public agents responsible for interpreting and regulating the legal bidding environment, attached to inefficient and often unreasonable bureaucratic control routines.

Breaking with the traditional formalism in our contractual Administrative Law is perhaps our biggest challenge, for the implementation of an e-marketplace in government contracts.

How can we convince, for example, our public authorities to admit dynamic pricing, characteristic of existing platforms on the market? How to convince the traditional legal scholars[41] that price is actually a conveyer of information and that the "stipulated price is imperfect to communicate all the characteristics and intentions of the contracted bidder"[42], that the estimated price "is an incomplete value indicator that

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[39] CROOM, S.; BRANDON-JONES, A. Impact of e-procurement: Experiences from implementation in the UK public sector. Journal of Purchasing and Supply Management, v. 13, n. 4, p. 294-303, 1 Dec. 2007.

[40] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/. Accessed on: 12/24/2020, at 4:16 pm.

[41] According to Mackaay and Rousseau, the relationship between the price of a good, its value and its cost represents a problem for the legal scholar (MACKAAY, Ejan; ROUSSEAU, Stéphane. Análise Econômica do Direito. Translated by Rachel Sztajn. 2ª edição. São Paulo: Atlas, 2015.p. 117).

[42] NÓBREGA, Marcos; CAMELO, Bradson; TORRES, Ronny Charles Lopes de. Price research in public contracts, in times of pandemic. Available at: https://ronnycharles.com.br/pesquisa-

each bidding gives a certain good"[43], that several factors, including time, affect it [44], that the reference price is not the transactional price and is not intended to identify it precisely[45], since the transactional price, will depend on several objective and subjective factors, and the value of a good defined in the exchange cannot be identified, "except in the light of an agreement freely accepted by the parties, each one taking into account the other possible options"[46]?

How can we convince our authorities that licensing requirements exacerbate transactional costs[47] and that, are often inefficient in fulfilling the function determined by the constituent that qualification requirements should be required only to guarantee compliance with obligations[48]? How to convince everyone that we will not improve the efficiency of public contracts without worrying primarily about agency theory, game theory, moral hazard, bounded rationality, information asymmetries, transactional costs, market design, design and establishment theory of incentives[49]?

While the literature and precedents regarding bidding in Brazil focus on the compliance of public and private agents with established formal rules, it is "necessary to go further, and discuss why these rules are the way they are and what their meaning and way of improving them"[50].

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de-precos-nas-contratacoes-publicas-em-tempos-de-pandemia/ Accessed on: 12/24/2020, at 11:29 a.m.

43 NÓBREGA, Marcos. JURUBEBA, Diego Franco de Araújo. Assimetrias de informação na nova Lei de licitação e o problema da seleção adversa. R. bras. of Dir. Público – RBDP | Belo Horizonte, ano 18, n. 69, p. 9-32, abr./jun. 2020.

44 NOBREGA, Marcos. A contratação integrada no Regime Diferenciado de Contratação – Inadequação da teoria da imprevisão como critério para o reequilíbrio econômico-financeiro do contrato. Revista de Dir. Público da Economia – RDPE | Belo Horizonte, ano 12, n. 45, p. 111-141, jan./mar. 2014.

45 BARBOSA, Túlio. Preços para licitações públicas. IN TORRES, Ronny Charles L. de. Licitações Públicas: homenagem ao jurista Jorge Ulisses Jacoby Fernandes. Curitiba: Negócios Públicos, 2016. P. 149-164.

46 MACKAAY, Ejan; ROUSSEAU, Stéphane. Análise Econômica do Direito. Translated by Rachel Sztajn. 2ª edição. São Paulo: Atlas, 2015.p. 119.

47 NÓBREGA, Marcos. JURUBEBA, Diego Franco de Araújo. Assimetrias de informação na nova Lei de licitação e o problema da seleção adversa. R. bras. of Dir. Público – RBDP | Belo Horizonte, ano 18, n. 69, p. 9-32, abr./jun. 2020.

48 TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. P. 479.

49 NÓBREGA, Marcos. CAMELO, Bradson. O que o prêmio Nobel de Economia de 2020 tem a ensinar a Hely Lopes Meirelles? O modelo de licitações que temos no Brasil é eficiente?. Available at: https://www.jota.info/opiniao-e-analise/colunas/coluna-da-abde/premio-nobel-economia-2020-ensinar- hely-lopes-meirelles-15102020. Accessed on 12/24/2020, at 12:07.

50 NÓBREGA, Marcos. CAMELO, Bradson. O que o prêmio Nobel de Economia de 2020 tem

A necessary perception for the law enforcer, in the context of public procurement, is that there are no magic solutions. The apparent dogmas that are reflected in many court decisions are topical truths that often ignore the versatility of similar, but not identical, factual situations, ignoring that decision-making will always involve a certain amount of trade-off. The great challenge in public procurement is that we have the maturity to let go of old stigmas to build models in which the advantages outweigh the disadvantages.

In this line of thought, it is worth analyzing the interesting legal format given to the ancillary procedure "qualification process" in the new Procurement Law.

4 The Application Process in the New Procurement Law and The Basis for a Public E-Marketplace

The qualification process should not be confused with the contracts or contracting that will be signed based on it. The legal nature of the qualification process is not equivalent to a hypothesis of unenforceability or even the signed administrative contract. It is closer to an ancillary procedure, such as application procedure or permanent pre-qualification, produced to justify subsequent direct hiring[51].

The new Procurement Law Project treated the qualification process as an ancillary procedure, distinguishing it from the understanding that equated it to an instance of unenforceability. This treatment was common and defended by relevant doctrine[52] and also by jurisprudence[53], considering that, in practice, the creation of a qualification process aimed to justify the situation and unfeasibility of competition in which the Administration would accept as collaborators / contractors all those who, given motivated public demands, expressed interest in signing a contract or administrative agreement.

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a ensinar a Hely Lopes Meirelles? O modelo de licitações que temos no Brasil é eficiente?. Available at: https://www.jota.info/opiniao-e-analise/colunas/coluna-da-abde/premio-nobel-economia-2020-ensinar- hely-lopes-meirelles-15102020. Accessed on 12/24/2020, at 12:07.

51 TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. p. 441.

52 CARVALHO, Raquel Melo Urbano de. O Sistema de Registro de Preços: um reforço à obrigatoriedade de licitar. *In.* Direito do Estado: questões atuais. Salvador: Juspodivm, 2009. P. 70.

53 TCU. Acórdão 3567/2014-Plenário.

In line with the new Procurement Law, the qualification process is not an instance of non-enforceability, but an ancillary procedure necessary for subsequent direct contracting. As defined by the legislator, in section XLIII of its article 6, the qualification process is an "administrative process of public call in which the Public Administration invites interested parties to provide services or supply goods so that, having met the necessary requirements, they accredit themselves to the authority or entity to carry out the purpose when called"[54].

This understanding of the qualification process as an ancillary procedure that allows for a certain flexibility, assuming that the rigors set out in the contract are not imposed on it administrative in itself[55] and was already defended by the AGU[56]. In a similar line of thought, Normative Instruction No. 05/2017, when regulating the hiring of outsourced services, defined the qualification process as an "administrative act of public call intended for the pre-qualification of all interested parties who meet the requirements previously determined in the call for proposals, with a view to future contracting, at the price set by the Administration".

It is worth noting, however, that the contours defined for the qualification process by the new procurement law have advanced significantly, allowing this ancillary procedure to expand its usefulness in the scope of public procurement.

Firstly, if previously the adoption of the qualification process was restricted to the hiring of all providers qualified and interested in performing certain services, when the public interest would be better served by hiring the largest possible number of simultaneous providers[57], according to the text of the New Procurement Law , it is accepted that it is adopted not only for the subsequent contracting of services, but also for the supply of goods.

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[54] Art. 6°. (...)
(...)
XLIII - Qualification Process: Administrative Public Calling Proceeding in which the Public Administration calls for services to provide services or provide goods so that, fulfilling the necessary requirements, they accredit the authority or entity to execute the purpose when summoned;

[55] TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. p. 440-441.

[56] PARECER n. 0003/2017/CNU/CGU/AGU.

[57] RIBEIRO, Juliana Almeida. Inexigibilidade de licitação e o credenciamento de serviços. Jus Navigandi, Teresina, ano 16, n. 2809, 11 Mar. 2011. Available at:<http://jus.com.br/revista/texto/18683>. Accessed on: 05/20/2012 P. 11.

Secondly, it should be noted that the lawmaker did not refer to a necessary direct contracting due to its unenforceability, although it indicates that the qualification process is a procedure prior to the execution of the object (contracting). Furthermore, when defining the instances in which the qualification process is applicable, in article 78, **the legislator clearly indicates that it precedes hiring, which denotes that it would be an ancillary procedure preceding direct contracting.**

Therefore, if traditionally the qualification process was related to hiring due to non-enforceability, in the new Law, in the absence of an express restriction, it may be used as a prior procedure for other direct contracting, due to exemption or non-enforceability.

Furthermore, in cases of unenforceability, the unfeasibility of setting off must be understood in its broadest sense. Unviable competition, for the purposes of applying the instance of unenforceability of bidding, notably arising from the ancillary qualification procedure, would not only be characterized in situations in which it is impossible to have a dispute, but also in those in which the dispute is useless or harmful to meeting the contractual intention of the Administration[58]. This understanding is clearly identifiable in the instance for the application of the qualification process, provided for in article 78 of the new Procurement Law, although there is no restriction on the using the qualification process only in situations where competition is unfeasible, as the legislator established a rule that allows the qualification process to be adopted even more extensive than that previously established by case law.

It is worth transcribing the rules established by article 78 of the New Procurement Law:

[58] TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. P. 430.

> Section II
>
> The Qualification Process
>
> Art. 78. The qualification process can be used in the following contracting cases:
>
> I- parallel and non-exclusive: case in which it is viable and advantageous for the Administration to carry out simultaneous contracting under standardized conditions;
>
> II- with selection at the discretion of third parties: in which case the selection of the contractor is the responsibility of the direct beneficiary of the service;
>
> III- in fluid markets: case in which the constant fluctuation in the value of the service and contracting conditions makes selecting an agent through a bidding process unfeasible.
>
> Sole paragraph. The qualification procedures will be defined in regulation, observing the following rules:
>
> - the Administration must publish and keep available to the public, on its official website, a call for interested parties, in order to allow the permanent registration of new interested parties;
>
> - in the case of item I of the *caput* of this article, when the object does not allow the immediate and simultaneous hiring of all qualified individuals, objective criteria for distribution of demand must be adopted;
>
> III- the notice calling for interested parties must provide for standardized contracting conditions and, in the cases set out in items I and II of the *caput* of this article, must define the value of the contracting;
>
> IV- in the case of item III of the *caput* of this article, the Administration must record the market prices in force at the time of contracting;
>
> V- the transfer of the contracted object to third parties will not be permitted without express authorization from the Administration;
>
> VI- Complaints will be accepted by either party within the deadlines set out in the notice.

The new law greatly expands the scope of use of the qualification process, allowing interesting application of this ancillary procedure, if the interpreters of the Law do not insist on imposing restrictions based on past understandings, interpreting the provisions of the new law with the past legislation mindset.

In addition to the express expansion of the use of the qualification process for the supply of goods (acquisitions), we note that, if the case of "parallel and non-exclusive" contracting and "with selection at the discretion of third parties" were already commonly identified in services qualification process, the instance justifying its adoption for "fluid markets" is an interesting novelty, little tried before the new Law. We stress at this point **that the use of the qualification process for**

"fluid markets" allows the contracting resulting from this ancillary procedure to take place without prior price definition, which leads to the acceptance of "dynamic prices" by the Administration.

These dynamic prices, also called real-time prices or algorithmic prices, are flexible and variable based on demand, supply, competition prices, prices of substitute or additional products[59]. The price can in fact change from customer to customer based on their purchasing habits. Thus, if a certain good is constantly purchased by a certain municipality at a specific time, this will certainly impact the price of the product at that period. The market intuitively already does this, however, with algorithmic pricing rules, this will be easier to capture. Dynamic pricing allows suppliers to be more flexible and adjusts prices to be more individualized, specifically for a particular buyer of that product.

Dynamic pricing is determined by rules-based or self-improvement (AI) algorithms that take into account multiple variables to set the best price for that specific product, for that customer, at that time. This, in essence, already poses a major challenge for formatting public procurement systems. Many variables can be considered to set these prices, such as: product seasonality; data on specific customers; size of the purchasing market for a given demographic region; shopping habits in a given area; prices of substitute and supplemental goods; history of last purchases; similar purchases in regions with the same economic size, among many other ways to format the algorithm to capture the randomness of prices.

Considering this aspect of dynamic prices, it is possible to raise the qualification process for the supply of airline tickets, recently adopted by the Federal Government, as a reference for the potential of this ancillary procedure defined by the new Law. According to the model established by Qualification Process Notice No. 01/2020 of the Purchasing Center of the Ministry of Economy, the qualification process allows interested airlines to offer a minimum discount of 15% on all fares and classes in force at the time of ticket is issued and valid for all scheduled domestic routes operated by the airline[60].

By referring to the "fares and classes in force at the time the ticket is issued", the rule defines a dynamic pricing format, uncommon, until

[59] AIMULTIPLE. Dynamic pricing: What it is, Why it matters & Top Pricing Tools. Available at:

[60] https://www.gov.br/economia/pt-br/assuntos/noticias/2020/setembro/ministerio-da-economia-publica-edial-de-credenciamento-para-compra-direta-de-passagens-aereas.

then, in the administration's contractual practice, but clearly valid and efficient, as it takes advantage of the best price available at that time.

Given the dynamics of the market price, notably in fluid markets, the attempt to "stabilize" a proposal, so that the supplier commits for a long period, requires the bidder to include the risk of fluctuation when defining its proposal and, obviously, the less bold or responsible he is, the greater the margin to be added. **With dynamic pricing, there is an adjustment of the various economic variables involved so that it is defined at the intersection of the supply and demand curves.**

It is important to reiterate: this format, in accordance with the rules established by article 178, applies to the contracting of services or the supply of goods.

However, one question remains, it has not been answered by the legislator, it will be defined by the regulation and may be crucial for us to respond to the provocation raised by the title of this writing: what would a fluid market be, for the purposes of applying the qualification process?

If the interpretation of a fluid market, given by the regulation, is broad, and this instrument is adapted to the virtual environment, we can use the qualification process for a variety of contractual requirements. **The potential is enormous and significant, creating the basis for us to implement an e-marketplace to meet demands in which this format will prove to be much more efficient than traditional bidding modeling.**

One obvious application undoubtedly involves the provision of airline tickets. As is common, the ticket purchase price varies. With the adoption of the qualification process, at the time of contracting, an electronic tool will automatically collect the price offered by qualified companies, for the desired route, at a time the matches the administrative needs. Thus, the best price is taken advantage of at the time of demand, without artificial stabilization that juxtaposes risks and can be inefficient, above all, for the buyer.

In addition to this instance already tested by the Federal Government's Purchasing Center[61], we could also have adopted this model, for example, for the acquisition of supplies to combat COVID-19.

[61] See Qualification Process Notice No. 01/2020 for the Purchasing Center of the Ministry of Economy. Available at: https://www.gov.br/economia/pt-br/assuntos/noticias/2020/setembro/ministerio-da-economia-publica-edital-de-credenciamento-para-compra-direta-de-passagens -aereas.

During the period of Public Health Emergency of National Importance - ESPIN, given the large fluctuation in prices, one of the greatest difficulties faced by the public administrator was justifying the estimated prices for the necessary contracts[62]. The format of stabilizing a price in a proposal linked to a long period, as suggested with the Price Registration Minutes, is inefficient, as the risk of fluctuation is tremendous, which induces higher prices or irresponsible proposals[63], alienating potential suppliers and increasing transactional prices, harming any advantage arising from the gain in economies of scale that could be achieved by an immediate purchase[64].

Admitting dynamism and fluidity, at that moment, could be a more efficient economic option, as it would mitigate risks and make better use of the price available in the market.

Given the lack of definition in the concept of a fluid market, regulation may allow that contractual claims with relevant fluctuations, whether resulting from price variations or costs involved that vary greatly depending on demand, can be met by the qualification process. In this context**, the acquisition of foodstuffs, fuel supply, acquisitions of supplies strongly impacted by exchange rate variations, among others, could be included.**

However, the most important thing is to realize that the qualification process, in the format defined by the new procurement law, creates the basis for a public e-marketplace, which answers our initial question and can favor a huge increase in efficiency in public Administration contract.

Finally, it is necessary to understand that the qualification process, as an ancillary procedure for registering suppliers capable of future supplies of goods or services, is not strictly subject to the legal administrative contract system, although it is subject to the legal public law

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62 JACOBY FERNANDES, Jorge Ulysses; JACOBY FERNANDES, Murilo; TEIXEIRA, Paulo; TORRES, Ronny Charles Lopes de. Direito provisório e a emergência do coronavírus. Belo Horizonte: Fórum, 2020. P. 84.

63 On this topic, see: NÓBREGA, Marcos; CAMELO, Bradson; TORRES, Ronny Charles Lopes de. Price research in public contracts, in times of pandemic. Available at: https://ronnycharles.com.br/pesquisa-de-precos-nas-contratacoes-publicas-em-tempos-de-pandemia/ Accessed at: 12/24/2020, at 11:29 a.m.

64 TORRES, Ronny Charles Lopes de. Dispensa de licitação para fins de registro de preços. In Registro de Preços: análise crítica do Decreto Federal nº 7.892/13, com as alterações posteriores. FORTINI, Cristiana (Coord.) 3a edição. Belo Horizonte: Fórum, 2020. Pp. 146/166.

scheme. This perception is fundamental, as imposing on a qualification process the prerogatives and restrictions inherent to the administrative contracts scheme would give rise to transactional costs that could harm the efficiency of e-marketplace modeling, to the detriment of the Government itself. Thus, the qualification process, *per se*, does not allow the Administration to use certain extraordinary prerogatives related to the administrative contract[65], nor does it bring with it the same restrictions imposed by the specific legal regime of these contracts signed by the Administration[66].

This seems to us to be the understanding indicated by the legislator, which is evident from the rules prescribed in items I and VI of the sole paragraph of article 178 of the New Law, that the call notice must "allow the permanent registration of new interested parties" and admit "the denunciation by either party within the deadlines set out in the notice".

Inspired by these provisions, the regulation could, taking advantage of the margin of discretion allowed by the Law itself and the Constitution, reduce the qualifying requirements, for the qualification process purposes, only to those essential to ensure compliance with obligations, as prescribed by section XXI of article 37 of the Federal Constitution, which established a certain functionality for enabling bidding, something, unfortunately, ignored in ordinary practice by the Public Administration[67].

The regulation could also move towards the creation of signaling and screening mechanisms to mitigate the asymmetry of information that exists between the administration and qualified suppliers[68]. A certain dose of innovation is necessary, drawing inspiration from practices already tried in other countries, "importing what worked and adapting it to the Brazilian reality" to prevent the absence of a suitable legal design from making the opportunity for configuring a public e-marketplace in a "new patch on an old garment"[69].

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[65] TORRES, Ronny Charles Lopes de. Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. p. 441.

[66] PARECER n. 0003/2017/CNU/CGU/AGU.

[67] TORRES, Ronny Charles Lopes de Leis de licitações comentadas. 11ª edição. Salvador: JusPodivm, 2020. p. 479.

[68] NÓBREGA, Marcos. JURUBEBA, Diego Franco de Araújo. Assimetrias de informação na nova Lei de licitação e o problema da seleção adversa. R. bras. of Dir. Público - RBDP | Belo Horizonte, ano 18, n. 69, p. 9-32, abr./jun. 2020.

[69] MEDEIROS, Bernardo Abreu; ARAÚJO, Thiago C.; OLIVEIRA, Rafael Sérgio de. Marketplace à brasileira: entre o R$ 1,99 e 'Adeus, Lênin'?. Available at: https://www.jota.info/opiniao-e-

5 Conclusion

The approval of the new procurement law by the National Congress brought a mix of anxiety, euphoria and frustration to the legal community.

Without a doubt, the approved text brings several advances in relation to the legal regime of Law No. 8,666/93, justifying the anxiety and euphoria about the beginning of its application; On another note, its analytical and maximalist nature frustrated those who dreamed of a new, minimalist legal platform that was more adaptable to the social and technological changes that have been affecting Brazilian society.

This "dream"[70] aspired to a new law that would assimilate economic reading to the rules governing public contracting, being prepared for current forms of contracting, such as through e-commerce platforms.

Assimilating an economic reading would mean establishing legal rules focusing on their economic repercussions, on the incentives created and not on the formalistic establishment of control steps. A Law that had special concern with the reducing transactional costs, market design, creation of incentives, moral risk, limited rationality, game theory, agency theory and information asymmetries; as well as understanding that price is an extremely dynamic phenomenon, a conveyer of information that is influenced by several factors, amplified with the virtualization of contracting.

Furthermore, it is undeniable that the use of electronic platforms for contracting is already a reality and was intensified in 2020, due to the social and economic adaptations resulting from the period of confronting the COVID-19 pandemic. The fact is that, throughout the world, several countries have been moving towards adopting e-marketplaces in their public procurement for years, highlighting several advantages in this new environment. With due respect, Brazil cannot continue indefinitely carrying out its selection and hiring procedures under the bureaucratic platform enshrined in Decree-Law 2,300/1986 and Law No. 8,666/93.

The purpose of this article was to touch on these two points. Firstly, provoke the need for reflection on an economic reading of

analise/artigos/marketplace-a-brasileira-entre-o-199-e-adeus-lenin-24112020. Accessed on: 12/24/2020 at 4:11 pm.

[70] NÓBREGA, Marcos; TORRES, Ronny Charles Lopes de. Licitações públicas e e-marketplace: um sonho não tão distante. Available at http://www.olicitante.com.br/marketplace-sonho-distante/. Accessed on: 12/24/2020, at 4:16 pm.

public contracts; second, analyze the compatibility of the text of the new procurement law with the format of a "qualification" environment with greater agility and lower transactional costs, getting closer to what would be the dreamed adoption of a public e-marketplace.

On this last point, specifically, if it is true that the new legal text did not expressly deal with the e-marketplace, the authors of this article sought to demonstrate that, given the interesting legal format given to the ancillary "qualification procedure", in the new Procurement Law, bold regulation free from old dogmas can set the basis for implementing an e-marketplace capable of meeting certain administrative demands, with great gains in efficiency, compared to traditional bidding modeling.

We hope that this article, in some way, can contribute to the development of this debate, still under construction, by the academic and professional communities.

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THE LIMITS AND THE APPLICATION OF INTERNAL RATE OF RETURN (IRR) IN THE CONCESSIONS AND PUBLIC-PRIVATE PARTNERSHIPS (PPPS) IN BRAZIL

MARCOS NÓBREGA

Summary: There are a series of theoretical and practical questions about regulation of concessions and PPPs in Brazil, when the Internal Rate of Return (IRR) is used as an instrument of adjustment and measurement of profitability, as well as an instrument of marking of the economic-financial balance of contracts. In this way, adjusted concessions by the IRR can be inappropriate for that instrument, although it is easy to understand, cannot capture all the nuances of the cash flow of the projects. Moreover, if the cash flows are multiples, there are more than one IRR, which makes its use impractical. Alternative arrangements as the "Marginal Internal Rate of Return", whose goal is to isolate the flows of funds not originally provided in contract, can be used as a technical output, but it is still far from a proposal for regulation of the appropriate contracts. It is expected that, in the next years, other mechanisms are used to prevent the immense distortions made by regulation of the IRR.

Keywords: Internal Rate of Return (IRR) – Concession – Contracts - Cash flow - Regulation.

1 Introduction

Regulation and control of public service concessions present theoretical and practical limits. We have seen in recent years a politicization of the debate and important decisions promoted by control bodies and, above all, by the Judiciary that cause immense impact on profitability of these concessions and it has as reference the adequacy (or inadequacy) of using the Internal Rate of Return on these contracts.

The *leitmotiv* of deciding the Courts draws a link between the use of the IRR and the principle of Economic-Financial Rebalancing – EFR – of the contract. It means that, often, the imbalance would be a contractual remedy resulting to the maintenance and/or re-definition of IRR, in order to place it in levels that are able to rebalance the accordance. So it has been done.

It is true, as we will see, when tracing the decision about the EFR in the maintenance of IRR often have fragile economic base. The judiciary and the organs of control, when they detect the "smoke of the imbalance" (sorry for the neologism!), they point out immediately to the recalculation of the rate. This invariably brings a lot of problems for concessions, users and the Government itself.

There are measures that can be used to alleviate these deficiencies and some of them are useful as the Marginal Cash Flow and the Modified Internal Rate of Return.

Thus, it is common that investment decisions (or even judicial decisions) are taken without a clear understanding of the limits and the consequences of the application of the IRR. Insomuch that the problem arises at the root when the preparation of public notices and the definition of the referred Return Rate. Therefore, the authorities should clearly understand the definition, calculation methodology and alternatives to use of the IRR in contracts. Thus, the IRR is only used as a datum of contract, as cabalistic number and then they develop theses to justify the economic and financial recovery.

Take the well documented Judgment of TCU (*Court of Audit of the Union* - the Brazilian federal accountability office), number: TC 026.335/2007-4 that, provoked by the Supervisory and Privatization Secretariat of the Court of Auditors, examined the occurrence of financial imbalances in the concession contracts of federal highways, arising from overvalued tariffs, allegedly operating in disfavor of the users. In this case, there was an IRR originally set when its concession was granted in 90s, amounting from 17% to 24%. Years later, with the economic boom and the decrease of the "Brazil risk", the State argued that the contract was unbalanced in favor of the dealer, and it demanded a readjustment for less amount of IRR, under the penalty of allowing that the hired dealer earns extraordinary gains.

Similarly, the concessions, which have been celebrated in recent years, showed lower IRR, reflecting the positive economic position. With the deep economic crisis of 2015-16, the profitability of those dealerships

will suffer concussions and certainly the readjustment of contracts via IRR will be charged administratively and judicially.

The questions are: if the Internal Rate of Return is the best instrument to obtain the return of these investments, and If the IRR can serve as a parameter for this rebalancing. It can be asked if it would fit to the Government define *ex ante* the timing of the release of the auction notice, the value of the IRR. Finally, innovations (or inventions) as the modified IRR and the marginal cash flow would be able to resolve these imperfections.

As we see, there are many doubts. Many questions still don't have a proper research on doctrine. Something has been discussed in the economic engineering area and the investment analysis, but in the field of Law, nothing further than the reproduction of old manuals.

2 The Internal Rate of Return as a tool for the evaluation of profitability

The most popular indicator of the profitability of a project is, without doubt, the Internal Rate of Return. However, for decades, according to Kelleher and McCormack[1], the books of Finance has issued warnings regarding the use of the IRR and the possibility of reinvestment of the cash flow performed by this rate, pointing out that its use may make a bad design seems good and a good project seems very good.

The authors report that a survey, which was conducted in the United States in 1999, shows that of ¾ of CFOs tend to use IRR as they evaluate projects. Kelleher and McCormack also made an informal survey with 30 executives of corporations, Hedge Funds and Venture capital firms that showed that only 6 executives were aware of the shortcomings and problems to define profitability of projects using the IRR. Then, why do those responsible for investments of companies continue to use indiscriminately the IRR when it known its failure?

It is known that some deficiencies in the IRR are extremely technical, but the indiscriminate use of this rate can bring serious implications to the company. When the CFOs perform a contract based on the IRR, it is possible that they are doing it in very distorted

[1] Kelleher, John e MacCormack, Justin. Internal Rate of Return: A Cautionary Tale. The McKinsey Quarterly. Ouctober 20, 2004. Disponível no endereço eletrônico: http://ww2.cfo.com/strategy/2004/10/internal-rate-of-return-a-cautionary-tale/

calculations. A clear effect is a decrease in shareholder wealth because the project, after all, will not present the expected return. The hypothesis that the flows of intermediate cashes contained in the IRR will be reinvested at the same rate, is the major explanation for it. It's unreal.

According to the authors, when the calculated IRR is greater than the effective rate of reinvestment of intermediate cash flow, may be unrealistic expectations regarding the annual return on investment. The implicit rule is that the company should have additional projects, also attractive and could invest the intermediate cash flows. It is seen that the assumption behind the use of the IRR is the idea of opportunity cost. It occurs, however, in most of the time, the concession projects are so specific and unique that we cannot talk about alternative projects. Therefore, the use of IRR simply doesn't make sense.

It's known, though it goes beyond the scope of this work, which is also behind the adoption of the IRR as guided by profitability control element of the concession, investment evaluation based on WACC model that embeds the possibility of the company, on the change of the opportunity cost of capital, it realign its investment portfolio to achieve its profitability. To make[2] that correlation doesn't make sense, because there is no alternative use to the project that is generally specific, as a general rule. Hence, because to establish an IRR control and make it static, it can enable monopolistic gains of the concessionaire.

The authors conclude that the best way to avoid the problem is simply not to use IRR as a form of decision, maybe replacing it by the modified IRR.

Anyway, the two most used methods for evaluation of investment is the Net Present Value (NPV) and the Internal Rate of Return (IRR), which are methods that have a universal character.

The degree of reliability of the two methods is equal. However, in general, only one of them is used to evaluate a particular investment. Typically, it is the IRR method. Because it seems to be more understandable and obvious to investors as an indicator that shows the limit of profitability of the project. In many cases, Tomasevic and Mackevicius[3]

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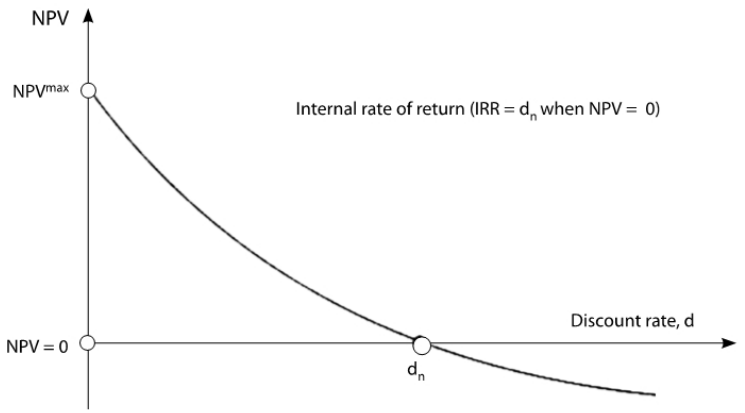
[2] BELLUZO, Luiz Gonzaga. Decisão de Investimentos, CMPC E Revisão Tarifária no Setor de Transportes Rodoviários. In CARVALHO, André Castro (Org.) – Teoria e Prática do Equilíbrio Econômico-Financeiro dos Contratos de Concessão de Rodovias: O Caso do Anel de Integração do Paraná – São Paulo: Quartier Latin, 2010. Pag 17.

[3] MACKEVICIUS, Jonas e TOMASEVIC, Vladislav. Evaluation of Investment Projects in Case of Conflict Between the Internal Rate of Return and the Net Present Value Methods. Ekonomika 2010, vol. 89(4).

remind us the result both the NPV and the IRR converge to the same origin. However, the results can differ significantly in the case of non-typical investments, generating opposite results.

Both methods are based on the cash flow of a project, and it is important to determine the outputs and inputs of resources. The NPV is based on the concept of Net Present Value and it shows the amount of income that is added to the project, in relation to payments. Thus, the NPV is equal to the aggregate cash flow for a determined period, and discounted at a given rate.

Let's see at the chart, copied from Mackevicius and Tomasevic:



In this case, the following rules are applied:

a) VPL > 0, in this case, the investment is considered effective, in other words, the value of the project will increase during its implementation.

b) NPV < 0, the investment will not be effective and the investor will have losses in the amount equal to the NPV.

NPV = 0, this project does not generate profit or loss to the investor.

These assumptions are presented in the chart above, which shows the NPV for various discount rates. This curve has typically the

downslope format. Two curve points deserve attention: the **dn** point and the VPLmax one (NPVmax in the chart). In **dn** point, point the curve intersects the x-axis and the VPLmax one when the y-axis is crossed.

Dn point is the most that interests us and it means the rate at which the investor will not have gains or losses. After this point, the VPL liquid will be negative and the investor should not accept this project. This point of intersection is called Internal Rate of Return.

The intuitive idea is: If a particular investor puts money intended for an investment in a bank whose rate is higher than that of the enterprise, there would be no reason to make the investment. When the interest rate coincides with the IRR of the project, so it makes investing in the project or leaves the money applied to the Bank. They are equivalents. In other words, it would generate the same profit.

It is important to note that the IRR depends only on intrinsic factors to the project; it makes no sense use it beyond the limits of the project.

To calculate the IRR, we must match the equation of NPV to zero and it makes us find its value. Of course, the simplest way is to use the electronic calculator or an Excel spreadsheet. Mechanically, it can represent an exercise in mathematical interpolation we find a suitable number.

From the mathematical point of view, it is important to realize that the formula that calculates the NPV is a linear transformation. This means by adding one or more periods for the analysis of investments, this increases or decreases the NPV outcome without changing the results of prior periods. In the case of IRR, adding other periods could lead to changes in the direction of the curve and compromise the final result.

In the case of IRR, there is an intrinsic hypothesis that cash flow revenues can be reinvested by the value of it. This condition, however, is infrequent and the reinvestment rate varies.

Anyway, there are advantages and disadvantages of using the Internal Rate of Return for investment evaluation.

The first major advantage is that the IRR is informative, objective and independent of the size of any alternative investment, besides showing the limit of profitability of a particular project. Thus, the widespread use of IRR is given by the fact that it can communicate with only one number the basic characteristics of particular project profitability. The IRR represents as close as you can get to NPV, without that, in fact, we have a criterion as the NPV.

Similarly, when the Government publishes a public note granting setting of a given IRR, the companies that are interested, the press, the control bodies, the society may (especially comparing with other similar projects) have a broad idea of the attractiveness of the project.

The IRR allows the comparison of projects with different levels of risk, so that a more risky project should have a higher Internal Rate of Return so that it can be accepted. The IRR also allows listing and staggering projects according to its economic viability, as well as the limit cost to borrow resources shows and it still keeps the project viable.

Despite the advantages of IRR, there are several disadvantages that can determine its adoption difficult and, in many cases, not desirable.

Firstly, it is not an absolute criterion of profitability, because it only observes the internal aspects of the project. In addition, it is highly sensitive the reliability of predictions about the entire cash flow of the project. Here I open a parenthesis: how to agree with the cash flow forecasts that were made for concessions in Brazil at the term of two or three decades. It seems illogical to anchor any decision of economic and financial balance in the IRR, when it is known that the premises on which it is based are fragile. There is no way to ensure a stable cash flow in a concession in the country, by which to regulate and to control them by IRR loses any sense.

The Internal Rate of Return can only be used when we are in front of a conventional cash flow, which means there will be only one output of funds followed by only capital inflows. In other words, there will be no change in the sign of the cash flow during the execution of the project. It is easy to understand observing again the expression that calculates the IRR:

$$TIR = \sum_{T=0}^{n} \frac{Fn}{(1+i)^n} =$$

I = Discount rate (IRR)
Fn = Cash flows during the period *n*
n = Number of periods

A conventional[4] cash flow would be one that benefitted these two aspects:

> I) Disbursements (net cash outflows) that have occurred in the early years and receipts (net cash inputs) that will occur in subsequent years, featuring just a reversal of the cash flow.
> II) The sum of the receipts overcomes disbursements.

In the case of a conventional flow, according to Descartes' Theorem, there is only one positive root ($x^* = 1 + i^*$) for the IRR equation, with attention to the condition I. The condition II demonstrates that X^* exceeds ' the unit, in other words, $i^* > 0$, soon there will be only an Internal Rate of Return.

In the end, the use of IRR assumes that cash flow will always be reinvested for the same fee. That doesn't happen, what makes it illogical use the IRR under these circumstances. The model of the IRR, as it was conceived and interpreted, allows inferring that the intermediate cash flows when they are positives (incomes), they are remunerated at a rate of interest equal to the IRR, whereas negative cash flows (disbursements) are funded by the same rate. As this premise is untrue, the IRR may differ substantially from the market rate and compromise all the analysis of the feasibility of the project.

Most of the times, however, we are facing unconventional cash flows, those in which alternate inflow and outflow during the time, mischaracterizing the linearity of the cash flow. As we know, the IRR calculation means in solving a polynomial equation of degree n. So, the more cash flow changes sign, the more we will have roots in the equation.

BARBIERI presents an interesting example, formulated in the following terms: "*A company has invested in a large event $1,000,000 temporary Convention Center, by celebrating the passage of the Millennium. She profits, as a liquid result a year later, $2,400,000. However, at the end of the following year, it suffers a condemnation that makes it compensate the Municipality $430,000, for the cost of removing the facilities, in addition a fine of 1 million. The minimum rate set by the company attractiveness is 20% per year.*"

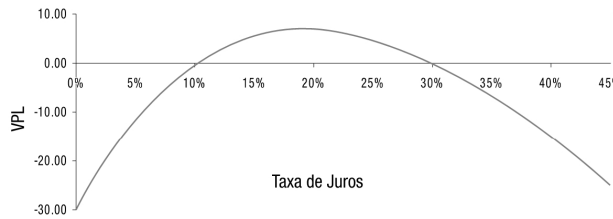
[4] BARBIERI, José Carlos; ÁLVARES, Antonio Carlos Teixeira e MACHINE, Claude. Taxa Interna de Retorno: Controvérsias e Interpretações. GEPROS. Gestão da Produção, Operações e Sistemas – Ano 2, vol. 5, out-dez/07, p. 131-142

The NPV calculation in line with the rate of interest is given by the following formula:

$$VPL = -1.000 + \frac{2.400}{(1+i)} - \frac{1.430}{(1+i)^2}$$

VPL = NPV

If we match the equation to zero, we will find the Internal Rate of Return on investment. It can easily be seen in the case of a resolution of 2nd degree equation that will have two answers: 10% and 30%. If we adopt an interest rate of 20%, we will have an NPV of 6.94%. So, if the IRR is 30%, we should accept the project because IRR > NPV. If we chose 10% IRR, the project could not be viable because IRR < NPV (20%). How can we solve it? The chart below represents this function:



Source: Barbieri e ali

The NPV is negative for a Minimum Acceptable Rate of Return (MARR) less than 10% or above 30%, what determines that the investment should not be done under such circumstances. The investment would only be feasible if the MARR is between 10% and 30%. This seems odd! For a project with 20% MARR would be feasible, the same project would not be practicable with 5%. It makes BARBIERI conclude that: "The IRR set with the interest rate that nullifies the Net Present Value of cash flow does not represent the measure of return on investment.

From a financial point of view and according to the mathematical model of the IRR, intermediate positive flows should be applied by the IRR and the negative ones should be also funded by the same rate. If there is an abrupt reversal of sign for cash flow, all the investment (cash outflow) could be rescued by the IRR at any time during the execution

of cash flow. In this case, the investor would be getting all paid by IRR and he'd be borrowing, the same project, surplus resources to the same value of IRR. It makes no sense, because, from the point of view of the company, the logic is reversed; i.e. in the case of a loan, the less interest rate is the ideal. In the case of investment logic, it occurs the opposite exactly.

In these cases, there is no way to use the IRR as a method of gauging the profitability of the Project. In addition, if there isn't a clear idea of how the cash flow of the business has been behaving over time; how to propose (and to approve) a Financial Economic Recovery based on the IRR? It just doesn't make sense and it can increase distortions.

In this case, the appropriate hypothesis is not to use the IRR for regulating and controlling the concessions. In the case of legalization of a concession contract, claiming IRR imbalance and the need to rebalance the contract, the most appropriate is, before all, to perform thorough expertise to find out the actual cash flow behavior during the analysis period.

As a result, we can observe that the IRR cannot have a static character because it is influenced by exogenous and endogenous factors. If the Financial Economic Rebalancing is done, considering the immutability of the IRR, the dealer will have heavy losses (in case of worsening of the economic scenario) or he will receive monopolistic gains and profits above the agreed values on the market.

The decisions of the controlling bodies, and especially the Judiciary Branch, they are often taken – I repeat – misguided bases because the IRR, when treated in a static way, could not greatly reflect the real profitability of the project.

Accordingly, alternative methods are possible as the modified IRR, having as consequence the marginal cash flow. However, the major problem remains: the misunderstanding of the limits and scope of IRR and alternative methods to evaluate the return on investments. Decisions, both Court of Audit of the Union as the Judiciary based on the IRR, feature strong distortion in relation to reality, causing wrong decisions. Most of the time, it makes no sense to be regulated by IRR, even judging based on it. Also, it is absurd to politicize the issue.

Consequently, it is necessary a deeper analysis of the Economic Financial Recovery Institute in the administrative contract, by placing the debate on real bases, scientifically solid and simply not to

repeat institutes that only affect the actual proposed problems. Such understanding is urgent, because one of the ways for the resumption of economic development is the recovery of infrastructure projects in the country.

3 Conclusion

The regulation of public service concessions in Brazil by Internal Rate of Return presents a series of problems, both the use of the IRR, as an instrument of adjustment and measurement of profitability of concessions, as well as benchmarking instrument of economic-financial balance of the contract.

In this way, to regulate the IRR concessions can be unsuitable, by this instrument, although easy to understand, it cannot capture all the nuances of the cash flow of the project. Furthermore, if the cash flows are multiple ones, we have seen that there are more than one IRR, what makes its use impractical.

Finally, we have seen that mechanisms such as "marginal internal rate of return", whose goal is to isolate the flows of funds that have not been provided in contract, can be used as a technical output, but still far from an adequate regulation of the contracts.

Finally, it is expected that other mechanisms are used to prevent the immense distortions made by adjusting the IRR.

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"GREEN" BANKING AS A FORMAT OF SOCIAL RESPONSIBILITY IN ENVIRONMENTAL ECONOMICS

E. G. SHERSHNEVA

MARCOS NÓBREGA

The article examines the environmental-responsible ("green") banking as a sustainable development format in the transition context of most countries to the "green" economy model. The purpose of the study is to analyze "green" banking in different countries and update the treatment of the Russian banking sector to the environmental-oriented business principles. During the research were used the systematic analytical approach to the study of "green" banking theoretical foundations, the generalization techniques, the comparative analysis. The empirical base was the data of UNEP and the WWF (World Wildlife Fund), the official reports of Russian banks. Summarizing the different researcher`s view points on the concept of "green" banking, the authors concluded that eco-oriented banking contributes to the "triple profit" effect: increasing economic efficiency, reducing the harmful effects on the ecosystem and improving the bank`s social image. As a comparative analysis result of the "green" banking development in the countries (Brazil, Russia, India, China), it was concluded that at this time the Russian banking sector is immature in the implementation`s processes of environmental principles and initiatives. While the other countries demonstrate a large-scale progress in "green" banking practices. It is established that the Bank of Russia, in contrast to regulators from other countries, is not a "locomotive" of environmental-responsible behavior of Russian financial institutions: only a few major banks on a voluntary basis adhere to environmental business-principles and implement "green" financial instruments. The recommendations proposed by the authors in the "green" banking can be useful for the Bank of Russia in the financial sector`s strategy. The results can be used by Russian banking institutions in the preparing local documents in the corporate social responsibility`s field. In conclusion, the authors emphasize the importance of the bank greening financial solutions in the reduction the anthropogenic load on the ecosystem.

Keywords: banking sector, socially responsible banking, environmental responsibility, "green" banking, "green" financing, environmental risks.

Problems and relevance of the research topic

Population growth and the corresponding increase in the consumption of natural resources are accompanied by such adverse effects as environmental pollution, loss of biodiversity, climate change. The situation is aggravated by the irresponsible behavior of business entities, which in the pursuit of high financial results leave a devastating environmental "footprint" without thinking about the prospects of future generations. These conditions pose a threat to the normal existence of both human civilization and the planetary environment.

In modern society, there is a debate about the role of social and environmental responsibility of various participants in economic relations. Commercial organizations, receiving economic benefits from interaction with the environment, do not consider their activities from the position of the possibility of making a feasible contribution to the improvement of the environment, which in the long term does not contribute to the creation of conditions for human development. In this regard, the environmental-responsible consciousness of modern leaders should be considered as an essential component of goal-setting, and management and financial decisions are key determinants of environmental change.

In the context of environmental modernization, the term "sustainability" has become widespread, which reflects the whole range of relationships in society, designed to minimize the negative consequences of "unstable", strategically murderous for the planet production and consumption patterns. The combination of global challenges has reoriented economic science in search of ways of further development. Modern economists, who are not indifferent to the fate of the planet, suggest moving from the model of "uncontrolled, thoughtless" growth to the model of "green" growth, which is based on the principles of responsibility and stability.

The effectiveness of the transition to an eco-oriented ("green") economy and the achievement of the decoupling effect depend on many factors. In many countries, the main mechanism for transforming the economy into a "green" format is the corresponding adjustment of the financial sector. Distribution processes in the financial market, carried out by the participants of financial relations (on the basis of the principles of social and environmental responsibility), can have

a significant impact on the vector of "green" progress and further contours of socio-economic development of the state.

Given the dominant role of the banking sector in the structure of the financial market, there is no doubt that commercial banks, as elements of the "circulatory system" of the economy, have a chance to become catalysts for "green" transformations by redistributing financial resources on the principles of social and environmental responsibility. In this regard, the development of the conceptual foundations of eco-responsible banking as a driver of "green" growth becomes urgent. The question today is as follows: the choice of investors in the field of investment depends on the future.

This article develops the thesis of the strategic importance of greening financial decisions that are made by commercial banks based on the analysis of previous theoretical and empirical research.

The authors actualize that the implementation of social and environmental principles in banking activities will allow to achieve synergy of economic effect and environmental benefits. In the long term, this will contribute to improving the living conditions of people and, as a result, will provide the banking sector with a solvent customer base, which, of course, will strengthen the foundations of the banking system.

The aim of this work is to study the state of eco-responsible ("green") banking in different countries and to characterize the position of the Russian banking sector in line with global environmental trends.

The first task is to analyze theoretical views on the content of eco-oriented banking and substantiation of social and environmental responsibility as a key element of a sustainable model of banking business ("green" banking).

The second task is the generalization of different points of view of researchers on the interpretation of the concept of "green" banking and the formulation of the author's definition of the concept.

The third task is to conduct a comparative analysis of the state of" green "banking in emerging markets and to study the international experience of activation of" green " initiatives in the banking sector.

The fourth task appeals to the problems of the development of "green" banking in Russia and involves the proposal of recommendations to stimulate eco-responsible banking.

The author's conclusions and proposals formulated in the framework of the above tasks, determined the originality and scientific novelty of the study.

Based on the results of other researchers and their own conclusions, the authors came to the conclusion that the actualization of social and environmental responsibility among the participants of the financial market is an integral element of the "green" progress of modern states. Taking into account global trends, the Russian banking sector will have to "consciously" transform business processes in the context of "green" challenges, which in the future will contribute to improving the environmental image of our country and creating more favorable conditions for people's life.

Degree of study and elaboration of the problem

According to foreign authors *R. M. Lalon* [1], *Cornée S. and A. Szafarz* [2] indicator point for the development of socially responsible banking was adopted in 2003, when some of the world's leading banks such as *Citigroup Inc., The Royal Bank of Scotland, Westpac Banking Corporation*, was adopted on social and environmental installation in the field of credit and project financing (the"equator Principles"[*"equator Principles"* aimed at managing social and environmental risk in project financing and apply to projects of more than $ 10 million USA.

The principles assume the division of funded projects into groups (A, B, C), each of which corresponds to its level of environmental safety. For example, group A includes potentially the most dangerous environmental projects. At the same time, there are minimum requirements for environmental and social responsibility for all groups of projects [3].

Further, since the 2010s in the foreign scientific literature there has been an increase in research interest in the subject of socially-oriented banking. Thus, the evolution of the paradigm of sustainable development marked the beginning of the concept of sustainable banking as a system of scientific views on socially responsible banking. Supporters of the concept of sustainable banking *N. Biswas* (2011) [4], *Cornée S. and A. Szafarz* (2014) [2] consider the socially-oriented banking as financial intermediation that is based not only on economic but also on non-economic (social, ethical, environmental) criteria. In the process of development of scientific ideas about the "responsible"

banking business there was the formation of various research areas (Fig. 1) who study the activities of financial institutions that do not set as a priority goal to achieve maximum economic efficiency in any way available.

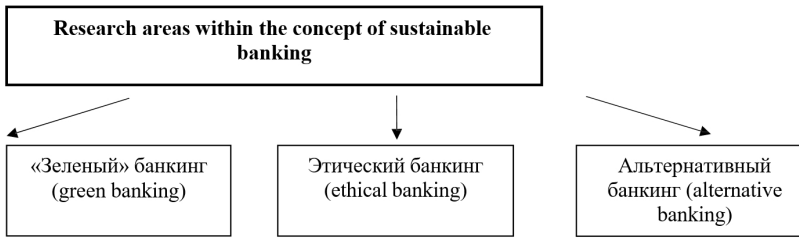

Fig. 1. Trends in responsible banking research

A number of researchers, such as *S. Bahl (2012) [5], N. Singh & B. Singh (2013) [6] M. Prasetyo (2015) [7], N. Kapoor (2016)* [8] characterize ecological and responsible banking in the context of the theory of "green" banking, which finds an equilibrium position between the economic benefits and effective marketing strategies based on the solution of several environmental problems, including the inversion of the climate, air quality, reduction of biodiversity. Supporters of the concept of "green" banking believe that long-term economic projects, which take into account natural laws, in the end are cost-effective, and implemented without taking into account long-term environmental consequences-unprofitable.

The authors of the *L. San-Jose, L. Retolaza & Gutierrez-Goiria (2011) [9], Paulet, E., Parnaudeau, M. & F. Relano (2015) [10], V. S. Chew, L. H. Tan & S. R. Hamid* (2016) [11] reveal in their works the theme of "ethical" banking, implying that the concept of banking, based on principles of economic sustainability, ecological responsibility, social inclusion, ethics and transparency.

In the work of *K. Mettenheim & Butzbach*, O. (2014) [12] is considered "alternative" banking as a new format of banking activities, which involves the economic benefits of a combination of social and environmental benefits (alternative banking).

Regardless of the object, all considered approaches take the environmental component as a mandatory component of socially responsible banking. At the same time, the term "green" banking is considered to be more widely used and widespread.

The table systematizes the interpretation of ecological ("green") banking in foreign scientific literature.

Table Approaches to the interpretation of "green" banking according to a number of foreign authors

The source	The contents of "green" banking
Raad Mozib Lalon [1]	"Green" banking. Any form of banking, from which the country and the nation receives environmental benefits. The traditional bank becomes a "green" bank, directing its operations to improve the environment. Green banking also includes the development of inclusive banking strategies that will ensure economic development and environmental impact.
Sarita Bahl [5]	"Green" banking is a new strategic imperative within which the development of eco-friendly banking operations aimed at protecting the environment takes place.
Hardeep Singh, Bikram Pal Singh [6]	"Green" banking as a concept is proactive and "smart" thinking based on the understanding that today's actions to protect the environment can benefit our future generations.
Neeru Kapoor, Meenu Jaitly, Rishi Gupta [8]	Green banking is a combination of operational improvements, technologies and customer habits in the banking business, aimed at increasing respect for the environment and reducing the carbon footprint.
Broto Rauth Bhardwaj, Aarushi Malhotra [13]	Green banking is an innovative strategy of the bank based on the introduction of technologies, processes and products that lead to a significant reduction in the carbon footprint, as well as contribute to the sustainable development of the banking business.
Mark G. Dotzour, Sunshine Manning [14]	Green banking is a banking model that creates opportunities to mitigate the negative impact on the human environment, as well as allows the private sector to become an economic beneficiary of environmental activities.

The analysis of the interpretations presented in the table made it possible to form the author's point of view that eco-oriented banking is a strategically important format of banking activities aimed at obtaining a "triple win": increasing economic efficiency, reducing the harmful impact on the ecosystem and improving the social image of the bank.

The authors 'publications [5, 8, 10, 13] are dominated by the opinion that the eco-responsible banking business includes three

components: financing of environmental projects, development of "green" banking products, improvement of internal processes in order to reduce the harmful effects on the ecosystem. As rightly noted by the researchers, the survival of the banking industry is inversely proportional to the level of global warming [6]. This phrase in metaphorical form gives the audience to understand that the consciousness, will, behavior and habitat of our contemporaries determine the future demographic and socio-economic conditions, and, as a consequence, the effectiveness of the banking system, designed to serve our heirs.

In the works of Russian authors the concept of "green" (ecological) banking as such is not considered. Domestic researchers mainly focus on "green" Finance," green "investments and" green "financial instruments, while assigning to banks the role of creditors engaged in the practice of" responsible " financing.

Thus, in the opinion of *Porfierev*, the concept of "green" Finance implies a set of financial products and services, the development, production and use of which is focused on reducing environmental and climatic risks of development, and "green" financing includes expenditures, primarily investments, from public and private sources, in the development and implementation of projects and programs in the field of ecosystem support [15].

In the collective monograph (*Rubcov*), the term "green Finance "can be used to describe a wide range of ways to Finance technological processes, projects and companies related to environmental protection, as well as financial products (tools) and services with an environmental component" [16]. Two key points can be distinguished from the presented quotations. First, financial products and services, defined as the basic component of green Finance, are in practice the prerogative of commercial banks. Second, investments in green projects are also made through bank participation.

Researcher *V. V. Arkhipova*, considering the practice of "green" Finance in different countries, the leading role in the "greening" of the global financial system assigns to various banks as the main participants of the financial market. She notes that one of the most important components of the emerging global market is the emerging "green" banking system, which gradually denotes a multi-level "network" of financial intermediaries: "green" banks and development banks, commercial banks with separate eco-financial units [17]. In a

number of works of other authors there is also a point of view that further "green" growth significantly depends on the willingness of financial intermediaries (mainly banks) to invest in environmental activities [18; 19].

Among the studies devoted to the development of forms of "green" investment, one can distinguish scientific articles by T. N. Sedash [20], N. Ah. Khutorova [21],

N. N. Yashalova [22], which deals with environmental-oriented lending, leasing, operations with environmental securities. The authors characterize "green" financial instruments from diverse positions: as profitable active operations of the financial market, as image elements of corporate culture and as forms of environmental responsibility of credit and financial institutions.

Thus, in Russian scientific thought there is no holistic view of " green " banking as a business trend of the modern economy, but the researchers still focus on the sustainable interdependence between the greening of financial decisions of commercial banks and reducing the anthropogenic load on the ecosystem.

Analysis of the state of "green" banking in different countries

The principles of eco-responsible business are actively implemented in the banking practice of different countries. Thus, According to the international Finance Corporation in 2006, 100 credit and financial institutions took into account such principles in their strategies, and in 2016 their number increased to 1553. Of these, 44.8% are in the EU, 16.5% in the US, 7.6% in Australia, 5% in Canada, 3.4% in Brazil and South Africa, 2.5% in Japan, 1.1% in China, 15.7% in other countries [17]. Thus, the leaders of the "evil" initiatives in the financial sector are developed countries, and developing countries take the position of conformists.

According to IFC calculations, in 2016 the share of green instruments in the total volume of bank loans was 12% in Japan and China, 14% in the US, 20% in the UK, 30% in India [17]. Note that the values of this relative indicator of China and India are close to the values of developed countries, which indicates the presence of implicit development potential. It should be assumed that in the future, countries with growing markets, such as Brazil, India and China,

which are part of the BRICS group, will be able to strengthen their environmental positions.

The BRICS group[1] is a system of growing economies characterized by an imbalance in the processes of achieving the decoupling effect. This is reflected in the problems of regulation of various sectors of the economy, ensuring economic growth, and the preservation of ecosystem well-being.

Next we analyze the state of environmental banking in Brazil, India, China and Russia.

The World Wildlife Fund (WWF) in 2015, has prepared a summary report on the assessment of the status of the financial markets of the BRICS countries in the context of sustainable development (Financial market regulation for sustainable development in the BRICS countries)[2].

The study analysed the accounts of a number of commercial banks and interviewed high-level representatives of banking and regulatory institutions. 5 factors were chosen as the main characteristics of the assessment of the degree of "greening" of banking activity:

A - Adoption of environmental and social criteria in banking (hereinafter-e & s criteria);

B - the Presence in the banking practice, the criteria of "green" investments;

C - Assessment of environmental and social risks in the credit process;

D - Information on environmental and social activities in official bank reports;

E - presence of regulatory environmental and social norms in banking legislation.

Each factor was evaluated by the degree of severity: high, medium, low.

Based on the WWF report data, the authors have compiled a generalized graphical interpretation of the factors reflecting the state of "green" banking in Brazil, China, India, and Russia (Fig. 2).

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[1] South Africa, which is part of the BRICS group, was not analyzed by the authors, as this state has the lowest rates of gross domestic product, population size, which makes it possible to make an assumption about less significant scale of pollution compared to other countries of the group.

[2] Source: WWF Report «Financial Market Regulation for Sustainable Development in the BRICS Countries, 2015», режим доступа https://wwf.ru/upload/documents/wwf_international_report_brics.pdf

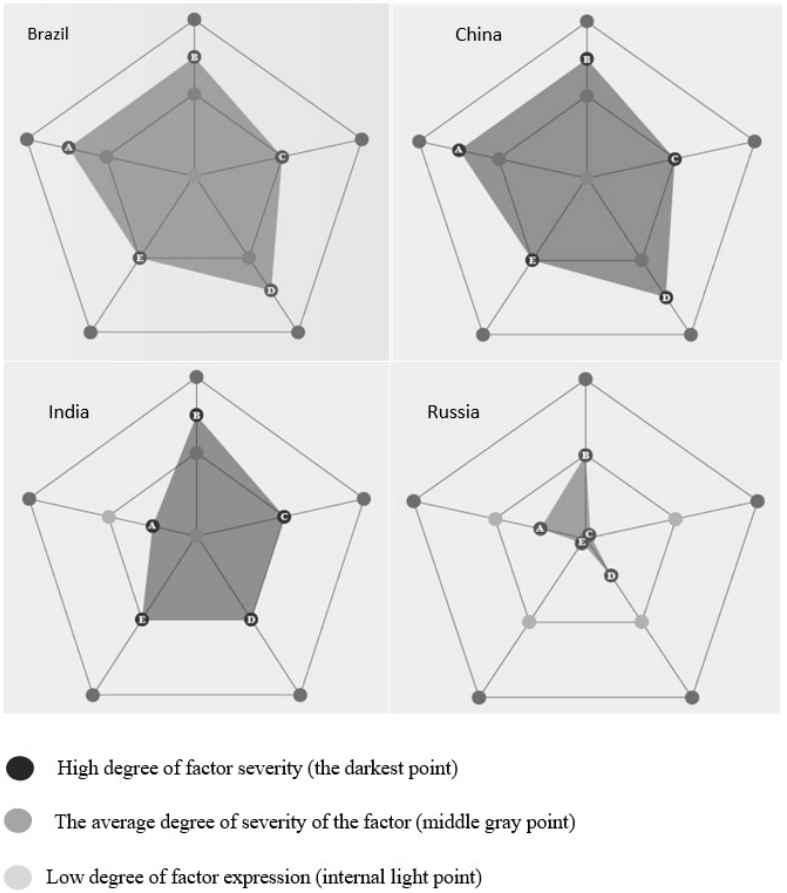

Fig. 2. Comparative characteristics of "green" banking in BRICS countries

The area of the ABCDE polygon is an integral indicator of the development of environmental initiatives in the banking sector of the states. As seen in Fig. 2, Brazil and China are more progressive in the degree of development of "green" banking. The graphical profiles of these countries are identical.

In Brazil, the eight largest banks adhere to the equator Principles and UNEP international standards[3] and implement e&S criteria in their operations.

[3] The United Nations programme for the environment

In 2011, the Central Bank of Brazil (Banco Central do Brasil) became the first regulator in the world to monitor eco-risks based on capital adequacy reports under the Basel III standard, and in 2014 introduced requirements for all banks to create a system for assessing social and environmental risks [17].

In China, the seven largest banks comply with the equator Principles (in limited form) and UNEP standards, as well as implement sustainable development policies based on E&s criteria. In 2007, the Commission on regulation of banking activity in China has developed the principles of "green" lending, which has evolved from a simple language to the assessment system of economic and environmental efficiency of the financed projects on the basis of standardized indicators.

The people's Bank of China together with UNEP, has developed recommendations for the greening of the banking sector, including support for and increased use of green financial instruments. The Industrial and Commercial bank of China was the first in China to publish a study on the impact of environmental factors on the credit and reputational risks of commercial banks [23].

In India, only three of the largest banks are guided by E&S criteria in their activities and publish relevant reports. No Indian Bank has joined the equator Principles and UNEP initiatives.

Fig.2 illustrates that factor A (Adoption of environmental and social criteria in the banking sector) is below average. An important step towards greening can be considered the 2007 edition of the Reserve Bank of India Advisory notice for commercial banks, which contains the concepts of environmental and social risks. The Reserve Bank of India is in the process of developing a "road map" for green banking in the country, exploring various aspects of "clean" financing.

Judging by the schedule (Fig. 2), the greatest lag is observed in Russia, since all factors are expressed slightly. Thus, factors C and E are estimated at almost zero level. Unlike other countries, the fundamental Russian normative and legal documents regulating banking activities absent any determination, requirement, or regulatory treatments of the ecological-oriented nature[4]. The strategic plans of the Bank of

[4] The Authors analyzed the Federal law from 02.12.1990 № 395-1 "On banks and banking activities", the instruction of the Central Bank of the Russian Federation from 28.06.2017 G. No. 180-I "on mandatory standards of banks", Regulation of the Central Bank of the Russian Federation dated 06.08.2015 No. 483-P"on the procedure for calculating the amount of credit risk based on internal ratings".

Russia do not provide for any imperatives or incentives to increase the environmental activity of financial institutions. Russian banks are not obliged to 180-I "on mandatory standards of banks", Regulation of the Central Bank of the Russian Federation dated 06.08.2015 No. 483-P"on the procedure for calculating the amount of credit risk based on internal ratings".implement social and environmental principles in their activities and to assess environmental risks in lending to projects. The WWF report States that environmental principles are not a priority for the majority of Russian financial market participants and do not matter in the process of loan approval.

Among the Russian banks that voluntarily implement environmental principles of doing business, it is possible to distinguish only a few major banks: Public Company (PC) "Sberbank", PC "VTB", state corporation "Vnesheconombank", JSC "Alfa-Bank". These banks provide loans to environmental projects that emit environmental-oriented affinity card, realize environmental charity projects, open the "green offices", disclose in the official report information about their environmental- oriented activities. However, none of the Russian banks has joined the equator Principles and only Vnesheconombank is a member of UNEP.

In Russia, there is no so-called" environmental public pressure", which refers to the requirements of interested groups and the General public to implement environmental measures. Discussion of environmental issues is less firmly entrenched in public debates in Russia, and advocacy groups are far less influential than in other countries. In such circumstances, banks may perceive environmental regulation as an additional burden on their core business and an increase in their costs. After all, certification of "green" projects," green "audit, disclosure of a large amount of information – all this creates additional costs and increases costs for all participants of" green "projects, which reduces their competitiveness compared to" non-ecological " investment [23].

Aware of the important role of the banking system as a "money provider" of environmental projects, many countries are taking measures to develop "green" initiatives in the banking sector.

For example, in Mongolia, the thirteen commercial banks on a voluntary basis, adopted the principles of sustainable development, developed by the Association of Mongolian banks together with the

Ministry of environment and the Bank of Mongolia[5]. These banks are investing in environmentally friendly projects, and publish reports on environmental activities.

The Bank of Bangladesh, using economic incentives and moral convictions, has approached the banking sector with an initiative to develop lending to agriculture, small and medium-sized "green" enterprises. In 2011, the regulator introduced requirements for the adoption of E&S criteria and mandatory environmental risk management, as well as provided a "refinancing window" in the amount of US $ 25.5 million for banks providing responsible financing. In addition, macroprudential measures in the form of relaxed capital adequacy requirements and/or bank ratings are used as incentives.

In 2012, the Colombian government and the Association of Colombian banks prepared an environmental agreement called the "Green Protocol" (Protocol Verde), which sets out recommendations for banks to provide "green" loans and risk assessment. The Protocol also provides an analysis of the impact of investing in environmentally unfriendly projects.

The Central Bank of Morocco has established a working group on green Finance. Currently, meetings are held with the management of commercial banks to explore the possibilities of regulatory stimulation and standardization of eco- responsible banking. Some Moroccan banks have fixed E & S criteria in their operational activities.

"Road maps "for the greening of the banking system and the development of" green " financial instruments are developed and implemented in banking practice by regulatory authorities of Nigeria, Kenya, Peru, Vietnam, Indonesia [17].

According to the scientist *R.M. Lalon* from the University of Dhaka (Bangladesh), "green" banking is turning from a "fashionable" phrase into a global trend, both in strengthening the theoretical foundations of eco-oriented banking, and in the system of enhancing international cooperation in this field [1].

For example, in 2009, as a result of the cooperation of 28 banks, the Global Alliance for Banking on Values was formed, which focuses credit institutions on eco-responsible business format.

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[5] Here and further we used the data of the UNEP report "Green Finance for Developing Countries: Needs, Concerns and Innovations, 2016", available at: https://www.seforall.org/sites/files/Green_Finance_for_Dev_Countries.pdf]

In 2012 the sustainable Banking Network was established as an informal organization that brings together banking regulators and banking associations interested in the development of environmentally sustainable practices and regulations. In 2015, as part of the UNEP Financial Initiative (UNEP Financial Initiative), a working group was established to issue a road map for banks and other investors to ensure a favourable market environment for the development of green banking. In the same year. a Coalition of investments in green infrastructure (Green Infrastructure Investment Coalition) was formed to unite the efforts of government agencies, international organizations and banks to cooperate in the financing of green projects. In turn, at the suggestion of the largest European banks in Frankfurt am main, the community of Sustainable financial initiatives (Sustainable Finance Initiative) was established in 2017 in order to contribute to the formation of infrastructure for a sustainable financial sector [23].

Thus, the dualism of domestic and international factors stimulates the promotion of "green" banking in different countries. The banking community of developing countries recognizes that there is a need for financial institutions to adhere to environmental principles, on the one hand, through market innovation, voluntary standards, public-private partnerships, on the other, through public support policies.

Discussion of the research results

The study showed that the model of "green" banking as a necessary format of socially oriented banking activity is being developed in different countries. Commitment to environmental thinking becomes part of banking strategy and corporate governance. In the most "advanced" banks, environmental factors are taken into account when lending projects, E&S criteria are introduced into the risk management system, attempts are made to conduct stress testing to identify the relationship between environmental factors and financial results. Foreign banks, following corporations, have adopted the practice of special reporting on environmentally sustainable development, including it in the corporate social reporting.

The analysis of the state of "green" banking in different countries leads to the conclusion that in these historical conditions the Russian

banking sector is immature in the implementation of environmental-oriented activities. There are at least two reasons for this situation.

First, unlike the regulatory authorities of other countries, the Bank of Russia's policy is not aimed at promoting the greening of the banking system and the development of green financial instruments.

Secondly, most Russian commercial banks either do not implement E&S principles in their activities or do it as a "cosmetic" image measure. Only the largest Russian banks (Sberbank, VTB, Vnesheconombank, Alfa-Bank) have built eco- responsible strategies. Earlier in the study [24] we have already noted that these credit institutions are the flagships of "green" banking, lending projects that are aimed at significantly reducing the anthropogenic impact on the environment and the introduction of resource-saving technologies.

The practice of a number of other Russian banks demonstrates cooperation in financing green projects with the European Bank for reconstruction and development (EBRD) and the International Finance Corporation (IFC), which invest in energy efficiency projects. The EBRD and IFC instrument is an environmental and technical support programme for small and medium-sized enterprises, which is implemented through commercial partner banks through the provision of targeted credit lines. The main partner banks of the EBRD are PC "Promsvyazbank "and JSC" ROSBANK", the partner banks of IFC are PC" Transcapitalbank", JSC" Loco-Bank", PC" absolute Bank", JSC" Prime Finance " [24].

At the same time, other positive changes in the Russian banking practice, reducing environmental pressure, should be noted. First, it is the greening of internal banking processes. Most banks install energy-and water-saving equipment, introduce digital-service and electronic document management. Customers who use the bank's services remotely, save paper, fuel, protect the road surface, do not pollute the atmosphere with exhaust gases. Secondly, the issue of "green" card products (affinity cards) by banks. Issuers of these cards deduct some of the interest for the card transaction to charitable environmental foundations. Affinity-procedures allow the bank and its clients to feel socially responsible market players. Third, it is sponsorship of projects to improve the environment. Financial investments in such projects allow not only to improve the environmental situation, but also to improve the social image of banks.

However, some "fragments" of eco-oriented banking products are clearly insufficient in the context of environmental problems` escalation. More substantial amounts of green investments are needed, both in the form of loans and in the form of other financial instruments. For example, for the Russian economy, the green securities market and green leasing remain undeveloped financial segments.

According to the authors, the stop factors of development of "green" practice in the Russian banking sector stem from the following circumstances:

1- the concept of environmental responsibility as an element of corporate culture is a relatively new "genre" for the Russian banking sector, which explains the unwillingness of many banks to include this element in their strategic plans;
2- the Russian banking society still maintains the rigid paradigm of "corporate egocentrism", which asserts profit maximization as the sole purpose of business;
3- not all shareholders and top managers are aware of the benefits of implementing green banking: there is still a "conserved" perception of environmental initiatives as ineffective;
4- few Russian enterprises perceive environmental responsibility as an integral element of sustainable development of society and economy, so there are a small number of market entities that can be the objects of "green" lending;
5- short-term resource base of medium and small banks does not allow them to Finance long-term environmental projects;
6- the absence of normative documents fixing social and environmental responsibility as a principle of activity, which characterizes the passive position of the regulator (Bank of Russia) in stimulating "green" investments;
7- the environment of Bank employees is not saturated with a sufficient number of specialists with knowledge in the field of modern standards of corporate social responsibility and experience in their implementation in the activities of credit institutions;
8- in General, the active position of society, business and the state in the field of solving environmental problems has not been formed.

As the main direction of development and promotion of environmental responsibility of Russian banks can be identified taking into account the existing foreign experience in this direction. Environmental-oriented investment, development of "green" financial products, publication of reports on environmental activities, professional training of specialists in the field of social responsibility are already being scaled up in foreign practice and can be integrated into the Russian banking sector.

It also seems appropriate to adapt in the banking environment ISO: 26000 "Guide to corporate social responsibility" [national standard of the Russian Federation "Guide to social responsibility" GOST R ISO 26000-2012, date of introduction 15.03.2013], in which a separate section is devoted to environmental protection. The document notes the priority of an integrated approach to reducing environmental impact, taking into account the direct and indirect economic, social and environmental consequences of the activities of market participants.

The Bank of Russia should pay attention to promoting green banking practices. The environmental banking system can ideally be built in such a way that the industrial sector is interested in environmental projects, and it would be beneficial for banks to be "green". From the point of view of enterprises, this aspect can be revealed in the order of lending, preferential terms at a reduced percentage. And for eco- oriented banks, "bonuses" should be provided in the form of easing reserve requirements or reduced capital adequacy requirements.

Main conclusions

Eco-oriented banking (green banking) is a strategically important concept of banking aimed at achieving three-component synergy: increasing economic efficiency, reducing the harmful impact on the ecosystem and improving the social image of the bank. By channeling their resources to support the green image of our planet, banks are able to create "benefits of the future." The appeal to the positive practices of foreign experience should convince bankers of the effectiveness of socio- environmental principles of business management, which in the strategic perspective will ensure a strong competitive position.

The comparative analysis of development` factors of "green" banking in the BRICS group countries allows us to conclude that

the Russian practice is significantly behind other countries. The leading position in the group is taken by the Brazilian banking system, in which the eight largest banks adhere to international standards of social and environmental responsibility. In addition, the Central Bank of Brazil has the status of the world's first regulator, which has introduced requirements for all banks to establish a system for assessing social and environmental risks.

The advancement in questions of the greening of banking activity shows China, where the seven largest banks implement environmental policies based on international standards and regulatory bodies are taking active measures to promote green banking practices.

In India, the three largest banks are guided by E&S criteria in their operations. None of the banks using international standards. It is noteworthy that the Reserve Bank of India is in the process of developing a "road map" for the "green" financing development.

The experience of other developing countries has shown that Central banks, together with national banking associations, act as engines of green banking initiatives. In addition, at the international level, there is an active creation of interbank alliances in order to provide favorable conditions for the "green" banking development.

Summarizing the results of the study, we can conclude that there is a positive practice. However, it is fragmentary, discrete in nature, since there are no instruments of regulatory impact on the environmental behavior of banks.

Only four major Russian banks have implemented E&S-criteria in their strategies, and no bank has adopted international standards.

In Russia, where at the moment there is not yet enough internal experience in conducting environmentally responsible business, the best foreign models can be adopted by Russian banking institutions in the implementation of corporate social responsibility principles in the main financial activities. Following these guidelines leads to a rethinking of the monetary role in the global economy, makes managers think about real values.

We all live and work on the same planet, and a long happy life is needed not only for us, but also for future generations.

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AUTHORS

E. G. Shershneva
Ural Federal University named after the First President of Russia B.N. Yeltsin, Yekaterinburg, Russia

Eric Castro e Silva
Professor of Financial and Tax Law at the Recife Law School of the Federal University of Pernambuco (UFPE). He served as a member of the Administrative Council for Tax Appeals (CARF), a collegiate body of the Ministry of Economy, for 7 years. PhD in Law from the University of São Paulo (USP) and Master in Law from the University of Cambridge/England.

Filipe Lôbo Gomes
Post-doctorate in Law at UFPE and at the University of Coimbra. PhD in State, regulation and inductive taxation at Federal University of Pernambuco (UFPE). Professor at the Law School of Federal University of Alagoas and at CESMAC, where he teaches at Undergraduate and Master's levels. Attorney General of the Court of Justice of Alagoas State.

Frederico Turolla
Doctor and Master in Business Economics from Fundação Getúlio Vargas – SP (2005, 1999), with an exchange in International Economics and Finance from Brandeis University (1997). Graduated in Economic Sciences from the Federal University of Juiz de Fora.

Gustavo Kaercher Loureiro
Doctor in Law. Former Adjunct Professor of the Law School of the University of Brasília – UnB. Associate Researcher at the Center for Studies in Regulation and Infrastructure of Fundação Getúlio Vargas – FGV-CERI.

Marcos Nóbrega
Substitute Counselor of the Court of Auditors of Pernambuco (TCE-PE), Associate Professor IV at Federal University of Pernambuco (UFPE) – Law School of Recife; Bachelor, Master's and PhD in Law at UFPE, Bachelor in Economics at UFPE, Bachelor in Business at the Catholic University of Pernambuco (Unicap). Visiting scholar at Harvard Law School, Senior Fellow at Harvard Kennedy School of Government, Visiting Professor at University

of Lisbon, Visiting Scholar at Singapore Management University and Visiting Scholar at the Massachusetts Institute of Technology – MIT.

Rafael Véras de Freitas
PhD and Master in Regulatory Law from Fundação Getúlio Vargas – FGV-RJ. Postgraduate in State Law and Regulation from Fundação Getúlio Vargas – FGV-RJ (2010). Postgraduate in Business Administrative Law from Candido Mendes University (2008). Former professor of the LL.M. in Infrastructure and Regulation at FGV – FGV-RJ. Former Coordinator of the Concessions Module and Postgraduate Infrastructure at FGV. Member of the Institute of Administrative Law of the State of Rio de Janeiro – IDAERJ.

Ronny Charles L. de Torres
Federal District Attorney. PhD student in State Law at UFPE. Master's in Economic Law from UFPB. Tax Law graduate (IDP). Legal Sciences graduate (UNP). Member of the National Chamber of tenders and procurement of the General Consultancy for the Federal Government. Author of several legal books, including: *Leis de licitações públicas comentadas* (11ª Edição. Ed. JusPodivm).

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His groundbreaking volume offers an innovative exploration of public contracting, moving beyond traditional administrative law and infrastructure governance. It introduces sophisticated concepts such as contractual incompleteness, the "Klink Boat Theorem," and dynamic non-linear equilibrium, emphasizing adaptability in the face of uncertainty and systemic shocks. Grounded in both theoretical rigor and practical insight, the book navigates through contemporary challenges including information asymmetry, the impact of structural reforms, and the necessity for responsive, context-sensitive governance frameworks.

With contributions rooted in detailed case studies and interdisciplinary analyses, the work critically evaluates conventional financial models, procurement systems, and the modernization of public administration through digital platforms. Furthermore, it underscores the emerging role of sustainability, framing environmental responsibility as integral to public economic governance. Intended for academics, policymakers, and practitioners, this book provides essential tools for understanding and managing the complex realities of public contracts in today's rapidly evolving world.

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