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ESCOLA DE ENGENHARIA DE SÃO CARLOS**

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**Corporate Governance Policies: A Behavioral
Contribution to Compliance Systems**

São Carlos

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Contribution to Compliance Systems**

Monografia apresentada ao Curso de Engenharia de Produção, da Escola de Engenharia de São Carlos da Universidade de São Paulo, como parte dos requisitos para obtenção do título de Engenheiro de Produção.

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This work would not be possible without the support of so many people that listened to my thoughts, criticized them and kept me on track to deliver the best I could.

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ABSTRACT

For the greatest part of the 20th century, Economics and its correlated areas relied on premises of rational human behavior. With the advancement of the emerging field Behavioral Economics, questions arose regarding whether different human behavior assumptions could lead to different outcomes and predictions. Merging together three fields – Behavioral Economics, Corporate Governance and Ethics – this thesis aimed at assessing whether compliance systems and policies differ if based on a rational or behavioral model of human decision-making. Two distinct compliance frameworks emerged: Classical Compliance Systems and Behavioral Compliance Systems. In order to test whether these distinctions indeed had validity in real-world examples, two multinational corporations that were accused of fraudulent operations were studied. It was proposed that, before the scandals, both companies relied on Classical Compliance Systems that did not have internal validity. In one of the corporations, a transition after the scandal from a Classical System to a behavioral-based Hybrid System (which mix core Behavioral policies with peripheral Classical ones) was also identified. It is hoped that this study will allow a better comprehension of the effectiveness of compliance systems, as well as boosting efforts towards applying behavioral models to other Corporate Governance policies.

Keywords: Behavioral Economics, Corporate Governance, Ethics, Corporate Scandals, Human Behavior, Compliance Systems

RESUMO

Durante grande parte do século 20, a Economia e suas áreas correlatas basearam suas teorias em um modelo racional de comportamento humano. Com a emergência da área da Economia Comportamental, muitas dessas premissas do homem racional começaram a ser questionadas: diferentes premissas sobre o comportamento humano poderiam levar a diferentes resultados e previsões? Correlacionando-se três áreas de estudo – Economia Comportamental, Governança Corporativa e Ética – esta monografia tem como objetivo analisar se os sistemas de Compliance de grandes corporações diferem caso sejam baseadas em premissas clássicas ou comportamentais de tomada de decisão. Dois frameworks distintos para explicar os sistemas de compliances foram identificados: Sistemas Clássicos de Compliance e Sistemas Comportamentais de Compliance. Para se testar a validade dos modelos identificados, exemplos reais de duas corporações multinacionais envolvidas em escândalos corporativos foram estudados. Constatou-se que ambas empresas baseavam seu compliance nas premissas do Sistema Clássico de Compliance antes das fraudes ocorrerem. Ademais, em um dos casos, observou-se que houve uma transição do Sistema de Compliance Clássico para um Sistema de Compliance Híbrido baseado em premissas comportamentais (i.e. que agrupava premissas centrais dos Sistemas Comportamentais de Compliance com políticas periféricas dos Sistemas Clássicos). Oito proposições acerca da estruturação dos Sistemas Clássicos e Comportamentais de Compliance foram propostas, para que futuros estudos possam desenvolver melhor as características de ambos. Espera-se que este trabalho permita uma melhor compreensão da efetividade dos diferentes Sistemas de Compliance existentes. Também, busca-se aumentar o escopo de atuação das ciências comportamentais, alavancando estudos que misturem modelos comportamentais com outras políticas de Governança Corporativa.

Palavras-chave: Economia Comportamental, Governança Corporativa, Ética, Escândalos Corporativos, Comportamento Humano, Sistemas de Compliance.

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LIST OF ABBREVIATIONS AND ACRONYMS

AML	Anti Money Laundering Taskforce
BIT	Behavioral Insights Team
CCS	Classical Compliance Systems
CDC	Central Disciplinary Committee
CEO	Chief Executive Officer
CFO	Chief Financial Officer
COO	Chief Operational Officer
CRB	Compliance Review Board
EBS	Enron Broadband Services
EES	Enron Energy Services
EMH	Efficient Markets Hypotheses
GDP	General Disciplinary Processes
HR	Human Resources
KYC	Know-Your-Counterpart Process
LDC	Local Disciplinary Committee
LLC	Limited Liability Company
RAC	Risk Assessment and Control Department
S&P500	Standard and Poor's 500 Index
SEC	Securities and Exchange Commission
STR	Suspect Report Transaction
WARP	Weak-Axiom of Revealed Preferences

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1 INTRODUCTION

It would be unthinkable, few decades ago, to correctly predict how the field of Economics would have been shaped nowadays. Since its birth, the field has been so closely related to Mathematics that it simply could not progress without fancy models to describe it – be it demand and supply functions, macroeconomic correlations, or plain human behavior.

Human behavior, of course, is not only the field of study of Economics. Social sciences as a whole are interested in the consequences of our interactions and – most importantly – how the different behaviors shape the world we live in. Every social science model individuals, their interactions and outcomes in a perspective that suits their needs: from history to sociology, science progresses from different assumptions that may lead to divergent conclusions.

However, Economics has its intricate details: it is the only social science that has been able to create a unique framework of ideas and assumptions that surpassed every other minor research path, effectively creating a core of ideas into which academics rely on up to the present days, either to corroborate or refute parts of it (PIKETTY, 2014).

This set of ideas is, of course, continuously changed over time: many of the assumptions that have been held in the past were discredited or partially changed as time – and business cycles – went by. For instance, it would be hard to find a pure Keynesian or Monetarist today, given the amount of information the economics field could absorb with the supply crisis of 1970s or the financial collapses of 2001 and 2008.

Even though the main framework has changed significantly, some of its ideas still remained rock solid. Of all its assumptions, the pre-requisites for a good model of human behavior inside Economics remained unchallenged for many years – precisely until 1971, when two rather unknown Israeli psychologists would fundamentally shake the structures of how Economics has been modeling human behavior for the greatest part of its history.

It is important to be fair with other social sciences: plenty of them – especially psychology and sociology – challenged fiercely the “rational model” economics relied on. However, the criticism was smothered by the small validity and low statistical rigor of the studies. In addition, empirical data for reliable conclusions were scarce.

Why, then, did these two psychologists revolutionize the field of Economics? Using experimental data – allied with astonishingly well formulated controlled experiments – they were able to use statistics in their favor to effectively reject many of the hypotheses that permeated the economic model of human behavior. In the end, individuals were not as rational as one might think, and indeed suffered from systematic biases, using heuristics

that were incompatible with how economics based its assumptions on behavior.

It is important to mention that rational theory of human behavior allows for human errors, as it is clear that even rational individuals live in a world permeated by uncertainty. However, what the rational models could not easily incorporate – and what Kahneman and Tversky spend much of their life studying – is that human behavior is comprised not only of random errors, but also systematic errors which may cause individuals to choose suboptimal outcomes on a recurrent basis.

The reaction from the status-quo was fierce, but not able to reverse the trend Daniel Kahneman and Amos Tversky championed: Economics had to incorporate realist hypotheses vis-à-vis human behavior – which, of course, made models extremely more complex.

The corroboration of the importance of Behavioral Economics came at the most outstanding fashion: with three Nobel Prizes in the last 15 years (Daniel Kahneman in 2002; Robert Shiller in 2013; and the newly laureated Richard Thaler, winner of the 2017 prize). Few research fields in economics were able to grasp such a devastating success in such a short span of time.

From finance to public policy, the Behavioral Economics field was able to effectively change the way research has been made. However, much needs to be done: how many fields still rely on unrealistic assumptions of human behavior and how their consequences would be changed by applying the Behavioral Economics framework?

Clearly, one of the fields still untapped is Corporate Governance. In simple terms, the field is mainly interested in analyzing how different groups influence corporate performance (i.e. what are the duties and responsibilities of the different stakeholders inside a corporation, or – in a much more summarized view – *Quis custodiet ipsos custodiet?* [who will guard the guards themselves?]).

Much like Economics, Corporate Governance has a main framework – the Agency Theory perspective – that comprises the majority of studies in the field. Mainly interested in the interaction between principals (shareholders) and agents (executives), not much is said about the how human behavior deviations may alter the assumptions borrowed from mainstream economics.

Therefore, how can Behavioral Economics assist the field? Given that Corporate Governance is a vast and multidisciplinary research domain, the Behavioral Economics insights have to be applied into specific domains where its assumptions may bring the most fruitful results.

One key area where a more realistic assumption of human behavior can potentially unlock rewarding results is in the study of corporate misconduct. In a classical approach, the board exists in order to deter undesirable behavior by those that run the day-to-day

business.

However, how can the board – defining the corporations’ policies – do such thing? First of all, it is extremely important to understand what are the mental processes that lead individuals to engage in improper behavior. Again, different frameworks may require different solutions.

Despite the fact that the correlation of Behavioral Economics and Compliance Systems allow different questions and answers to be made, few studies indeed tried to analyze and understand (with the exception of Van Ees, Gabrielsson and Huse (2009)) the importance of merging new behavioral assumptions in consolidated models of Corporate Governance policies. This study intends to reduce this research gap by studying one of such policies – the compliance system of corporations.

Given the importance of how different assumptions regarding human behavior can drastically alter outcomes of corporate policies, *this thesis has aims at bringing together Behavioral Economics, Corporate Governance and ethical frameworks into a unified understanding of how human behavior may affect Corporate Governance mechanisms – in this case, how compliance systems are structured around human behavior and how these assumptions may influence the system’s effectiveness.*

Therefore, two main research questions are answered in this thesis:

(a) What are the differences between compliance systems based on a rational model of human behavior versus the Behavioral Economics framework vis-à-vis human decision-making? What is the effectiveness of each type?

(b) How fraudulent companies structure their compliance systems? Are there fundamental changes in post-fraud compliance structuring?

The present thesis is divided into two main parts: the first one is comprised of a comprehensive literature review regarding the abovementioned three topics – Behavioral Economics, Corporate Governance and ethical/unethical decision-making. At the end of the topic, efforts will be made towards contributing to how these fields may profit by using fruitful discoveries from each. In addition, an explanation regarding the different compliance systems (Classical Compliance Systems and Behavioral Compliance Systems) will also be stated.

The second part is targeted at discussing the validity of the systems developed in Part One. The method used by this thesis was qualitative analysis, through interviews and public documents.

Looking at two multinational corporations that were charged with fraudulent operations in the last decades, a thorough analysis of the compliance systems will be made in order to see whether the categorizations made in Part One indeed make sense and are

corroborated by real-world examples. The first of the case studies – Enron Corporation – will be done using secondary data, mainly from the vast amounts of reports and reviews done after the famous scandal that led to the corporations' downfall.

The second case study, however, will be done using primary data collected by the authors. An in-depth explanation of the compliance system of this multinational corporation (which will remain undisclosed due to confidentiality issues) will be made, together with an interview with the Brazilian branch Head of Compliance.

Responsible for the regional compliance system of this multinational corporation – which has over 5000 employees and yearly revenues of more than \$1.5 billion in Brazilian soil – the interview allows for a deeper understanding of how one of the key players of this corporation sees their compliance structuring effectiveness.

The last part of this thesis aims at wrapping up the discussion and develops eight propositions for future studies, according to the structural factors of each type of compliance system. In addition, these propositions will be tested according to each of the case studies abovementioned.

Finally, it will be proposed new research paths into this newly inaugurated field of Behavioral Corporate Governance. It is clear that a vast number of Corporate Governance policies and mechanisms still remain unchallenged by the new forms of thinking vis-à-vis human behavior, meaning that high-yielding endeavors can surely still be made.

We hope to be able to comprehensively explore a tiny part of this fascinating way of thinking about corporations.

2 DEVELOPMENT

2.1 Part One: Literature Review and Compliance Frameworks

2.1.1 Behavioral Economics

2.1.1.1 Definition of Behavioral Economics

In order to discuss what Behavioral Economics is, it is best to explain what it is not. As a framework that clashes fiercely with mainstream economics (mainly the neoclassical assumptions), it is recommended to elucidate what the rational model of human behavior is before delving deeper into Behavioral Economics' assumptions of human decision-making.

Economics is usually considered the most powerful of the social sciences for two things: first, it has the biggest influence in public policy, acclaimed as an indispensable tool for good management; second, as already explained in the Introduction, it is the only one that has a unified, core theory from which the great majority of assumptions derive (THALER, 2015).

The constrained optimization, combined with the concept of equilibrium, is at the core of economic thinking. From Walras to Arrow, the idea of how individuals behaved in order to achieve the outcomes that maximized their welfare remained unchallenged. Therefore, one of the most important premises of economic theory is that people choose by optimizing, with unbiased choices: what economists usually call as “rational expectations” (THALER, 2015).

The theory of individual decision making is usually consisted of two approaches: the choice-based approach, which focuses on the decision maker's choice behavior; and the preference-based approach, which assumes that individuals have a defined preference relationship among the set of possible alternatives. The latter requires that possible choices have to satisfy certain rationality axioms (MAS-COLELL, WHINSTON AND GREEN, 1995).

A preference relation \succeq (i.e. $x \succeq y$ reads as “x is at least as good as y”) is rational if it complies with two properties (MAS-COLELL, WHINSTON AND GREEN, 1995):

- *Completeness*: for all x, y included in a set of alternatives X , it must follow that $x \succeq y$ or $y \succeq x$, or both.
- *Transitivity*: for all x, y, z included in a set of alternatives X , if $x \succeq y$ and $y \succeq z$, then $x \succeq z$.

Mas-Colell, Whinston and Green (1995) point out that, while the completeness assumption states that rational individuals have a well-defined preference among any two

alternatives, transitivity implies that “it is impossible to face the decision maker with a sequence of pairwise choices in which her preferences appear to cycle” (p. 7).

Some important questions arise: when both theories of individual decision making (i.e., choice-based and preference-based approaches) converge? What are the underlying assumptions? The answer lies on the Weak Axiom of Revealed Preference (WARP), which reflects the expectation that individual choices exhibit consistency among themselves.

In simple terms, it states that if the decision maker chooses alternative x when y is available, then it can never be the case that the decision maker chooses y when x is available or feasible. It can be shown that, when the choice theory satisfies the WARP and is defined for all subsets of the set of alternatives X , then it is completely equivalent to a theory of decision making that grounds itself on rational preferences (MAS-COLELL, WHINSTON and GREEN, 1995). The framework, together with the assumptions of unlimited computational capacity, are at the core of the rational model of human behavior.

The common individual that standard economic theory studies is usually defined as *homo economicus*, or economic man: this decision maker comes across choice sets with exogenously predetermined preferences; is self-interested; is outcome-oriented; and has a time preference that allows him to distribute consumption over time in a manner that maximizes his welfare (GINTIS, 2000). The questioning of this type of model of economic behavior started to arise with the emerging science of choice, which attracted considerable attention and cuts across major social sciences (THALER and SUNSTEIN, 2009).

As a dissonant voice to the idea of *homo-economicus*, Thaler (2015) affirmed that decision makers are not generally rational, as standard economic theory predicts. First, ordinary optimization problems that individuals usually face are too complex for them to solve, something that Herbert Simon already observed in the late 1940’s with his bounded rationality and satisficing behavior concepts (SIMON, 1947). In addition, the foundations upon which individuals make choices are not unbiased, as there is a wide array of heuristics and biases that influences decision-making – from framing effects up to loss aversion phenomena (TVERSKY, KAHNEMAN and SLOVIC, 1982).

It is important to mention that the standard economic theory does not require that individuals make perfect choices or forecasts. It requires, on the other hand, that these choices or forecasts are unbiased, meaning that they cannot be systematically wrong in a specific direction (THALER and SUNSTEIN, 2009), which the Heuristic and Biases approach proved to be false.

While there is not a unique approach towards conceptualizing Behavioral Economics, Diamond and Vartiainen (2012) defined Behavioral Economics as an “umbrella of approaches that seek to extend the standard economics framework to account for relevant features of human behavior that are absent in the standard economics framework” (p. 05).

Mullainathan and Thaler (2000) focused the definition on the investigation of market's behavior when agents display human limitations and complications. Also, Behavioral Economics tries to extend the framework by introducing psychological foundations that had not permeated through the economics field until recently (CAMERER, 1999).

Even though market forces, learning and evolution can minimize human traits, they do not render these qualities irrelevant (MULLAINATHAN and THALER, 2010). There is a strong conviction that, by introducing psychological insights in economic analysis, the Economics field as a whole will improve its realism – generating more insights, better predictions and policy decisions (CAMERER, LOEWENSTEIN and RABIN, 2004).

These psychological phenomena include limits on rational calculation, willpower and greed, and the natural psychophysical properties of preference and judgment (CAMERER and MALMENDIER, 2004). The main idea of Behavioral Economics is to increase the plausibility of economic theories, while maintaining the accurate predictions of field data (TECK-HUA, LIM and CAMERER, 2006).

Camerer and Malmendier (2004) stated that Behavioral Economics is an approach to economics with the comparative advantage of using knowledge from neighboring social sciences. Tomer (2007) identifies six key dimensions that Behavioral Economics diverge from standard or Mainstream Economics: narrowness, rigidity, intolerance, mechanicalness, separateness and individualism. The author also stated that, even though many academics define themselves as Behavioral Economists, their approaches and researches are substantially different.

Camerer (2005), on the other hand, understands that Behavioral Economics is not restricted to the study of human imperfections, but also to how these characteristics influence organizations as well, as it is natural to extend the implications of individual behaviors inside bigger networks.

The common approach used by behavioral economists is by studying how actual behavior deviates from the predictions of rational choice theory. This methodology is usually called the “Heuristics and Biases” approach (CAMERER, 2004). However, it is important to mention that the methods used in Behavioral Economics do not differ from other Economics branches. While at its birth Behavioral Economics relied heavily on evidence generated by experiments, this is no longer true: behavioral economists have outpaced this method, especially turning to field data, field experiments, computer simulations and brain scans (CAMERER, LOEWENSTEIN and RABIN, 2004).

Loewenstein (1999) tried to clear out the misunderstanding of merging Experimental Economics and Behavioral Economics as a unified enterprise: while the first is defined by the use of experimentation as a research tool, the latter is methodological eclectic”, defining themselves based on the application of psychological insights to economics. According

to the author, Experimental Economics has not been able to bypass the problem of low external validity of laboratory experiments. In addition, there are many rules developed in Experimental Economics that are too restrictive to behavioral economists, such as the seldom collection of data like demographics, self-reports, response times, and other cognitive measures (CAMERER, LOEWENSTEIN and RABIN, 2004).

There is a common syllogism that embeds much of the western society: the more freedom individuals have, the more well-being they will have. The more choice individuals have, the more freedom they have. Therefore, the more choice individuals have, the more well-being they have.

However, as Schwartz (2016) pointed out, the ever-increasing choices individuals face come at costs that involve greater regret, missed opportunities and unrealistic comparisons. According to the author, individuals would be much better off if they embraced voluntary constraints to their freedom of choice, lowered their expectations, avoided comparisons and looked for what is good enough (much like the satisficing behavior Herbert Simon once coined) instead of having a maximizing behavior.

If the standard rational model of individual behavior is wrong in many situations, does it follow that individuals have irrational behaviors? While Ariely (2015) asserted that Behavioral Economics is founded on the premise that human beings are irrational, Kahneman (2011) stated that all the research in human decision-making was not to prove that individuals are irrational (however it may be described), but only that they are not properly described by the rational choice theory.

2.1.1.2 History of Behavioral Economics

Before diving into the key conditions for the emergence of Behavioral Economics studies, it is important to take one step back and analyze how economics and psychology developed as a whole. Economics was established before psychology, which was generally viewed as correlated to philosophy in the eighteenth century. The economics as a field emerged in the nineteenth century much due to physiology thinking (SENT, 2004).

The endeavors to increase the interface between psychology and economics are not something new. Actually, much of the first efforts in combining both fields emerged during the birth of classical economics. Adam Smith, more famously known for his book *The Wealth of Nations* published in 1776, previously wrote a book that would become the cornerstone of this new emergent area. The book *Theory of Moral Sentiments*, written in 1759, argued that behavior was much determined by the struggle between “passions” and the “impartial spectator”. Passions included physiological needs (such as hunger) and emotions (such as fear and anger). While Smith believed that behavior was heavily influenced by such passions, he argued that individuals could shield themselves from such

controls by viewing their behavior from the perspective of an outsider – the impartial spectator (ASHRAF, CAMERER and LOEWENSTEIN, 2005).

In addition, Camerer (1999) argued that Smith described all the ways in which people care about the interest of others, something partially neglected in modern mainstream economics. Many of the concepts that are studied nowadays by the field of Behavioral Economics was presaged by Smith's older book, such as loss aversion, "dual-process" frameworks, insensitivity to opportunity costs, and willpower and fairness (ASHRAF, CAMERER and LOEWENSTEIN, 2005; CAMERER, LOEWENSTEIN and RABIN, 2004; CAMERER, 2005). Jeremy Bentham, Irving Fisher and William Jevons, among others, were economic researchers that drew heavily on psychological intuitions at the beginning of the twentieth century (CAMERER, 2005).

One interesting aspect regarding emotion is that economics sees rational decision-making stripped out of all emotions. The idea of emotions clouding judgment is one that is viewed as common sense until nowadays. The story of a railroad supervisor, called Phineas Gage, challenges this idea of good decision-making without emotions: following an accident that damaged his ventromedial prefrontal cortex – an area known for emotional processing – Gage's personality changed dramatically and he was unable to feel empathy, show concern for others and to plan for the future. Research showed that patients with damaged areas linked to emotions are unable to engage in an efficient decision-making, as rational theory predicts (SOLTES, 2016).

Therefore, according to these academics, stripping out emotions completely renders individuals that are unable to make choices and that, when they are able to draw any decision at all, it is usually poor options (SOLTES, 2016; TALEB, 2002).

If many early academics indeed incorporated psychological insights in their economic interpretations, what happened during the twentieth century that almost completely excluded Psychology from future economic models? Bruni and Sugden (2007) suggests that Vilfredo Pareto's reformulation of choice theory was responsible for the elimination of Psychology from Economics, by basing economic theory on principles of rational choice. The author calls this shift the "Paretian turn". The early-twentieth century scholar championed the assumption that Benthamite utility was revealed by choice, an objective fact (CAMERER, 2005). However, Pareto was not solely responsible for this new economic interpretation of reality: many academics completed this turn in the 1930s and 1940s, such as John Hicks, Roy Allen and Paul Samuelson.

The rejection of academic psychology was also related to the maturity and research methodologies of both fields of study. Psychology in the late nineteenth century and early twentieth century was focused on Freudianism and how memories influence the unconscious behavior. This went against a mechanistic view that was necessary for the advancements of the economics field (SENT, 2004). At the beginning of the twentieth century, economists

hoped to build a discipline much like the natural sciences. Back then, psychology was emerging and was not solidly based in scientific propositions, providing a too unsteady foundation for the economics field.

The solution was to construct an account of economic behavior built from assumption about the nature of homo-economicus (CAMERER, LOEWENSTEIN and RABIN, 2004; THALER, 2000). Theorists, such as Paul Samuelson and John Hicks, worked hard to formalize economics mathematics –with physics as inspiration. Psychologists were more concerned with experimental traditions rather than mathematical structure (CAMERER, 1999). John Maynard Keynes was one of the few early-twentieth century theorists to absorb psychological insights into his economic models (AKERLOF and YELLEN, 1987). According to Thaler (2015), Keynes thought that “emotions”, what he called “animal spirits”, played an important role in individual decision making.

In the 1940s, economists took up logical positivism, with a special twist (called F-Twist, after Milton Friedman): focusing on the accuracy of predictions using economic models with rational individual agents, economists at the time believed that theories should be based on the outcomes of the models, and not on the accuracy of their assumptions. This method of evaluation was addressed as the “as-if” approach. (CAMERER, 2005; THALER, 2015). The F-Twist allowed economists to develop their theories without psychological foundations, modeling decision makers as rational individuals. In addition, it was believed that the lack of psychological assumptions seemingly simplified the analytical models, due to the fact that economists at the time believed that relaxing rationality assumptions would lead to intractable models to work with (CAMERER, 1999).

The strong claims by Milton Friedman were met with skepticism by some notable authors, including Paul Samuelson and Herbert Simon. Samuelson defended operationally meaningful theorems (i.e., a hypothesis about empirical data that could be refuted under ideal conditions) and a descriptivist view of the nature of scientific explanation (i.e., theories as restatements of assumptions and conclusions). Herbert Simon, on the other hand, proposed the “principle of continuity of approximation”, according to which conclusions based on assumptions will be approximately correct if the real world’s conditions are considerably close to the theory’s assumptions (SENT, 2004). Thaler (2000) suggests that mainstream economics, especially since the 1940s, did not incorporate behavioral assumptions because these models would require different skill sets when compared to traditional models. Incorporating emotions and quasi-rationality assumptions were a major hassle.

At the same time, the interface between psychology and economics was undergoing a deep transformation, much due to Simon’s contribution to the cognitive revolution, which sought to lessen the dominance of behaviorism in the field. This revolution renewed the connections between cognitive psychology and old Behavioral Economics (SENT, 2004).

The Nobel-Prize winner Herbert Simon, in his 1947's book *Administrative Behavior*, pointed out to problems concerning the Organizational Theory, as the latter is usually modeled in such a way that firms seek to maximize profits by selecting a volume-price pair, using production functions and cost functions to do so. However, not much is said about the motivations that lead to maximizing decisions by the organization's participants. Moreover, it did not ask how the actors acquired the information required for these decisions, how they make the necessary calculations and whether they are capable of making decisions postulated by profit-maximizing theory. The term "bounded rationality" became widespread, and studies about how people actually make decisions, as well as their computational and cognitive limitations were first developed by Simon. The Nobel-Prize winner was also a critical voice on the mainstream economics' aversion to direct observation of economic decision-making (THALER, 1989).

However, despite the fact that Simon's influence was noticeable, it did not alter the fundamental direction of economics (CAMERER, LOEWENSTEIN and RABIN, 2004). Camerer (1999) suggests that, due to the fact that economics was becoming increasingly intertwined with mathematical theories, this approach would not be easily blended with algorithmic theories.

Simon and his colleagues, especially at Carnegie Mellon University, sought to characterize a restricted rational agent on the assumptions of economic and administrative theory, especially regarding organizations. At that time, computer simulation was a new tool to develop their behavioral contributions. These simulations allowed researchers to study behavioral models more thoroughly, as they required the analysis of more variables using advanced techniques (SENT, 2004).

There are four groups of contributors to the resurgence of behavioral studies in economics in the middle of the 20th century: Carnegie Mellon researchers, with names such as Simon, James March and Richard Cyert, mainly focused on the study of bounded rationality; researchers at Michigan, led by George Katona, were interested in attitude research and psychological economics; a group of Oxford researchers studied uncertainty and coordination; and a number of researchers at Stirling advocated eclecticism and integration. Although distinct, these initiatives all shared the principle that the mainstream focus on profit maximization and utility was not the best explanation to the behavior of economic entities: instead, they focused on recognizing empirical laws that described behavior more precisely (SENT, 2004).

Again, much of the early efforts in studying and applying behavior in economics were not fruitful (SENT, 2004). However, the development of the economics field led to an initial acceptance that certain anomalies could not be permanently ignored (CAMERER, 2005). Concomitantly, developments in cognitive psychology started to provide important insights to the economics field (CAMERER, 1999).

In the economics realm, Allais (1953) provided a thought experiment that pointed towards discrediting the belief that people behave according to Bernoulli's principle. More importantly, it showed that people do not act according to the Independence Axiom, which postulated that two gambles mixed with an irrelevant third one have to maintain the same preference order (MAS-COLLEL, WHINSTON and GREEN, 1995). Ellsberg (1961) also provided an experiment demonstrating that people are averse to ambiguity, not behaving according to Bayesian principles or according to Savage's Subjective Expected Utility approach. Markowitz (1952) hypothesized that the utility function has three inflection points, the middle one being the "customary wealth" of the individual. Preceding Kahneman and Tversky's efforts, Markowitz also believes that utility should be measured in relative levels, rather than absolute ones. Lastly, Strotz (1955) also raised questions related to how individuals choose and plan present as well as future consumptions, indicating that individuals have inconsistent intertemporal choices.

The beginning of what is today known as Behavioral Economics started in the 1970s, with Daniel Kahneman and Amos Tversky as champions of such new endeavor (SENT, 2004). However, many other scholars also contributed to the emergence of the field, such as Ward Edwards, Duncan Lee, Baruch Fischhoff and Paul Slovic (CAMERER, 1999; CAMERER, LOEWENSTEIN and RABIN, 2004).

Studying about the perspective of expected utility maximization and Bayesian probability judgments, Kahneman and Tversky evaluated how these explanations actually fitted behavior phenomena (SENT, 2004). Both authors published two cornerstone studies of what would be later drawn heavily by the Behavioral Economics field: their 1974 article *Judgement Under Uncertainty: Heuristics and Biases*, published in *Science*, described how individuals created mental shortcuts to make probability judgments – sometimes grossly deviating from statistical principles; and their 1979 paper entitled *Prospect Theory: Decision Making Under Risk*, published in *Econometrica*, which proposed an alternative model to the Expected Utility Theory. The latter is one of the most widely cited papers in the history of the acclaimed journal (CAMERER, LOEWENSTEIN and RABIN, 2004).

Kahneman and Tversky's contribution can be traced to three areas: heuristics and biases, framing effects, and Prospect Theory. While the first focus on shortcuts in reasoning, the second emphasizes how choices actually support underlying preferences; finally, the latter is a formalization of their insights into a theory of decision making under risk (SENT, 2004).

The Behavioral Economics field went further with Richard Thaler – 2017's Nobel Prize winner, who is professor of Behavioral Sciences at the University of Chicago. Having collaborated with many of Kahneman's work, especially through a strong collaboration when both academics worked together at the University of British Columbia, Thaler made important contributions to the areas of consumer choice, self-control, savings behavior,

finance and public policy (SENT, 2004; KAHNEMAN, 2011; THALER, 2015).

In turn, the abovementioned authors influenced a wide range of new economists, such as Colin Camerer, Linda Babcock, Catherine Eckel, George Loewenstein, Matthew Rabin, David Laibson, Terry Odean and Sendhil Mullainathan (SENT, 2004). A later landmark was also achieved in 1985, during a conference at the University of Chicago, at which a far-reaching range of scientists participated: names such as Simon, Tversky and Kahneman clashed against the rationalists' team, with important names, such as Robert Lucas and Merton Miller (THALER, 2015).

The conference witnessed efforts at reconciliation, but also considerable divergence (SENT, 2004). It is also important to mention the efforts of Eric Wanner, who, as the president of the Russell Sage Foundation, took an interest in combining economics and psychology, organizing occasional meetings with psychologists and economists (THALER, 2015).

The 1980s gave birth to the institutionalization of Behavioral Economics, with important achievements including the foundation of the Society for the Advancement of Behavioral Economics, the beginning of the *Journal of Economic Behavior and Organization*, as well as the *Journal of Economic Psychology*. Additionally, annual meetings and two handbooks were also developed in the aforementioned decade (SENT, 2004).

During the 1990s, a special issue of *Quarterly Journal of Economics* was devoted to Behavioral Economics (CAMERER, LOEWENSTEIN and RABIN, 2004). With the old and new heavyweight behavioral economists gaining traction, efforts were made towards formalizing and testing psychological predictions. Furthermore, recognition came from prestigious institutions, such as the American Economic Association, the John Bates Clark Medal, and the MacArthur Foundation (SENT, 2004).

Lastly, Behavioral Economics achieved important appreciation in public affairs. In late 2000s, the United Kingdom government championed an initiative to make government more effective and efficient by creating the Behavioral Insights Team (BIT). Even if the official mission of the BIT was broad, the basic idea of the team was put behavioral science insights into practice. The BIT intervened in a wide array of topics, ranging from tax collection to home insulation (HALPERN, 2015; THALER, 2015).

2.1.1.3 Deviations from Standard Economic Models

The Behavioral Economics agenda consists of two main topics: searching instances where behavior differs from what the standard economic model predicts; and demonstrating that these deviations are economically significant and, therefore, must be taken under consideration. Mainly, three assumptions of human behavior have been thoroughly

challenged: unbounded rationality, unbounded willpower and unbounded selfishness (MULLAINATHAN and THALER, 2000).

While in many social sciences models explicitly incorporated boundaries in those three concepts, economics literature did not deeply explore the implications of models considering such human limitations (JOLLS, SUNSTEIN and THALER, 1997).

2.1.1.3.1 Bounded Rationality

Herbert Simon was one of the first to formalize the problems of bounded rationality. In his book *Administrative Behavior*, he stated:

“It is impossible for the behavior of a single, isolated individual to reach any high degree of rationality. The number of alternatives he must explore is so great, the information he would need to evaluate them so vast that even an approximation to objective rationality is hard to conceive.” (p. 92, SIMON, 1947)

Actual behavior, according to Simon (1947), falls short of objective rationality in at least three ways: first, rationality requires a complete knowledge of future consequences, while knowledge of consequences is often sparse; second, as future consequences lies in a conceptualized world, imagination must fill the gaps of value anticipation; lastly, rationality requires availability of all possible choice sets, whereas in actual behavior only a few of these possibilities are considered. Simon proposed that human beings satisfice instead of maximize, as they lack the proper requirements for performing the latter.

Simon’s studies may have a lot in common with Kahneman and Tversky’s ones. However, they have a different approach to the inability of maximization: while Simon studied how individuals could behave in a “satisficing manner” instead of a maximizing one, Kahneman and Tversky went one step further, studying heuristics not as a simplification of rational models, but rather as a different methodology and category. While mainstream economics could incorporate Simon’s argument that we are not perfectly rational and, therefore, accept that individuals engage in ways of approximation, they were not willing to accept the much more disruptive nature of Kahneman and Tversky’s findings (TALEB, 2002).

Conlisk (1996) stated that, to avoid problems such as the free lunch fallacy, realistic models should be required to incorporate bounded rationality. In addition, the author bases his adherence to bounded rationality in four main reasons: there is a wide range of evidence in economics and psychology pointing towards this feature of human behavior; models with bounded rationality are successfully descriptive; economic methodology does

not restrict the usage of bounded rationality; and lastly, models of bounded rationality incorporate scarcity, a fundamental concept of economics.

Because of such rational limitations, individuals usually appeal to heuristics and rules-of-thumb when making decisions (DIAMOND and VARTAINEN, 2012). These cognitive tools emerge both in judgments and in choice. The specific biases will be discussed later, but they include overconfidence, optimism, anchoring, extrapolation, mental accounting and probability heuristics. (MULLAINATHAN and THALER, 2000).

Many of the rationality departures are captured by Prospect Theory, proposed by Daniel Kahneman and Amos Tversky in 1979. While the theory will be extensively discussed later, it suffices to say at this point that it is a descriptive theory of how people make choices under uncertainty (MULLAINATHAN and THALER, 2000).

2.1.1.3.2 Bounded Willpower

According to the Behavioral Economics literature, human beings often engage in actions that they know to be in conflict with their long-term interests. These include a wide variety of topics, such as smoking, drug dependency, and health issues (JOLLS, SUSTEIN and THALER, 1997). Thaler and Shefrin (1981) suggested that the concept of self-control can be modelled as an individual, at every point in time, consisted of both a farsighted planner and a myopic doer. Lack of self-control is usually operationalized through hyperbolic discounting, instead of standard economic models that consider exponential discounting. However, as opposed to the behavioral sciences view, some classical economists argue that it can also be equally understood through the lens of information costs (THALER, 2015; POSNER, 1998). The problem of inconsistent behavior due to the fact that individuals may discount the future at variable rates was already discussed by Samuelson in 1937, when he wrote his seminar article about utility functions (THALER, 2015).

2.1.1.3.3 Bounded Selfishness

Standard economic theory does not exclude altruism behavior, although it is mainly focused on self-interest as primary motive for decision-making (MULLAINATHAN and THALER, 2000). However, Behavioral Economics believes that altruism has a key role in utility functions: self-interest is bounded in many different scenarios such as market bargaining sets (JOLLS, SUNSTEIN and THALER, 1997). People seem to behave altruistically or selfishly depending on the behavior of others and their cooperation propensity. Therefore, individuals can be categorized as conditional cooperators, adjusting

their cooperation level according to the willingness of others to cooperate (THALER, 2015).

Fairness is also a key point for understanding human behavior. In an experiment performed by German researchers (and later also unknowingly replicated by Kahneman and his team), researchers placed random pairs of individuals in different rooms. Participants knew the existence of the partner but his identity remained anonymous. A sum of \$10 would be given to the participants, and it was up to one of them (randomly assigned) how it should be split. However, there was a catch: regardless of how the participant who had the right to choose split the money, the other participant had to agree on the division. If the participant rejected the deal, both would walk out empty-handed (BRAFMAN and BRAFMAN, 2008; THALER, 2015).

Researchers wanted to understand how individuals valued fairness. According to standard economic theory, any split that gave the participants a monetary amount should be accepted, as some amount is greater than no money at all. However, what researchers found was that, when the money was not split evenly, most participants presented with an unfair split declined the offer. This consistent behavior of rejecting offers perceived as unfair remained even when higher stakes (such as \$100) were given to participants. However, it is important to mention that how individuals perceive fairness varies from society to society: western societies place a greater emphasis on fairness when compared to indigenous groups, for example (BRAFMAN and BRAFMAN, 2008).

The idea of fairness is also closely related to the deliberate action of individuals. When the same study was conducted with the splitter being a computer instead of a human being, the receiving partner was prone to accept any offer made by the machine. Therefore, when it comes to fairness, the researchers found that it was not the outcome that mattered, but rather the process: this is usually referred to as procedural justice (BRAFMAN and BRAFMAN, 2008).

2.1.1.4 Heuristics and Biases

The study of human decision-making was transformed in the 1970s, when academics, especially Daniel Kahneman and Amos Tversky, started to challenge common models of rational human behavior. Their work focused on heuristics and biases that people rely on during the decision-making process (which can deviate significantly from the rational model predictions). Their work highlighted the mental processes that occur when transforming a complex problem into a manageable query (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

Heuristics can be understood as a simple procedure to assist the gathering of adequate solutions, albeit generally imperfect, to complex problems (KAHNEMAN, 2011).

These heuristics are quite often very useful, but they can, at times, lead to systematic errors and biases (KAHNEMAN and TVERSKY, 1996). The central idea of the heuristics and biases agenda was to propose that judgment under uncertain scenarios often relies on a limited number of heuristics, rather than on a full account of possible outcomes and their expected values (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

Before delving deeper into the heuristics and their biases, a formal approach of rational decision making under uncertainty will be developed.

2.1.1.4.1 Rational Models of Decision Making Under Uncertainty

The formal analysis of decision making involving risk and uncertainty starts at the formal description of risky alternatives: the concept of lottery. This section draws heavily from Mas-Collel, Whinston and Green's book, *Microeconomic Theory* (1996).

A simple lottery can be understood as a list of $L = (p_1, p_2, \dots, p_n)$, with $p_N \geq 0$, where each vector element p_N is interpreted as the probability of outcome N occurring. The vector must contain all the possible outcomes, which is mathematically interpreted as $\sum_n p_n = 1$. It is crucial to mention that the outcomes that may result are certain. While simple lotteries are very useful for economic analyses, there is a more general variant of a lottery, known as compound lottery. Every compound lottery can be reduced to a simple lottery, which is the only lottery of relevance to the decision-maker. However, even though the simple lottery obtained through the reduction of a compound lottery is the only one that matters, the more complex the alternatives are, the heavier the burden carried by rationality assumptions. These assumptions are stronger regarding choice under uncertainty compared to choice under certainty theoretical framework.

How individuals prefer different lotteries is of enormous significance to the expected utility analysis. There are two important assumptions about the decision maker preferences over lotteries: the continuity axiom and – most important – the independence axiom. The continuity axiom states that small changes in probabilities do not change the nature of the ordering between two lotteries. This axiom dismisses the possibility of lexicographic preferences for alternatives with zero probability of outcomes. The independence axiom also states that if one mixes two lotteries with a third one, the preference order of the resulting mixture is independent of the particular third lottery used. This axiom is at the heart of the mainstream theory of choice under uncertainty.

The independence axiom is intimately linked with how preferences can be represented with risky outcomes: given that the independence axiom (and the continuity axiom) is true, it is possible to represent preferences over lotteries with a utility function that has the expected utility form. This result is called the Expected Utility Theorem.

The theorem has two primary advantages: it is convenient analytically and also has a normative guidance, as it can be a valuable guide to decision making. However, as a descriptive theory, it has many flaws and difficulties, such as the Allais paradox (presented earlier), the Machina's Paradox, and induced preferences.

The theory above mentioned relies on the assumption that risk is objectively perceived and summarized by means of numerical probabilities by decision makers. However, it is often the case that individuals make judgments about uncertain events that are not readily quantified. In this case, decision makers usually make subjective estimates. The Subjective Probability Theory states that:

“if states of the world are not associated with recognizable, objective probabilities, consistency-like restrictions on preferences among gambles still imply that decision-makers behave as if utilities were assigned to outcomes, probabilities were attached to states of the nature, and decision were made by taking expected utilities.” (p. 205, MAS-COLLEL, WHINSTON and GREEN, 1996)

The intent of the Subjective Probability Theory is to reveal well-defined probabilistic beliefs by the decision maker's choice. It is a generalization of the Expected Utility Theory.

However, there are problems: the plausibility of the axioms is not independent from the complexity of the choice situations; as they become more complex, these axioms become more constrained and less realistic.

2.1.1.4.2 List of Heuristics and Biases

In this section, the many heuristics already studied will be presented, as well as the framework in which they were analyzed.

Kahneman, Tversky and Slovic (1982) originally identified three main general-purpose heuristics: the availability, representativeness, and anchoring and adjustment.

With the biases that will be highlighted below, one can ask whether it is possible to believe in intuitive judgment from experts, and what are the requirements for truly meaningful experts' opinions.

There are two clear distinct views on this topic: Kahneman (2011) stated that there are very few instances where intuitive judgment can be trusted, and that individuals should always be skeptical with this kind of approach. Gladwell (2007), on the other hand, writes many instances where these intuitive judgments can be better than a more rational decision.

In a somewhat conciliatory article, Kahneman and Klein (2009) stated the premises under which intuitive expertise is valid or not:

- The environment in which the judgment is made must be stable;
- There has to be opportunities for the expert to learn the regularities of the environment;
- An environment of high validity is a necessary condition for the development of skilled intuitions;
- Validity and uncertainty is not incompatible;
- True skills cannot be developed in irregular environments.

The Representativeness Heuristic

The representativeness heuristic states that the subjective probability of an event is determined by the degree to which it is similar in essential characteristics to its parent population; and to the extent it reflects the primary features of the process by which it is generated (KAHNEMAN and TVERSKY, 1972).

The following example, extracted from Kahneman (2011), exemplifies how the heuristic works:

First, a description of a fictitious person (called Linda) is given:

“Linda is thirty-one years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear demonstrations.” (p. 198 KAHNEMAN, 2011)

Next, participants are asked to rank the following scenarios based on its probability of occurrence:

*“Linda is a teacher in elementary school.
Linda works in a bookstore and takes yoga classes.
Linda is active in the feminist movement.
Linda is a psychiatric social worker.
Linda is a member of the League of Women Voters.
Linda is a bank teller.
Linda is an insurance salesperson.
Linda is a bank teller and is active in the feminist movement.”* (p. 198 KAHNEMAN, 2011)

The two critical elements of the list above rely on how individuals assessed the probability of Linda being a bank teller and the probability of Linda being a bank teller and an activist feminist.

While it is clear that the probability of a subset of event has to be less than or equal to the probability of the event itself (i.e., $P(A\&B) \leq \min(P(A)|P(B))$), 89% of individuals ranked the probability of Linda being a bank teller and an active feminist as higher than the probability of Linda being only a bank teller.

This clear logical violation arises from the fact that her description invokes a stereotype that closely relates Linda into being an active feminist rather than a bank teller (KAHNEMAN, 2003). The term "conjunction fallacy" was coined to refer to situations in which people judge a conjunction of two events as being more probable than one of the events in a direct comparison.

It is important to mention an important illusion that arises from the representativeness heuristic: the illusion of validity. This phenomenon emerges from the overconfidence individuals have on their prediction, with little or no regard for the factors that limit the predictive accuracy. It produces an unwarranted confidence between the predicted outcome and the input information used. This illusion is behind the fact that people predict by selecting the outcome (e.g., a person's occupation) that is most representative of the input (e.g., the description of a person), such as in Linda's case. The illusion persists even when individuals are aware of the factors that limit the predictions' accuracy (KAHNEMAN, TVERSKY and SLOVIC, 1982; KAHNEMAN, 2011).

Another famous example of systematic errors arising from the representativeness heuristic can be exemplified by Tom W's example, drawn from Kahneman and Tversky (1973):

A first group was asked to answer the following question:

“Consider all first-year graduate students in the U. S. today. Please write down your best guesses about the percentage of these students who are now enrolled in each of the following nine fields of specialization.

business administration

computer science

engineering

humanities and education law

medicine

library science

physical and life sciences

social science and social work” (p. 238, KAHNEMAN and TVERSKY, 1973)

In this scenario, people often relied on base-rates for each of the nine fields, as they did not have specific additional information.

A second group of people were asked to assess the probability of Tom W belonging

to the abovementioned nine groups. The description was:

“Tom W. is of high intelligence, although lacking in true creativity. He has a need for order and clarity, and for neat and tidy systems in which every detail finds its appropriate place. His writing is rather dull and mechanical, occasionally enlivened by somewhat corny puns and by hashes of imagination of the sci-fi type. He has a strong drive for competence. He seems to have little feel and little sympathy for other people and does not enjoy interacting with others. Self-centered, he nonetheless has a deep moral sense.” (p. 238, KAHNEMAN and TVERSKY, 1973)

In this scenario, individuals usually had a stereotyped image of Tom W. as a computer scientist or engineer. However, with this new additional information, for which its validity has not been assessed, individuals did not rely on a priori base rates, relying solely on this new information given. This phenomenon was coined as base-rate neglect. Even when this experiment was done with psychologists, who supposedly understand the validity of such descriptions, the base-rate neglect bias still persisted.

Kahneman (1973) stated that there are three types of information that is relevant to statistical prediction: a prior or background information (such as base-rates); specific evidence concerning the individual case (such as Tom W’s description); and the expected accuracy of predictions.

In Tom W’s case, expected accuracy was low, so rational individuals should rely heavily on prior probabilities. However, this was not the case and subjects, using the representativeness heuristic, relied on the description given and ranked the fields almost exclusively according to it.

In addition, individuals usually expect that a sequence of events generated by a random process will represent the essential characteristics of that process even when the sequence is short. Therefore, people regard, in a coin toss, the sequence H-T-H-T-T-H as more likely than H-H-H-T-T-T or H-H-H-H-T-H, although they are equally likely (KAHNEMAN, TVESKY and SLOVIC, 1982).

One important feature of the representative heuristic is that it gives rise to the “Law of Small Numbers”. This “law” states that intuitions about random sampling, especially regarding large samples, are easily applied in small samples as well (KAHNEMAN, 2011).

The fact that people view a sample randomly drawn from a population as highly representative, they assume that this sample is similar to the population in all its characteristics: every section from a random sequence must reflect its true proportion. This bias can severely impact researchers, as they are more likely to: gamble their research hypothesis on small samples; have undue confidence in early trends; have unreasonably high expectations regarding replications; and rarely attribute a deviation of expected

results due to sampling variability (KAHNEMAN and TVERSKY, 1971).

There is a key feature of the representativeness heuristic: misconceptions regarding the phenomenon of regressions. There is a general phenomenon, known as regression to the mean, in which extreme events are followed by regression towards the mean (i.e., followed by less extreme outcomes). However, people do not develop correct intuitions about this phenomenon: in many cases, they do not expect the regression to occur; in addition, when the regression towards the mean occurs, individuals often try to create spurious causal explanations for it.

One example of failing to account for the regression of stochastic events can be observed when experienced flight instructors seem to note that praise for an exceptional landing is followed by a worse landing, and when the opposited occurred: harsh criticisms after poor landings are usually followed by better ones. The incorrect conclusions made by flight instructors (i.e., that praise must be avoided as it causes worse landings, and that punishments are beneficial for learning) are simply the regression to the mean process of random events (KAHNEMAN, TVERSKY and SLOVIC, 1982; KAHNEMAN, 2011).

The Availability Heuristic

The availability heuristic states that people assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind (KAHNEMAN, TVERSKY and SLOVIC, 1982).

The biases that arise from this heuristics usage are vast. One of its many forms can arise due to the retrievability of instances. When the size of a class is judged by how often one can retrieve its events, classes of events that are easily retrieved will be deemed more likely than classes of events that are not easily retrieved. This effect is also behind the fact that people increase their subjective probability of a fire accident after seeing a house burning or the increase in subjective probability of car accidents after seeing a car overturned by the side of the road (KAHNEMAN, TVERSKY and SLOVIC, 1982).

A second category of biases are those that arise due to the effectiveness of a search set. The fact that individuals think that it is more likely for a word to start with “r” rather than for it to have “r” as a third letter exemplifies this bias. Individuals approach this problem by recalling the instances that each of the abovementioned events occur and assess their relative probability. Since it is easier to recall words that start with “r”, individuals will consider this event more probable than “r” in the third letter (KAHNEMAN, TVERSKY and SLOVIC, 1982).

Another instance of this category of biases can be seen when individuals are asked to form seven letter words that has the letter “n” as the sixth letter, when compared to

individuals that are asked to form seven-letter words that end with “ing”. The former will be judged more difficult than the latter, a straightforward violation of the conjunction rule (KAHNEMAN and TVERSKY, 1996).

Biases of imaginability arise when one has to assess the frequency of a class whose instances are not stored in memory but can be created following a given rule. In this situation, individuals generate many instances and evaluate the frequency or probability of events. However, the rule for constructing instances may not reflect the actual frequency and, therefore, lead to systematic errors. An example is to assess, given a group of 10 people, the number of k members, $2 \leq k \leq 8$, inside a committee that maximize the possible available committees. Although the correct answer is 5, people usually apply the availability heuristic and answer that the correct answer is 2, with the number of groups monotonically decreasing as k increases (KAHNEMAN, TVERSKY and SLOVIC, 1982).

These deviations may arise from illusory correlation, when people incorrectly judge the frequency at which two events co-occur. For instance, people in an experiment with mental patients overestimated the correlation between mental illness diagnosis and drawings performed by each patient (KAHNEMAN, 2011).

The availability heuristic relies heavily on the well-known fact that instances of large classes are recalled easier than instances of less frequent classes; that likely occurrences are easier to imagine than unlikely ones; and that the connections between events are overestimated when the events usually co-occur (KAHNEMAN, 2011).

The idea of availability of some piece of information being correlated with the frequency of the abovementioned information in the past is partly true. According to Schwartz (2016), the frequency of experience does affect the availability to memory, but it is not the only factor: salience or vividness of the experience matters as well.

Adjustment and Anchoring Effects

It is often the case when individuals make estimates by starting from an initial value that is continuously iterated until a final answer is reached. This initial value, although it can be suggested by the problem or the result of a partial computation, is sometimes insufficiently adjusted, and different starting points may yield significantly different final estimates (KAHNEMAN, TVERSKY and SLOVIC, 1982).

One of the biases may arise due to insufficient adjustment. In an experiment, Kahneman and Tversky built a spinning wheel that would stop only at numbers 10 or 65. The researchers asked the participants to spin the wheel and write down the number at which the wheel stopped. Afterwards, participants had to answer two questions:

“Is the percentage of African nations among UN members larger or smaller than the number you just wrote? What is your best guess of the percentage of African nations in the UN?” (p. 152, KAHNEMAN, 2011).

It is clear that the number on the spinning wheel – 10 or 65 – should not be taken under consideration as it does not provide useful information about the questions’ answers. Therefore, they should be logically ignored. However, they were not: the estimates for the second question of those who saw 10 and 65 on the spinning wheel were 25% and 45%, respectively (KAHNEMAN, 2011).

The anchoring effect occurs when individuals consider a particular value for an unknown quantity before estimating that quantity. The final estimates stay close to the particular value considered, resembling an anchor (KAHNEMAN, 2011).

Anchoring effect may also provide an explanation for the following phenomena: people tend to overestimate the probability of conjunctive events and to underestimate the probability of disjunctive events.

A majority of individuals would prefer to bet on the probability of drawing a red marble seven consecutive times (with replacement) from an urn containing 90% red marbles and 10% white marbles, rather than to bet on the probability of drawing a red marble from an urn containing equal quantities of red and white marbles. In addition, people would prefer the latter rather than to bet on the probability of drawing at least one red marble in seven successive tries (with replacement) from an urn containing 10% red marbles and 90% white marbles (KAHNEMAN, 2011).

While in the first experiment the probability of drawing 7 consecutive red marbles is 48%, in the second experiment the probability of drawing at least one red marble is 52%. Therefore, in both scenarios, individuals tended to choose the option that was less probable.

This phenomenon occurs due to the fact that the stated probability of the elementary event (success at any stage) provides an initial value for the estimation of probability of conjunctive and disjunctive events; as the adjustment is generally insufficient, the final estimates remain close to the probability of elementary events (KAHNEMAN, TVERSKY and SLOVIC, 1982).

Anchoring effects are a widely studied topic. LeBoeuf and Shafir (2006) confirmed that physical anchoring effects exist, whether involving dimensions such as length, weight and loudness, much like the psychological anchors studied. Moreover, it can affect business managers (KAHNEMAN, LOVALLO and SIBONY, 2011), change in prices (SHAFIR, DIAMOND and TVERSKY, 1997), and negotiations and norms (KAHNEMAN, 1992).

However, it was not until recently that the psychology of the anchoring effect was properly understood. It involves two different mechanisms that combined produce the

anchoring effects: there is a deliberate process of adjustment and there is an automatic and unconscious component. Anchoring can be understood as a priming effect, which will be discussed in the next section. Initial values evoke suggestion, which is a priming effect that selectively evokes compatible evidence (KAHNEMAN, 2011).

Strack and Mussweiler (1997) suggested that the intricate mechanism of anchoring effects cannot be properly understood if one focuses on the numerical value of an anchor. Instead, it seems to be necessary to focus on the cognitive mechanisms used to solve the comparative task and to the consequences of these mechanisms for generating judgments. The authors proposed that, to solve the comparative task, individuals first need to check whether the target value includes the anchor one, trying to construct a mental model that selectively includes information that is consistent with the anchor value.

Priming Effect

The exposure to certain stimuli may nudge following stimuli towards the same direction. If an individual sees or hears the word “EAT”, it is more likely to complete the word fragment “SO_P” as “SOUP” rather than “SOAP”. If, for instance, a person is exposed first to the word “WASH”, then the inverse happens. This is called priming effect (KAHNEMAN, 2011).

Priming is not restricted to concepts of words: actions and ideas can be primed by unconscious events as well. The existence of such a variety of alternatives can yield discoveries that threaten the image of consciousness and autonomous decision making. For instance, location of polling stations can influence the act of voting; exposition to things related to schools increase the tendency to support school initiatives; being exposed to words that are related to the elderly (e.g., bald, gray, wrinkle, forgetful) can significantly impact walking speed of participants (KAHNEMAN, 2011).

Priming effect exists, whether individuals are consciously aware of such effect or not. An interesting approach is to assess whether money primes individuals, and what characteristics are intensified. It is shown that money primes individualism, with reluctance to be involved with others, to depend on others or to accept demands from others (KAHNEMAN, 2011).

The Affect Heuristic

Affect and its psychological stimulus has been widely studied by behavioral theories but has been put aside on the studies of human judgment and decision-making. Much

due to the rationalistic view of human nature, the focus was on cognition rather than on affection (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

The affect heuristic can be described as the mechanism individuals use in making judgment and decisions by consulting their emotions. Usually, people form opinions and make choices that are closely related to their feelings and their tendency to approach or avoid matters, without conscious deliberation. It can be understood as a substitution of questions, answering an easy one (“How do I feel about it?”) rather than a difficult enquiry (“What do I think about it?”) (KAHNEMAN, 2011).

The research field is vast: Winkielman, Zajonc and Scawrz (1997) studied how the exposure to affective stimuli – below the level of awareness – might influence decision making. The authors found solid evidence towards considering affective stimuli on judgment and decision making, below the level of consciously experienced feelings. Kahneman (2003) stated that the emotional core of an attitude can be the main determinant of judgments and behaviors. LaFrance and Hecht (1995) found that affect (i.e. individuals smiling or not) had a profound impact in punishment regarding academic misconduct. Sherman and Kim (2002) studied how long the affective preferences last, even when the stimuli that gave rise to the affect no longer exists. The authors found that the affect persists even when the initial stimuli is invalidated.

The abovementioned studies showed that affect is closely linked to preference, regardless whether the cause of such affect is consciously perceived. There is also a component of independence between affect and cognition, indicating that there may be situations where affective stimuli exist and that cognitive evaluation is not needed (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

Confirmation Bias and Halo Effect

Individuals are “belief perseverates”. As Lord, Ross, and Lepper (1979) stated:

“People who hold strong opinions on complex social issues are likely to examine relevant empirical evidence in a biased manner. They are apt to accept “confirming” evidence at face value while subjecting “discontinuing” evidence to critical evaluation, and as a result to draw undue support for their initial positions from mixed or random empirical findings.” (p. 2098)

Two main effects are at place: first, there is reluctance for a proper search for evidence that contradicts one’s prior beliefs; second, even if the evidence is found, they are treated with skepticism. A somewhat stronger effect of belief perseverance is known as confirmation bias, in which individuals misinterpret or ignore proofs that go against their prior beliefs (BARBERIS and THALER, 2003).

The operations of associative memory contribute to the confirmation biases. When a question is posed (e.g. “Is Sam friendly?” or “Is Sam unfriendly?”), a deliberate search for confirming evidence takes place. Therefore, individuals seek data and information that are likely to be compatible with the beliefs they currently maintain (KAHNEMAN, 2011).

The bias occurs even when the searched information is not diagnostic, given that it may corroborate a wide array of alternative hypothesis. On the other hand, individuals are unlikely to search for diagnostic information that are inconsistent with one’s prior hypothesis (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

A parallel between the confirmation bias and anchoring effect can be made: decision makers compare their target value with the anchor, by selectively generating information that is consistent with the hypothesis that the target’s value is equal to the anchor’s (GILOVICH, GRIFFIN and KAHNEMAN, 2002).

The existence of confirmation bias may lead “first impressions” to gain significance importance: Rabin and Schrag (1999) suggested that confirmation bias leads to overconfidence, as individuals hold onto their beliefs despite probabilistic analysis that could refute their initial hypothesis. In addition, the authors found that confirmation bias is important when decision makers must aggregate information from many sources. When this situation holds, individuals may be inclined to combine information as a manner to confirm their own beliefs.

Lastly, the confirmation bias may have a key role in theory development: Loewenstein and Schkade (1999) attributed to this bias the fact that theories are resistant to corrections and changes: there is a tendency to focus on theory-confirming evidence and to disregard observations that might disconfirm the initial theory.

The confirmation bias is also closely linked to the halo effect: global evaluations of a person can induce altered evaluations of a person’s attributes, even when there is sufficient information for independent assessments. The fact that global evaluations may be capable of altering perceived information of stimuli means that confirmation bias has a key role on how judgment regarding individuals is built (NISBETT and WILSON, 1977).

Lastly, the halo effect can have a profound impact in business administration and leadership: stories of successes and failures consistently exaggerate the impact of leadership style and management practices on firm outcomes (KAHNEMAN, 2011).

Mental Accounting

Mental accounting can be described as the “set of cognitive operations used by individuals and households to organize, evaluate and keep track of financial activities” (p.183,

THALER, 1999). The concept deeply embeds topics from the Prospect Theory, such as relative gains and losses (THALER, 1985).

The idea of opportunity cost is at the core of mainstream microeconomics, and dictates sharply individual choice behavior. However, with a bounded rationality, decision makers are not able to evaluate all the numerous possibilities regarding the usage of their wealth; instead, they rely on heuristics to guide through a smaller set of alternatives (THALER, 2015). This heuristic is a form of narrow framing, as it allows for a set of alternatives to be under control and manageable by a finite mind (KAHNEMAN, 2011).

Three components of mental accounting should be highlighted. First, there is the idea of how outcomes are perceived and experienced, and how decisions are made and evaluated. Second, there is the assignment of activities into specific mental accounts (e.g., organizing money to be spent in bills, leisure, home supplies etc. in different jars). The sources and uses of money are thoroughly divided into mental sections as if they were physically divided. Lastly, there is the frequency onto which these mental accounts are evaluated (THALER, 1999).

The main idea of the mental accounting heuristic is that it violates a very basic economic principle: the fungibility of money. Not only families, but organizations also have specific budgets for specific needs. For an organization, it can have the role of keeping costs under control while giving employees discretion in their expenditure (THALER, 2015).

Mental accounting is built upon two different sources of utility: transaction utility and acquisition utility. The latter is already rooted in standard economic theory (what economists may call “consumer surplus”): it is the utility gained from the object minus the opportunity cost of acquiring it. The transaction utility, however, has a different component: it is the price actually paid for the goods minus what one would normally expect to pay (i.e., the reference price). A rational standard economic individual would only care about the acquisition utility (THALER, 2015).

To illustrate the influence of mental accounting tools, Thaler (1985) proposes the following experiment:

“You are lying on the beach on a hot day. All you have to drink is ice water. For the last hour, you have been thinking about how much you would enjoy a nice cold bottle of your favorite brand of beer. A companion gets up to go make a phone call and offers to bring back a beer from the only nearby place where beer is sold (a fancy resort hotel) [a small, run-down grocery store]. He says that the beer might be expensive and so asks how much you are willing to pay for the beer. He says that he will buy the beer if it costs as much or less than the price you state. But if it costs more than the price you state he will not buy it. You trust your friend, and there is no possibility of

bargaining with (the bartender) [store owner]. What price do you tell him?"
(p. 206)

The median price given in the fancy resort version was \$2.65, while in the small grocery store was \$1.50. It is important to notice that, in both cases: i) the ultimate consumption act is the same; ii) there is no possibility of strategic behavior in stating the reservation price; iii) no atmosphere is consumed by the respondent (THALER, 1985). Then, why would individuals care where the beer is bought? The essence here is that individuals have expectations regarding prices in different places. Paying more or less than what the expected price is the essence of transaction utility (THALER, 2015).

Another key important feature of the mental accounting is regarding sunk costs. Due to the fact that this heuristic is closely linked to the Prospect Theory, it also incorporates observations related to the psychological value of gains and losses. More specifically, inside a mental account, realizing a loss is twice as painful as realizing a gain. Therefore, individuals would be reluctant to close mental accounts that are negative (THALER, 1999).

Odean (1998) confirmed this effect: using trading records for 10000 accounts at a discount brokerage, the author found that investors have a strong preference for realizing winner rather than loser investments (i.e., investors tend to hold losers for too long and sell winners too soon). This behavior was not justified by portfolio rebalance, trading costs of low price stocks, or subsequent portfolio performance. At the end, it is a suboptimal strategy and the phenomenon was coined as “disposition effect” (WEBER and CAMERER, 1998).

Mental accounting seems to explain a well-documented gambling behavior: individuals that are ahead in the game (i.e., making money) did not seem to treat their winnings as real money, and would use this money in a riskier manner. That is, they treat the winnings as “house money”, and therefore are prone to gamble with it. It is another blatant violation of the fungibility of money. Thaler coined it as the “house money effect” (THALER, 2015).

The behavior analyzed in the preceding chapter is closely related to the inability of human beings to ignore sunk costs. Thaler (1980) proposes two examples:

“A family pays \$40 for tickets to a basketball game to be played 60 miles from their home. On the day of the game there is a snowstorm. They decide to go anyway, but note in passing that had the tickets been given to them, they would have stayed home.

A man joins a tennis club and pays a \$300 yearly membership fee. After two weeks of playing he develops a tennis elbow. He continues to play (in pain) saying ‘I don’t want to waste the \$300!’” (p. 47)

A very educative example by Kahneman (2011) is also shown:

“Two avid sports fans plan to travel 40 miles to see a basketball game. One of them paid for his ticket; the other was on his way to purchase a ticket when he got one free from a friend. A blizzard is announced for the night of the game. Which of the two ticket holders is more likely to brave the blizzard to see the game?” (p. 429)

Standard economic theory implies that only marginal costs and benefits should affect decision making, while sunk costs should be considered irrelevant. However, the abovementioned examples suggest that they are not irrelevant, creating a sunk cost effect (THALER, 1980).

Arkes and Blumer (1985) provided evidence regarding the sunk cost effect. In an experiment, customers who had initially paid more for a season subscription to a theater series attended more plays during the following months, indicating that they valued the sunk cost of the tickets. Several questionnaires corroborated the finding: those who had incurred sunk costs inflated their estimates regarding how likely the project could succeed in comparison to those that had not incurred sunk costs. Maybe one of the most intriguing findings is that the sunk cost effect was not lessened if the individual was literate in Economics.

Framing Effects

The idea of framing effects is closely linked to invariance of preferences: according to the standard economic theory, different representations of the same choice problem should yield the same preference (i.e., the preference between options should not depend on how the choices are described). However, it can be shown that invariance is violated given how the choice sets are described, indicating the existence of framing effects (TVERSKY and KAHNEMAN, 1986). The context that influences choice can also be created by language (SCHWARTZ, 2016).

The framing effects can be exemplified with the well-known Asian disease problem, presented in Kahneman and Tversky (1981):

“Imagine that the United States is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

[FIRST VERSION] If Program A is adopted, 200 people will be saved. If Program B is adopted, there is a one-third probability that 600 people will

be saved and a two-thirds probability that no people will be saved.

[SECOND VERSION] If Program A is adopted, 400 people will die. If Program B is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die Which one of the two programs would you favor?" (p. 453)

In the first version of the problem, 72% of participants chose Program A. In the second version of the problem, 78% of participants chose Program B. A pattern has emerged: choices involving gains are often risk averse, while choices involving losses are risk taking. However, it is easy to observe that both problems are identical, except for the way they are described, blatantly violating the principle of invariance (TVERSKY and KAHNEMAN, 1981). According to Schwartz (2016), the effects of framing become even more salient when stakes are higher.

The idea of framing effects has huge economic impact. Thaler (2015) has discussed the debate whether gas stations should be allowed to charge different prices for purchases with credit card or with cash. The credit card industry lobbied to make different pricing illegal. However, if they could not make it illegal, then the lower price charged when paying with cash should be labelled as a discount, not the credit card purchases as a surplus charge. Economically, they are equivalent. Psychologically, they are not.

In the first scenario, paying on cash would be viewed as a discount and, therefore, evoke feelings of gains. On the latter, paying with credit card would be viewed as a surcharge, evoking feelings of losses.

The concept of same outcomes being reframed in different ways is also linked to how individuals evaluate their decisions towards the outcomes. Schwartz (2016) shows this with the following example:

"Mr. Paul owns shares in company A. During the past year he considered switching to stock in Company B, but he decided against it. He now finds that we would be better off by \$1200 if he had switched to the stock of Company B. Mr. George owned shares in Company B. During the past year he switched to stock in company A. He now finds that he would have been better off by \$1200 if he had kept his stock in Company B. Who feels greater regret?" (SCHWARTZ, 2016, p. 153)

Because both Mr. Paul and Mr. George own the same shares and would both be richer by \$1200 if they had shares in company B, their condition is exactly the same. However, 92% of participants who answered the question stated that Mr. George would feel worse than Mr. Paul. Apparently, the regret is greater when individuals decide for something that is worse than their initial condition rather than the regret when one fails to act. According to Schwartz (2016), the bias to downplay omission (failures to act) when

we evaluate the consequences of decisions is called omission bias.

Endowment Effects

The endowment effect was first proposed by Richard Thaler in his 1980's article *A positive theory of consumer choice*. Thaler discusses a wide variety of somewhat irrational behaviors, such as:

“Mr. R bought a case of good wine in the late '50's for about \$5 a bottle. A few years later his wine merchant offered to buy the wine back for \$100 a bottle. He refused, although he has never paid more than \$35 for a bottle of wine.

Mr. H mows his own lawn. His neighbor's son would mow it for \$8. He wouldn't mow his neighbor's same-sized lawn for \$20.” (p. 43)

Maybe the most comprehensive example was given in Thaler (2015). Participants were asked to answer both versions of the question:

“VERSION A) Suppose by attending this lecture you have exposed yourself to a rare fatal disease. If you contract the disease you will die a quick and painless death sometime next week. The chance you will get the disease is 1 in 1000. We have a single dose of an antidote for this disease that we will sell to the highest bidder. If you take this antidote the risk of dying from the disease goes to zero. What is the most you would be willing to pay for this antidote?

VERSION B) Researchers at the university hospital are doing some research on that same rare disease. They need volunteers who would be willing to simply walk into a room for five minutes and expose themselves to the same 1 in 1000 risk of getting the disease and dying a quick and painless death in the next week. No antidote will be available. What is the least amount of money you would demand to participate in this research study?” (p.16)

Standard economic theory predicts very similar valuations to both of these questions: the trade-off between risk and reward should not be significantly different in the versions abovementioned. However, the actual answers for these questions were hugely different. Individuals would pay significantly less in version A, while in version B they asked enormous amounts of money, sometimes even considering not participating for any amount offered (THALER, 2015).

The examples shown identify considerable differences between buying and selling prices. The main reason the endowment effect exists is closely linked to Prospect Theory

and its loss aversion principle, where losses loom larger than gains. Thus, when removing a good previously owned, the endowment effect creates a loss while adding the same good generates a gain (THALER, 1980). In simple words: “people often demand much more to give up an object than they would be willing to pay to acquire it” (p. 194, KAHNEMAN, KNETSCH and THALER, 1991).

The presence of endowment effects indicates evidence that indifference curves are non-reversible: people exhibit valuations and preferences that depended on their initial reference entitlement. This may indicate a market restriction, where fewer trades will occur, rather than the amount predicted by standard economic theory (KNETSCH, 1989).

The key idea is that once an object has become part of one’s endowment, giving it up entails a loss. However, because losses are worse than gains are good, the endowed object will be worth more to the owner than to potential trading partners (SCHWARTZ, 2016).

Kahneman, Knetsch and Thaler (1990) showed that the endowment effect persists even when market condition allows individuals to learn, in contrast with what the Coase theorem predicts: the discrepancies of individuals’ willingness to pay and their willingness to accept were strikingly different, even in repeated market experiments.

Therefore, the authors stated that loss aversion and its major consequences should not be interpreted as sideline effects, but as a fundamental characteristic of individual preferences. Similarly, Loewenstein and Adler (1995) showed that people were not previously aware of the endowment effect: in their experiments, subjects underestimated how much they would value an object before actually receiving it.

Given that behavioral studies are a multidisciplinary field, Knutson et. al. (2008) searched the neural antecedents of the endowment effect. While in a functional magnetic resonance imaging study (fMRI), individuals were given different products with different buying, selling and choosing prices. It was shown that, during selling of items that individuals preferred, areas of the brain linked to loss aversion, such as the right insular, were activated.

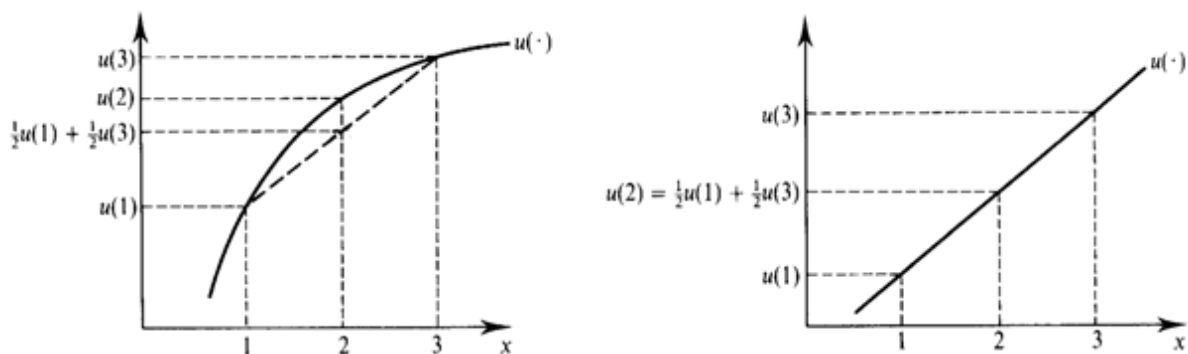
2.1.1.5 Prospect Theory

Until the introduction of the Prospect Theory, Expected Utility Theory was unabashedly the dominating mode of analysis (normative analysis as well) of decision-making under risk. However, Kahneman and Tversky (1979) proposed several classes of choice problems in which preferences violate the Expected Utility Theory. Prospect Theory sought to question the idea, solid until then, that a single theory of human behavior can fit both normatively and descriptively (THALER, 2015).

Before discussing the intricate details of Prospect Theory, it is extremely important to understand how judgment under risk is considered inside the expected utility theory. Daniel Bernoulli, in 1738, sought to identify a relation between utility and current wealth. He pointed out that the utility of a given sum is different, depending on the amount of wealth that individuals previously had (e.g., \$1000 can have different utility for someone who has \$10000 in wealth and for someone that has \$2 million) (KAHNEMAN, 2011).

More importantly, Bernoulli observed that the majority of people do not appreciate risk and, if they are offered two alternatives, one certain and another gamble, that has the same expected value, individuals would choose the safest option. Therefore, although the expected value of the gamble and the certain option are the same, they have different utilities, due to the diminishing marginal utility of wealth (KAHNEMAN, 2011). Bernoulli invented the term risk aversion: people's utility increases monotonically as they get wealthier, but at a diminishing rate (THALER, 2015). Figure 1 shows utility functions of a risk averse and a risk neutral individual, respectively.

Figure 1: Risk-Averse and Risk-Neutral Utility Functions.



Extracted from: MAS-COLLEL, WHINSTON and GREEN, 1995, p. 186.

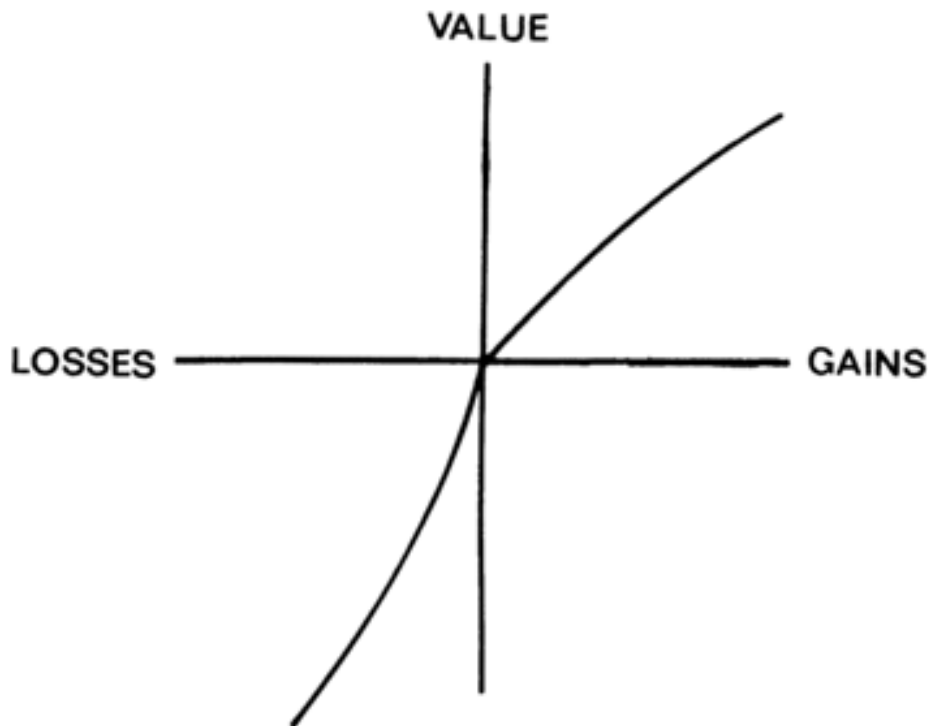
Several implications are drawn from Kahneman and Tversky's seminal paper. Specifically, it introduced the idea of relative gains and losses, as stated in the paper:

“Although this is probably true [reference point being the status quo], for most choice problems, there are situations in which gains and losses are coded relative to an expectation or aspiration level that differs from the status quo.” (p. 286, KAHNEMAN and TVERSKY, 1979)

Another key idea developed is that the value function is normally concave for gains, commonly convex for losses, and generally steeper for losses than for gains (KAHNEMAN and TVERSKY, 1979). Roughly speaking, losses have a psychological value that is twice as strong as the same quantity in terms of gains (THALER, 2015). Figure 2 exemplifies the value function proposed by Kahneman and Tversky.

If psychological responses to gain and losses were perfectly faithful to the consequences of these changes, the graph that relates the objective state (horizontal axis) and the subjective state (vertical axis) would be a straight line that went through the origin. However, what Prospect Theory suggests is far from this statement (SCHWARTZ, 2016).

Figure 2: Prospect Theory Value Function.



Extracted from: KAHNEMAN and TVERSKY, 1973.

What the value function highlights is a key feature of the theory: individuals are loss averse and, when directly compared, losses are valued stronger. According to Kahneman (2011), loss aversion has an evolutionary trace: organisms that considered threats as more urgent than opportunities have a better chance of survival.

However, if individuals are loss averse, does that mean that they are also always risk averse in the realm of losses? How individuals behave regarding risky prospects? Kahneman (2011) shows that an increase in the probability of winning a sum from 0% to 5% or from 95% to 100% are more impressive and valued higher than an increase from a mid-range scale, such as 60% to 65%.

Increasing the probability from 0% to 5% creates a chance of winning that did not exist before: it illustrates a phenomenon called possibility effect. On the other hand, increasing the probability from 95% to 100% is called the certainty effect. Both effects

have powerful consequences in the domain of losses.

The result from changes in wealth and probabilities give the following conclusions: people attach values to gains and losses (i.e. in relative terms) rather than to wealth (i.e. in absolute terms), and the decision weights that they assign to outcomes are different from the objective probabilities (KAHNEMAN, 2011). These insights result in the fourfold pattern, presented in Figure 3.

Figure 3: The Fourfold Pattern.



Based on: KAHNEMAN, 2011.

However, as every theory, Prospect Theory has its blind spots. First, it is a complex theory, one that could be hardly taught to new undergraduates. Therefore, standard concepts, which even though are simple requires a considerable amount of explanations, should have its space in introductory economics. Additionally, the failure of rationality that is embedded into Prospect Theory is often irrelevant to the predictions of economic theory, which work out with great precision in many situations (albeit terribly in others). The key idea is to identify domains where standard economic models provide good approximations, and for those domains that it does not, look for a more rich-description of human behavior (KAHNEMAN, 2011).

There are also strong theoretical assumptions in Prospect Theory. It is stated that

the reference point – usually the status quo – has a value of zero. However, it may not be so. Kahneman (2011) presented the following thought experiment:

“Have a good look at the following prospects. What would it be like to own them? A. one chance in a million to win \$1 million B. 90% chance to win \$12 and 10% chance to win nothing C. 90% chance to win \$1 million and 10% chance to win nothing” (p. 357)

While in situations A and B winning nothing is simply a nonevent (i.e., a value of 0 makes good sense), failing to win in situation number C can be extremely disappointing, and, therefore, the reference point probably does not retain the null value. In simple words, Prospect Theory cannot deal properly with disappointment and regret (KAHNEMAN, 2011).

Speaking of regret, Schwartz (2016) stated that one of the reasons individuals are risk averse is because they are also regret averse: being faced with a sure thing rather than probabilities is a way to guarantee that the decision made will not be regretted, given that one will never know what the outcomes of the probabilities would be. On the other hand, if one chooses to gamble and the outcome is worse than what the sure thing was, regret takes place. Not only regret is an important consequence of many decisions, but the prospect of regret is an important cause of many decisions. Choices will be made with the anticipation of regret being taken under consideration (SCHWARTZ, 2016).

Schwartz (2016) also affirmed that the desire to avoid regret can influence individuals to engage in no action at all, what he calls "inaction inertia". According to the author, when faced with an alternative that is no longer available, individuals decide not to act at all to avoid the regret of not having made the correct decision before, when the alternative was accessible.

2.1.1.6 Evolutionary Theory and Behavioral Economics Flaws

Even though Behavioral Economics has a long-lasting battle with mainstream economics – especially regarding rationality of individuals – another branch of research, called evolutionary psychology, developed a different explanation to rational deviations (TALEB, 2002).

According to evolutionary proponents, the reason why individuals have difficulties to grasp probabilistic reasoning lies in the way things are presented to us in the current environment. According to Steve Pinker, one of the main proponents of such theory, “our brains are made for fitness, not for the truth”.

In other words, individuals engage in biased decisions because these decisions are made outside the real habitat of one’s brain has evolved. The natural habitat of one’s

cognitive capabilities, according to the evolutionary theory, is not specific, but evokes the beginning of the Homo Sapiens species, 130 thousand years ago (TALEB, 2002).

Interestingly enough, while the behavioral and the evolutionary schools disagree in many aspects, Taleb (2002) stated that they agree in two crucial aspects: (1) in many cases, individuals do not think rationally when making choices, but rather use heuristics; and (2) individuals make serious probabilistic mistakes in today's world, whatever the reason it may be.

Neurobiologists also have their side of the story: they refute the idea of two systems – one of the cornerstones of Kahneman and Tversky's thinking – stating that individuals have three brains: the reptilian one, which is very old and dictates physiological properties that humans share with other animals, such as heartbeat; the limbic brain, center of emotions that humans share with mammals; and the neocortex or cognitive brain, which distinguishes primates and humans. Through the means of environmental mapping, neuroscientists are able to understand the function of each different parts of the brain (TALEB, 2002).

2.1.1.7 Behavioral Economics Applications

The Behavioral Economics framework, since its rebirth, has been applied in a wide variety of fields. This section has the objective of exemplifying some of the new branches of behavioral economists. It is important to mention that the list is non-exhaustive, and many efforts are being directed towards areas that were marginally touched in the last years (e.g. healthcare).

2.1.1.7.1 Behavioral Finance

Behavioral finance is the study of psychological insights in financial markets and its consequences. The main idea is to assess whether financial markets can have situations in which its outcomes are inefficient – and under which assumptions (THALER, 2015; SEWELL, 2010).

Behavioral finance scrutinizes and criticizes the Efficient Market Hypothesis (EMH), coined by professor Eugene Fama. According to the EMH, a security's price is equal to its fundamental value; furthermore, the EMH principles raises doubts related to the possibility of “beating the market” (THALER, 2015).

Barberis and Thaler (2003) stated that two building blocks sustain the behavioral finance studies: limits to arbitrage, which seeks to understand how rational players may

be dislocated due to irrational (or noise) players; and psychology, which examines the behavior of financial players, assessing its deviations from standard rational theory.

Bondt and Thaler (1984), using data from the Center for Research in Security Prices, have shown that most people tend to overreact to events, getting overly optimistic or pessimistic. Due to the fact that investors overshoot, the reversal trend was able to be predicted given past return data alone: portfolio of prior “losers” are found to outperform prior “winners”, given enough time span (at least thirty-six months). Bondt and Thaler also published many follow-up papers with further evidence on investment overreaction, involving security analysts and market seasonality in their framework as well (BONDT and THALER, 1987, 1990).

Another striking result was found by Robert Shiller in 1981, with his seminal article “*Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?*”. In it, Shiller addresses the ideal of fundamental value (i.e., the “right” price of securities).

By collecting data from 1871 up to 1979 in stock prices and calculating the present value of dividends – which, according to financial theory, should determine a stock price – Shiller found that stock prices indexes seem too volatile (five to thirteen times more than predicted) to be solely explained by movements in the present value of dividends.

Even though one could generally save the notion of efficient markets by altering the discount rate, the author has also shown that movements in expected interest rates that could justify such volatility are much larger than the actual movement in the sample period considered.

Following Shiller, De Long et. al. (1990) presented an overlapping-generations model under which irrational traders do affect prices and earn higher-than-expected returns. In the authors’ model, the unpredictability of noise traders creates a risk that deters rational traders from profiting from arbitrage deviations. Therefore, prices can deviate significantly from their fundamental value, shedding light into the excess volatility of asset prices.

According to standard economic theory, closed-end funds market capitalization (which only raises money at time zero and invests it, with its shares trading freely at markets) has to be equal to the net asset value if the fund (THALER, 2015).

However, Lee, Shleifer and Thaler (1990) stated four puzzles related to closed-end funds: why closed-end funds are usually sold at a discount; why the fund trade at a price that is different from the fundamental value of its holdings; the variation of discounts and premiums; and convergence to net asset value when a closed-end fund decides to become an open-end fund. According to the authors, the divergence of share price in relation to close-end funds net asset value shows that demand which arises from irrational beliefs can influence securities prices on the long-term.

Following their findings, Lee, Shleifer and Thaler (1991) proposed that fluctuations

in discounts of closed-end funds may be related to changes in individual investor sentiments. Therefore, these irrational investors would be subject to waves of optimism or pessimism: when investors are feeling cheerful, discounts on closed-end funds shrink, with the opposite being true as well.

In a somewhat provocative article, Owen and Thaler (2003) presented cases of gross violation of the law of one price; perhaps the well-known case of 3Com-Palm is the most emblematic one. In the early 2000s, 3Com had plans to spin-off Palm from the rest of the company, and each 3Com shareholder would receive 1.5 shares of Palm shortly after the initial public offering. The anomaly arose when, after the operation has been completed, the value of a 3Com share was actually lower than the value of 1.5 shares of Palm, which indicated that the market was valuing the remaining 3Com business – a profitable business – at a net negative amount. Other instances of violation of the law of one price can be stated, such as the inconsistent price of Royal Dutch shares in New York and in the Netherlands (THALER, 2015).

Lastly, the finance community is starting to understand the valuable insights behavioral sciences can bring to the job. In his book *The Little Book of Behavioral Investing*, James Montier shows how a wide variety of individuals' flaws in decision making can be better understood and investment decisions enhanced with this knowledge. From overoptimism to forecasting bias and information overload, the author shows how to deal with the hurdles of the profession – keeping in mind that every player in the market is a human being, prone to the same abovementioned biases (MONTIER, 2009).

2.1.1.7.2 Law

Jolls, Sunstein and Thaler (1997) contributed to the Behavioral Economics approach by analyzing how behavioral features could enhance the understanding of law. According to the authors, the economic analysis of law is still deeply rooted in the neoclassical assumptions of economics. Furthermore, they divide the behavioral contribution into three categories: positive, prescriptive, and normative. The positive analysis of law is concerned with how individuals behave in response to rules and how they are built. Regarding the prescriptive analysis, there is a concern regarding which rules should be adopted to meet certain objective. Lastly, the normative analysis is responsible to assess more strategic questions regarding law. In the article, the authors discuss the implications of behavioral insights into the rationality concept in legal environments.

2.1.1.7.3 Poverty

Mullainathan and Shafir, in their book *Scarcity* (2013), provided another very interesting way of using behavioral approaches to better understand individual behavior. The core idea of the book is that scarcity – i.e. living with less than what one's expectations of needs are – shapes many scarce-prone individuals, such as poor, overweight or time-scarce persons. According to the authors, scarce-prone human beings behave differently from other individuals and, while scarcity has its benefits in some situations, it may also consume cognitive capacity and executive control. In a somewhat interesting explanation, the authors conclude that many of the seemingly irrational behavior individuals have are due to slack.

According to the authors, individuals that live under scarce resources are the ones that should perform better trade-off analysis as their stakes are higher – oddly meaning that those individuals are the ones that behave more closely to what rational economic theory would predict.

2.1.1.7.4 Organizational Economics

The Behavioral Economics field has often been worried about how individuals behave. However, many efforts can be directed to how the study of organizations can also be enriched by the behavioral approach, as well as how individuals behave inside organizations. Camerer and Malmendier (2004) were one frontrunners in this line of research.

According to the authors, organizations can be a rich field to understand how individuals think about other people. In addition, organizations are intrinsically more complicated than individuals, meaning that behavioral models of how individuals really perceive the organization is essential. Lastly, organizations can respond endogenously to individual biases – to either correct or exploit them. The authors also state that organization economics can be a much more welcoming field for behavioral analysis than behavioral finance is: psychological ideas can be a more valuable input to understand regularities and make predictions in the former domain than in the latter.

Despite the fact that Behavioral Economics has indeed started to influence a wide variety of fields, many other still remain to be explored. For example, one of the most widespread types of organizational structuring – the corporation – lacks a sufficient understanding of how Behavioral Economics may impact the field development in the upcoming decades.

As a field that has borrowed many concepts from mainstream economics in order to derive its analyzes, Corporate Governance can profit from the new assumptions that

behavioral sciences have originated. As a central objective of this thesis, Corporate Governance can be a vast field for new behavioral efforts into untapped research fields.

We now turn to a review of how Corporate Governance has flourished in the last decades, also discussing the (scant) efforts towards embedding psychological assumptions into the field.

2.1.2 Corporate Governance

2.1.2.1 Definition of Corporate Governance

Corporate Governance, despite being thoroughly examined in the last few decades, has its competing definitions (CLARKE and BRANSON, 2012).

Corporate Governance can be referred to as the structure of rights and responsibilities of different stakeholders – including shareholders, directors and executives – and how they influence the companies they control and manage (AGUILERA, GOYER and KABBACH DE CASTRO, 2013).

According to Tayan and Larcker (2011), who are aligned with the mainstream theory of Corporate Governance (heavily based on Agency Theory), the purpose of governance procedures relies in control and monitoring attributes of Corporate Governance, defining it as “the collection of control mechanisms that an organization adopts to prevent or dissuade potentially self-interested managers from engaging in activities detrimental to the welfare of shareholders and stakeholders” (p. 8).

Pendleton and Gospel (2013) views Corporate Governance as “the processes influencing key decisions about how wealth is created, resources allocated, and returns distributed in business organizations. It is essentially about power relationships between various key actors” (p. 634).

According to the abovementioned authors, Corporate Governance systems – at its simplest level – involve a system of directors, which has the main objective of overseeing management operations. However, nowadays Corporate Governance systems are comprised of a much broader set of stakeholders, including owners, labor unions, creditors, customers suppliers, analysts, and the media and regulators, to mention a few (TAYAN and LARCKER, 2011).

Clarke and Branson (2012) criticized the narrow view Corporate Governance has been applied to in the Anglo-American world: with the financialization and heavy reliance in Agency Theory, Corporate Governance in these countries has been majorly concerned with accountability and control involved in corporations with dispersed ownership, focusing mainly in obtaining ways to maximize shareholder value with the use of good Corporate Governance practices. While the role of governance has somewhat changed in recent years,

the classic Anglo-American view is still strong in the political realm.

The different views of Corporate Governance are heavily linked with the academic background used to define the term (mainly legal, sociological, economic and organizational branches), as well as the values, institutions, culture and objectives pursued (AGUILERA and JACKSON, 2010; CLARKE and BRANSON, 2012).

Aguilera and Jackson (2010) argued that, while there is a diversity of definitions, the multi-dimensional nature of Corporate Governance poses challenges to its applications in an international “one-size-fits-all” governance system. They state that “Corporate Governance is most often in a universalistic fashion linked to a very-specific microeconomic or managerial problem setting, but neglects the institutional, legal, and cultural environment in which organizations and decisions are embedded” (p. 490).

2.1.2.2 History and Evolution of Corporate Governance

Corporate Governance is as old as trade itself, albeit the freshness of the term. Whenever ownership and control are separated, Corporate Governance issues arise, including unrealistic expectations, corporate scandals and frauds (TRICKER, 2012). According to Cheffins (2013), the history of Corporate Governance encompassed the major corporations created in the 16th and 17th centuries, such as the East India Company and the Hudson’s Bay Company.

Adam Smith, one of the most prominent thinker of modern economics, was also skeptical of the ability of managers to properly look after other people’s money, anticipating in two centuries further developments in Agency Theory (TRICKER, 2012). In the 19th century, with Britain as an economic and military power, business needed to acquire capital in order to boost investments. A booming middle class also had plenty of money to invest. However, there was still one problem: if businesses became bankrupt, its owners were liable and had to honor the business’ debt until they were also bankrupt. This served as a disincentive to invest in companies run by others and increased risks that effectively deterred developments towards a more effective financial market (TRICKER, 2012).

With the creation of the limited liability company (LLC) in 1855 by the British Parliament, the owners’ liability was limited to the amount of money they invested in the firm. This type of structure proved to be extremely successful and bolstered industrial growth, the creation of jobs and economic prosperity (TRICKER, 2012). In the early 20th century, shareholders in advanced economies started to become progressively large and diverse. In addition, many institutional investors started to organize themselves and invest in equity at these public firms.

This phenomenon was the start of a separation between ownership and management,

as owners were becoming increasingly distanced from the companies they acquired. As Berle and Means (1935) stated, there was a growing shift of power to company's management at the expense of these pulverized shareholders. In this early development, corporate boards were still inexistent in organizational charts. Moreover, the corporate networks complexity started to develop, as companies began to own other corporations as well (TRICKER, 2012).

Following World War II, the United States experienced great prosperity, meaning that its corporations also grew at a fast pace. During this boom, Corporate Governance was not a priority and the term was not usual in management jargon. At that point in time, timid efforts towards the development of boards began to appear, but stakeholders expected them to be supportive of management – a reasonable phenomenon given that executives could choose the board's directors (CHEFFINS, 2013).

In the 1970s, the discovery of illicit payments by US corporations, which led to a litigious climate in the country, made the United States' Securities and Exchange Commission (SEC) to delve deeper in the Corporate Governance environment. As the investigations developed, it became clear that few outside directors knew of these illegal schemes, frustrating the United States accountability system.

In addition, the SEC gathered efforts in order to create voluntary reforms for corporations: Harold Williams, appointed as the SEC chairman in 1977, stated that the "ideal" board should be comprised of only one executive (the CEO) and should have an audit committee, a nomination committee and a compensation committee. The term "Corporate Governance" would begin to grasp management environments and regulators and gain traction (TRICKER, 2012; CHEFFINS, 2013)

The first efforts in creating guidelines that embraced the emerging trend of Corporate Governance was also made during the 1970s, in organizations such as the American Bar Associations, the American Assembly and the American Law Institute. There was, at the time, widespread support from businesses to these organizations' efforts towards better Corporate Governance (CHEFFINS, 2013).

Although the Corporate Governance system started to develop in the United States, European countries at the 70s also began to develop their governance structure, with directives aiming at having outside directors inside boards, as well as – in countries such as Germany and the Netherlands – the adoption of two-tiered boards (TRICKER, 2012).

The friendly environment began to change in the 1980s. A political shift to the right, with the election of Ronald Reagan in the United States and Margaret Thatcher in the United Kingdom would rebalance the forces at stake and end the movement for Corporate Governance reform started in the previous decade (CHEFFINS, 2013).

Tricker (2012) argued that corporate abuses continued in the 80s, and that such

scandals started to lead to calls for ways to rethink accountability at the top management level: the term “Corporate Governance” was indeed alive.

The 1980s was known as “the Deal Decade”, much due to aggressiveness and innovativeness of financial techniques which allowed leveraged buyouts – and a much more hostile corporate environment. In response to these new forces, management often reacted defensively, making payments to those shareholders that obtained a sizeable stake and also introducing management entrenchment mechanisms such as the poison pill. These defensive measures were counteracted by a more active shareholder environment, and the emergence of a front-runner shareholder-oriented Corporate Governance was finally ensued (CHEFFINS, 2013).

Also in the 1980s, academic studies began to blossom. However, they were initially tied to economic analysis and rejected Berle and Means (1932) pro-regulation scrutiny. Being backed by highly influential articles written by Jensen, Meckling and Fama, the view of shareholders as a helpless entity exploited by management began to fade and a reliance on market forces to regulate managerial behavior was in place (CHEFFINS, 2013).

The 1990s saw the emergence of institutional shareholders: as these entities became increasingly large, they started to acquire equity positions that prevented them from selling their stake at any given time.

This new ownership stake meant that these shareholders had to be in proximity with management; however, institutional shareholders spent a scant amount of time overseeing management and were usually allied with management, restricting shareholder activism to behind-the-scenes deliberations. Regardless, this shift in power was important to ensure that a shareholder-centric Corporate Governance would be the norm (CHEFFINS, 2013).

The last decade of the 20th century was also the period when Corporate Governance codes began to flourish. The UK Cadbury report, the first Corporate Governance code in the world, set the guidelines for subsequent efforts in developing governance best practices. The Cadbury report called for, among other things, widespread use of non-executive directors, the CEO-chairman separation, the introduction of a number of committees and a “comply-or-explain” approach.

In the United States, even though companies must follow laws from the state in which they are incorporated, they must also meet SEC’s requirements, which, in 1997, produced a Statement on Corporate Governance, also describing general guidelines for governance practices. Many other Corporate Governance codes were developed in a wide variety of countries and institutional settings, such as France, South Africa, Hong Kong, Australia and the Netherlands (TRICKER, 2012).

The new millennium saw astonishingly big corporate collapses in companies such as Enron, WorldCom and Tyco. Enron – which was one of the largest companies in the United

States – became the symbol of corporate fraud and an example of Corporate Governance failure. As a reaction to these scandals, the public opinion towards top management executives began to shift from smart entrepreneurs to greedy, shortsighted and dishonest human beings.

The SEC approved, in 2002, the Sarbanes-Oxley Act, which had strong requirements such as: only independent directions could serve audit committees; shareholder approval of stock options for directors; and separation of audit services from other services auditors could provide, among many others (TRICKER, 2012).

The early 2000s also saw an emergence of economists interested in venturing in the Corporate Governance realm. Cheffins (2013) stated that it is quite odd that economists are latecomers, given that Jensen and Meckling (1976) developed one of the most cited paper in Corporate Governance history. Many economists started to become interested in governance with the changing perceptions of efficiency of public traded companies, much due to the aforementioned scandals (CHEFFINS, 2013).

Corporate Governance finally became global: many of the crises that followed were attributed – at least partially – to bad Corporate Governance. In addition, shareholders started to value good Corporate Governance practices and payed a premium of around 30% for companies shares in well-governed companies – especially in countries with weaker shareholder rights (CHEFFINS, 2013).

With the development of Corporate Governance and its multidisciplinary approach, many different Corporate Governance theories started to emerge and to challenge the undisputed position Agency Theory had in Corporate Governance literature. Theories such as the stewardship theory; the transaction cost economics; the resource dependency theory; the social network theory; and the managerial and class hegemony tackled different facets that the Agency Theory was not focusing on.

In addition, the belief of a “one-size-fits-all” governance approach became weaker, as cultural, social and institutional variables began to show its importance (TRICKER, 2012).

Up to this date, Tricker (2012) criticized the fact that developments in Corporate Governance, despite an astonishing increase in academic studies regarding the theme, had been made on a reactive basis – mainly as a response to corporate collapses, board excesses and entrenched chief executives, instead of relying on a reasoned agenda for academic Corporate Governance studies.

2.1.2.3 Corporate Governance Main Theories

2.1.2.3.1 Agency Theory

While Jensen and Meckling (1976) are normally considered the proponents of this theories, thinking regarding the implications of the separation between ownership and control has long been researched. Berle and Means (1932) in their seminal work *The Modern Corporation and Private Property*, discussed about the shift of power that dispersed shareholders – a new phenomenon at the time in the United States – would bring to managers in detriment of owners (CLARKE and BRANSON, 2012).

The Agency Theory framework draws much of its assumptions on the agency dilemma. This kind of dilemma arises when the owner of the wealth (the principal) is different from the person who is managing his affairs. The idea is revolved around the concept of how to make agents act in consonance with the interests of the principals, given that they may have incentives to increase their wealth to the detriment of the principals' objectives (TRICKER, 2012). According to Jensen and Meckling (1976), in their seminal paper, agency relationship can be described as:

“[...] A contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal. The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent“ (p. 308).

Tricker (2012) argued that, by offering a statistically rigorous process for reaching to conclusions, the theory also was simple enough to become the building block of Corporate Governance frameworks.

However, the Agency Theory, as the mainstream framework is applied up to this day, has also many critics: Clarke and Branson (2012) stated that agency theory sees their key players (shareholders, executives and directors) as mainly self-interested beings, while also not considering other crucial stakeholders for an effective business operation. Echoing the abovementioned authors, Heminway (2012) and van Ees and van der Laan (2012) pointed out that Agency Theory inaccurately predicts human behavior in some instances, as directors and managers are not self-interested welfare maximizers all the time.

Deakin (2012), using a legal perspective, argued that the idea of shareholders-as-principals-and-managers-as-agents is flawed: in his point of view, even though shareholders are entitled to appoint and remove directors from the board, they are forbidden to act

directly in management. Therefore, the author affirmed that directors are agents of the company, not of the shareholders.

The principal-agent conflict can be viewed through a wide variety of frameworks. For instance, the school of New Institutional Economics stated that given costs associated with information gathering, the idea of “complete rationality” is overruled. This implies that positive transaction costs exist and that complete agency contracts (i.e. a principal with full knowledge of its agents’ preference functions and also precise knowledge of the distribution function of external shocks) are impossible (FURUBOTN and RICHTER, 2005).

Therefore, one of the central ideas of the New Institutional Economics school is to dissect the principal-agent relationship looking for optimal contracts for both parties (FURUBOTN and RICHTER, 2005).

While the Agency Theory usually sticks to the traditional study setting of analyzing potential conflict arising from a principal’s information asymmetry regarding the agent, Hoskisson et. al. (2013) expanded the scenario to englobe multiple Agency Theory conflicts: in many instances, parties face dual identities (i.e. they are, at the same time, principals for a group of stakeholders and agent for another).

Also, in many instances some actors may have a longer focal situation, with interests that may transcend the current scenario, creating potential for incongruences and inefficiencies. Lastly, when relationships transcend the current situations, different investment horizons can interfere with incentives and undermine the responsibilities of each party.

Peng and Sauerwald (2013), following the same line as the aforementioned authors, stated that it is also extremely important to study conflicts that arise not only between agents and principals, but between principals among themselves. The authors pointed out that these conflicts are prone to arise with concentrated firm ownership and poor institutional protection for minority shareholders.

These principal-principal conflicts have vast effects in Corporate Governance structures, ranging from managerial talent acquisition/retention to executive compensation and mergers and acquisitions (PENG and SAUERWALD, 2013).

2.1.2.3.2 Stewardship Theory

While also analyzing the shareholder-manager relationship in much the same way as Agency Theory does, the stewardship theory arrives at different understandings of their relationship (HEMINWAY, 2012).

Tricker (2012) affirmed that the stewardship theory constructs its conclusions on the premise that directors can be trusted. In the author's view, stewardship theory reflects the classical ideas of Corporate Governance, believing that directors act accordingly to what is expected of them – both impartially and ethically. The theory characterizes management less as opportunists and more as cooperative individuals that behave given the shareholders' interests (HEMINWAY, 2012).

Therefore, they do not always act and search for ways to behave based solely on their self-interest. Even though, of course, many directors do act in detriment of the company's shareholders, this notion is not as widespread as Agency Theory proponents believe, making the stewardship theory a valid framework of analysis (TRICKER, 2012).

The role of the board, according to proponents of the stewardship theory, is to facilitate and empower managers, in lieu of a strict monitoring task, as agency theory proposes (ZATTONI and PUGLIESE, 2012).

While agency theory and stewardship theory depart from very different behavioral assumptions, they may be complementary, rather than opposite frameworks (VAN EES and VAN DER LAAN, 2012).

Roberts (2012) argued that in environments with high-trust/high-involvement cultures, executives are motivated to act according to shareholders' principles, while also becoming identified with the company's organizational culture and success.

Critics of the stewardship theory argues that corporations nowadays are much different from what they were when the theory first began to appear. The concept of shareholders owning a single company and having strong relationships with the board is not applicable in today's environment where organizations such as mutual funds increase their stakes.

Moreover, modern corporations are often complex and opaque, meaning that the accountability of directors to shareholders is much more difficult. Lastly, the stewardship theory is embedded in a normative view of Corporate Governance, emphasizing what should be done, meaning that it is not predictive and much harder to draw empirical conclusions (TRICKER, 2012).

2.1.2.3.3 Transaction Costs Economics

The Transaction Costs Theory takes the agency problem discussed above as given and builds upon how to efficiently mitigate its costs (DRIVER, 2012). To proponents of the Transaction Costs Theory, a company is a nexus of contracts, and its existence is based upon the idea of lowering transaction costs by avoiding costs associated with contract enforcement in uncertain environments. Therefore, the corporation is the coordinator of

these contractual relationships that arise from the separation of ownership and management (DELA RAMA, 012; CLARKE and BRANSON, 2012).

A corporation should focus on the costs of monitoring directors (through independent directors, committees, chairman-CEO separation etc.) up to the point where these enforcement costs equal the benefits that arises from these initiatives (TRICKER, 2012).

While seemingly close to the Agency Theory framework, Transaction Costs Economics criticizes the former as having a focus on how to balance risk-taking activities rather than on the best choice of governance to deal with contract hassles (DRIVER, 2012).

2.1.2.3.4 Resource-Based Theory

A resource-based view of a firm proposes that boards represent a source of competitive organization to a corporation, given that they are in a privileged position to contribute to strategic decision-making. Well-connected boards (with different kinds of stakeholders) reduce the distance of the corporation to its environment and can provide external sources and legitimation to boards' decisions (ZATTONI and PUGLIESE, 2012).

In contrast with the Transaction Costs Theory, the resource-based theory argues that the existence of a firm is due to the monopoly position it can acquire when combining different resources inside the firm (DRIVER, 2012).

For many resource-based proponents, the main skill of a company is its dynamic capability – that is, to be able to constantly adapt and create improved knowledge. Being an inward-looking framework, its proponents state that the company is a governing structure also focused in innovation prospects, instead of being only a conflict-resolution entity (DRIVER, 2012; BENN, 2012).

2.1.2.3.5 Team Production Theory

The team production theory views the corporations as groups of internal and external stakeholders. All these stakeholders supply resources to the company and may, given the chance, opportunistically appropriate the corporation. The public corporation can be viewed not as a nexus of contracts, but as a bundle of firm-specific investments that individuals make to a company while trying to reap the benefits from these investments (HEMINWAY, 2012).

It is important to mention that Transaction Cost Theory is also deeply involved in the study of firm-specific investments due to the existence of ex-post opportunistic behavior (such as in a labor contract). Williamson, one of the main proponents of the Transaction

Costs view, sees private orderings (e.g. self-enforcing agreements) as a complement to court ordering mechanisms (FURUBOTN and RICHTER, 2013).

Blair and Stout (1999) stated that corporate assets do not belong to the shareholders, but to the corporation itself. Control over these assets is defined internally, through a job of team member coordination, allocating the resulting contribution to these teams. At the peak of this internal hierarchy is the board of directors, which has authority regarding the usage of corporate assets and is independent – by law – of individual team members.

However compelling the theory may be, Heminway (2012) stated that the weakness of this theory is its possible applicability: it is mainly focused on US public companies. Moreover, it does not account for rules that place shareholder interests above all other stakeholders. Being a theory of aggregate groups, it fails to explain the dominance of certain stakeholders in corporate management.

2.1.2.3.6 Stakeholder Theory

The stakeholder theory expands the notion of director-shareholder accountability, stating that boards should be held accountable and act on the best interest of various classes of stakeholders (shareholders included). The stakeholder's theory challenges the assumption of shareholder value maximization, which is embedded in the Agency Theory. To their proponents, different stakeholders have different goals, and the boards' task is to manage these divergent goals as efficient as possible (ZATTONI and PUGLIESE, 2012).

According to Benn (2012), stakeholder theory is a merge between resource-based theory and traditional corporate social responsibility theories. The author stated that the stakeholder theory considers successful organizations those that adds value for all stakeholders.

The stakeholder theory also has its limitations: it has a limited capacity to address how to effectively manage risk. Furthermore, it does not clarify how to operate a governance system that in fact integrate all the elements of a system (both human and non-human stakeholders).

Lastly, the term “stakeholder” is not clearly defined, as the traditional view of stakeholders is probably too narrow for nowadays complex environments (BENN, 2012).

2.1.2.4 Board Structure and Effectiveness

Even though the board of directors' structure may differ along the time axis and from country to country, boards are usually described by its structural properties, mainly:

size, professional and demographic information, independence, number of committees and director compensation (LARCKER and TAYAN, 2011).

According to the Spencer Stuart Board Index, (2016) the average United States' board size is 11 directors, with about 85% with directors that meet the regulatory standards to be classified as independent. There is also a steady decline in CEO-chairman duality, nowadays residing at 52% of the boards. The United Kingdom figures are somehow proximate, notwithstanding the fact that they have less independent directors in their boards – the figure being close to 70% (PYE, KACZMAREK and KIMINO, 2012).

Although recent Corporate Governance codes called for significant changes in board composition (especially through the usage of non-executive directors and independent ones), the gender representation is still a taboo.

According to Sealy and Vinnicombe (2012), more women on corporate boards can bring important benefits, ranging from better compliance to corporate codes up to better succession planning, usage of external sources, new director trainings and balancing of board skills. The authors debunked many myths (such as human capital, time and ambition ones) that tries to provide a rational explanation for this underrepresentation.

Many countries, seeking to increase the female representation in boards, passed numerous rules to address the problem, such as Norway, Spain, France, Netherlands and Sweden (LARCKER and TAYAN, 2011; STILES, 2013). As reported by the Spencer Stuart Board Index (2016), initial changes are beginning to gain traction in the United States: in 2016, 32% of new directors were females.

Nielsen (2012) controversially stated that diversity in women directors' prior professional experiences has negative effect on board outcomes. Therefore, according to the author, it is important not only to appoint women, but also the assess their personal and professional characteristics and how they interact with the board's ones.

While research on gender diversity has received attention from the academic literature and public authorities, the broader diversity shall be better explored. Nielsen (2012) affirmed that diversity can have many different conceptualizations, such as: diversity of personal attributes; cognitive and demographic diversity; diversity as variety (differences in knowledge); separation (differences in opinion); and disparity (differences in concentration of social assets), among others.

The author also pointed out that the level of aggregation is important, as “individual versus team” decisions can be influenced in different ways by diversity initiatives.

In a study conducted from 1989 to 2010 in the United Kingdom, Pye, Kaczmarek and Kimino (2012) stated that, in spite of the fact that the composition and the roles that directors have changed, the importance of relationships and their interconnectedness has not. Strategic issues, governance and remuneration ones are still tasks that directors have

to decide and interact with managers.

Regarding the measurement of board effectiveness, this indicator is contingent on the model chosen to evaluate its outcomes. Table 1 show the different models that the last three decades in Corporate Governance studies has brought (NICHOLSON, KIEL and TUNNY, 2012).

Table 1: Models of Board Effectiveness and Performance.

Author(s)	Model	Measurement of Effectiveness
Zahra and Pearce (1989)	Integrated Model	The role of the board is beyond monitoring and includes strategy and service roles. Companies face different challenges during their life cycle, and boards need to adapt to the requirements of each phase.
Nicholson and Kiel (2004)	Intellectual Capital Framework	Explicitly identifies three levels of aggregation that may influence board outcomes: group, individual and corporate levels of performance. Intellectual capital of the board is a result of the corporation environment. Effective Corporate Governance needs congruence or alignment.
Carter and Lorsch (2004)	Board as a System	Performance reviews need to assess board behaviors. Information needs to be collected "on the act" (i.e., during the board meetings).
Charan (2005)	Board as a Source of Competitive Advantage	Boards have evolved from compliance-focused to a more active and involved stance. Group dynamics, information architecture and focus on substantive issues are key to good board performance.
Huse (2007)	Value-creating Board	Broader, societal focus for understating how boards add value.

Adapted from: NICHOLSON, KIEL and TINNY, 2012.

The studies regarding the effectiveness of different boards are somehow ambiguous. Van Ees and van der Laan (2012) showed that, given that the Corporate Governance field is multidisciplinary, many different variables can be defined as an efficiency indicator, while at the same time neglecting the correlation that may exist among them. One possible explanation for different branches of research and explanation for boards' structure and effectiveness can be given due to the different roles and duties the directors hold, be it monitoring, strategic advice or network activities.

Based on the divergent indicators that might exist to assess board performance, Nicholson, Kiel and Tunny (2012) approached the problem of board evaluation by creating a framework that ranges from the objectives of the evaluations, who and what will be evaluated, and the techniques used up to the usefulness of the results. The framework tries to grasp the various evaluation dimensions, from board processes to structure.

Huse and Gabrielsson (2012) presented different perspectives on board and value creation, depending on the external/internal perspective of the firm and the unitary/balancing perspective. The value creation and role of boards can be broken down into its tasks, members, teamwork, leadership legislation and feedback.

Table 2: Perspectives on Boards and Value Creation.

	<i>Unitary Perspectives</i>	<i>Balancing Perspectives</i>
<i>Firm external perspectives</i>	<p>Shareholder perspectives</p> <p>Value creation for shareholders</p> <p>Boards are serving shareholder interests</p>	<p>Stakeholder perspectives</p> <p>Value creation for stakeholders</p> <p>Boards are serving stakeholder interests</p>
<i>Firm internal perspectives</i>	<p>Managerial perspectives</p> <p>Value creation for the management</p> <p>Boards are serving management interests</p>	<p>Firm perspectives</p> <p>What is best for the firm</p> <p>Value creation throughout the whole value</p>

Adapted from: HUSE and GABRIELSSON, 2011.

Although the board itself is under a thorough scrutiny, not much attention has been given to second-layer governance mechanisms, such as board committees. These boards are usually comprised of independent directors, giving these committees the task of enhancing Corporate Governance primarily through its potential monitoring role. However, given the recent corporate scandals that have risen in the early 20th century, many started to believe that committees have, at most, a symbolic role (STILES, 2013).

Regarding this matter, Stiles (2013) investigated the three main board committees: audit, remuneration and nomination, also examining the process underlying these committees.

The audit committee has roles especially related to the oversight of financial reporting quality, external audit and internal control. The author found that audit committee is negatively correlated with earnings misstatements; however, when the independence of the audit committee member is questioned (e.g. through CEO involvement in the committee), this negative correlation is significantly reduced.

Moreover, the author found that the presence of an independent audit committee reduces the likelihood of earnings mismanagement. Regarding external audit oversight, Stiles (2013) also found that independent audit committees tends to promote auditor

independence, with financial expertise in the committee reducing the dissonance between the committees' decisions and the external auditors' ones. It was possible to highlight as well that an increase in financial skills at the committee reduced the likelihood of external auditors' resignation, as the relationship between external auditors and management was strengthened with the intermediation of an independent audit committee.

Stiles (2013) also studied the effectiveness of the remuneration committee. This committee has the objective of determining and presenting the board the framework and mechanisms for the remuneration of the top management team. However, in contrast to the stated effectiveness of the audit committee, the performance of the remuneration committee is more controversial. Many authors did not find a correlation between the composition of the committee and the CEO pay level.

However, regarding the usage of external compensation consultants, many authors have found that their usage is correlated with a higher CEO compensation. Lastly, various authors believe that compensation committee leads to a self-perpetuating motion of ever-increasing CEO compensation levels, challenging the usefulness of such committee.

Discussing the nomination committee, Stiles (2013) argued that its role is to lead the process of board appointments and to give advice to the board vis-à-vis possible candidates. However, in terms of management, the CEO usually has the best knowledge concerning the skills needed for the company and the board. The role of the board, therefore, is to diminish the management influence in nominating future directors. The danger of not being able to overcome the CEO influence is big: when the CEO serves at the nomination committee (or if no such committee exists), corporations appoint fewer independent directors and favor those in the "grey area".

Nonetheless, it is important to point out that the likelihood of CEO dismissals is smaller if the board is comprised of independent directors with few external directorships. Lastly, the existence of nomination committee may positively influence the nationality diversity of boards and top management teams, but has little effect on gender or educational diversity (STILES, 2013).

2.1.2.5 Corporate Ownership

Although, at first glance, corporate owners may seem a relatively homogeneous group, this assumption is erroneous: more often than not, firm owners differ considerably regarding their motivations for investing, their risk appetite and the time horizon they are considering. When one player has a majority stake, its goals are usually put in the first place – to the detriment of other shareholders. How this conflict of interest may arise, and how the corporate ownership structure varies from country to country is a fertile ground for analysis. (BOSS et. al., 2013).

Aguillera, Desender and Kabbach de Castro (2012) stated that there are four kinds of ownership structures: family ownership, institutional ownership, state ownership and banking ownership.

According to the authors, family control is a distinct class of investors, as they usually hold undiversified portfolios, have a long-term view and actively engage in the corporations' management. Institutional investors, on the other hand, are more concerned about maximizing shareholder value and liquidity. State ownership, even though they receive less attention from the academic literature, is a crucial form of ownership in many countries. And lastly, banking investors usually have multiple ties with the corporation and uses its ownership to cement this often-complex relationship with the enterprise.

According to Pendleton and Gospel (2013), there are two types of governance systems: market-outsider and relational-insider ones. In the latter, big companies are public and institutional investors have big stakes (even though these stakes generally comprise a small fraction of the whole corporation). As these owners normally have a diversified portfolio, monitoring costs are usually considerably costly – also correlated to the well-known phenomenon of the free rider problem.

In market-outsider governance systems, governance is exercised by “exit” rather than by “voice”: it is more efficient for investors to sell their stakes and let the market for corporate control dictate how the firm should be governed.

In relational-insider governance systems, on the other hand, concentrated ownership is the rule, with substantial involvement by these shareholders in the smaller details of running the corporation. These systems are normally characterized by smaller stock markets and fewer public companies, meaning that the market for corporate control may not be as efficient as in market-outsider systems. These differences in institutional settings are normally viewed in the “varieties of capitalism” literature (PENDLETON and GOSPEL, 2013).

According to Beuselinck, Deloof and Manigart (2013), information disclosure is linked to the form of ownership structure of the firm. The authors state that family owners are usually less prone to publish voluntary information, a topic that is further discussed in topic 2.1.2.5.2. In addition, foreign ownership is positively correlated with more information disclosure in Asian countries. Lastly, there is a belief that firms with more pulverized ownership should suffer more from agency problems and, therefore, demand more voluntary disclosures – however, empirical evidence is mixed.

2.1.2.5.1 Institutional Investors

Institutional shareholders are not a homogeneous group. It is comprised of mutual funds, pension funds, professional investment management funds, university endowment funds and insurance companies, among many others (BOSS et. al., 2013).

Once a small player in corporate ownership markets, institutional investors are gaining traction and becoming one of the most important corporate owners of the modern world (BOSS et. al., 2013). In the United States, institutional investors have grown from around 5% of all listed equity in 1950 to 70% of all corporate stocks in the 2010s. (BOSS et. al., 2013; USEEM, 2012). Figures in the United Kingdom are no different: physical persons hold only 10% of all public equity; in Japan, 20% (ÇELIK and ISAKSSON, 2013; USEEM, 2012).

The separation of ownership and control is not the only culprit for the appearance of significant agency costs. In addition to that, pulverized shareholders do not have the incentive to engage in monitoring activities, further increasing agency costs.

The rise of large shareholders may, to some extent, diminish agency costs by engaging in monitoring mechanisms more effectively, as with bigger stakes incentives also increase. Empirical evidence supports this assumption (GILLAN and STARKS, 2003).

The ownership share of institutional investors is widely variable, depending on the legal and regulatory systems of the country. The relation of institutional investors and governance variables, such as the existence of pension systems, financial liberalization and investment policies of foreign investors all matter for the institutional investors' importance in a given market (GILLAN and STARKS).

Aghion, Van Reenen and Zingales (2013) studied how the ownership structure may affect firm performance, especially regarding innovation endeavors. The authors have found that, contrary to the widespread belief of short-term view of institutional investors, the presence of these investors actually boosted innovation, even after accounting for possible effects of an increase in R&D and endogeneity of institutional ownership.

However, as Boss et. al. (2013) remarked (and was also aforementioned), institutional investors are a very heterogeneous group. According to the authors, there are three types of institutional investors: pressure-sensitive (e.g. insurance companies), pressure-resistant (e.g. public pension funds, mutual funds, endowments etc.) and pressure-indeterminate institutions (e.g. brokerage houses). Pension fund owners tend to hold their stocks longer because of their long-term focus.

In addition, they are prone to show more interest by actively participating in governance, voicing their opinion and concerns. On the other hand, mutual funds, due to their capillarity, usually do not engage in governance procedures; this is not to say they

are completely passive: they may express their voice for short-run decisions, but usually do not interfere in strategic guidance. As stated by Pendleton and Gospel (2013), mutual funds tend to flourish in market-outsider governance systems, where the “exit” strategy is less costly.

Hedge funds, as a relatively recent type of institutional investor, has become a critical player for the corporate environment but has not received enough attention from the academic literature. Their interest in corporate decision-making is ambiguous; however, they usually focus on firm regulatory systems and conformity with rules for fair practice. As they search for quick profits, they can diverge from other shareholders’ interests, and their short-term view may influence long-term profits of the corporation (BOSS et. al., 2013).

2.1.2.5.2 Family Ownership

Family firm research is receiving widespread attention from the academia. According to Boss et. al. (2012), these firms are often inclined to bow to institutional pressures, as their wealth (both in an economical and psychological sense) is linked to the decision-making process inside the corporation. When high stakes of a company are owned by a family group, the monitoring role of the board is weakened: as the family is both the majority owner and influences in the conduct of the business, the board loses this customary function. In addition, executive compensation is of little relevance, as the managers have important stakes at the company itself. Lastly, information disclosure is likely to be small, as they usually do not have to rely on external sources of financing their business (AGUILLERA, 2012).

While many may believe that family-controlled firms are not a characteristic of the United States corporate structure, Aguillera, Desender and Kabbach de Castro (2012) argued that up to one-third of the S&P 500 corporations can be classified as family-owned. In Asian countries, the family-owned type of ownership is, by far, the most important one: up to 84% of the GDP of these countries can be concentrated on the hands of the 15 most powerful country’s families (DELA RAMA, 2012).

As better protection of minority shareholders may allow a greater reliance of corporate financing in capital markets, the role of banks in family-owned firms is important in countries where this shareholder-minority protection is weak: the banks may have the role of monitoring the business conduct and governance procedures (AGUILERA, DESENDER and KABBACH DE CASTRO, 2012).

Uhlener (2013) pointed out to the dangers of measuring family involvement with a single indicator (usually percentage of ownership). In the author’s opinion, “such indicator can potentially confound the effects of founders with later generations and single owners

vs. business-owning families” (p. 411).

2.1.2.5.3 Bank Ownership

According to Aguilera, Desender and Kabbach de Castro (2012), banks tend to have a more complex and longer-term relationship with corporate clients. Firms that have banks as an important shareholder often disclose little information, as confidentiality between the bank and the corporation is highly valued. In addition, banks also actively engage in governance mechanisms, naming representatives for the company board. The authors stated that banks usually have a strong position in leadership in non-financial companies or in groups of corporations.

Being a shareholder with superior information due to the often-close ties with the management, banks normally have significant power in governance procedures, influencing the priority of boards of directors, monitoring mechanisms and executive compensation. As these institutions usually provide financing for the firm, the authors argued that banks have a strong incentive to promote long-term value for the company (AGUILERA, DESENDER and KABBACH DE CASTRO, 2012).

2.1.2.5.4 State Ownership

Aguilera, Desender and Kabbach de Castro (2012) argued that the state is usually understood as a passive owner, with the tendency of being a long-term perspective, emphasizing value creation over time. In addition, the state may also be interesting in securing social welfare, which may not be aligned with other shareholders objective of profit maximization.

Boss et. al. (2013) stated that government ownership is more influent in two domains: emerging economies and in market failures (such as natural monopoly). Also, the authors pointed out that, in most cases, government ownership is not well perceived: it is usually correlated with worse performance of firms, lower innovation, increased corruption and worse monitoring intensity is also associated with state ownership.

It is important to mention the relevance of sovereign wealth funds, with assets of more than US\$ 2 trillion in 2010. Fotak, Gao and Megginson (2013) believe that "sovereign wealth funds are the result of a process of evolution of state ownership which is largely shaped by governance and agency-related issues” (p. 582).

2.1.2.5.5 Internal Ownership

Boss et. al. (2013) suggests that internal owners, such as executives, board members and employees, are important shareholders vis-à-vis decision-making. Concerning executives, the authors suggested that as executives have a bigger ownership stake, they are less prone to appropriate the company's resources and have a longer-term view. Also, board members may receive greater ownership position in order to block inefficient acquisitions and to act according to shareholders' interests.

Lastly, employee ownership is usually related to the creation of alignment between employees' incentives and the performance of the firm.

2.1.2.6 Corporate Governance Processes

Although many studies focused on board composition in order to explain board effectiveness and, consequently, firm performance, a different branch of authors started to question whether the behaviors, ties and processes that happen within boards may matter more than how it is actually constituted.

McNulty (2013) stated that the only way in which one can actually know if the board is performing is being inside the boardroom, which academics cannot. In addition, Harrow and Phillips (2013) affirmed that governance researchers pay little academic attention to understanding owners from a behavioral standpoint.

Two different research approaches have been developed in order to access board processes: the first is to model board processes conceptually, building upon the idea that the board of directors is, essentially, a group. The other is to use qualitative research in order to draw upon directors' experiences of how board actually work (ROBERTS, 2012).

McNulty (2013) pointed out that while a range of studies tried to highlight the link between structural and compositional characteristics of boards (such as CEO-duality, size etc.) many are inconclusive and called for studies of intervening variables.

Zahra and Pearce (1989), in their seminal article regarding board of directors and firm performance relationship, discussed three main areas where studies in this field might be fruitful: the impact of board variables (interindustry differences, organizational life cycles etc.); board processes and attributes (regarding what is the behavior of the board and how it actually makes decisions); models that take under consideration to precursors events and their consequences; wider samples, instead of focusing, for example, on Fortune 500 companies; and lastly, standardization of how board variables are actually measured (e.g. by its outside directors).

McNulty (2013) did a comprehensive literature review of studies that focused on board processes, looking at variables such as power, influence, expertise and experience,

will and skill, decision-making processes etc. The author called for a more comprehensive understanding of board contribution to strategic decisions, especially concerning the passiveness or proactiveness of directors vis-à-vis this kind of contribution to the company.

John Roberts (2012), following the same line as Zhara and Pearce (1989), stated that the character of any board is complex, diverse and contingent, especially regarding individual behavior; the dynamic relationships that evolve during a directors' tenure; and the resultant group culture. The author also believed that the control function and the strategic functions of boards can enact very different from board to board. Furthermore, the author favored a strategic role of the board as: "it provides a unitary point of focus for both executive and non-executive directors – a shared task on which they can work together – in which the experience, skills and contacts of non-executives can be drawn upon by executives in support of their performance" (p.210)

McNulty (2013) also argued that the governance literature should embrace how social and psychological processes influence the board decision making. Well-known social and psychological phenomena, such as "groupthink" and "pluralistic ignorance" should also be present in board meetings.

Three particular constructs are identified under the umbrella of board processes: effort norms, which relate to how well-prepared directors are to participate and contribute; cognitive conflict, referring to how disagreement on issues are resolved by the board; and use of knowledge and skills, relating to how the relevant expertise is coordinated and used by the board (MCNULTY, 2013).

It is important to mention that the recent events relating to corporate scandals show how perfect governance credentials may still be not enough to deter management misconduct. Enron, one of the most emblematic cases, had seemingly outstanding credentials but failed miserably. Laws and codes that influence board structure does not dictate how these board processes might occur: the board substance/decision-making is more important than its form (MCNULTY, 2013).

One of the key Corporate Governance policies is its compliance system structuring. With a much tighter public scrutiny, allied with more severe laws that attempt to bar corporate misconduct, the field has received widespread attention in the last decades. However, how the compliance system of corporations is structured depends on how those who develop the system understands decision-making in management environments.

Given that different assumptions may lead to very distinct measures, it is extremely important to discuss the fundamentals of honesty and ethical conduct. The next topic discusses thoroughly the main frameworks that lead to corporate misconduct. With models that go from sociology up to criminology and economics, fraudulent behavior is dissected into its subcomponents. The following analysis is extremely important for our following

discussion on compliance system structuring.

2.1.3 Ethics in Corporate Environments ¹

2.1.3.1 Stages of Moral Development

When discussing about human morality and how it develops throughout one's life, the name of the developmental psychologist and Harvard professor Lawrence Kohlberg is certainly among the prominent authors in this field. During the World War II, witnessing the atrocities that the Nazis were committing, Kohlberg became interested in studying the potential disparities between morality and legality: when was it appropriate to disregard laws? When the usage of physical violence is justifiable? (SOLTES, 2016).

In order to study how individuals perceived morality and how it influenced their daily decision making, Kohlberg decided to explore the intricate details by presenting to research participants moral dilemmas and observing how they would act in these circumstances. The most famous of these dilemmas is the Heinz Dilemma, stated as follows (SOLTES, 2016; KOHLBERG, 1971):

“In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000, which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, I discovered the drug and I'm going to make money from it." So, Heinz got desperate and broke into the man's store to steal the drug-for his wife. Should the husband have done that?” (KOHLBERG, 1971, p. 2)

The main focus in Kohlberg's dilemma is not the “yes or no” answer, but rather how the participants reasoned and how their arguments were structured (KOHLBERG, 1971). The research began with 72 individuals between 10 and 16 years old. Kohlberg followed 58 of these participants, interviewing them every three years during the following 20 years to see how their perceived morality changed with the passage of time. Using these observations, Kohlberg found that one's moral development is divided into six stages, every two of them inside bigger clusters (BENSON et. al., 2012).

¹ In this thesis, the terms fraudulent, criminal, unlawful, unethical, dishonest and misconduct behavior will be treated as synonyms.

There are some characteristics that Kohlberg applied to these stages of moral development, such as (KOHLBERG and HERSH, 1977):

- Stages are organized systems of thought, which means that individuals in the same moral stage are consonant regarding how to evaluate actions;
- Stages form a sequence. One cannot go from stage one to five without going through stages two, three and four. Moreover, movement is always to the stage above and never to the stage below;
- Stages are hierarchical integrations. Therefore, individuals in more advanced moral stages are able to understand the moral reasoning of individuals in lower ranks. However, the opposite is not true.

2.1.3.1.1 Preconventional Level

The preconventional level is usually developed in the early stages of human development, up to around nine years old. At this level, the individuals are responsive to cultural rules and binary labels such as “good or bad”, “right or wrong”. In addition, these labels are interpreted at a hedonistic or physical consequence of an action (punishment, reward, favors etc.) or in term of the power of those who state the rules (BENSON et. al., 2012; KOLHBERG and HERSH, 1977).

The first stage of moral development is called punishment-and-obedience orientation. During this stage, the individual determines his actions based on its physical consequences. The goodness or badness of the decision is not taken under consideration: avoidance of punishment and deference to power are valued in their own rights, rather than at a higher moral order that is supported by punishment or authority (e.g., law and order – the fourth stage) (KOLHBERG and HERSH, 1977). At this stage, “the children think of what is right as that which the authority is right. Doing the right think is obeying authority and avoiding punishment” (KOHLBERG, 1971, p. 3).

The second stage of moral development is called instrumental-relativist orientation. In this stage, the individual not only thinks in terms of punishment but also how its actions satisfy one’s needs. Actions are based solely on ways to maximize one’s wellness, and concepts such as fairness and reciprocity are interpreted in a pragmatic way: reciprocity is based on the idea of “you scratch my back and I will scratch yours” rather than in more abstract terms such as loyalty and justice (KOLHBERG and HERSH, 1977). Individuals at this stage are no longer impressed by the figure of an individual authority, analyzing the actions and consequences through different angles. Since things are relative, “one is free to pursue one’s own interests, although it is often useful to make deals and exchange favors with others” (KOHLBERG, 1971, p.3).

2.1.3.1.2 Conventional Level

At this level, the focus shifts from an egocentric perspective to a broader one. Individuals see maintaining the expectations of others (be it family, friends, its nation) as valuable in its own right. Here, the idea is not only of conformity to social norms, but plain loyalty to it by actively supporting the role of these norms (KOHLBERG and HERSH, 1977).

The third stage of moral development is referred as the interpersonal concordance or “good boy – nice girl” orientation. At this stage, behavior is molded based on how others perceive it. Basically, individuals engage in actions which make them better seen and approved in their community. Notwithstanding, there is a high degree of conformity to these expectations, meaning that one does not challenge what the majority perceives as the “right” behavior (KOHLBERG and HERSH, 1977). The emphasis is “being a good person, which basically means having helpful motives toward people close to them” (KOHLBERG, 1971, p.2).

The fourth stage of moral development is referred as the “law and order” orientation. Authority again arises as a big influencer at this stage. However, in contrast with the first stage, the authority is understood as the maintenance of social orders that exists through the usage of legal procedures. One does not challenge the existing rules, rather showing support and conformity to the existing social order (KOHLBERG and HERSH, 1977). Here, “the concern shifts toward obeying laws to maintain society as a whole” (KOHLBERG, 1971, p.3).

2.1.3.1.3 Postconventional Level

At this level, the individual engages in an effort to define his moral values and principles apart from any authority, be it the authority created by social conformity of groups or the authority of laws and current rules. Here, the individual’s own identification is more highly valued than the influence of others. Again, the focus is on the individual and the consequences of its actions, but not in an egocentric view, such as in the preconventional level (KOHLBERG and HERSH, 1977).

The fifth stage of moral development is called the social-contract, legalistic orientation. The correct action tends to be defined in terms of how the behavior affects one’s well-being and how it affects the whole society. There is awareness of one’s personal values and the values that a society as a whole may have, meaning that efforts to reach consensus are valuable. While there is a degree of conformity, the notion of changing the existing rules in order to achieve greater individual and societal well-being is taken under consideration

(KOHLBERG and HERSH, 1977). The basic rights and the democratic processes that allows everyone to voice their opinion has a clear role at this stage (KOHLBERG, 1971).

Lastly, the sixth stage is usually referred as the universal-ethical-principle orientation. What is right is defined in one's consciousness by applying self-applying ethical principles that comprises the idea of universality and consistency. The "rules" that individuals follow are not strict rules, but rather self-imposed ones in order to achieve abstract goals such as justice, equality of rights and dignity (KOHLBERG and HERSH, 1977). The principles are defined as those that will make agreement more just (KOHLBERG, 1971).

2.1.3.2 Frameworks of Ethical Behavior

2.1.3.2.1 Gary Becker's Crime-and-Punishment View

According to Soltes (2016), making trade-offs through the means of cost-benefit analysis is at the heart of competent business management. Be it Thomas Jefferson or managers, the idea of thinking about decision through the lens of the possible benefits and consequences is widespread.

Gary Becker, the Nobel laureate and one of the most prominent economists of the 20th century, considerably expanded the economics into the crime-and-punishment realm. As Becker puts it in his Nobel laureate speech (BECKER, 1993):

I began to think about crime in the 1960s after driving to Columbia University for an oral examination of a student in economic theory. I was late and had to decide quickly whether to put the car in a parking lot, or risk getting a ticket for parking illegally on the street. I calculated the likelihood of getting a ticket, the size of the penalty, and the cost of putting the car in a lot. [...] The frequency of their inspection of parked vehicles and the size of the penalty imposed on violators should depend on their estimates of the type of calculations potential violators like me would make." (p. 5)

During Becker's time, criminal behavior was considered a psychological anomaly, rather than deliberate decision made by coherent decision-making. According to the Nobel laureate, however, criminals acted the way they did based on their interests: their basic motivations were not necessarily different from those of ordinary people (SOLTES, 2016).

Becker continued to study the theme and took inspiration from Jeremy Bentham, a social philosopher of the eighteenth century. According to Bentham's theory of punishment, individuals were periodically making calculations in order to maximize their well-being. As rational individuals, human beings are always weighing pleasure against pain (SOLTES, 2016).

Using Bentham’s contribution, Becker used the core idea of well-being-maximizing individuals and sought to better understand how this well-being could be quantified – a variable earlier defined as utility. Becker did not specify which behaviors would maximize or decrease utility, as they were subjective (SOLTES, 2016; BECKER, 1993).

Using utility as a cornerstone for his analysis, Becker understood that crime behavior could also be understood through the utility analysis. According to the University of Chicago professor, criminals compared the utility gained from illegal actions with the utility that could be gained with legal actions, committing to the same resources as the illegal action. As aforementioned, viewed in this way, criminals are not intrinsically inclined to do illicit actions, but rather have perceived costs and benefits that are different from the law-abiding citizens (SOLTES, 2016).

While criticism arose regarding the separation of morality from criminal behavior, Becker did not state that his theory saw individuals as individual monetary-maximizers beings. In his acceptance speech, Becker puts that his analysis assumes that “individuals maximize welfare as they perceive it, whether they be selfish, altruistic, loyal, spiteful or masochistic” (BECKER, 1993, p. 1).

Even if the prospect of viewing morality as just another factor in the cost benefit analysis is gruesome for some, few moral tenets are inviolable. Rational choice recognizes that given deep-rooted moral beliefs can be violated in the right circumstances where expected benefits outweigh expected costs (SOLTES, 2016).

However, even though it is a robust theory, it leaves the question of how well it explains how individuals actually behave: questions regarding if the theory fitted well with empirical analysis was not the main concern of early economists, as they were much more inclined to view the usefulness of a theory using Milton Friedman’s “as if” hypothesis – something already discussed in the Behavioral Economics review. The rational choice model was a theory for predicting outcomes, not a model of human cognition (SOLTES, 2016).

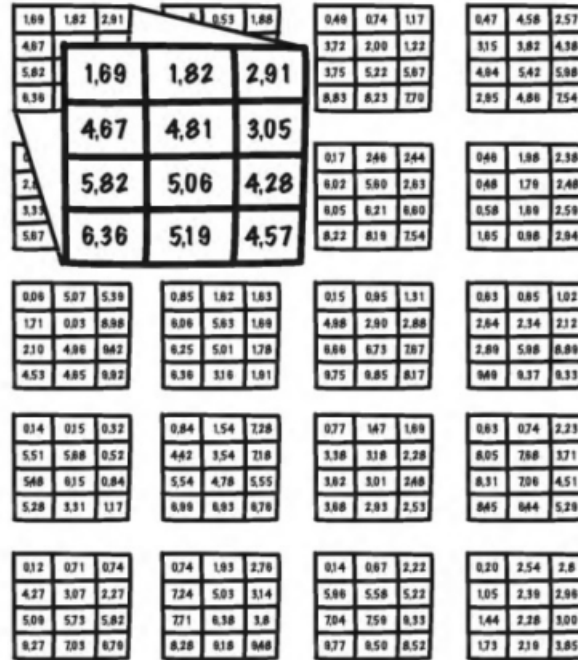
The assumptions underlying the rational model had simple policy actions for deterring crime: first, raise the probability of one being caught in illicit behavior; second, raise the punishment costs to the individual (ARIELY, 2012).

2.1.3.2.2 Dan Ariely’s View on Dishonesty

In order to test whether individuals engage in illegal behavior according to how the rational model predicts, Ariely (2012) benefited from social experiments. In a series of tests, later called “The Matrix Experiment”, the author conducted a simple experiment, where individuals had to find, in each matrix, two numbers that summed ten. Figure 4

shows one example of such matrices:

Figure 4: Matrix Test Example.



Extracted from: ARIELY, 2012.

In each experiment, Ariely gave a pre-specified monetary amount for each matrix correctly solved. The participants, once allowed to start, should try to answer the biggest amount possible of matrices, in order to maximize their monetary value. However, the time given in order to solve the matrices was purposefully short, in order deter participants from answering all the matrices correctly (ARIELY, 2012).

The debut experiment was made in two different settings: in the first, once the time given was ended, participants had to handle the matrix sheets to the researcher, who would count the number of matrices and give the appropriate amount of compensation to each participant. This was categorized as the control group (ARIELY, 2012).

In a second trial, the experiment unfolded exactly like the control group until the time allowance finished. In this scenario, the participants, instead of handling the papers to the researcher, would shred their matrices sheets in a paper shredder located in at the back of the classroom and then would tell the researcher how many matrices they answered correctly. The researcher would then give the participant the amount of money according to their oral statement (ARIELY, 2012).

Unsurprisingly, when the second group was compared to the control group, the

researchers found that many people cheated. Participants on the second trial stated that they answered correctly, on average, two more matrices than participants at the control group (ARIELY, 2012).

The real question was not to test whether people cheated given the incentives to do so, but how the dishonest behavior changed when incentives were purposefully manipulated by the researchers. In many follow-up experiments, Ariely and his group of researchers repeated The Matrix Experiment under different circumstances (ARIELY, 2012).

The researchers found that the increase of monetary incentives did not affect how much participants cheated, a blatant violation of the economic approach Becker coined. Not only researchers increased monetary incentives, but reduced the “psychological burden” of lying to the researcher by placing a jar – without supervision – with coins and bills outside the classroom where the experiment was being conducted. Individuals would shred their papers and head themselves to the jar in order to collect the money. Still, cheating did not show systematic deviations from the initial experiment. In another experiment, researchers placed a visibly blind researcher to conduct the experiment. The results maintained (ARIELY, 2012).

Given the jaw-dropping results, Ariely proposed a theory that would better explain dishonest behavior. As the author describes it (ARIELY, 2012):

The central thesis is that our behavior is driven by two opposing motivations. On one hand, we want to view ourselves as honest, honorable people. We want to be able to look at ourselves in the mirror and feel good about ourselves (psychologists call this ego motivation). On the other hand, we want to benefit from cheating and get as much money as possible (this is the standard financial motivation). Clearly these two motivations are in conflict. How can we secure the benefits of cheating and at the same time still view ourselves as honest, wonderful people? [...] As long as we cheat by only a little bit, we can benefit from cheating and still view ourselves as marvelous human beings. This balancing act is the process of rationalization, and it is the basis of what we will call the “fudge factor theory.” (p. 19)

The Matrix Experiment was conducted under different scenarios in order to test its validity. It was also able to show that individuals mimic others behaviors. That is, when one individual clearly cheats on the test by stating that he solved all the matrices and is not caught, other participants cheat considerably more (ARIELY, 2012).

In addition, group identification also affects moral decision-making: when a participant using a jacket from a rival university also blatantly cheated, cheating from other students did not rise, while when the experiment was replicated with the cheater wearing a jacket from the same university as other participants, cheating did go up (ARIELY, 2012).

Lastly, being reminded of moral signals – even if one does not believe in them – reduces cheating significantly. In yet another matrix experiment, individuals had to recite the Ten Commandments before starting the test. In this scenario, even when only self-denominated atheists participated, cheating went down. At a similar setting, individuals had to sign the matrix sheet stating that they acknowledged the fact that the experiment was being conducted under the university’s honor code. In this situation, cheating also decreased – even though, surprisingly, the university did not have any honor code (ARIELY, 2012).

2.1.3.2.3 Edwin Sutherland and Donald Cressey’s Differential Association Theory

Somehow differently from Ariely’s approach, another framework regarding dishonest behavior arose in the criminology field. Donald Cressey, who, together with Edwin Sutherland elaborated on the differential association theory. According to the authors, the principles of the theory are (SUTHERLAND, 1947):

- Criminal behavior is learned much like most activities;
- Learning occurs during interaction with other individuals through a communication process;
- The most important part in the learning process happens during encounters with intimate individuals;
- The criminal learning behavior is comprised of the techniques to commit crime (which sometimes are complicated and others rather simple), as well as the specific directions of motives, attitudes, impulses and rationalizations;
- One becomes delinquent when there is an excess of favorable definitions towards the violation of law, which predominate over the unfavorable definitions to this breach;
- The learning process of criminal behavior through the means of criminal and anticriminal guidelines is comprised of the same fundamentals as any other learning procedure;
- The necessities and general values of an individual do not explain criminal behavior.

In general terms, the theory proposes that criminal behavior is learned in a process of differential association (that is, how strongly one is associated with criminal behavior compared to a lawful one). As Cressey (1964) summarizes:

“Criminal behavior is human behavior, has much in common with non-criminal behavior and must be explained with the same general framework used to explain other human behavior. However, an explanation of criminal behavior should be a specific part of a general theory of behavior. Its specific task should be to differentiate criminal from non-criminal behavior” (p. 14)

Specifically, regarding illegal behavior, Cressey has made an insurmountable contribution towards the explanation of why so many individuals engage in frauds.

Cressey’s fraud theory, which was aimed at explaining why embezzlers, who he called trust violators, committed fraud became known as “the fraud triangle” and has been used ever since by regulators, professionals and academics (KASSEM and HIGSON, 2012).

Cressey (1950) highlighted three elements for white-collar crime to happen: (1) the individual must have a non-shareable problem that becomes a stimulus for dubious actions; (2) the individual’s position must give him an opportunity for engaging in illicit actions; (3) the individual must engage in mental processes in order to neutralize the view that his behavior was criminal. Later, Cressey’s argument was summarized in a triangle with three variables: perceived financial need (i.e. pressure), perceived opportunity and rationalization (CHOO and TAN, 2007).

Figure 5: The Fraud Triangle.



Adapted from: DELLAPORTAS, 2013.

In a study with accountants, Dellaportas (2013) examined the factors that may influence accountants towards engaging in fraudulent behavior. The article exemplifies which types of environments and situations may sway individuals to act in illegal manners. According to the author, pressures such as those related to financial needs (e.g. personal

debt), work life (e.g. dissatisfaction with the job) and vices (e.g. gambling); together with the bountiful opportunities accountants have to commit fraud; and with the common rationalizations (e.g. “the organization owes it to me” or “the company can afford it”), accountants are very susceptible to fraudulent activities.

2.1.3.3 Unethical Decision-Making in Management Environments

Up until recently in the United States, personal accountability was unthinkable in management environments: even though companies could be fined, individuals were rarely included in civil cases – much less criminal prosecutions (SOLTES, 2016).

Soltes (2016) wrote a comprehensive review of how managerial misconduct was seen since the beginning of the twentieth century. Even in periods where public scrutiny regarding managerial misconduct were high – such as at the Great Depression – executives were hardly the target of discontent; rather, individuals pointed at politicians for reckless misconduct. Even in scandals such as price colluding from electrical manufacturers, in the beginning of the 1960s, where individuals did briefly go to jail, their reputation and jobs remained rock solid.

The first major attempt to shed light on managerial malfeasance was made by Edwin Sutherland, in 1939, while delivering a speech at the American Sociological Society. There, he stated that much of the serious crimes were not only confined to the lower-classes, but were also being committed at the upper-stratum by respected business leaders. In this speech, the term “white-collar crime” first appeared.

Sutherland continued his inquiry in his book *White Collar Crime*, published in 1949. In his book, the author made a comprehensive data gathering of lawsuits of the 70 largest corporations in the United States in the 1929 and 1938. He found that all companies had lawsuits, totaling 980, being 158 of them in the criminal court. Sutherland argued that illegal practices were widespread in the corporate community, stating that white-collar crime could also be viewed through the lens of the differential association theory abovementioned (SUTHERLAND, 1949).

Gary Becker, with his theory of human behavior, believed that the systematic way in which people might or might not engage in criminal activity is widespread, regardless of the kind of crime one may commit. Therefore, it also could be fully applied to white-collar criminal behavior: in an editorial, Becker stated that executives, when analyzing whether or not they will engage in illegal actions, not only considered the punishment they would face if they got caught, but also the chances of being apprehended (SOLTES, 2016).

The rational theory has a clear understanding of white-collar behavior. As Soltes (2016) puts it:

“The emphasis on viewing cost-benefit analysis as a psychological model of choice rather than as simply a description of behavior has led to a particular notion of why once successful and intelligent executives commit white-collar crime – namely that these executives make thoughtful and deliberative calculations to break the law when doing so serves their needs and desires. They are not making hasty decisions with clouded judgment. Their personal failure lies in reasoning that the illicit choice is the ‘appropriate’ one.” (p. 98)

Dan Ariely puts a different understanding of why managers are engaged in fraudulent activities. According to the author, the more distanced one is from the explicit monetary action, the more prone one is to engage in dishonest activities.

In his experiments, individuals cheated twice more when the aforementioned matrix experiment gave the participants tokens (which could be exchanged for cash few meters away from the classroom where the experiment was being conducted) than when they received the monetary amount immediately (ARIELY, 2012).

Soltes (2016) reached a similar conclusion, stating that, in some modern financial crimes, all one has to do is to change some numbers in a spreadsheet. White-collar victims are physically, psychologically and temporally distanced from the fraudulent executive, which makes unethical decisions appear much less costly to the perpetrator than it actually is.

By studying white-color criminality, Soltes (2016) argued that, instead of rational weighing of pros and cons, executives’ fraudulent decisions were much more related to gut feelings than a proper rationalization of decisions. The author argued that, in many cases, the decision of doing something illegal was one decision out of thousands of decisions that managers had to make every day.

Bazerman and Tenbrunsel (2011) stated in their book that there are ethical blind spots, preventing individuals to see the gap between their truly ethical behavior and their inner image of how ethical they think they are. The authors believe that ethical judgments are influenced by circumstances and factors that lie outside one’s awareness.

Given the ethical gaps that individuals inherently have, these gaps are compounded when considered the organizational level. The ethical gap that exists in organizations are more than the sum of the gaps on individuals: rather, group work creates additional gaps, through the psychological processes of groupthink, pluralistic ignorance etc. Moreover, functional boundaries prevent individuals to perceiving a problem as an ethical one (BAZERMAN and TENBRUNSEL, 2011).

Morck (2008), applying the behavioral finance framework to Corporate Governance problems, found that behavioral assumptions appear more complete than rational expla-

nations. In his article, the author stated that independent directors might induce greater rationality and ethics in Corporate Governance settings. Following the same line, Watson (2013) argued that empirical evidence suggests that there is an uncritical loyalty bias towards management, to which even independent directors acquiesce. Concerns regarding reputation may hinder the performance of corporate boards.

After a comprehensive review regarding the three fields, one question still remains unanswered: how to tie together these concepts and how can they correlate with each other?. In the next subtopic, a more forward-looking perspective will be taken. The current research efforts towards correlating these three fields will be discussed, as well as how to further classify compliance systems using the previous discussions on human behavior.

2.1.4 Wrapping-up: Where the Discussion Leaves Us

2.1.4.1 Behavioral Corporate Governance

2.1.4.1.1 Current Research Efforts

It is no novelty to anyone who tangentially understands the field of Corporate Governance that, since its birth, a mainstream framework has been applied throughout the years: that of the Agency Theory perspective. The term coined by Jensen and Meckling in 1974, of course, borrows certain principles and assumptions from other fields, mainly from Economics.

Once we challenge some of the assumptions of neoclassical economics – something that, as a matter of fact, is not only done by behavioral economists but also by institutional economists (given that neoclassical economics consists of costless transactions) – many of the conclusions that arise from the Agency Theory perspective become ambiguous.

The idea of incorporating behavioral assumptions in Corporate Governance studies is certainly something not new. Van Ees, Gabriëlsson and Huse (2009) discussed that the mainstream tradition has so far yielded conflicting results and few concrete perspectives for academics and practitioners. In their article, the authors' state:

“Most studies that have studied boards from an economic perspective have more or less neglected board behavior. Instead they have analyzed the relationships between ideal-typical board constructs and corporate performance, and applied unquestioned behavioral assumptions as a basis for prescription where interaction, communication and information sharing between board members have generally not been assumed to affect the board’s work” (p. 17)

When talking about behavioral sciences in Corporate Governance, four concepts stand out (VAN EES, GABRIËLSSON and HUSE, 2009):

- *Bounded rationality*: the bounded rationality concept captures the phenomena underlying any modern organization in which the complexity of decision-making and information-gathering makes it impossible for individuals to completely understand all linkages of variables around them. Even though individuals strive to maximize utility, real-world constraints make them unable to do so.
- *Satisficing behavior*: going hand-in-hand with the abovementioned concept, the satisficing behavior makes decision-makers strive for what is “good enough” for their current needs rather than searching for optimal solutions. This kind of behavior may entail also a short-term thinking and a search to deal with immediate constraints, rather than to search for the best outcome in the long-run.
- *Routinization of decision-making by means of heuristics*: based on previous works of organizational theorists, such as Herbert Simon, James March, Richard Cyert, Sidney Winter and Richard Nelson, it is stated that boards of directors may operate through the usage of routines, which are time-dependent and built up over time. Routines are normally understood as the past experience of organizations, comprising knowledge, beliefs and values. Both the idea of the creation of routines, as well as its opposite (unlearning consolidated routines) are extremely important for the behavioral analysis of firms and its interface with the board.
- *Political bargaining*: Also neglected by the mainstream theory, the study of behavior in Corporate Governance settings encompasses the idea of organizations being depicted as complex political systems, with agents organized in coalitions. In corporations, the coalitions’ goals may be divergent, meaning that organizations may have a wide array of conflicting and inconsistent goals. There may be political bargaining in order to obtain cooperation between different coalitions. Therefore, it is the objective of the board of directors being able to understand the different interests inside an organization and captain the efforts towards a unified goal formation.

In order to sustain the efforts of a theory of Behavioral Corporate Governance, Van Ees, Gabriëlsson and Huse (2009) summarize:

“A behavioral theory of boards and governance will thus emphasize that board members rely on general rules and lessons based on past experience (heuristics) to make strategic decisions, rather than employing rational models of decision making that require knowledge and information that they cannot have. In particular, the decisions in the current period are informed and shaped by the environmental feedback that board members receive from their earlier decisions [...] Learning processes among board members can hence be expected to be “operationalized” in the form of information gathering and decision-making structures, procedures and rules.” (p. 14)

Another particular feature of the emerging field of behavioral Corporate Governance is its focus: not only contracts, which is the key feature of the mainstream perspective and in Behavioral Corporate Governance also has an important role, but rather on the informal structures and behavioral processes. It studies both the micro-social forces, derived from social psychology, as well as the macro-social forces from sociology (VAN DER LAAN, 2009). Table 3 summarizes the current research field in behavioral corporate finance

Table 3: The Axiomatic and Behavioral Perspective on Corporate Governance.

<i>Axiomatic Perspective</i>	<i>Behavioral Perspective</i>
The firm is a nexus of contracts.	The firms as a nexus of coalitions.
Uniform decision-making structures, designs and ideal-typical behaviors	Political decision-making processes, procedures and contexts.
Emphasis on goal attainment through incentives.	Emphasis on goal formation through political bargain.
Optimal decisions given limited and asymmetric information.	Decision making that are “good enough” given bounds on human rationality.
Boards protect value through monitoring.	Boards create value though problemistic search for new information.
Focus on performance (outcome).	Focus on decision-making (behavior)

Extracted From: VAN EES, GABRIELSSON and HUSE (2009)

2.1.4.1.2 Gaps in Behavioral Corporate Governance

It is clear that, while efforts towards building the cornerstone of a behavioral approach to Corporate Governance have been made, there is still much to be done. First of all, many of the efforts to define behavioral processes was maintained at the macro-level, such as organizations, boards, coalitions etc. Given that the predecessors to the field (i.e. Herbert Simon, James March, Richard Cyert etc.) were much more interested on the study of behavioral processes inside firms, such approach is expected. On the other hand, by focusing on an aggregate level, many of the insights that can be gained at the individual level is lost. For instance, the contributions of the heuristics and biases approach, coined

by Daniel Kahneman, are almost completely neglected; as a matter of fact, the whole field of Behavioral Economics is.

In the existing literature, few mention Kahneman and Tversky's work in Corporate Governance settings. Van der Laan (2009) briefly uses Prospect Theory in order to introduce the idea of "status quo" in firms' strategic decisions. However, besides this study, not much can be found relating both fields of study.

Individuality matters, as well as the biases that come along with it. It is believed that many of the biases and its effects already mapped by behavioral economists have profound impact in Corporate Governance processes and directly influences the outcome of their decision-making.

Echoing many academics, Corporate Governance processes matter as well. For instance, they matter as much as structural variables of the board of directors, which are dissected exponentially more than the psychological features underlying decision-making. Although structural features surely can impact the outcomes of the board's decisions, it is fair to assume that the same individuals in different organizational contexts might produce divergent outcomes. Therefore, while studying these features may bring important insights, it excludes the way in which decisions are made: the board of directors remain a black box, much like firms were before Coase's contribution.

It is long past time to reveal the intricate details of how decisions are made, and Behavioral Economics may contribute to reveal an important – and oft neglected – part of the decision-making process. Table 4 reveals some of the cognitive biases highlighted by behavioral economists that may influence board's outcomes.

Table 4: Research Directions on the Interface Between Behavioral Economics and Corporate Governance.

<i>Heuristics and Biases Approach</i>	<i>Corporate Governance Settings</i>
Endowment Effect	<p><i>Boards of directors deal with many financials decisions that are crucial for the longer-term stability of a corporation. It is very likely that directors may make decisions that unjustly takes into consideration the current ownership and allocation of assets. Sunk costs may also alter the boards' behavior.</i></p> <p><i>It is important to check whether the endowment effect may also affect managerial entrenchment, as the board may value them more than external peers due to the behavioral bias.</i></p>
Prospect Theory/Loss Aversion	<p><i>The Prospect Theory may bring important features, especially for accounting-related issues: is it better to realize losses all at once or throughout the quarters? Given that many accounting rules give room for managerial discretion (as stated in SOLTES, 2016), it is crucial to check whether loss aversion may also be seen in financial markets.</i></p> <p><i>In non-related accounting issues, it is also crucial to understand whether investment decisions are affected by this effect. How much of the "loss aversion degree" of organizations is transmitted to the board? What is the causal relationship? The degree of loss aversion is defined by the organization and implemented on the board or the other way around?</i></p>
Availability Heuristic	<p><i>Are board's decisions related to how frequent events are remembered? How corporate scandals influence the boards' decision-making in the long run?</i></p> <p><i>The availability heuristic may have profound implications in executive compensation, given that some CEO's compensations are ventilated much more often than others, prompting a chain reaction (upward spiral of CEO compensation is also discussed in ARIELY, 2008).</i></p>
Priming Effects	<p><i>Priming effects may be especially important for the board-CEO relationship. As a great deal of the information flow between the management and the board goes through the CEO, it is likely that the usage of priming methodologies influence board behavior.</i></p>
Mental Accounting	<p><i>Again, mental accounting may be especially important for asset allocation decisions. The fungibility of money may also be put into question depending on how investments decisions are framed.</i></p>
Framing Effects	<p><i>How the information in framed may have profound implications in the board decision-making. For instance, in the Enron days, the company made insurmountable amounts of effort to position itself as a logistic company rather than as a trading company, prompting analysts to compare its performance with other corporations from the logistic sector.</i></p> <p><i>Again, special focus has to be given to the information flow from the executives to the board, as it may be framed in ways to nudge the board's decisions in certain directions.</i></p>

Source: Authors.

It is important to state that the abovementioned table presents non-exhaustive research paths, as many other heuristics and biases (such as the affect heuristics) can influence and alter decision-making outcomes.

In addition to the fact that the heuristics and biases approach has been underutilized, many other psychological phenomena have been disregarded as well. Social psychologists study group behavior for a long period of time, although few of the concepts have been introduced to Corporate Governance studies. For example, the groupthink and pluralistic ignorance concepts, which were already mentioned in earlier chapters, can have profound effects on how the decision is developed (JANIS, 1972; CIALDINI, 1987). Given the fact that social ties are extremely important for directors, one may not raise questions that can damage one's reputation within important social groups.

To conclude, it is very unlikely that the biases that affect ordinary people would not also influence executives and directors. With the emerging field of neuroeconomics, it is clear that these biases occur at a biological level.

As Kahneman (2011) stated, one cannot get rid of the biases that affect one's everyday decision-making, but can become aware of the situations in which specific biases can occur. The same applies for Corporate Governance processes: it is time to develop settings that are more robust to these deviations. Given how the field is studied today, much has to be done in order to further understand how the board's black box truly operates – and under which behavioral settings.

2.1.4.2 Compliance Systems Frameworks

As discussed previously, ethics in management environments have been analyzed substantially over the previous decades: behaviors that would otherwise be considered a prerequisite of day-to-day business have become enforceable and punishable with incarceration in many instances. Moreover, a change in public opinion (at least in developed countries) has accelerated the passage of laws punishing more severely unethical behaviors in management environments.

There is no shortage of corporate scandals in the last 20 years: Enron, probably the most emblematic one, has shown how the “everybody-is-doing-it” approach can turn into catastrophic proportions: Enron, in its golden years, was the 7th largest company in the world in terms of market capitalization (MCLEAN and ELKIND, 2005).

As another example, Siemens, in 2008 agreed to pay over \$1.6 billion in fines in order to set bribery cases that were regular during much of the 2000s (to date, it is one of the biggest fines ever applied due to dishonest practices).

Notwithstanding the fact that much has been developed in the last decades, there

is still a much-needed understanding regarding the underlying assumptions that permeate dishonest decision-making. This has profound implications regarding how executives and boards – through Corporate Governance practices – can work together in order to build solid compliance systems that effectively impede illegal activity from happening in every hierarchical level of the business.

Much of the compliance systems nowadays are based on what is called the “economic approach” to human behavior. As Gary Becker puts it, in his book *The Economic Approach to Human Behavior*:

“[...] How many offences should be permitted and how many offenders should go unpunished? The method used [in his essay] formulates a measure of the social loss from offenses and finds those expenditures of resources and punishments that minimize this loss. The general criterion of social loss is shown to incorporate as special cases, valid under special assumptions, the criteria of vengeance, deterrence, compensation and rehabilitation. [...] The optimal amount of enforcement is shown to depend on, among other things, the cost of catching and convicting offenders, the nature of the punishments – for example, whether they are fines or prison terms – and the responses of offenders to changes in enforcement.” (p. 40)

As extensively discussed in previous chapters, individuals behave in a constant cost-benefit calculation, checking whether the benefits of certain decisions outweigh the expected punishment (i.e., the punishment times the probability of being caught).

While this approach certainly has plenty of momentum and is also politically sensible (especially when talking about criminology and the optimal prison time for certain types of crimes), one has to be careful when translating the same approach into environments which constantly operate in the gray area.

In management environments, as Soltes (2016) pointed out, individuals engage in hundreds of decisions every day. The amount of sensible decisions one has to make grows exponentially once one climbs the corporate ladder. Is the economic approach the most suitable one for these types of environments? Due to the fact that individuals have limited computational capacity (as Simon (1947) pointed out more than 50 years ago), it is unlikely that one can perform cost-benefit analysis of all possible decisions every day. Dennis Koslowski, from Tyco, argued that his illegal activity consisted in signing few documents from a pile of papers that sat on his desk (SOLTES, 2016).

If corporate environments have information overload, companies should not rely entirely on a framework of human behavior that relies on the assumption of infinite computational capacity. It is clear that it should also not be ditched altogether, as it is extremely important to highlight and make crystal clear the punishments of illegal actions.

However, when the dishonest decisions are not clear-cut, highlighting the costs will not be as effective as one might think.

The behavioral approach can have much to contribute to the area of ethics in Corporate Governance. As Dan Ariely's approach shows, one can engage in dishonest behavior up to the point where one's auto image is unaffected. How much one's "tolerance" is depends on: how widespread the dishonest actions are; if one's social ties tolerate or not these types of actions; and how distant one's actions are from the monetary outcomes, among others (ARIELY, 2012).

Soltes (2016) also proposed that, in order to reduce white-collar crimes, executives and directors have to engage in activities outside their usual environments, in order to perceive that, while some actions may be widespread inside their corporate bubble, they are reprehensible actions for spectators outside their business environment.

How can Corporate Governance benefit from it? By also applying the knowledge derived from the behavioral sciences, compliance systems can be much more effective in blocking unwanted activities. Also, by looking for not only an increase in punishment stakes or in surveillance, Corporate Governance mechanisms can look for group behaviors that also can help in their endeavor for a cleaner corporate habitat.

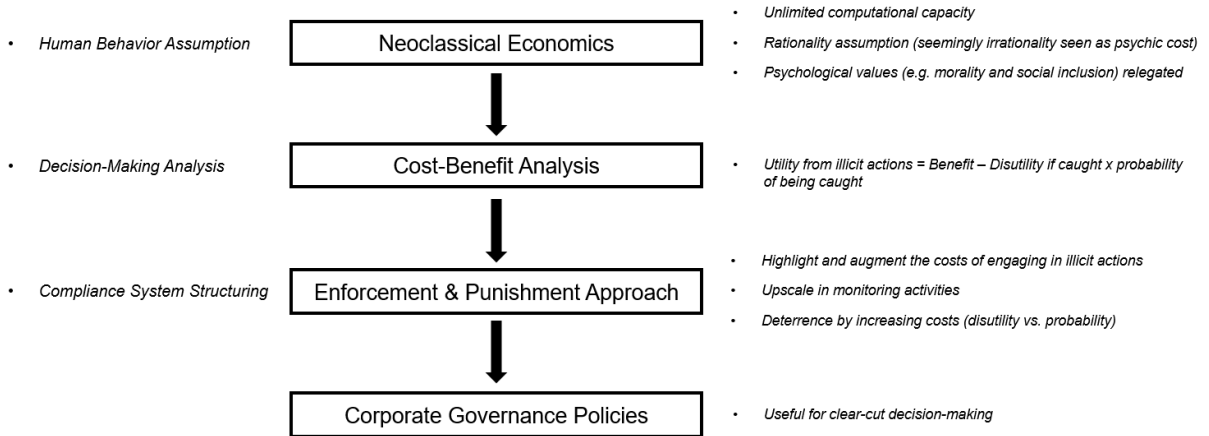
For example, by understanding the social aspect of human groups, compliance systems can use influencers inside the corporation as ambassadors, taking advantage of mimicking behavior. The list of possible actions that behavioral sciences enable for boards are numerous.

With this framework in mind, it is important to analyze how compliance systems can be structured. Given these basic assumptions regarding human behavior, different policy measures may arise, influencing the effectiveness of the actions.

Through the literature review, it is possible to dissect two main types of compliance systems structures: one related to what will be referred to as the Classical Compliance System (CCS) – that is, systems based on human behavior as modelled by the neoclassical economists; and another one entitled the Behavioral Compliance System (BCS). Each type of system has assumptions that differ substantially, not only regarding human behavior, but also vis-à-vis the consequences of it.

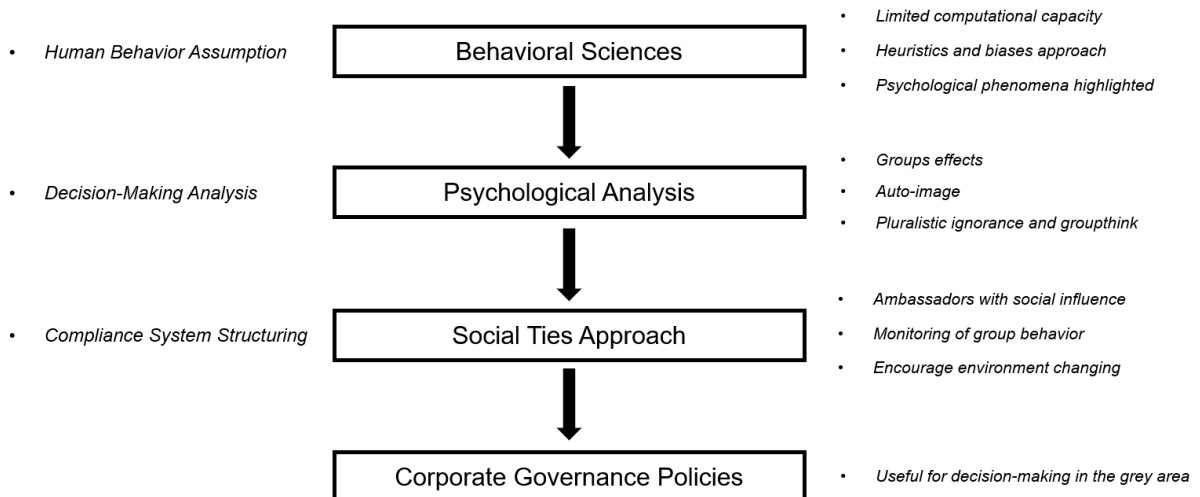
Figures 6 and 7 exemplify how the different assumptions of human behavior may end up with substantially different compliance scenarios:

Figure 6: Compliance Systems Structuring using the Economic Approach to Human Behavior: Classical Compliance Systems.



Source: Authors.

Figure 7: Compliance Systems Structuring using Behavioral Sciences Contribution: Behavioral Compliance Systems.



Source: Authors.

Figure 6 uses the classical assumptions of human behavior as a premise for corporate policy developments. One key aspect of it is the inexistence of information overload, meaning that individuals are able to grasp and evaluate the different consequences of the policies with minimum effort.

In addition, psychological features are sidelined, as they do not offer any new type

of insight if individuals are modelled with the classical assumptions. Therefore, all the phenomena related to psychological concepts end up being taken under consideration as a mathematical number in the rational decision-making process (if they change the benefits, costs or probabilities of the individual).

2.2 Part Two: Analysis of Compliance Policies of Two Multinational Corporations

Part Two of this thesis seeks to investigate whether the compliance frameworks previously defined in Part One are good models for the structuring of real-world compliance systems. In order to test the the validity of the models, the analysis will be performed in two convicted multinational corporations, involved in accounting schemes and bribery scandals.

At first glance, it can be unusual to test compliance systems of companies that became famous for actually having ineffective mechanisms for deterring corporate misconduct. However, both companies give critical insights into fundamental changes that may deter future frauds.

By studying a company that has declared bankruptcy – and, therefore, did not have the time to alter its compliance system – key assumptions will be searched in order to test whether its system was CCS or BHS-related.

In addition, with the second case study, it is possible to study the compliance changes that arose at a multinational corporation that also spiraled downwards after the frauds were discovered, but was able to recover from it. If there were fundamental changes to the assumptions of dishonest human behavior, is it possible to see whether it has gone from one type of compliance system to the other?

The following subsections aim at answering all these questions with the assistance of the framework developed at Part One.

2.2.1 Enron Corporation

2.2.1.1 History: From Birth to Bankruptcy

The accounting scandal involving Enron Corporation in 2001 is probably one of the most emblematic cases of corporate fraud. From a stock price peak of \$90.56 in August 2000 up to the bankruptcy declaration in December 2 of 2001, the case highlights how quickly one of the biggest corporations in market capitalization terms stumbled once its accounting schemes were revealed. This section will be strongly based on McLean and Elkind, 2005. The authors made a comprehensive review from Enron's modest beginnings up to its colossal fall.

Enron's history is also the history of its founding father, Kenneth Lay. During much of the tightly-regulated market of natural gas, Lay was one of the main characters and strong proponents of the deregulation of energy markets. Once the tide started to turn to its favor, Lay used his knowledge and influence to become one of the key beneficiaries of such deregulation.

As the CEO of a mid-sized pipeline company called Houston Natural Gas, Lay drew attention of bigger players in the energy market. InterNorth, a key company of the pipeline business, agreed to merge with Houston Natural Gas in a \$2.3 billion deal, creating the HNG Internorth Corporation. Lay also quickly became the CEO and chairman of the merged business. In 1985, HNG Internorth finally changed its name to Enron.

During early times, Enron struggled with its bet of quick deregulation of the natural gas business. Piling debt over debt, Enron also suffered big international losses, such as the nationalization of Enron's assets at developing countries. Reporting a loss of \$14 million in 1986, Enron seemed to be in a strong decline.

Even though Enron was a hard-asset company, owning more than 37500 miles of pipelines, small parts of Enron started to play with what later would become Enron's core business: trading. In the early days, Enron Oil was a small group that became specialized in oil trading. Although the oil trading business started booming, it was later found that their exposition was much higher than previously thought, causing losses hovering \$140 million. Enron would later take a \$85 million after-tax charge due to its oil trading business.

Moreover, it was later found that many of the oil traders were also engaging in embezzlement activities, transferring money from Enron accounts to their personal ones. Enron sued the traders, with litigations also from the SEC and the United States attorney office. In the end, the two big traders were convicted and went through prison sentences. It was the first time the newly-found Enron got involved in a corporate scandal.

When the deregulation efforts finally arrived in the late 80s, Enron would need someone who could pioneer the efforts in this untapped market. This is the environment Jeffrey Skilling, one of the key players in Enron's rise and fall, came into play. As a McKinsey consultant, Skilling quickly became a star through its "Enron Gas Bank" idea, in which Enron would simply be a platform matching supplier contracts with consumer contracts, hedging all the risk involved in transportation and price changes.

In June 1990, Skilling left McKinsey and was hired as the chairman and CEO of Enron Finance. In a short span of time, Skilling effectively created a market for natural gas contracts. With the emergence of derivatives in the natural gas market, Wall Street firms also poured in into the newly created market. However, with the information advantage Enron had with its enormous physical assets, Enron was always one step ahead.

Notwithstanding the fact that Skilling's new business was indeed thriving in the early 1990s, he also was a strong proponent of unusual accounting methodology at the time inside Enron. An advocate of mark-to-market accounting, which effectively meant that it was possible to book the entire estimated present value of a contract once the contract is signed, Skilling got the board approval to use mark-to-market methodology

inside Enron Finance. The SEC, in early 1992, also stated that it would not object to the usage of such methodology. It did not take long until the whole corporation was using the mark-to-market accounting principles.

Even though the trading business was booming, Enron still was a company with heavy assets and framed itself that way. This line of thought was reinforced with the Teeside deal, a massive gas-fired cogeneration power plant which cost \$1.3 billion to build. Even though, at an earlier moment, Enron would invest in hard assets at developed countries, at later stages the company started to tap into resources at emerging ones, such as India and Brazil. Enron International, the business division responsible for such investments, made bold attempts that turned into astonishing losses later on (such as Dabhol's power plant investment, in India).

In 1991, Enron Finance was merged with Enron Gas Marketing, responsible for selling natural gas to wholesale consumers. At this point in time, trading was still small comparable to other Enron's divisions. With huge deals being made in 1992 (one with an estimated value of \$4 billion), Skilling's division started to be recognized and praised.

The former McKinsey consultant was fond of securitization procedures as a way to leverage growth. That is, Skilling was hugely in favor of removing capital and balance sheets as constraints on growth. Special Purpose Entities (SPEs), which later would be the culprits of the company, were heavily revered by Enron and publicly disclosed.

By 1996, Skilling's division was already making almost 20% of Enron's profits, and that its presence was not being taken for granted anymore. In addition, Enron was becoming an all-star at Wall Street, increasing profits from \$387 million in 1993 to \$520 million in 1995, a 34% increase in only two years.

However, the way Kenneth Lay ran its business also received negative feedbacks. As one former executive puts it in McLean and Elkind (2005), "if you are the CEO of a public company, it isn't yours" (p. 90), referencing the way Lay used Enron's assets to benefit his family. It was clear that Enron had no real oversight from the board of directors, which also responded to Lay as the chairman.

The episode highlights that true inside Corporate Governance efforts – from an Agency Theory perspective of monitoring and oversight – was inexistent at Enron. The internal Corporate Governance ineffectiveness would be further reinforced with much grievous later events at the corporation. As McLean and Elkind (2005) pointed out:

"There was one part of the business that Ken [Kenneth] Lay always kept to himself: the care and feeding of Enron's board of directors. Over time, most of the old board members had been replaced with people Lay handpicked. [...] But Enron was hardly the only board in America rife with conflict, and in any case, the real problem with the board wasn't merely the conflicts. It was

just that every member of the board seemed to believe that Ken Lay walked on water. The Great Man persona he presented to the world at large was also what the Enron directors saw. [...] The meetings themselves were clubby affairs, with soothing conversation and long dinners. [...] Kay would share his vision with the group, and the outcome was never in doubt. 'Whatever Ken wanted them to okay, they did,' says a former executive. Which goes a long way toward explaining what happened next [at Enron]". (p. 96)

By promising jaw-dropping returns to its shareholders, the creativity at accounting departments started to flourish: the company often would look for non-recurring events, such as the sale of assets, and book its profits as part of ongoing operations. Moreover, much due to mark-to-market methodology, Enron would rework its long-term supply contracts in order to book additional earnings at the moment it was signed. To Enron's defense, at this time these transactions were not hidden and were in plain sight at their financial statements. However, due to much of Enron's aura at the time, analysts would often overlook these operations. As a matter of fact, the phenomenon of financial analysts hardly swimming against the tide was also deeply analyzed by the Nobel-winner Robert Shiller in his book *Irrational Exuberance*.

In 1996, due to its meteoric rise (and the resignation of the then COO, Richard Kinder), Skilling would become the president of Enron, running a company with more than ten thousand employees and \$13 billion in revenues. Due to bad strategic moves in the previous years, Enron would book \$105 million in profits in 1997, an 82% reduction. At this particular point in time, Enron was underperforming the market by more than 40%.

In an effort to refashion Enron, Skilling would begin to trade not only natural gas, but other commodities as well, such as energy. Through the acquisition of Portland General in 1996, Enron began to reap benefits from this underexplored market. With the benefit of hindsight, it would be easy to state that Enron had no internal system for evaluating their deals and internal sectors.

However, Enron did indeed have one, called Risk Assessment and Control department (RAC). The RAC was created to, in theory, prevent Enron from engaging in bad deals. All Enron deals would have to be reviewed by the RAC, which would then endorse or not the deals. However, the RAC had not the political power to prevent Enron's behavior and culture: it was much more a facade to analysts and often revered by Enron's top management team. As McLean and Elkind (2005) stated:

"It was certainly true that RAC had substantial resources and talented analysts. Buy the part about RAC being a serious force within the company, able to stop bad deals dead in their tracks: that part wasn't even close to the

truth. And everyone in the company knew it. 'RAC was a hurdle, a speed bump, but not an obstacle', says a former Enron managing director". (p. 116)

By the late 1990s, trading was already Enron's core, employing over 5000 people. However, the top management team would never publicly state that, as Wall Street was extremely sensible to such types of companies. Skilling would always try to display Enron as a business with stable and predictable earnings.

The exact point in time when Enron crossed the line is blurry. As McLean and Elking point out, "the Enron scandal grew out of a steady accumulation of habits and values and actions that began years before and spiraled out of control" (p. 132).

Many of Enron's moves were also being done by other companies (such as mark-to-market accounting, off-balance sheet transactions and lump-sum gains being booked as recurring earnings). The fact is that, in the bull market of the 1990s, many of these operations were widespread and not monitored closely.

What, according to the abovementioned authors, may separate Enron's schemes from other companies is the extent to which such manipulations were being made: at the end of the 1990s, Enron's cash flow was severely stricken and Enron manipulated its statements in often woefully complex ways. At that point, Enron certainly did cross the line.

The blurriness of Enron's scandal reinforces Soltes (2016) arguments that the majority of corporate decisions lay in the grey area. If even the misconduct at Enron, one of the major corporate scandals of recent history, developed in a way in which individuals are not certain exactly when Enron precisely began to engage in illegal activities, many of the less drastic white-collar crimes that Soltes (2016) explained in its book are still harder to assess.

Moreover, Enron's saga shows how social effects have major impacts: Enron did what everyone else was doing, which made analysts much less worried with specific deviations. Once the practice becomes widespread, it becomes a self-fulfilling prophecy.

In order to be able to maintain its seemingly financial health through the usage of complex financial transactions, Enron had to have outstanding talent in its financial departments. That is what the environment demanded when Andrew Fastow, one of the main characters in Enron's corporate scandal, appeared.

Incredibly talented, Fastow was able to dig in and fully understand the loopholes created by weak rules in the newly-inaugurated securitization market. Being hired in 1990, Fastow quickly grew the corporate ladders to become Enron's CFO in 1998.

Even though Fastow's complex off-balance sheets structures were astonishingly complex, it could not have lasted long without proper consent from those who should have

the objective of monitoring the company's transactions: in this case, the audit firm Arthur Andersen.

Arthur Andersen and Enron were companies close to each other: Enron was one of Andersen's most valuable customers, with fees that reached \$54 million in 2000. Besides, Enron was keen to hiring former Arthur Andersen's former employees, hiring over 86 accountants from the audit firm. Andersen, being a company with branches both at consulting and auditing portfolio, clearly faced dilemmas that clashed often at Enron. A conflict of interest had risen to insurmountable levels.

The seemingly complacent view of the audit firm is naïve. Arthur Andersen clearly knew that Enron's structure and transactions were risky ones, often with transactions that had no clearly defined rules whatsoever. Even though, Andersen was not able to see the big picture and predict where these cumulative high-risk operations lead to.

By creating complex financial structures, that at the beginning were disclosed in Enron's financial statements, such as Whitewing (although being disclosed as a minority interest in a joint venture instead of appearing as debt), Fastow became highly publicized, winning many prizes due to the innovative ways he was able to fund Enron: in 2000, one year before Enron's collapse, Fortune honored Fastow with the "CFO of the year" prize.

As a way to decapitalize Enron's operations, its off-balance operations had to have a minimum of three percent of independent equity required by law. Even though this independence was highly controversial, many investment banks and pension funds were more than welcome to provide Enron with this capital.

It is important to state that Fastow needed not only the consent of its audit firm, but also from a wide array of professions: lawyers, bankers and credit-rating agencies. As McLean and Elkind (2005) pointed out, "every bit as much as the accountants at Arthur Andersen, the banks and investment banks were Enron's enablers".

Fastow was able to devise monumental operations, making Enron trade with Enron regularly. What its corporate leaders did not know was the amount of monetary rewards its CFO was taking with his dual role as the CFO and also as the head of one of its private equity funds, LJM. At later stages, the all-purpose private equity fund LJM2 was also created, enabling a second round of complex financial operations that helped Enron meet its earnings target on a recurrent basis. As McLean and Elkind (2005) explained:

"LJM was really just doing Enron's dirty work: warehousing troubled assets, allowing Enron to get them off its balance sheet and book the profits and cash flow it desperately needed to please Wall Street. LJM's real business was making Enron look good. And in return, LJM was getting paid handsomely for its troubles through special arrangements with Enron." (p. 203)

Apart from its financial transactions, many of Enron's late strategic moves were pointed towards broadband and electricity. With its new segments called Enron Energy Services (EES) and Enron Broadband Services (EBS), the corporation was eager to explore these new horizons outside the established oil and gas market. However, these divisions relied on unrealistic assumptions that failed to materialize. In the end, these divisions – which at the beginning were highly valued and praised – ended up bringing few profits to the corporation.

As already stated, Enron tried to distance itself from being a trading company, fearing Wall Street's erratic response. Nonetheless, even with EES and EBS, the wholesale traders knew their key primary role inside Enron, developing their own organizational culture that even Skilling did not have much openness.

In the late 1990s and beginning of the 2000s, Enron was a company revered by analysts. By constantly beating analysts' forecasts, Enron return was 1400% since 1990, more than three times the gain of the index S&P500. There seemed to be a veiled assumption that Enron was unbeatable at its core business, with innovative operations and a strict culture to bring its shareholders maximum value.

All the remaining skepticism one may have was heavily outnumbered by those that praised Enron's operations: the corporation had become the best case study on management, in addition to Fortune's prize of Most Innovative Company six years in a row.

Maybe one of the most emblematic events of Enron's saga was its electricity trading in the state of California. Taking advantage of the then-recently deregulated market, Enron quickly structured its electricity trading department in the late 1999s. Through a series of complex supervisory and quasi-governmental agencies, California would price its electricity hourly through auctions conducted the previous day and on the day of delivery.

The new rules were prone to gaming. Enron and other market participants, such as Dynegy, constantly looked for loopholes that would give them arbitrage profits. In essence, these companies were able to manipulate the market while its rules were not clear.

Coupled with poor planning on the side of the Californian government – that did not foresee the increasing demand in electricity at the same time hydroelectric power was scant – shortage of energy became increasingly common, with price spikes that constantly hit the price cap of \$750 per megawatt hour. Even with energy at the price cap, power shortages continued, prompting the government to increase the price cap to \$1500 per megawatt hour.

In the end, utilities companies became increasingly indebted, with companies – such as Pacific Gas & Electric – filling for bankruptcy. In the end, price caps were implemented in the whole west coast, effectively putting an end to the energy crisis. California ended

up paying four times the cost it paid in a similar period a year earlier.

Enron's speech, along with other players that hugely benefited from the energy crisis (in January 2001, in the midst of the crisis, the electricity trading brought \$254 million in profits to Enron), was that the market was not truly deregulated and government interference (such as the price caps) triggered the crisis. However, the explanation was not sufficient, and Enron's image began to crumble.

Enron's complex financial operations also began to receive greater scrutiny, with analysts and the financial media trying to figure out who was behind the off-balance sheet operations and how they operated. Having succeeded Lay as the CEO in the early 2000s, Skilling began operating in an environment he was not familiar with.

After a disastrous analysts' conference call subsequent to its first quarter earnings release, questions began to arise regarding whether Enron was overvalued. In April 2001, the stock had fallen by nearly half since its all-time-high price in August 2000.

While Enron's stocks were soaring, much of its obligations with the Special Purpose Entities would not need to be disclosed in Enron's financial statements. However, with the devaluing of its stocks – and with the imminent downgrade of its investment status by credit rating agencies – Enron would be obligated to disclose its losses from these complex off-balance sheet transactions.

Enron's stock price kept decreasing, and many of the previous agreements had to be revisited. Whilst the corporation still had access to the banks, liquidity was not an issue. However, with the increasingly worrisome financial condition, many banks that were happy to trade with Enron at earlier stages started to cut its lending or demand collaterals.

Public scrutiny of the off-balance sheet transactions further accelerated Enron's fall. On October 17th and 18th 2001, The Wall Street Journal argued that Enron's business was indeed dangerous and exposed the “vexing conflict-of-interest questions” that arose with Fastow both as the CFO and as a key player in the private equity funds Enron transacted with.

The failure of Enron to publicly disclose much of the losses it was now realizing was also heavily criticized. On top of all that, it became clear that Enron did not know how much Fastow was making with its funds; once this information was demanded by the board and, later on, disclosed to the media, the astonishing amount was one more indicator of Enron's lack of control (Fastow made \$60.6 million with deals at LJM and LJM2).

The free-fall of Enron's stock price, allied with the complex operations financial analysts were beginning to comprehend, prompted the SEC to begin investigations regarding Enron's operations. At this point in time, Skilling had already resigned, alleging

personal reasons.

At the end of October 2001, Enron did not have enough cash to run its day-to-day operations. In a last attempt to save Enron from bankruptcy, the corporation approached Dynegy in order to start talks regarding Dynegy's acquisition of Enron.

Even though conversations started, it became clear that Enron's culture would not be fit for the environment Dynegy was used to. After a \$1.5 billion infusion from Dynegy, the Enron's rival learned about many junk assets that Enron was hiding off the records. In addition, the liquidity Enron would need was far more than Dynegy was expecting. Without the help of banks to reduce this constraint, the deal was off.

The final blow came when the credit agencies downgraded Enron's credit status to junk bonds: this triggered many repayments clauses that Enron could not honor. On Sunday, December 2nd 2001, Enron finally filed for the largest bankruptcy case in the United States' history.

Enron's fall was a matter of Corporate Governance: Arthur Andersen's defense relied on management decisions that were outside the scope of auditing mechanisms. As McLean and Elkind (2005) stated:

“Andersen argued that some dubious Enron Accounting moves were business decisions made by the company and as such simply outside the province of the auditors. Duncan [Andersen's lead partner on the Enron account] said at trial that the firm viewed LJM as a bad idea, but ‘we believed that this was an area of Corporate Governance, and as long as it had been thoroughly vented through the corporation, that was a business determination by Enron” (p. 407)

In the aftermath, Enron's board denied responsibility for the frauds, stating that much of the management behavior was hidden from their oversight. As one director puts it, “the board was duped. I don't see any other answer. [...] There was nothing there for the board to have reason to suspect something was wrong. A few bad apples spoiled the barrel” (MCLEAN and ELKIND, 2005, p. 409).

As it becomes clear in this example, the monitoring aspect of the board was feeble at best; management was able to run the business without any dissonant voice.

The scandal was not a unilateral one. It relied on a network of stakeholders that fostered Enron's growth for much of the 1990s: as stated earlier, without the complacency of accountants, securities' analysts, banks and the regulatory bodies such as the SEC, Lay's corporation would not be as astounding as it was.

Appealing to the widespread practices that ran through the corporate world at that time, many Enron employees sided with its management. A McLean and Elkind (2005)

puts it:

“According to this view, what the Enron executives had done was nothing worse than what dozens of CEOs in Silicon Valley had done – where people who worked for companies with far less to offer than Enron ad fed Internet hype, cashed out, and walked away unscathed.” (p. 413)

Many interviews from these former executives are equally telling. Andy Fastow, who now is a consultant and advises on how to spot fraudulent actions, summarizes his actions with the following metaphor the former Enron CFO told his son (COONAN, 2016):

“Suppose when you’re 16, you go to a party using the car and the one rule is you don’t drink alcohol. The first thing is someone offers you a beer, and you say no, because the one rule is no alcohol. But what if you have a really clever friend, who pulls out a chewable tablet? This is a beer tablet, you can chew it and it’s the same as drinking a beer but you wouldn’t be breaking the rules. [...] I said I’m in prison because I was the beer-tablet pusher. Every way I could find ways to follow the rule technically but undermine the principle of the rule, I did it. And because I did that, it caused a lot of harm and that’s why I should be in prison.”

McLean and Elkind (2005) finished their investigation at Enron with the following question that remains a moto for understanding fraudulent behavior:

“If an entire enterprise is clearly fraudulent in common sense terms, to what extent are its top executives entitled to rely on the fact that lawyers and accountants may have signed off on individual transactions? Amid all the protestations that it was someone else’s fault, who should bear the responsibility for Enron’s fall?” (p. 419)

2.2.1.2 Enron’s Compliance System

It may seem odd to analyze a Compliance System of a clear fraudulent company. The questions that arise from the episode should also be seen through the lens of the internal policies that did not deter managerial misconduct.

Enron, as explained in the earlier subtopic, has been seen as an outstanding company, with seemingly rigorous and innovative processes up until the point of the downfall. For all legal purposes, Enron was a true model for Corporate Governance practices; however, the company failed miserably. How its Compliance System was structured, and for which purpose?

Regarding Compliance and Audit mechanisms, Enron also exceeded all legal requirements, becoming a truly frontrunner in Corporate Governance requirements. As

Benston and Hartgraves (2002) pointed out, Enron's Audit and Compliance Committee was comprised with at least four members (out of six) which had substantial expertise in the topics – including a Stanford professor.

Nonetheless, the approaches to these practices were mainly for “check-the-box” purposes. No internal or external policy regarding to compliance mechanisms were indeed being seriously taken under consideration, as the section about Enron's RAC clearly highlights. For all legal and external purposes, Enron had all the requirements for a innovative but also conscious company. On the inside, however, the story was clearly the opposite.

What Enron's saga highlight is that being a corporation that fulfills all the legal requirements for a better corporate image does not necessarily reflect in a truly robust compliance system that indeed prevents misconduct. A legalistic approach to compliance requirements did not end up with solid internal compliance policies at Enron's case.

In addition, another fact that stand out in Enron's case is the kind of message the top management team conveyed to the rest of the corporation. As the corporation's executives were regarded as individuals that surpassed any barrier in order to achieve the desired results, employees understood that this was the path to success. Much like in the analysis that will be made in the next subtopic, talking about limits to decision-making is something that has to be nurtured in corporate culture – but is rarely done.

The executives' actions set the example for the rest of the corporation, as their actions and values were mirrored by the rest of the corporation: the majority of employees understood the RAC purposes and what they needed to do in order to climb the corporate ladder.

These phenomena of social mirroring (from influencers to those that are influenced) are extensively studied in psychological fields but their insights were not used in Enron's compliance system. Behavioral mechanisms were not taken under consideration, given the legalistic approach to compliance.

What the preceding evidence elucidate is that Enron's Compliance System was a clear Classical Compliance System, where social interactions are neglected and a heavy “by-the-book” approach is used.

While it is not sufficient to state that CCS are more prone to fraudulent schemes, compliance approaches that aim at fulfilling external stakeholders demand without properly restructuring internal policies are more likely to suffer from fraudulent events due to the fact that compliance systems are seen only as a fulfillment process rather as a behavioral change.

2.2.2 Corporation W

In this subsection a thorough dissection of the compliance system of a multinational company will be performed (due to confidentiality issues, the company will be referred to as corporation W). Corporation W is a multinational company of the Electrical & Electronic industry segment, with over 300000 employees worldwide and with a revenue of approximately \$100 billion. It is a company headquartered in Germany, with more than 160 years of existence.

This corporation was also deeply involved in corporate scandals throughout its history, and it has structured its compliance system in the last years in order to reduce its exposure to such scandals. The analysis will permeate corporation's W Code of Conduct and how its compliance system is structured, the responsibilities of the compliance team and the process from receiving a complaint up to the point of investigation and applicable punishments.

After the analysis of the compliance system, this study aims at analyzing the interview given to the author by the compliance director of the Brazilian subsidiary of this multinational corporation. The interview was made in September of 2017 and lasted for approximately 4 hours. The interview was done with the usage of a structured questionnaire which guided the discussion. Again, due to confidentiality issues, the questionnaire will not be put in the Appendix of this thesis.

Responsible for overseeing the actions of more than 5000 employees and the relationship with suppliers and customers, the interview provides key insights into how the compliance system of corporation W understands human behavior and what are the effective measures to keep the integrity and rectitude of its wide range of operations.

Lastly, a comprehensive analysis of the structure of the compliance system will be performed, mainly to observe whether the corporation relied on a CCS or BHS mechanisms before the frauds, and also if these assumptions have fundamentally changed after the scandals.

2.2.2.1 Code of Conduct

The code of conduct of this multinational corporation is divided into five different categories: basic conduct rules; relationship with business partners and external entities; avoiding conflicts of interest; handling of the company's property; information handling; environment, health and safety; complaints and observations; and compliance monitoring.

The basic principles of conduct are related to how employees should act in general terms. There are specific requirements regarding acting in consonance with the applicable laws and legal systems of the territory; mutual respect, honesty and integrity and right

to privacy of each employee; responsibility for the company's reputation (i.e. that the actions of employees are intimately related to how they behave and the consequences of their actions); and lastly how the company sees the role of management in sticking to the company's code of conduct.

This last topic deserves attention. In its first paragraph, it is stated that "the culture of integrity and conformity of an organization starts from above". It becomes clear that middle-level managers have an important role in deploying the conduct to every employee, given the fact that they are the ones to which their subordinates will compare their behavior with. The social aspect of conduct and behavior, meaning that individuals look at the action of others before deciding how to effectively be part of the environment, is present in the last topic of the basic conduct rules.

When speaking of relationship with external entities, the code of conduct makes clear that any behavior related to illegal competition (such as cartel formation), bribes, suspicious donations (such as to public authorities and political parties), money laundering and tax evasion are strictly forbidden. Especially when accepting and giving gifts, the principle of reasonableness applies: occasional offerings of symbolic values, in accordance to the local customs and cultures are not forbidden.

Another key point of the code of conduct relates to conflicts of interest. As highlighted, "employees have to inform their supervisors regarding any personal interest that may interfere with the outcomes of one's professional duties". Specific rules apply to employees that have parallel jobs or with relevant stakes in companies that are business partners of this multinational corporation. In addition, no employee can work or give assistance to a competitor or involve in activities that may hinder the normal competitive forces of the market.

Regarding the usage of the company's property – be it tangible or intangible – there is a specific concern related to the confidentiality of such assets and, more importantly, related to the usage of such assets for personal gains, such as with insider trading. The company stated clear rules that prohibits such types of behavior.

Finally, the code of conduct makes clear that any complaint and/or observation should be handled through the Compliance Office of the corporation, also stating that the management and monitoring of such conduct principles abovementioned are made by the compliance employees of each location.

It is important to analyze key points regarding this code of conduct: first of all, it was reprinted and reorganized after a major corporate scandal hit the company. Therefore, many of the clauses that exist are related to specific events that the company suffered in previous management cycles. Also, the code of conduct acknowledges that many of the decisions individuals face on their daily professional lives are not extremely clear regarding

their legal consequences; again, it is important to understand that decision-making relies generally in the grey area.

By not stating specific thresholds for its operations (e.g. maximum or minimum gift expenditure, the maximum stake one individual can have in a third private organization etc.), it gives a managerial discretion that is important in order to have an effective code, but, at the same time, that may give room for maneuver for employees that want to purposely breach the code: this is the point where an effective compliance system takes place.

2.2.2.2 Compliance Policies

The compliance team has entire responsibility over the management of the compliance system and principles that corporation's W rely on. Topics regarding anticorruption, antitrust, privacy and money laundering topics, as well as the effective implementation measures inside the company are total responsibility of compliance organizations. Notwithstanding the fact that the team is heterogeneous, the compliance organization relies both on compliance officers, who operates the compliance system, as well as subject matters experts, which are demanded in cases where more advanced know-how is needed.

The compliance system of this corporation relies on the "Prevent", "Detect" and "Respond" principles, which will be further discussed later.

2.2.2.2.1 Compliance Profiles

The multinational corporation has one Chief Compliance Officer, which reports to the company's general counsel, as well as to the board of directors. This report is made on a quarterly basis and covers the main points of concern during this time frame, as well as open issues from previous reports.

Apart from the Chief Compliance Officer, each branch of the corporation has its regional compliance officers with one Regional Compliance Head. These heads manage the compliance organizations throughout the world. All compliance officers – not only the Regional Compliance Heads – report to the Chief Compliance Officer

2.2.2.2.2 Compliance Deployment: "Tone from the Top"

Again, the importance of managers in applying the compliance principles is reinforced in the compliance system. Each regional office is required to provide guidelines

regarding organizational duties and supervision in accordance to the specificities of each country where the corporation operates.

Notwithstanding the importance of the middle-level managers, as stated both in the code of conduct and in the compliance system's explanation, in general the responsibility for following the appropriate rules of the compliance system relies on the CEOs and Heads of each business unit. These executives have to ensure that their actions are appropriate, as they have the duty to serve as models for lower-ranked collaborators.

Every CEO/Head receives appropriate support and is required to perform annual trainings and integrity dialogues with their teams.

After a brief explanation of compliance duties and their organizational structure, it is important to dive deeper into each of the three pillars of the organization's compliance: prevent, detect and respond.

2.2.2.2.3 Prevent Pillar

Business Partners

In many circumstances, organizations can be responsible for the actions of its business partners. Therefore, company W obliges its collaborators to undergo a procedure in order to assure that the partnership is properly monitored and managed. These business partners may range from intermediaries, resellers or consortiums.

All potential partnerships have to go through a compliance due diligence via the Business Partner Compliance Tool. The relationship with the partner will be analyzed and placed into one of three distinct categories: "lower risk", "medium risk" and "high risk". For the "medium risk" and "high risk" categories, the regional compliance officers are responsible for fully overseeing the approval processes. In addition, when the partnership is deemed "high risk", the contract has to be signed by the Division Head, the Country's CEO and the Head of Corporate Core and Head of Corporate Services.

Specially in cases where partnerships are developed between the corporation and smaller companies, the regional compliance organization directly involves itself in the background investigation. Before altering or renovating any existing business partnership, the partnership has also to go through the due diligence process again. The usage of subcontractors by the partnership is only allowed if the partner agrees with the compliance conditions imposed by corporation W. Also, when payments have to be made, all the necessary documentation has to be uploaded in the ERP to the database identified in the compliance due diligence and specified in the contract's partnership.

The signature of a contract does not mean that risks of corruption cannot happen while the partnership is on course. Therefore, “red flags” can be raised in order to highlight these risks, even after the partnership has been signed. When these “red flags” are identified, the business unit should cooperate with the compliance officer in order to eliminate these corruption risks.

Facilitation Payments

Regarding means of payment, the corporation follows, without exception, all the norms related to facilitation payments, as they are harmful and usually pave ways to more serious corruption problems (even in countries where facilitation payments are illegal but the perpetrator is not criminally charged).

However, at the same time, the company acknowledges that, in cases where these payments are made in order to avoid an imminent risk (a coercion situation, for example) to the company’s collaborator (be it a physical or psychological damage or a restraint on the freedom of the employee), these facilitation payments are not usually considered a punishable action.

Every payment made under coercion or that its ends remain unclear have to be reported to the regional compliance officers. All the registered facts submitted to the officers, which will handle the matter internally or through the cooperation with public authorities.

It is also important to mention that every regional compliance organization engages in a risk analysis regarding the likeliness of occurring such facilitation payments in the country the organization is in. This analysis guarantees that collaborators that face high risk of being in dangerous situations receive the appropriate training, especially how to handle coercion situations they might end up being in.

In addition, the regional compliance organization produces a report twice a year to the Chief Compliance Officer, detailing all the situations that facilitation payments and coercion payments were made, including the evidence and the actions that were undertaken by the regional organization.

High-Risk Payments

In high risk situations, any payments made by the corporation to subcontractors are prone to intense scrutiny by the regional compliance organization. As the criteria for defining what a high-risk payment is often variable, the definition of such indicators is

made by the Head of Accounting, Procurement employees and with the CFO of the regional country/division.

Every business unit have to evaluate the need of establishing systematics regarding the risk of dubious payments to subcontractors. Whenever the compliance system is totally integrated with the accounting schemes of the business unit, compliance criteria have to be taken under consideration in the case of methodology changes.

Furthermore, on a yearly basis, the regional compliance organization is responsible for defining for each division, together with the Head of Accounting and the Procurement team, which relevance degree has to be verified and established for high-risk payments. Each division can come up with particular criteria for how to categorize high-risk payments, but this evaluation is prone to scrutiny in Compliance Review Boards of each division.

Some specific types of exchanges are indicators of high-risk payments, such as: payments made outside the ERP system; direct debits to subcontractors; transactions made with paper money or equivalent; payments made to partnerships that surpass national frontiers; and payments made to suppliers that have bank accounts in countries where it does not operate (e.g. tax havens).

As a multinational corporation, company W also analyzes the risk of payments on a national-level. Therefore, payments made to suppliers in countries deemed high-risk by the Transparency International are also closely monitored.

Money Laundering Prevention

Money laundering and terrorism-related financing are strictly prohibited by the company's Code of Conduct. In order to prevent such events, the company has a specific Anti Money Laundering (AML) task force, with specific employees inside the compliance structure dedicated to this end.

The AML compliance system has its own procedures and internal controls necessary to minimize the risk of exploiting suppliers in order to promote money laundering or terrorism financing.

This system also proposes to create a high level of transparency whenever third-parties are involved. In order to do so, there are specific processes related to scrutinizing the operations of third-parties, commonly known as "Know Your Counterpart" (KYC) whenever legally required or when the internal risk evaluation made by the AML obliges collaborators to do so. In addition, there are specific procedures related to monitoring ongoing commercial relationships, including standardized reports of suspicious transactions/behavior.

The KYC are not mandatory to every new business partnership. However, in specific circumstances, the due diligence related to KYC has to be performed. These circumstances include: if there is payment in cash of an amount equal to \$11700,00 or higher to any third-party; in any case where the previous due diligence is no longer valid; and in any case where the AML system identifies compelling evidence related to money-laundering or terrorist-related operations (including “red flags”). All the information related to the KYC process (such as the clarification of all the legal representatives, effective beneficiaries of the counterpart etc.) are necessary before any business partnership is negotiated.

Even though the responsibility of the AML system lies on the compliance organization, the effectiveness of such operations depends on reliable inputs from commercial, sales, project, treasury, legal and accounting teams, as well as with the participation of middle-level managers up to executives. Their contribution is needed in order to comply with the rules related to the company’s AML system. In order to assist the risk exposure of each regional organization regarding money laundering, the headquarters of the company provides a list of global AML risk indicators (which range from low to high). These indicators can facilitate efforts related to AML risk mitigation and the appropriate response to current and potential business partnerships.

Additionally, each branch of the organization has to guarantee that all its relevant collaborators, ranging from sales personnel up to project managers (i.e. those that are exposed to environments that allow money laundering to flourish) participate in mandatory trainings organized by the AML compliance team.

Whenever a transaction is classified as suspicious related to money laundering or terrorist-financing issues, an internal report has to be submitted to the regional compliance organization, which will assist with the necessary measures.

As suspicious situations are more likely to occur in the front-end of the organization (i.e. sales force, treasury, legal collaborators), these collaborators are key in order to the AML system to function properly. In the event of a suspicious transaction, these collaborators are urged to contact the regional compliance organization immediately.

If the suspicion cannot be eliminated, a Suspect Report Transaction (STR) is needed in order to submit to the competent authorities. These reports are mandatory in countries where the law requires organizations to disclose suspicious transactions.

2.2.2.2.4 Detect Pillar

Guideline for Dealing with Compliance Cases

The multinational corporation under analysis considers a “compliance case” any actions

made by its collaborators or by related third-parties during their ongoing commercial activities that culminate in damage to the company's reputation, such as: criminal/administrative law violation; violation of internal rules (e.g. Code of Conduct); administrative/criminal charges against the headquarters; charges related to accounting practices and damages to its tangible and intangible assets.

There are two types of compliance cases: central and local. Every case is deemed central if it is related to: administrative/criminal charges made against the company in its headquarters' country; disclosure requests made by public authorities in its headquarters' country; information related to active corruption or undue advantages made by the company's employees or third-parties; antitrust violation cases; intentional violation of accounting principles; cases related to development banks and credit insurers; cases involving collaborators from high-ranking positions; cases of false declarations to other compliance cases; cases where regional compliance organizations cannot act due to conflicts of interests; and information related to money laundering and terrorist financing. Any other case that is not included in the aforementioned categories is treated as a local compliance case.

It is important to distinct compliance-related cases to other types of breaches that are not investigated by the compliance organization. Incidents related to HR processes, work environment, bonus payments, work environment, inadequate use of the company's property, labor laws and guarantee funds are not the scope of compliance departments.

In order to be able to track all compliance-related cases, the organization has a specific tool (also omitted for confidentiality purposes) for recording the appropriate cases. All collaborators inside the compliance organization are required to register all compliance cases in the abovementioned tool.

All information registered in the tool is made in a standardized way, in order to facilitate categorization and mitigation plans. Every quarter, all regional compliance organizations have to inform all new compliance cases inside their responsibility scope. These new cases are reported to the Chief Compliance Officer, which subsequently informs the Board of Directors, the Audit Committee and the independent auditors.

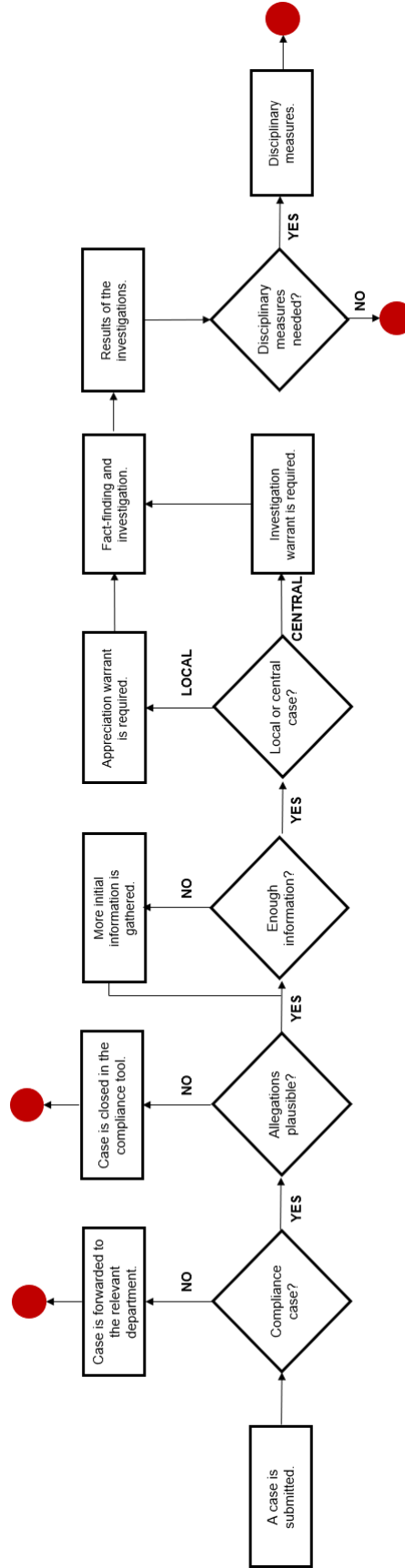
After the compliance case is registered, the case is investigated by the appropriate compliance organization or is redirected to specialized departments for the appropriate study. There are specific principles related to compliance investigation operations, which involve: objective and impartial investigations; fact-finding that is consistent with the applicable laws and internal rules; presumption of innocence; confidentiality and non-disclosure of collaborators involved (unless required by law); and adequate, necessary and appropriate methods of investigation. In addition, all collaborators involved in compliance investigations are required to follow the Compliance Code of Conduct for internal compliance investigations, which will be better explained later in the thesis.

The investigation of compliance cases obeys the following procedure:

- *First step:* determine if the case is a compliance case. If it does not fall into the categories abovementioned, the case will be forwarded to the appropriate department;
- *Second step:* if the case is indeed compliance-related, the plausibility of the allegations will be analyzed. If the allegations are not plausible, the case will be closed in the compliance tool and will not be assessed again;
- *Third step:* if the allegations are plausible, its content will be revised again in order to assess if there is enough information to allow for an internal investigation (called initial suspicion);
- *Fourth step:* if the allegations are substantive enough and the compliance case is local, the regional compliance organization will ask for an “appreciation warrant”, which will be signed by the country’s compliance head. If the compliance case is global, the global compliance organization will ask for an “investigation warrant”, signed by the Chief Compliance Officer;
- *Fifth Step:* after the investigation’s conclusion, the team responsible for the investigation will provide reports, summarizing the whole operation. This report has to be approved by compliance boards (in both local and central cases), and has to include a description of the investigations, facts gathered, legal assessment of the facts and recommended actions. In central compliance cases, the Chief Compliance Officer will provide the report to all relevant individuals (on a need-to-know basis). If disciplinary measures are needed, the reports will be forwarded to the relevant Human Resources department. In local cases, the regional compliance officer will also disclose the report to relevant individuals. It is important to highlight that all investigation/clarification conclusions shall be handled with extreme confidentiality and its disclosure should not be made without previous approval by the Chief Compliance Officer (in central cases) or by the compliance board (in local cases).

The compliance procedure can be visualized as demonstrated in Figure 8.

Figure 8: Flowchart of Compliance Cases Handling.



Source: Authors.

All warrants have to be properly identified and with the name of the department assigned to proceed with the investigations. In addition, a description of the allegations and the business unit involved also has to be clear in the document.

These warrants can be shown to the interviewees with the purpose of authorizing the investigation/clarification methods. On the other hand, in order to assure confidentiality and the integrity of the investigation, the warrants will not contain personal information in addition to the brief description of allegations.

In order to maintain the information flow to those organizations affected by the investigation, the Chief Compliance Officer or the regional compliance head will inform – on a “need-to-know” basis – the CEO and CFO of the relevant business unit. In addition, all the relevant information (such as interviews, documents and electronic information) need to be provided to the appropriate personnel in the company’s headquarters.

All collaborators will be properly notified of any investigation/clarification related to them – up to the point where this notification does not undermine the ongoing investigations.

Compliance Tools

All violations of fiduciary duties have to be registered in specific compliance tools designed for database purposes. As abovementioned, every violation that causes damages that exceed \$580 dollars to tangible and/or intangible assets of the company has to be registered in those specific tools.

In order to calculate the damages, the CFO of the relevant business unit is responsible for overseeing and assuring that any type of breach that exceeds the threshold value is indeed registered at the appropriate tools.

At the end of each quarter, all CFOs and relevant compliance members have to confirm – in written form – all relevant violations of fiduciary duties inside their business units, stating as well whether the event has been successfully registered.

Right after, the compliance segment deemed Compliance Strategy and Risk will analyze all violations registered in the tool and report them to the Chief Compliance Officer in the headquarters, which will also inform the corporation’s CEO, CFO and the board of directors.

The report of criminal offenses from collaborators or related third-party are not mandatory. It is up to the CFO of the relevant business unit, together with the respective compliance employees the decision to report or not. Criminal offenses are normally reported to the organizational structures concerned with employee safety.

Compliance Code of Conduct

It is essential that collaborators responsible for internal investigations and the activities of fact-finding execute their duties in a consistent manner, following the applicable laws and consonant to the corporation's values. The Compliance Code of Conduct applies to all investigations and interrogations made by an authorized person regarding the potential violations to the internal policies, internal procedures or applicable laws.

Collaborators involved in fact-finding have to: conduct their activities in a consistent manner and in consonance with legal and professional rules, in an objective and diligent way; demonstrate justice and respect with involved collaborators; avoid presumption of guilt; guarantee that every party has the right to be listened; allow the participation of lawyers or labor counselors in interviews; keep confidentiality of information (disclosure is only made on a need-to-know basis); protect the identity of informants; and look after internal policies.

Together with the duties one has to comply with during investigations, these collaborators cannot engage in secret recordings, assume false identity, make false declarations or try to gather information in a deceitful way. Therefore, the purpose of all information gathering has to be clearly stated and questionable details-collection methods are prohibited.

Personnel related to investigation-related operations have to be unbiased in their fact-finding. Therefore, specific clauses related to conflicts of interests (such as personal relationship with the investigation target) are stated in order to avoid partial investigations.

If any compliance collaborator engaged in the fact-finding procedure notices potential conflicts of interest, it must inform immediately its supervisor. The manager will evaluate if the conflict exists, and, in an affirmative case, the collaborator prone to conflicts of interest will be removed from the investigative operation and a third-party organization will be hired to finish the fact-finding stage.

Compliance Review Board

In order to guarantee an adequate "tone from the top" at every level of the organization, it is the duty of executives to review periodically the compliance system together with the regional compliance head, in what is called Compliance Review Board (CRB).

The CRB has the objective of: reviewing periodically the effectiveness of compliance efforts taking into consideration local factors and how the decision-making is structured;

overseeing the collaboration between the compliance organization and other business units; and enhance the compliance system.

The CRB can happen on a company-wide level or inside divisional units. In every CRB, it is required that the Regional Compliance Head, together with the CFO and the compliance personnel of the business unit participate at the meeting. The CRB must be scheduled every quarter.

In the CRB meetings, mandatory items have to be discussed, such as: compliance cases (local and central, mitigation actions and disciplinary sanctions); business partnerships status; feedbacks regarding risk mitigation previously identified; trainings; and high-risk payments overview.

Search Warrant Guidelines

In the compliance procedure of the multinational corporation under analysis, there is a specific topic related to how to act when unannounced search warrants happen in any of the corporation's sites.

The clause specifies which types of public authorities can conduct search warrants, who to contact in such events and key issues related to the communication with such authorities.

The corporation collaborator should always ask to see the scope of the warrant and to get identification of the public servants conducting the search.

The collaborator should always contact the legal and compliance offices, which will oversee the operation and follow the public authorities throughout the company's site.

After the search warrant is concluded and an inventory of the documents has been made, a report is sent to the headquarters legal and compliance offices. In case of antitrust violations, the report should also be forwarded to the headquarters Legal Competition segment.

Clearing Committee

The clearing committee has the objective of evaluating the results arising from the information and documents disclosure to governmental authorities in order to comply with local regulations. The committee discusses subjects related to the disclosure of solicitations from public authorities and voluntary disclosures by the corporation.

The committee is structured in the headquarters and is composed of the Chief

Compliance Officer and other executives related to the board and other global functions.

2.2.2.2.5 Respond Pillar

If the violation of any code and/or guideline (including the Code of Conduct) by collaborators of corporation W is corroborated by evidence collected during the investigation and fact-finding steps, these collaborators are subject to disciplinary measures.

The appropriate response to a violation is evaluated and decided: in a global central process by the Central Disciplinary Committee, composed of top executives; or in an accelerated CDC process together with the appropriate HR organizations.

The scope of the CDC is determined by the ranking of the violator:

- The CDC has jurisdiction regarding all compliance cases involving high-ranked executives;
- Regarding middle-level managers, the CDC has jurisdiction in those cases where the severity of the violation is significant (especially when this violation impacts antitrust and anticorruption efforts);
- For general employees, the CDC will have jurisdiction only in special cases (with high-risks both financially and reputationally).

It is important to mention that CDC members have the authority to direct any compliance case if one deems appropriate.

All compliance cases that go through the CDC can be treated either in a regular or in an accelerated mode. For all executives prone to disciplinary measures, the procedure followed is, generally, the regular mode. For middle-level managers, the accelerated mode can be applicable, depending on the severity of the breach. To general employees, the accelerated mode is appropriate.

In normal cases, disciplinary sanctions are only applicable after the fact-finding operations. However, in exceptional cases the collaborator can be suspended while the investigation is ongoing. These measures are appropriate if risks regarding the integrity of the investigation or if the interests of the corporation can be damaged by the collaborator.

All compliance cases which an evaluation of possible disciplinary measures lie outside the jurisdiction of the CDC are analyzed by General Disciplinary Processes (GDP). In the GDP, all disciplinary measures and related decision-making can be defined by the management team, together with the head of the business unit under consideration. More severe cases (or cases where conflicts of interest may arise) are handled by top executives,

together with the Head of Human Resources of the appropriate organization. In other instances, the Local Disciplinary Committee (LDC) may be appropriate.

At the end of the investigation and fact-finding steps, the compliance organization notifies the appropriate manager regarding the investigations key conclusions. The manager can settle a Local Disciplinary Committee in order to arrive at a reasonable disciplinary measure. All LDCs have the CDC as the main benchmark for its operations.

The LDCs' composition vary from branch to branch. In every country where the corporation operates, there are specific guidelines regarding the LDCs members, rules for defining the role and participation of the appropriate manager, jurisdiction, meeting topics, decision processes, mechanisms for avoiding conflicts of interests and many more. In the Brazilian case, the LDC is composed, among others, of the CEO and Head of Human Resources.

Whenever the LDC or the appropriate top executive decides which disciplinary sanctions to apply, the manager of the collaborator under scrutiny and the human resources organization are informed and have the obligation of applying the sanctions.

In order to arrive at an appropriate sanction, many factors have to be taken under consideration. For instance, proportionality have to exist between the sanction and the violation and conflicts of interest have to be completely eliminated. In addition, no collaborator involved in the fact-finding and investigation can lead or personally involve oneself at the process of deciding disciplinary measures.

The proportionality principle involves complex criteria that also have to be considered during the disciplinary decision phase. According to the compliance procedure, variables such as: severity of the behavior, duration and frequency of illegal conduct, intention or negligence, embezzlement, responsibilities of the collaborator and cooperation during the investigation – among many others – have to be pondered correspondingly.

There are five main types of disciplinary measures, as follows:

- *Informal warning*: the warning may be written or verbal and is appropriate in inadequate behavior cases of lesser severity. The informal warning consists of: (1) a description of the inadequate behavior and (2) a clear guideline regarding the expected behavior changes for the future. The informal warning has to be delivered by the collaborator's manager;
- *Formal warning*: a formal warning is appropriate in cases where inadequate behavior has to be dealt in a more solid manner but when the employment relationship has to still be maintained. A formal warning consists of (1) a description of the inadequate behavior, (2) a clear guideline regarding expected behavior changes for the future

and (3) the consequences (including the termination of the employment contract) if the collaborator's behavior remains unchanged;

- *Loss/Reduction of Variable Compensation:* in cases where the inadequate behavior requires solid financial measures, including the prohibition of variable compensation for a determined period of time;
- *Transfer to another function:* in determined cases, the violation requires the transfer of the collaborator to another function (in accordance with the appropriate labor laws). The transfer should always be "lateral" and under no hypothesis the collaborator will be transferred to a higher rank and/or with a bigger compensation;
- *Contract termination:* if the violation is deemed severe enough, the employment contract may be terminated. This termination can happen in two ways: ordinary termination of extraordinary termination. In the ordinary termination case, the terminated employee has the right to receive prior notice and is entitled to receive severance payments. In the extraordinary termination case (where there is repeated misconduct or very severe violations), the termination is made in a just cause provision. The terminated employee is not entitled to early warning or severance payments.

There are other possible measures, although less frequent than the ones above-mentioned. These other measures include suspension (with or without compensation) and cancellation of an imminent promotion.

In every misconduct case, the compliance organization is responsible for analyzing whether the collaborator may need to go through compliance training courses. The appropriate manager is responsible for guaranteeing that the collaborator goes through the entire training, if needed.

At the end, the compliance organization, together with the human resources department, create anonymous documents in order to document the disciplinary measures that accompany each compliance case.

2.2.2.3 Interview with the Regional Head of Compliance

The compliance procedure of corporation W is extensive and complex. After being caught in more than one corporate scandal in the last decades, its compliance system evolved to englobe a wide variety of behaviors and its consequences.

However, as complex and far-reaching it may be, some key assumptions have to be made in order to the whole system functions properly. In an interview with the head of

compliance at the Brazilian branch, the role of compliance and its behavioral consequences was dissected.

Being responsible for overseeing an organization with more than 5000 employees and more than \$1.5 billion dollars in revenues, fruitful insights regarding how to effectively structure a compliance system were made. During the time when many Brazilian companies are caught in massive corruption scandals, the example and survival of this multinational corporation can be appropriately benchmarked.

2.2.2.3.1 Ethics in Corporations

At the beginning of the interview, the director made that the term “ethics” is a pervasive one. What is ethics? Is it what the majority understands being the correct path? In the corporate world, the vagueness of the term implies that any system built around it is prone to be highly qualitative. Is it ethical for a company to sell equipment that may cause environmental effects (such as a turbine to a thermoelectric power plant)? As stated by the director, “in the day-to-day business, you do not have the incentive to be ethical. In the corporate world, we use the word rationalization, not the word ethics”.

The rationalization concept, as already explained in Part I, comes from Donald Cressey’s study of fraud. In his fraud triangle, rationalization is a key concept in order for ordinary people to be able to commit illicit actions and still preserve a good image of oneself. In corporate settings, the necessity of short term results creates the necessary pressure; the openness that many executives have in other organizations create the opportunity and, if properly rationalized, the fraud is likely to occur.

The mental shortcuts one uses to settle dissonant arguments were not discovered by Cressey. Leon Festinger, with its cognitive dissonance concept, already highlighted this seemingly awkward effect of settling divergent opinions using cognitive shortcuts. In addition, it was seen that Dan Ariely also stressed the fact with its “fudge factor”, also stressing the fact that ordinary people can commit illicit actions without self-punishment thinking. The fact that this multinational corporation understands the erratic behavior of human beings and designs its compliance system according to it highlights the fact that psychological insights allow much insightful approaches together with the traditional approach for crime and punishment.

2.2.2.3.2 Perception of Risk

Another key point highlighted by the director is that executives often engage in misconduct because “they do not have an appropriate perception of the risk levels they

are exposed”. Whenever doing business, corporations are exposed to a wide variety of risks (“no risks means not doing business at all”, according to the executive). Therefore, it is extremely important that individuals – especially high-ranked executives – understand clearly what they are exposed to. In clear terms, “the compliance system of our company is designed mainly to fundamentally alter the perception of risks the collaborators believe they are exposed to”.

In stating that the perception of risk is important, it becomes clear that, in many instances, the risk probability itself is less important than how individuals actually perceive it.

This idea of increasing perception is also something already mentioned in this study: the availability bias. By continuously stressing that executives might face during their day-to-day business, their perception of risk increases although the risk itself might remain unaltered. The parallel is clear with previous studies that sought to understand how individuals perceived the likelihood of dying from stroke or from an accident (KAHNEMAN, 2011).

Again, by using behavioral insights, the company can increase the effectiveness of its campaigns even if the intrinsic risks and opportunities remain unchanged. Much due to the company’s comprehension – even if not purposely so – of availability biases, it was able to direct its efforts in a more fruitful manner. The “Prevent-Detect-Respond” framework analyzed earlier is extensively advertised in the offices and throughout intranet campaigns.

2.2.2.3.3 Corporate Practices Limits

According to the director, “whenever a company’s strategy is structured, the whole idea of existing a limit is eliminated. One does not talk about disproportional competitive advantage while setting the corporation’s goals”. It is also important to mention that, in corporate settings, many of the decisions lie in the grey area (as Soltes (2016) already wrote extensively about and also continuously mentioned in this thesis). While one may be clear that giving a luxury car to a supplier configures a disproportional situation, a book of symbolic value may not be seen as an unusual setting.

Where is the threshold limit? The compliance director stated that “companies have to dictate where the line is drawn. Each company has a mission, vision and values that need to incorporate these kinds of restrictions”. Grasping an unusual way of thinking, the executive pointed out that employees need to, first of all, abide to the Code of Conduct rather than to the law. He affirmed that the Code of Conduct should give all necessary explanations and limits – including, of course, obeying the local laws.

2.2.2.3.4 Compliance System Changes After Frauds

The compliance system of the multinational corporation under analysis was significantly different before its corporate scandals. According to the director, “the company had a culture that facilitated fraud-related issues. Through the usage of questionable methods its employees got used to the way business was done”.

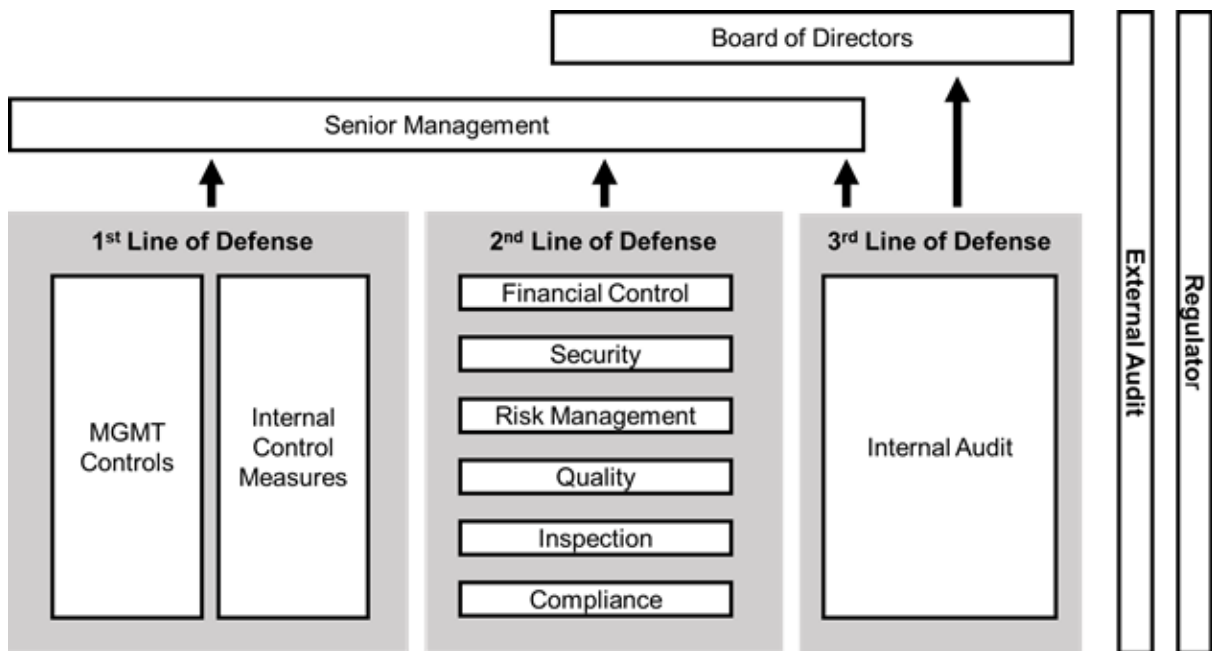
After its scandals, its compliance organization went from 50 collaborators up to 600. What fundamentally changed was the behavior of individuals and, more importantly, their perception of risk. As the director stated, “the compliance system looked mainly at the cultural aspect”. Whenever confronting unwanted behaviors, the head of compliance claimed that, “although understanding human behavior is important, it is equally valuable to prepare these individuals to confront challenging situations, where, without proper training, they will react in undesirable ways for the company they work to”.

2.2.2.3.5 Governance Aspects

There are two main sources of scandals, according to the interviewee: culture and lack of internal controls. While culture has been extensively addressed through the abovementioned measures, the lack of internal controls is “the primary governance mistake companies make”. The director stresses that the framework developed by The Institute of Internal Auditors is of enormous value in understanding how a company can protect itself from internal scandals.

There are three main lines of defense: the first line is control through the usage of management measures (i.e. how the leaders of the company set up internal control measures); the second line of defense is related to risk mitigation and controls, involving compliance systems, financial control, quality and inspection etc.; lastly, the third line of defense is the internal audit, which needs to analyze impartially the company’s processes. These lines of defense distinguish three groups involved in risk management: groups that own and manage risks (managers); groups that oversee risks (compliance functions) and groups that provide independent assurance (IAA, 2013).

The Head of Compliance pointed out that “these lines of defense are structured to defend solely the corporations’ tangible and intangible assets, including defending itself from its own collaborators if necessary”. Figure 9 illustrates the concepts abovementioned:

Figure 9: The Model of Three Lines of Defense.

Adapted from: IAA, 2013.

In the framework, it becomes clear that senior management and governing bodies have essential roles, especially in positioning themselves to sustain or demand change from one or more lines of defense (IIA, 2013).

According to the compliance director, it is of no use having a second or third line of defense solidly structured if the first line of defense is not. Even worse, senior management may be unwilling to support these lines of defense, deteriorating the possibility of monitoring worrisome misconduct.

By stating clear that the role of compliance is solidly related to monitoring prospects (“the CEO of the company is not paid to trust”), some important aspects of the compliance system approaches the neoclassical approach to crime and punishment: by increasing the probability of getting caught and, thus, raising the stakes if one gets caught, the company seeks to reduce misconduct.

As it can be seen, the compliance system of this corporation is a mixture of behaviorally-based assumptions (such as increasing the perception of risk and understanding that most decision-making occurs in the grey area) with classical assumptions of misconduct (monitoring aspects).

The framework followed by the corporation also relates to key compliance principles. By stressing out the importance of senior management to publicly support its risk management operations, it becomes clear that the “tone from the top” principle is one of

the key guidelines for an effective governance setting.

According to the Compliance Director, the majority of misconduct cases occur without the knowledge of the senior management. By stressing the importance and committing oneself to the principles, executives hope to be able to create a ripple effect and raise awareness to the topic down to lower-ranked collaborators. The inverse, of course, is much more worrisome: by not giving the example, top executives may damage a whole array of operations which they oversee. Social identification can be extremely delicate and hugely influence corporations' efforts towards becoming clean.

2.2.2.3.6 Company's Survival After the Scandal

Even though the company under analysis was hit significantly once its frauds were discovered, there is a widespread feeling that, together with structural shake-ups, the corporation was able to fend off worse outcomes. Today, the company serves as a model for other corporations that also were struck heavily by the ongoing investigations in Brazilian soil.

As the director stated, "the company could have declared bankruptcy as many did in its situation. Thankfully, the company had a legitimate purpose – albeit the frauds – and was able to quickly reorganize its governance structures". By increasing the compliance importance – together with improving the lines of defense that were not firmly settled, the company was able to alter the perception of risk of its collaborators.

Many companies in worrisome situations try to benchmark the solution brought up by the company W. Its head of compliance highlighted that "companies try to understand how we survived, how our governance supports our controls and, more importantly, how we were able to alter the perception of risk of the company as a whole".

2.2.2.4 Summarizing Corporation W Compliance System

Striking differences emerge from Enron's Compliance System to Corporation's W one. Even though both companies faced similar challenges regarding corporate frauds, Enron went bankrupt while Corporation W was able to recover from the event. How Corporation W compliance system was structured before the crisis? Not much can be said about it, given that there is not enough information for an extensive a priori analysis. However, some hints can be assessed: first of all, it was a small operation (50 collaborators) when compared with today's department (600 collaborators).

As the senior management was involved in the scandal, Corporation W's compliance policies did look much like Enron's: a "by-the-book" approach which did not permeate

through the company's values. As far as the evidence goes, Corporation W compliance system was much more correlated with CCS premises than with BCS ones.

How the company structured its compliance system changed dramatically in the aftermath of the crisis: the corporation strengthened its internal processes by conducting investigations that sweep throughout the world, with more than 1500 interviews and an assessment of more than 14 million documents.

Moreover, it reinforced its anti-corruption and standard guidelines, as well as introducing the "tone from the top" approach, relying on the creation of a robust ethical atmosphere as a top-down approach, from the organization's senior managers up to lower-ranked employees.

As reviewed in this subtopic, many of the corporation's new efforts – after the crisis – were aligned with the understanding that implicit cultural values and norms matter inside the work environment and should be considered inside compliance mechanisms.

By creating new mechanisms such as the "tone from the top", developing an easy-to-use compliance help desk and hotline that works 24/7 and by training its global workforce with mandatory compliance trainings whenever a new collaborator is admitted, the company effectively understood the insights that behavioral sciences can bring to corporate decision-making. The principle of "making it easy", something constantly stressed by the Nobel-laureate Richard Thaler, has been implemented in the company.

However, some aspects of its compliance system are still rooted in CCS policies. First of all, its Code of Conduct, together with the document dissecting how the system works are almost 100 pages long. Given information overload – together with the daily activities employees have to deal with – it is unlikely that all compliance principles are truly understood by the whole corporation.

However, it is important to mention that key points of the system (such as the Prevent-Detect-Respond framework) are indeed heavily publicized inside the corporation, reducing the amount of information procedures a collaborator needs in order to have access to compliance personnel.

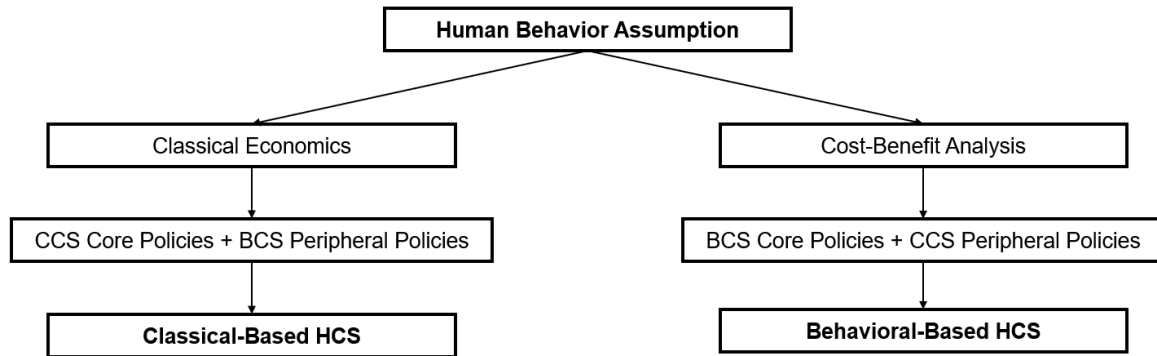
Therefore, Corporation W compliance system cannot be strictly classified as a pure CCS or BCS, adopting mechanisms from both ends. *This type of Compliance System will be deemed as a Hybrid Compliance System (HCS).*

It is important to mention that, given the basic assumptions of human behavior, no governance policy can completely mix behavioral and classical assumptions: by definition, behavioral sciences rely on concepts (such as limited computational capacity) that goes strictly against the premises of rational economics.

Hence, HCS are modelled on basic behavioral or rational premises, but not on both

simultaneously. The compliance mechanisms that follow from these basic assumptions, however, can indeed be mixed, as is the case of Corporation W. This distinction give rise to two distinct HCS models: classical-biased of behavioral-biased. Figure 10 exemplifies this distinction.

Figure 10: Hybrid Models of Compliance Systems.



Source: Authors.

While both types of HCS may have similar compliance policies, the foundations of the system matter. For instance, a classical-based HCS may incorporate policy tools such as an increase in publicizing the costs of deviating from the ethical standards – a behavioral idea (as the increase in advertising does not fundamentally alter the intrinsic risks/rewards) to a classical purpose of punishment.

A behavioral-biased HCS, on the other hand, bases its policies on behavioral insights, but can borrow specific concepts from CCS. For example, a behavioral-based HCS can have strict policies and extensive processes dissecting the procedures if one breaches the Code of Conduct, including the appropriate punishments, together with ideas such as leadership for compliance initiatives. That is, deterrence policies mixed together with social influence mechanisms.

Corporation W, based on its new compliance structure after the crisis, is classified as a behavioral-based HCS. However, it is too soon to state whether this new development will turn into a full HCS or not.

In addition, it is not possible to objectively assess the effectiveness of the new compliance system. Given that it is a recent implementation, the system has to be in operation for a longer period of time. However, it is clear that the company has become a benchmark vis-à-vis compliance restructuring for other companies that are now in trouble: a hint that the new compliance system is indeed more robust and fool-proof than the CCS

that existed before.

2.2.3 Behavioral and Classical Systems: Propositions Development

After scrutinizing the compliance systems of these multinational corporations, it is important to propose specific characteristics of each type of compliance system, in order to assess whether future studies will be able to sustain the categorization performed in this thesis.

Proposition 1a: Classical Compliance Systems rely on a Legalistic approach, comprised of extensive guidelines in order to hedge the risks of misconduct of collaborators.

Given that individuals do not suffer from information overload, CCS are based on complex and often robust compliance policies in order to insure itself from misconducts that might not be well defined. In a CSS, therefore, comprehension and easiness of reading and interpretation are not major issues given that individuals do not suffer from limited computational capacity.

The cost-benefit analysis lead to a system heavily based on the enforcement approach, where deterrence is key in order to avoid misconduct. Therefore, increasing the stakes (be it reducing the benefits or increasing the costs/probabilities) one may lose if caught act as a powerful guideline for the compliance system structuring.

Proposition 2a: Classical Compliance Systems are comprised of policies that focus on the punitive costs of engaging in misconduct behavior.

It is expected that CCS develop their policies around the Enforcement & Punishment approach, raising the costs of individuals that engage in dishonest activities. In addition, CCS mainly revolve around the punitive aspect for deterrence: This can be done through increased monitoring or through more severe punishments for minor breaches of the system

Proposition 3a: Classical Compliance Systems are comprised of policies that are useful and effective for clear-cut decisions.

The CCS approach, by clearly highlighting the costs of engaging in illicit behavior, is expected to be a powerful deterrent for decisions that are made on a binary environment (i.e. where “crossing the line” is a clear event). This type of environment is usually found in lower ranks of the corporation, mainly in the operational field.

Figure 7, on the other hand, highlights the key assumptions that comprises the Behavioral Compliance System. Borrowing many concepts from the behavioral sciences, this type of system bases its premises on a less idealistic view of the human nature.

In contrast with the CCS, the BCS take into consideration the limited computational capacity of individuals, as well as the consequences of it (many of it thoroughly dissected by the heuristics and biases approach coined by Kahneman and Tversky).

Furthermore, psychological foundations have a huge impact on how these systems are developed, as well as the consequences for group behavior and specific phenomena that arise in group decision-making. How one perceives itself in relation to the corporate culture and values are also of great importance for BCS.

Proposition 1b: Behavioral Compliance Systems takes into consideration (formally or informally) the heuristics and biases approach.

Proposition 2b: Behavioral Compliance Systems rely on psychological features of group behavior in order to derive its policies.

Fundamentally different from the CCS, BCS propositions 1a and 1b consider the decision making in a broader social fashion, also considering the intrinsic limitations human beings have in decision-making settings. Instead of relying on a mathematical weighing of costs and benefits, BCS model their policies based on social ties and interactions, as well as the inclusiveness of groups and how one's image and actions may influence the conduct of its peers (especially subordinated individuals).

Proposition 3b: Behavioral Compliance Systems require easy-to-use concepts and frameworks in order to embed the compliance process into the daily environment.

The limited mental capacity of individuals requires that BCS structure themselves as easy-to-remember concepts, primarily in order to be an effective tool if the misconduct opportunity arises. These concepts can be acronyms or easy access to compliance tools. BCS take into account that following compliance policies and rules should be something that do not increase the burden of daily activities.

Proposition 4b: Behavioral Compliance Systems are comprised of policies that are useful and effective for decisions that involve uncertainty environments (i.e. in the grey area).

BCS do not rely solely on Enforcement & Punishment approaches due to the fact that it perceives corporate decision-making as events that happen in environments embedded by uncertainty.

Therefore, individuals may be fully aware of the consequences of misconduct, but do not frame their decisions in such way. Decision-making that lie in the grey are is thoroughly discussed by Soltes (2016) and is a concept that BCS put as a cornerstone concept in their systems.

Proposition 1c: Classical Compliance Systems are less effective and a poorer enforcer in management environments than Behavioral Compliance Systems.

Lastly, due to the fact that BCS are comprised of richer assumptions regarding human behavior and decision-making, it is expected that corporations that rely on such systems have a more solid and holistic system that englobes specific nuances which CCS – with the classical assumption of human behavior – cannot.

2.2.4 Behavioral and Classical Systems: Propositions Testing

Given the preceding analysis of two big multinational companies vis-à-vis their compliance system, it is important to revisit the proposition developed in section 4.2 and assess whether they indeed reflect real-world circumstances.

Propositions 1a and 2a are corroborated from Enron's study of their compliance system. As the analysis highlight, the bankrupt company had a compliance system that was heavily intertwined with their accounting procedures and dubious risk management policies. No focus has been given to the consequences of top management misbehavior and the implicit cultural norms it gave to lower-ranked employees daily decision-making.

By also scrutinizing Corporation W compliance system, it also strongly supports the idea of a CCS transition to a behavioral-based HCS. As part of their ongoing policies after the scandal, propositions 1b, 2b and 3b could be corroborated with the different approaches Corporation W uses in order to deter misconduct.

It is important to notice, however, that, being a Hybrid Model, it is still possible to see features much linked with CCS approaches, such as the extensive and legalistic approach to the Code of Conduct and Compliance Guidelines.

Propositions 3a and 4b, deserves more attention from future studies on the field. Given that the sample of companies studied is small, there needs to be a systematic and quantitative approach in order to check whether they maintain their validity.

The intuition, however, is that indeed each type of system has a greater validity in different environments: in operational areas – with binary choices – CCS may have an advantage due to the fact that it allows simple and quick comparisons in order to arrive at conclusions. Whenever one climbs the corporate ladder, on the other hand, blurriness takes place and BCS are more well suited for the task of deterring misbehavior.

The discussion of validity and effectiveness of compliance systems – proposition 1c – also is backed by the analysis performed in this section. The reason is simple: bearing in mind that management decision-making rarely is done in clear environments where the right-wrong dichotomy takes place, we would expect that BHS indeed are better deterrents as they incorporate a much richer model of human behavior than CCS do.

In these environments where uncertainty is the rule, where the right or wrong is not at clear sight, the psychological features of decision-making gain relevance and are important variables at achieving a decision.

Therefore, given that the costs of compliance breaches are proportional to the corporate hierarchy level it takes place, it is expected that BCS are more effective than the widely spread CCS. Corporation W vs. Enron highlights this feature: while it is still early to clearly state that the HCS developed at Corporation W after its scandal is indeed more effective than the precedent CCS, the notoriety and benchmarking phenomena that happen on a daily basis in this corporation is a strong evidence that it indeed was able to devise a more efficient compliance model.

Table 5 summarizes the discussion developed in this topic.

Table 5: Testing of Propositions.

Proposition Number	Proposition	Case Studies Results
<i>1a</i>	Classical Compliance Systems rely on a Legalistic approach, comprised of extensive guidelines in order to hedge the risks of misconduct of collaborators.	Corroborated by Enron's Compliance Structuring. Corporation W also has policies that resemble this aspect of CCS.
<i>2a</i>	Classical Compliance Systems are comprised of policies that focus on the punitive costs of engaging in misconduct behavior.	Corroborated by Enron's Compliance Structuring.
<i>3a</i>	Classical Compliance Systems are comprised of policies that are useful and effective for clear-cut decisions.	Further studies need to be developed in order to fully test the proposition.
<i>1b</i>	Behavioral Compliance Systems takes into consideration (formally or informally) the heuristics and biases approach.	Corroborated by Corporation W's Hybrid Compliance System.
<i>2b</i>	Behavioral Compliance Systems rely on psychological features of group behavior in order to derive its policies.	Corroborated by Corporation W's Hybrid Compliance System.
<i>3b</i>	Behavioral Compliance Systems require easy-to-use concepts and frameworks in order to embed the compliance process into the daily environment.	Corroborated by Corporation W's Hybrid Compliance System.
<i>4b</i>	Behavioral Compliance Systems are comprised of policies that are useful and effective for decisions that involve uncertainty environments (i.e. in the grey area).	Further studies need to be developed in order to fully test the proposition.
<i>1c</i>	Classical Compliance Systems are less effective and a poorer enforcer in management environments than Behavioral Compliance Systems.	Corroborated by Enron's and Corporation's W Compliance System.

Source: Authors.

3 CONCLUSION

The journey of inserting Behavioral Economics insights into the vastness of economic models is only beginning. Wherever its insights were able to fundamentally change the conception of human behavior, new and innovative analysis were able to be made.

This thesis had the objective of analyzing how Behavioral Economics – and psychological insights as a whole – could be inserted in Corporate Governance policies. Given that Corporate Governance is also a field as widespread as economics, the authors decided to focus on a specific governance policy that produces significant impacts: the structuring of compliance systems.

The theme is not only relevant because how managerial misconduct is seen has changed dramatically, but because we are at a time where Brazilian institutions were severely hit by scandals that began at big corporations – state-owned and private-owned ones.

With a comprehensive analysis of the three main fields of this thesis – Behavioral Economics, Corporate Governance and Ethical Decision-Making – a solid theoretical background was formed in order to fully understand how the different human behavior assumptions could lead to very distinct compliance systems and impact its deployment policies.

In Part One of the thesis, two distinct compliance systems were able to be identified: Classical Compliance Systems, which mainly rely on Neoclassical Economics, and Behavioral Compliance Systems, based on the emerging field of Behavioral Economics.

Classical Compliance Systems are based on a rational model of human behavior, comprised of characteristics such as infinite computational capacity, perfect optimization techniques and, more importantly, unbiased decision-making. What these assumptions mean for the structuring of compliance systems is that individuals engage in a pure and simple cost benefit analysis, relegating psychological variables.

Therefore, for a compliance system to be effective in its deterrence objectives, the Enforcement & Punishment approach is the most suitable one (i.e., raise the costs/probabilities of misconduct).

Behavioral Compliance Systems, on the other hand, rely on a model of human behavior that takes into consideration the psychological biases and systematic flaws individuals make in their daily decision-making: limited computational capacity, social phenomena and systematic errors are considered.

Borrowing many insights from the Heuristics and Biases approach (at an individual

level) and from social psychology (at a group level), Behavioral Compliance Systems understand the effect of social and cultural norms in decision-making.

Therefore, for an effective deterrence objective, Behavioral Compliance Systems rely on social ties, organizational aspects and influencers (usually the top management team or more senior jobs) that cause behavior-mirroring at lower-ranked organizational levels. Psychological phenomena such as groupthink and pluralistic ignorance is also taken under consideration when group decision-making arises.

Part Two of the thesis was dedicated at testing whether the distinction between Behavioral and Classical Compliance Systems indeed made sense and also if the propositions identified were corroborated by real world evidence. For each type of compliance system, propositions regarding the structuring content and the consequences of each system were also developed. How the system is deployed to the corporation, how it is communicated, its effectiveness and the environments into which each type of system may work better were discussed and attributed to Classical or Behavioral Compliance Systems. Studying two multinational corporations that had engaged in fraudulent activities, it was possible to compare the validity of the propositions.

The first company discussed is an emblematic one for corporate governance studies: Enron. As a company often regarded as innovative and with sturdy corporate governance processes, the company's downfall sent shockwaves through the whole world.

It was identified that Enron was indeed a Classical Compliance System and had many of the features discussed in Part One (mainly the legalistic or "by-the-book" approach and the lack of ambassadors from the top management team). As it was also clearly seen, compliance efforts were an extension of risk management functions, which had the sole objective of appearing a solid company for outside analysts. Its internal operations, however, had little impact, as their analyzes and recommendations were often surpassed by the top management.

The other company studied – which was entitled as Corporation W due to confidentiality issues – was also hit by bribery allegations in many parts of the world. It was also highlighted that its system, prior to the crisis, was much like Enron's, being identified as a Classical Compliance System.

However, after the fraud was discovered, the company truly engaged in insurmountable amounts of effort and investments in order to create robust compliance systems that indeed could deter managerial misbehavior. The consequences of such mobilization is a transition from a Classical Compliance System to a behavior-based Hybrid Compliance System – which rely its core assumptions on the Behavioral Compliance System but borrows peripheral policies from Classical Compliance Systems as well.

Therefore, from the eight propositions developed, the two aforementioned case

studies corroborated six of them and also introduced the variables necessary for testing the two other propositions that were not able to be tested due to sample size and unavailability of information.

The purpose of this study was to dissect one of the many corporate governance policies that exist in the majority of companies throughout the globe. However, many other corporate governance concepts and facets can be studied through the lens of Behavioral Economics. For example, financial and strategic policies can benefit from a more realistic approach to human behavior.

In addition, structural factors can also influence decision-making environments. Are family-owned firms decision-making process different from other firm ownership structures? These are questions that may bring fruitful insights.

Future studies have a profitable opportunity of assessing whether the propositions make sense in other corporate environments. By studying two companies that did not engage in dishonest activities at the same time and that also did not end the same way, this study has the limitation of a true statistical study that can control for temporal and outcome variables.

Inside the compliance field, many questions also remain to be answered. First of all, it is important to mention that this study based its assumptions mainly on internal factors. However, how institutional factors correlate with the framework described in this work? How compliance efforts differ from country to country and how to insert cultural differences into the framework variables? An outside perspective can enhance the model by considering the institutional factors that directly influence a company's compliance processes.

The possibilities of applying behavioral insights into corporate governance are virtually endless. With an audience that keeps growing every year, Behavioral Economics is here to stay. It will be a challenging but certainly rewarding endeavor.

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