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COPPEAD GRADUATE SCHOOL OF BUSINESS

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LABOR COMPARISON USING ISE & RAIS DATABASE

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Master's dissertation presented to the COPPEAD Graduate School of Business, Federal University of Rio de Janeiro, as part of the mandatory requirements in order to obtain the degree of Master of Business Administration (M.Sc.).

Advisor: Otávio Henrique dos Santos Figueiredo, D. Sc.

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ABSTRACT

ZHENG YUAN. **LABOR COMPARISON USING ISE & RAIS DATABASE**

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This paper attempts to investigate whether the level of a company's sustainability performance has an impact on labor conditions and organizational commitments of the employees belonging to the company. To be specific, we want to see whether wages, working hours, gender discrimination, turnover rates, and employee tenure are different between sustainable companies and not sustainable companies, using a proxy of whether the company belongs to ISE (Corporate Sustainability Index / Índice de Sustentabilidade Empresarial). In this paper, we choose 30 representative companies from the ISE portfolio as a treatment group, and 17 matching companies as a control group. We extracted all employees' data of these companies during the year 2007-2013 from RAIS database (Annual Report of Social Information / Relação Anual de Informações Sociais). After converting the individual-level data into company-level data and combining some of the company's financial data from Economatica, we describe the data from different perspectives and then applied the logit and probit regression models to the data. The results show that the corporate sustainability performance of a company is positively related to its employees' organizational commitments. However, the relationships between corporate sustainability performance and the labor condition related variables are not statistically significant.

Keywords: Corporate sustainability; corporate social responsibility; labor conditions; Organizational commitment; RAIS; ISE

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LIST OF ABBREVIATIONS

- ISE** --- Corporate Sustainability Index / Índice de Sustentabilidade Empresarial
- RAIS** --- Annual Report of Social Information / Relação Anual de Informações Sociais
- CS** --- Corporate Sustainability
- CSR** --- Corporate Social Responsibility;
- CSP** --- Corporate Sustainability Performance
- NMW** --- National Minimal Wage
- FP** --- Financial Performance
- SP** --- Social Performance
- GDP** --- Gross Domestic Product
- RBV** --- Resource-Based View
- CNPJ** --- Cadastro Nacional de Pessoa Juridica
- ROA** --- Return on Assets
- ROE** --- Return on Equity
- PB** --- Price to Book Value
- ADR** --- American Depositary Receipt
- SRI** --- Sustainable and Responsible Investment

1. Introduction

The role of corporations in society has been a concern for both scholars and practitioners for a long time. As early as the 1960s, the concept of corporate social responsibility (CSR) was put forward and supported companies to incorporate social responsibility activities into their corporate strategy, which is different from neoclassical economics' view that the objective of a corporation is to maximize its profit.

The 1987 report *Our Common Future* by the Brundtland commission defines sustainable development as “to meet the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 43) and provides a generic framework to deal with sustainability-related challenges. Furthermore, environmental and social demands from shareholders and other stakeholders are pushing companies to consider sustainability issues more seriously (Berman, Wicks, Kotha, & Jones, 1999; Donaldson & Preston, 1995).

More and more companies began to incorporate sustainability into their business practice and took their social and environmental responsibilities. One example is the companies' growing number of environmental and sustainability reports and companies' participation of sustainability index. These companies believe that in a competitive and turbulent business environment, good sustainability performance is a way of gaining competitive advantage (Lee & Farzipoor Saen, 2012), such as attracting new investment by meeting social needs, generating new revenues by technological innovation, and enhancing risk tolerance by good company reputation. However, there is a lack of clear guidance about which strategies, plans or activities need to be implemented for companies. Consequently, an increasing number of companies have experienced the challenges of dealing with economic, environmental, and social issues at a practical level.

In this context, sustainability is becoming an increasingly important topic in the academic world. Researchers put forward a variety of concepts and theories to study corporate sustainability in different perspectives and verify their point of views through empirical evidence. However, the majority of previous research focus on external stakeholders and economic benefits, the impact of corporate sustainability (CS) on internal stakeholders like employees remains mostly unexplored.

The purpose of this paper is to explore this relatively new area in the Brazilian context to see whether the level of corporate sustainability performance has an impact on employees. To be specific, we mainly focus on two aspects of employees, one is labor conditions, and another

is organizational commitment. For assessing corporate sustainability, we use the Brazilian corporate sustainability index (ISE) as an evaluation criterion, which is comprehensive and authoritative.

This paper contributes to the literature in the following ways: Firstly, this paper focuses on the impact of corporate sustainability on internal stakeholders, while most of the previous literature focused on external stakeholders. Secondly, this paper uses the RAIS database, which is incredibly huge and includes information of all employees in the Brazilian formal labor market. This database enables us to collect all employees' data from these sample companies, providing substantial support to this study. Thirdly, while previous studies mainly focus on developed countries, this paper focuses on a large developing country - Brazil. So, apart from the primary objective of observing the relationship between corporate sustainability performance and employee-related variables, we can also see how the effects of control variables are on corporate sustainability in the Brazilian context. Fourthly, for the employee behavior, two aspects are taken into consideration, one is the labor condition, and the other is organizational commitment. The results show that the impact of corporate sustainability on the latter is more statistically significant.

The rest of this paper is organized as follows. Section 2 reviews the literature and proposes a theoretical framework. Section 3 explains the methodology and data used in empirical research. Section 4 presents the empirical results and related discussion. Section 5 summarizes the study, provides some implications and policy suggestions, and describe the limitations and future researches.

2. Literature Review

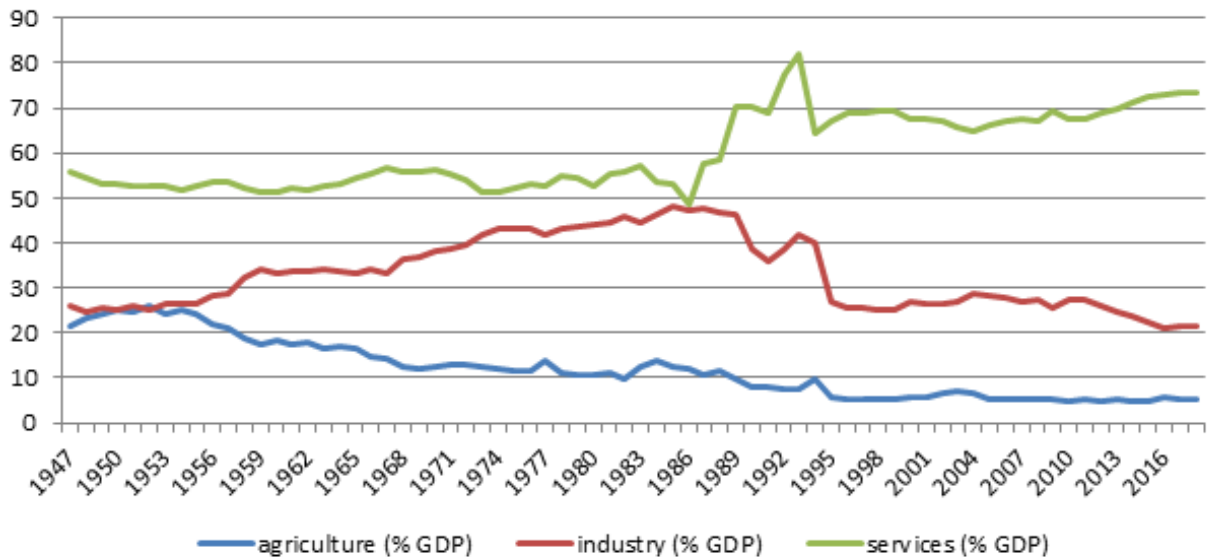
2.1. A brief introduction of the Brazilian Economy

The Brazilian economy is a broad topic, and the description here is organized chronologically by the different presidency and mainly focused on economic growth, price stability, international trade, and social equality. These key aspects provide us with a general idea of economic situations, and they are also directly or indirectly related to sustainable development in economic and social senses.

Since the Great Depression in the 1930s, especially after the Second World War, Brazil experienced a critical structural transformation and gradually turned into a modern, industrialized economy (Baer, 2014). In 1985, the share of industry sector reached its highest

point of 47.97%. However, it began to decline in the following years. For the recent year 2018, this share was only 21.59%; The development of the service sector has experienced a process of relatively stable at first and then rising. The turning point for service sector was also in around 1985; The share of agriculture sector of Gross Domestic Product (GDP) was in a continuous declining trend, falling from 21.36% in 1947 to 5.10% in 2018 (IPEA, 2019). Moreover, at the same time, the level of urbanization was also rising. In the 1940s, only 31.3% of Brazil's 41.2 million inhabitants resided in towns and cities. By 2016, this proportion had risen to 85.9% (IBGE, 2019). Now the Brazilian economy is characterized by a mixed economy that relies on import substitution to achieve economic growth.

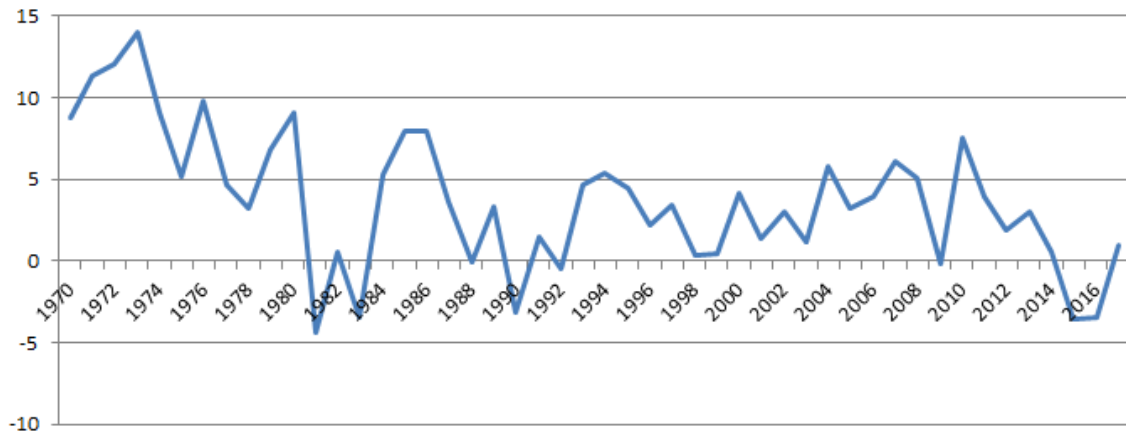
Figure 1. Changes in the Three Sectors (% GDP)



Source: IPEA, 2019

Brazil's growth performance in the past is changing dramatically. Periods of upward surges are always followed by sharp crashes, this has been eloquently described by commentators as "vôo de galhina" (literally, "flight of the chicken") (Amann & Barrientos, 2016). The decade of the 1970s saw an amazing economic growth which is called the "Brazilian miracle," however, the following decade became the dark phase of "lost decade."

Figure 2. GDP growth rate of Brazil



Source: Google data & the World Bank

Since the re-democratization process began in 1985, with the civilian government taking over the presidency, the biggest problem of Brazil has been inflation. The president José Sarney (1985-1990) and Fernando Collor (1990-1992) struggled hard with the high inflation problem, several programs such as Cruzado Plan and Collor Plan were introduced to deal with it, but all of them failed. Since 1989, the inflation rate has exceeded four digits. Between 1989 and 1993, the inflation averaged 1600.62 percent per year while the GDP grew an average of only 1.18 percent in these five years. Then in 1994, the Plano Real was implemented and quickly saw results, the inflation rate fell to 27.43% in 1995 and 9.93% in 1996. Since then, the inflation rate has remained at one digit for most of the time (IPEA and the World Bank open data, 2019). Apart from bringing back the stable price, the Plan increased the purchasing power of the poor and contributed to a natural process of flattening the income distribution.

Another critical thing happening during this period is the trade liberalization, which took place mainly in 1990-1995 and made the average tax rate fell from 30% to 13% (IPEA, 2019). Trade liberalization has impacts on labor reallocation and wages both in the short run and long run, and the level of influence depends on specific sectors and individuals' characteristics. According to Dix-carneiro's research, the labor market response following trade liberalization may take nine years or even much longer (Dix-carneiro, 2014).

Fernando Henrique Cardoso (1995-2002), who had enacted the Plano Real as Minister of Finance, became president, signaling a period of financial calm and fiscal austerity. Apart from a large exchange-rate devaluation crisis in early 1999 and a subsequent switch from exchange rate to inflation targeting in monetary policy, macroeconomic conditions remained relatively stable for the following years.

Moreover, the structural changes that took place in the 1990s also contributed to some positive transformations in the economy. Developments such as the privatization programs, the opening of the economy to foreign investment, trade liberalization and the reform of the financial system contributed to the growth of the Brazilian industry and its improvement in terms of productivity and competitiveness (Averbug, 2002).

Lula (2003-2011) inherited the tightening fiscal and monetary policies of the previous government and continued to implement the inflation target system. From his second year in office, Brazil's macroeconomic performance improved significantly. In 2004, Brazil saw a promising growth of 5.7% in GDP, following 2005 with 3.2%, 2006 with 4.0%, 2007 with 6.1% and 2008 with 5.1%. In 2007, Brazil unexpectedly discovered large-scale deep-sea oil fields in the surrounding sea areas, which was also a massive plus for the Brazilian economy. Even the world financial crisis (2008-2010) did not stop Brazilian economy, it experienced only a mild recession in 2009 with a -0.2% GDP growth and recovered relatively fast, at the end of 2010 the GDP growth rate was hitting 7.5% (the World Bank open data, 2019). During Lula's administration, Brazil had been one of the fastest-growing major economies in the world (Baer, 2014).

At that time, the global economy grew substantially, mainly driven by China and India. Benefited from increasing international prices and surging demand for essential export commodities, Brazil began to generate a large trade surplus. (Amann & Barrientos, 2016). Also, since the first decade of the 21st century, Brazil's high-interest rates and a stable domestic environment have attracted massive inflows of investment. The twin surpluses, along with the rapidly expanding domestic market, contribute to the high speed of Brazilian's economic growth.

During Lula's administration, a critical redistributive policy, Bolsa Familia, was implemented, which deal with poverty in Brazil and is often cited as a good example all over the world. Brazil has always had the problem of excessive concentration of income distribution, which was initially caused by the concentration of land ownership in Brazil's primary product export-oriented economy during the 19th and 20th centuries. When Brazil turned to import substitution industrialization, there was still no improvement because the newly added industrial sectors were highly capital-intensive. The high-inflation period in which the low-income groups suffered most had further deteriorated this problem (Baer, 2014). However, since the Plano Real, this problem had begun to ease, especially during President Lula's administration. Lula inherited multiple conditional cash transfer programs and unified them into

a single entity named Bolsa Família, which provides families monetary incentives to enroll their children in school. By 2007, over 11 million families (about 46 million people, one-fourth of Brazil's population) received Bolsa payments (Glewwe & Kassouf, 2012). One research shows that the long-run effect of Bolsa appears to increase participants' enrollment by about 18%, which implies a 16–17% increase in wages among the poorest third of the population; this amounts to an increase of about 1.5% in wages of the whole population (Hoffmann, 2006), or perhaps about 0.8% of GDP. The Gini Coefficient declined notably from 0.583 in 2003 to 0.531 in 2011 (IPEA, 2019).

Briefly speaking, Bolsa Familia, along with some other social projects has greatly promoted social equity, economic growth, and sustainable development from a macro perspective. Also, they have contributed to the labor market on aspects like increased wages and reduced the unemployment rate.

Then Dilma Rousseff (2011-2016) took office, however, shortly after he took office, the price of international commodities, like soy, iron, and oil, began to fall considerably, which significantly damaged Brazil's export and overall economic performance. Moreover, at that time, developed countries were in the recovery period after the crisis, the relatively high-interest rate attracted the outflow of cash from Brazil. These combined factors led to the steep depreciation of the Real since 2012. Between 2010 and 2014, the annual GDP growth rate slipped from 7.5% to 0.5% (the World Bank open data, 2019), the Brazilian economy had stepped into a period of recession. Accompanied by this economic crisis are sugaring inflation and interest rate, soaring government debt, increasing unemployment rate, deterioration in the labor market, corruption scandals, and political chaos.

2.2. Labor conditions

Labor conditions are an important part of the employer-employee relationship. Usually the term “labor conditions” is used interchangeably with “labour conditions” or “working conditions.”

The definition of labor conditions is not always clear due to the following reasons: Firstly, the concept of labor conditions can be narrow or broad, if, in the broadest sense, it can include everything related to work, even extending to human existence (Eurofound, 2012). Secondly, the concept of labor conditions was born and developed along with the process of industrialization. Some first emerged industries met labor-related problems, and they proposed some industry norms to try to solve these problems. However, the norms were closely related

to the specific industry and were limited by productivity and cognitive levels at that time. For example, for a long time, the regulations of the shipbuilding industry became the benchmark for labor conditions. Like in Paul H. Douglas's paper "A Definition of 'Conditions of Labor'" in 1919, he attached great importance to sanitary conditions, the safety of machinery and equipment, the apprenticeship system, and child labor. (Douglas, 1919). However, as time goes by, the economy, society, and technology have made great progress, making the implication of working conditions continuously changing. So, some important issues at the old times are no longer the focus nowadays. Thirdly, the implication of working conditions would vary according to a lot of factors, such as different countries, industries, and perspectives. Take the country context for example, in some countries, gender discrimination and child abuse are still a serious problem while in other countries not. In some countries, the power of trade union is weak, and the term "labor conditions" does not include employees' right to speak their voice or freedom of association while in other countries these issues are essential elements of labor conditions.

So, in general, there is no widely accepted definition. However, in order to express the meaning of working conditions concretely and operationally, most researchers or practitioners choose to define the term by listing its consisting elements.

Quinn did "the 1972-1973 Quality of Employment Survey" with 1,496 employees and organized 33 descriptions of working conditions into four groups: comfort, financial rewards, resource adequacy, and challenge. Included in the comfort group are working hours, health and safety, transportation to and from work. Among financial rewards, there are wages, fringe benefits, and job security. Resource adequacy covers elements such as the adequacy of the help, machinery, supervision, and information in the workplace. Challenge mainly refers to the content and meaning of the work (Quinn & Shepard, 1972).

Since 1991, European Foundation for the Improvement of Living and Working Conditions (Eurofound) has been monitoring related progress in Europe through its European Working Conditions Survey (EWCS). The latest version uses seven indices to describe the job quality and working conditions; they are as follows: physical environment; work intensity; working time quality; social environment; skills and discretion; prospects and earnings. (Eurofound, 2017).

Flanagan researches on the working conditions and worker rights in the global economy and defines that working conditions mainly include three elements: wages, work hours and job

safety. Also, he treated some other issues like freedom of association, nondiscrimination, and the elimination of forced and child labor as labor rights. (Flanagan, 2006)

Françoise J Carre lists 9 elements of working conditions in his book: the wage level; time at work and away from work; the supervisory structure and mechanisms; health and safety conditions in the workplace; the terms of the employment relationship; access to employment; the workplace itself; voice at work and social protection. (Françoise J Carre et al. 2015)

From the literature above, we see that different people have different opinions on which elements make up the working conditions. However, they have a consensus on some elements, like wages, working hours and safety. In this paper, the working conditions mainly refer to the first two plus gender discrimination. We do not include safety because of the lack of reliable indicators in RAIS to measure it.

2.3. Organizational commitment

Generally speaking, organizational commitment is an important dimension of work attitudes, and reflects an employee's relations with an organization and has implications for the decision of maintaining membership (Brammer, Millington, & Rayton, 2007).

A widely accepted definition of organizational commitment is “an individual's identification with and involvement in a particular organization.” Employees with organizational commitment usually show strong belief and acceptance of the organization's values and have the willingness to remain in the organization (Porter, Crampon, & Smith, 1976).

A similar definition of organizational commitment is presented by O'Reilly: “an individual's psychological bond to the organization, including a sense of job involvement, loyalty, and a belief in the values of the organization.” O'Reilly thinks there are three stages of commitment: compliance, identification, and internalization, which shows the development of an employee's attitudes toward the company (O'Reilly, 1989).

Based on previous literature, Meyer developed a three-component model which contributes to the definition and measurement of organizational commitment. The three simultaneous components are : (1) Affective Commitment refers to psychological attachment and involvement with the organization and is always linked to good work experience and lead to positive work-related results, such as better job performance, higher organization effectiveness, less absenteeism, and lower turnover rate. (2) Normative Commitment usually exists when a company has invested money and time in employees, and the employees feel a

moral obligation towards the company. (3) Continuance Commitment reflects commitment based on the perceived costs of leaving the organization, especially when an employee has already worked in the company for several years, he will cherish the accumulated skills and experience even more and becomes more reluctant to leave the company (Meyer & Herscovitch, 2001).

One thing worth mention is that the organizational commitment is not the only work-related commitment, there are other kinds of commitment like job commitment and career commitment (Bashaw & Grant, 1994; Morrow, 1983). As the observations in this paper are companies, organizational commitment is more suitable.

Bashaw believes that the level of organizational commitment may be related to some personal characteristics like gender, marital status, age, education, family income, and tenure, and the organizational commitments can result in better job performance and less propensity to leave. He analyzes 560 usable questionnaires and concludes that there is a negative relationship between organizational commitment and employees' propensity to leave the company (Bashaw & Grant, 1994). Randall also states that organizational commitment has an influence on job-related outcomes, such as turnover, absenteeism, job effort, and work performance (Randall, 1990).

2.4. Corporate Sustainability

2.4.1. Theories

Many researchers or practitioner studied companies' incentives to perform sustainably. Assuad reviews why company decide to develop sustainably and finds that related articles had been published during the 1960s and 1970s when the modern environmental movement had its beginnings. Overshoot, Collapse, and the Precautionary Principle is the main drivers at that time (Assuad, 2019). Nowadays the motivations for companies to be sustainable range from tangible benefits to intangible benefits. The former one is mainly referring to financial performance and market values, however, there is still no consensus on the relationship between sustainability practices and financial performance. The latter one includes a variety of motivations like resources and capabilities, institutionalization, access to knowledge, innovation and competitive advantage, and reputational gain (Orsato, Garcia, Mendes-Da-Silva, Simonetti, & Monzoni, 2015). Some theories are explaining this as follows:

From shareholder theory to stakeholder theory

The classical view on CSR is raised by Friedman “the social responsibility of business is to increase its profits.” The most important thing for a company is to maximize its profit and be accountable to shareholders. By maximizing its profit, the company makes a contribution to society in a certain way. However, the company does not need to do socially responsible activities directly, because that part is the government’s task (Friedman, 2009).

On the contrary to Friedman’s opinion, when defining a company’s objectives, Ansoff goes beyond profits and shareholders by introducing a new term "stakeholder theory." The major aim of the company is to take care of various stakeholders’ interests; sometimes it is not easy because these stakeholders may have conflicting demands (Ansoff, 1965).

As the concepts of stakeholder developed, Freeman defines the stakeholder as “any group or individual who can affect or is affected by the achievement of the firm's objectives.” Moreover, the various groups usually refer to shareholders, creditors, suppliers, employees, customers, government and public groups. Based on the development of stakeholder concepts, Freeman brings a corporate social responsibility model of stakeholder management, which incorporates various stakeholder groups and analyzes dynamics of stakeholder influences on corporate decisions (Hannan & Freeman, 1984). Standing on the shoulder of Freeman and Dierkes, Ullmann developed a three-dimension model in the stakeholder framework, which can explain almost all correlations among social disclosure and activity (Ullmann, 1985).

Resource-based view (RBV)

Stakeholder theory tells that the incentive for companies to engage in corporate sustainability activities is trying to meet their stakeholders’ expectations. Apart from that, some companies may go beyond the minimum requirement of satisfying stakeholders and consider corporate strategies from the investment perspective; then the resource-based view can be a good complement to stakeholder theory (Ruf, Krishnamurty, Brown, Janney, & Paul, 2001).

The resource-based view can be traced back to the earliest Adam Smith or Karl Marx. The contemporary perspective may begin with Edith Penrose’s view to see the firm as “ a pool of resources” in the book “Theory of the Growth of the Firm” in 1959. After many years of development, RBV has combined several areas of researches in economics, organization, and strategy.

RBV states that different companies have different resources, and some resources are of greater strategic importance than the others because they are rare, valuable, hard to acquire, develop, and accumulate, and is difficult for competitors to replicate and imitate (Surroca, A.Tribo, & Waddock, 2010). To be specific, these valuable resources usually have the following characteristics (Bowman & Ambrosini, 2003).

- Path dependent: Such resources are gradually formed during the company's long growth period and have been integrated with the company.
- Causally ambiguous: People do not precisely know how to obtain and nurture such resources, so it is difficult to engrave consciously.
- Socially complex: Such resources are related to the social phenomenon and have many intertwined parts, and the relationship between those parts is complicated. So, these resources are usually not easy to change on the short-run, such as the company reputation and company culture.

Resources can be seen as basic constitutive elements through which the company can turn inputs into outputs and perform their business. (Mathews, 2002). There are two broad classifications of resources; one is a tangible resource like physical and financial assets; the other is intangible resources like corporate reputation, intellectual property assets, know-how knowledge, and employee loyalty. The latter is more related to our topic, because it is usually valuable, inimitable and non-substitutable, which is by the characteristics listed above. Take the reputation, for example, although it is “ not legally protected by property rights, it was considered to be path dependent assets characterized by high levels of specificity and social complexity, thus creating a strong resource position barrier ” (Castelo, Rodrigues, Branco, & Rodrigues, 2012).

As we already discussed, the company's CS performance can enhance its corporate reputation so that RBV can explain the relationship between a company's internal characteristics and its performance. In other words, the existence of valuable and inimitable resources is the source of a company's competitive advantages, and it can explain why some company can perform better than their rivals.

Corporate sustainability can provide the company with internal and external benefits (Branco & Rodrigues, 2006)(Branco & Rodrigues, 2006; Orlitzky, L.Schimidt, & L.Rynes, 2003). The internal benefits of corporate sustainability include developing a new resource related to know-how and corporate culture and leads to a better way to assemble, integrate and manage the variety of resources. For example, effective human resource management can create

a competitive advantage by fostering a skilled workforce, enhancing employee productivity, reducing absenteeism and staff turnover, cutting related costs like recruitment and training costs, and leading to better corporate performance. The external benefits are more associated with corporate reputation, which improves relationships with stakeholders such as customer, suppliers, employees, government or other society parts, thus reducing the contracts cost with them, both implicitly or explicitly. (Liston-Heyes & Ceton, 2009; Lourenço & Branco, 2013)

Signal theory

Apart from these two theories above, there is another related theory called signal theory. The first time that the term “signals” was introduced can be traced back to 1970 in Jervis’s work. Then Spence developed the concept, using an equilibrium model to show that signal would make an individual’s practice visible, in order to communicate to other parties and seek to change the attributes credibly. The signal can be used as a kind of filter (Spence, 1973; Toms, 2002). With the gradual development of this theory, this object is not limited to individuals; its application is more in business organizations.

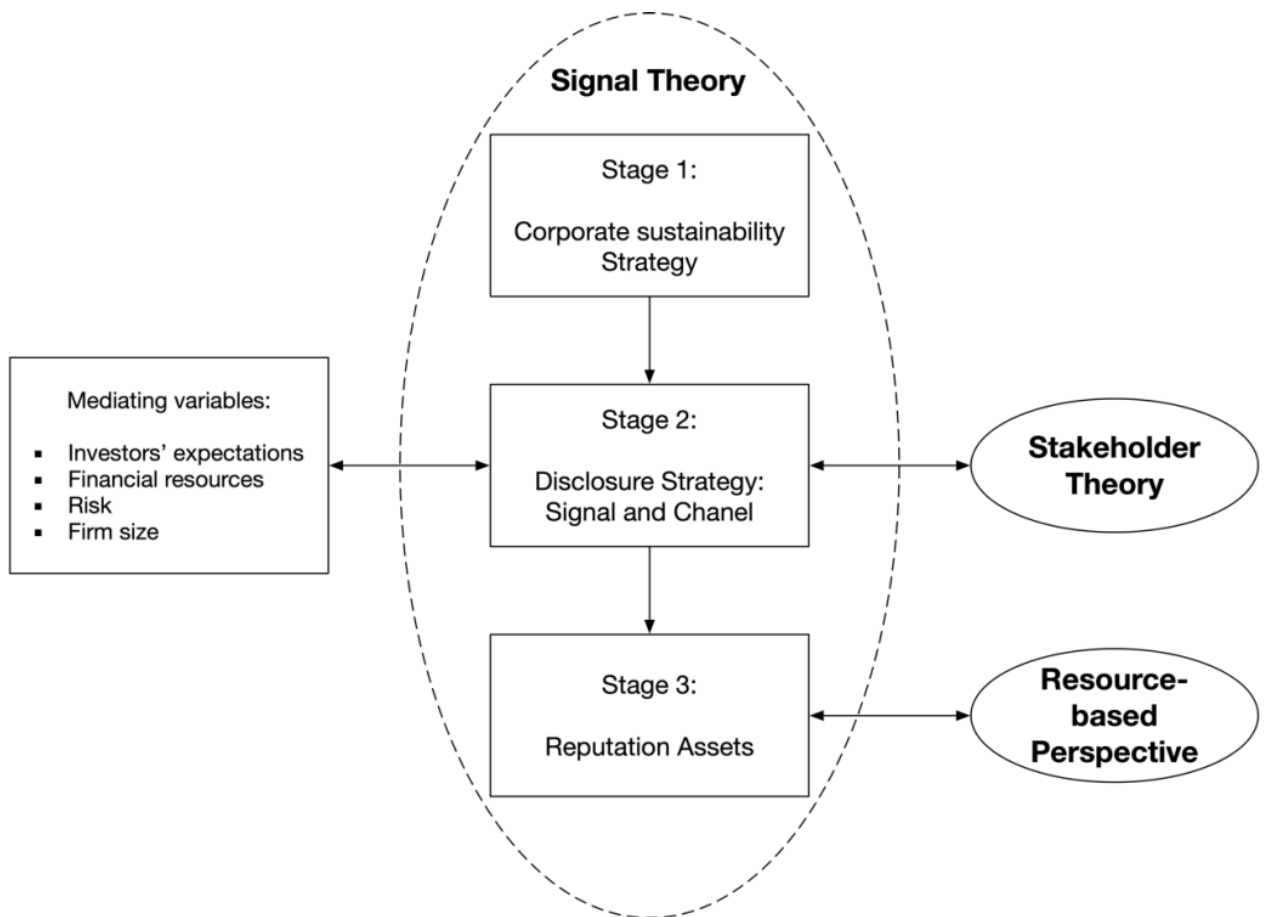
The signal theory was originally derived from the market failure caused by information asymmetry (Zimmerman & Watts, 1990), in that sense, the signal theory is related to agency theory (Glazer & Morris, 1987). It can explain some voluntary social practice like CS disclosure beyond economic interests and the legal requirement. Because in some cases, the information in the market is confusing, it is difficult for people to identify good or bad, which is unfair to the real good company. Disclosure can serve as a significant channel for the transmission of quality signals, thus making the good practices be seen. So if the company is better than its competitors, the benefits of sending signals is higher, so the managers have motivations to signal, especially in the areas that are less easier to notice.

To make the relationship more clear, we describe and summarize it by the figure below. At stage 1, companies implement CS strategy, driven by the motivations to create reputation assets and competitive advantages (V.Russo & A.Fouts, 2016), and maybe also driven by managers’ interests (McWilliams & Siegel, 2001). At stage 2, companies send signals to stakeholders to make the intangible investment visible through the annual report, advertising or some other channels. At stage 3, previous efforts can lead to a good corporate reputation as a reward.

Some interesting points worth mention are as follows:

Firstly, as the objective for the company is to create a competitive advantage among its competitors, the managers should consider whether the process and reputation assets are difficult for rivals to imitate. Secondly, this process can be mediated by some variables, such as investors' expectation, size, risks. Take the risk factor, for example, company's CSP can create moral capital, which may act similarly to "insurance" investment. CSP and accumulated goodwill can be seen as premium, reducing the company's general risks and provide protection when something negative happens (C.Godfrey, Merrill, & M.Hansen, 2009). Thirdly, the signal theory is by the stakeholder theory and RBV, and these three theories can complement each other. (Toms, 2002).

Figure 3. The Stages of Signal Theory



Source: edited by Toms (2002)'s model

2.4.2. Concepts and definitions

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” in Brundtland Report (WCED, 1987, p. 43).

When companies incorporate sustainable development, it is called corporate sustainability. Researchers and practitioners are trying to explore a more humane, more ethical and a more transparent way of doing business. A lot of related concepts were born in this process, such as corporate citizenship, sustainable entrepreneurship, the Triple Bottom Line, business ethics, corporate social responsibility (CSR) and corporate sustainability (CS) (Marrewijk & Werre, 2003). The latter two are the most comprehensive and widely used concepts.

There are many definitions about corporate social responsibility in previous literature, (B. Carroll, 1979; Davis, 1960; Epstein, 1987; Fitch, 1976; Frederick, 1960). The most cited definition of CSR is “social responsibility assumes that the corporation has not only economic and legal obligations but also responsibilities towards society” (B. Carroll, 1979). The core of this definition is that the company not only does something for itself but also does something for others. Although the definitions are changing over time and presented differently by different people, the core is not changing. For example, about twenty years later, McWilliams states another well-known CSR definition “CSR is actions that appear to further some social good, beyond the interests of the firm and that which is required by law” (McWilliams & Siegel, 2000), which is expressing the same idea of Carroll’s definition.

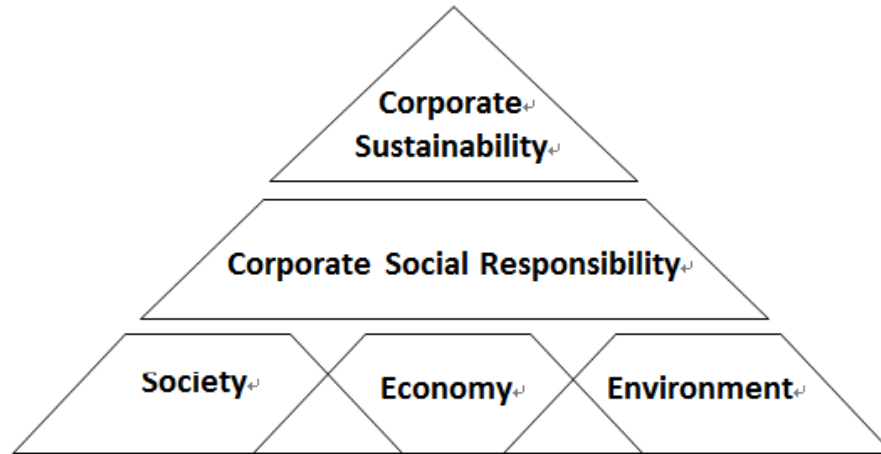
The corporate sustainability is described as “entails the incorporation of the objectives of sustainable development, namely social equity, economic efficiency, and environmental performance, into a company’s operational practices” (Labuschagne, Brent, & Van Erck, 2005).

CSR and CS are like two sides of a coin. Keijzers shows that in the past CSR mainly related to social issues while CS focused on the environment. However, their separate paths have grown into convergence now. In a broad sense, CSR and CS can be seen as synonyms (Keijzers, 2002). Moreover, both of them can be broken down into three balanced parameters: social equity, economic efficiency and environmental performance, which is referred as the “Triple Bottom Line (TBL)” (Elkington, 1994). The triple can also be expressed as “People, Planet, Profit.”

Although CSR and CS have a lot in common, in this paper, we prefer to use the notion of corporate sustainability. Because we agree more on Wempe’s opinion that CS is considered as

the ultimate goal, and CSR as an intermediate stage where companies try to balance the Triple Bottom Line (Wempe and Kaptein, 2002)

Figure 4. Relationship of CS, CSR and the Triples



Source: edited from Wempe and Kaptein's model

2.4.3. ISE

In order to provide investors with further insights into corporate sustainability performance, different ways of measures have been developed. Among them, sustainability indexes are especially popular, which serve to “systematically, accurately, consistently, and transparently assess the environmental, social, and economic performance of corporations” (Windolph, 2011). Sustainability indexes provide investors with a ‘theoretical portfolio’ consisting of stocks from companies that have shown renowned commitment to social and environmental responsibilities. These indexes are associated with the stock exchanges and serve as a benchmark of listed companies, assisting the investor's decision-making process.

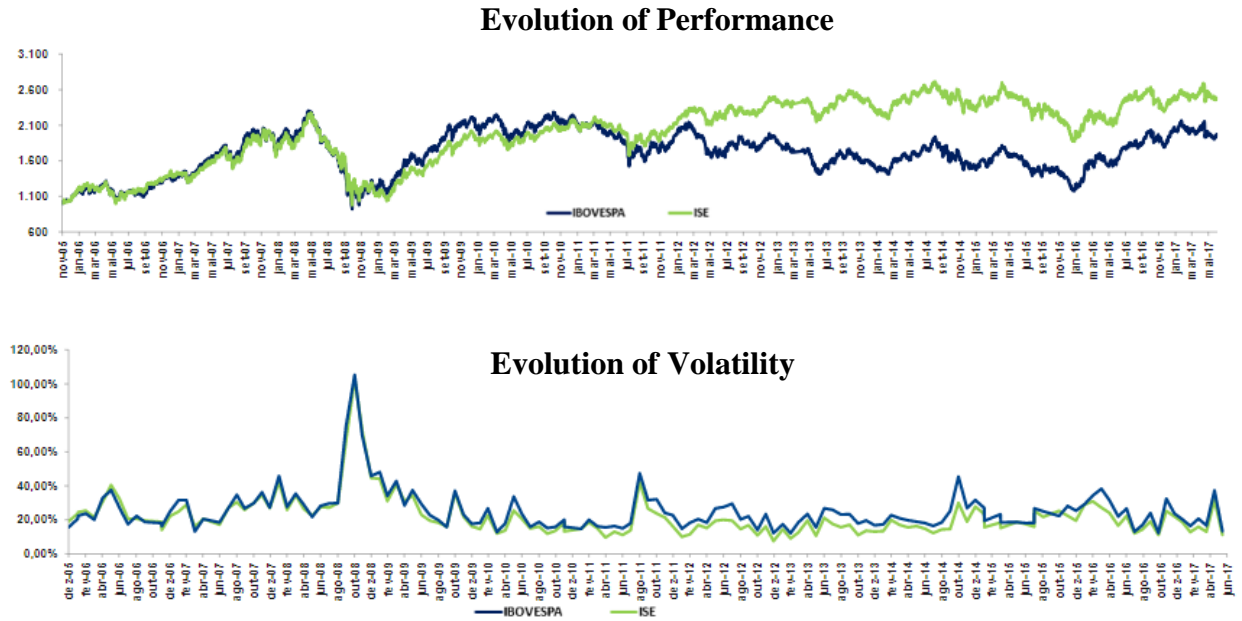
The history of sustainability indexes begins with the creation of the Dow Jones Sustainability Index (DJSI) in 1999 on the New York Stock Exchange. The second is the FTSE4Good in 2001 on the London Stock Exchange. The third is JSE, which is created in 2003 on Johannesburg stock exchange, South Africa.

Following these pioneer index, in 2005, Brazil created the corporate sustainability index (Índice de Sustentabilidade Empresarial - ISE), which is the first sustainability index in Latin America and the fourth of this kind in the world. The index was initially funded by the International Finance Corporation (IFC), the financial arm of the World Bank. Its methodological design is the responsibility of the Center for Sustainability Studies (GVCes) of the São Paulo Business School of Fundação Getúlio Vargas (FGV). Moreover, the Exchange is responsible for the calculation and technical management of the index. ISE is intended to be a

benchmark of companies that stand out in promoting good sustainable practices and are committed to corporate sustainability.

From the launch time till now, the ISE has been in the market for more than 13 years, its overall performance is outstanding, with a better return and higher stability compared to IBOVESPA.

Figure 5. Evolution of Performance and Volatility (ISE x IBOVESPA)

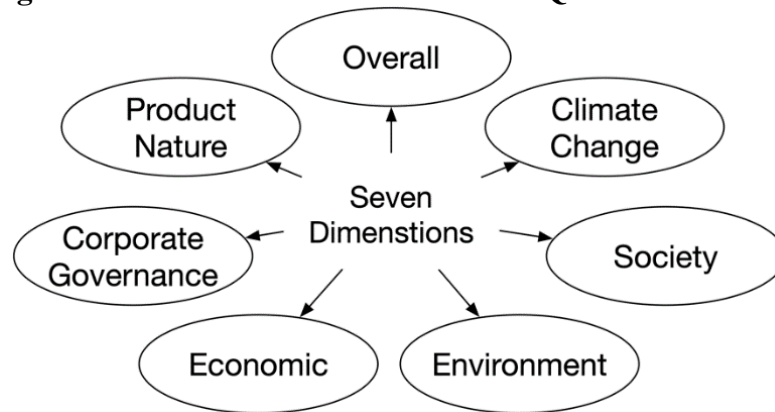


Note: BASE 1.000 = 29/12/2005

Source: Ibovespa, 2019

Every year, detailed questionnaires were sent to the 200 most traded Brazilian listing companies. Completion of the questionnaire is voluntary and can demonstrate the company's commitment to sustainability issues. To be elected, companies have to meet several prerequisites (Teixeira, Nossa, & Funchal, 2011):

- Have participated in the negotiations in at least 50% of the trading sessions during the 12 months preceding the start of the portfolio;
- Meet the sustainability criteria determined by the Deliberative Council, divided into seven dimension

Figure 6. Seven Dimensions of the ISE Questionnaires

Source: the official website of ISE, 2019

However, not all companies that receive the ISE questionnaire are interested in responding to it; previous research finds that a company's commitment to ISE is related to many factors, such as company size, activity sector, stock concentration, location. The detailed explanation is in the control variables part of section 3.

For those who answered questionnaires, cluster analysis is used to analyze responses and choose the top performed companies to make up the final portfolio, which is composed of up to forty companies. (Lourenço & Branco, 2013). For example, the portfolio for the year 2006 is comprised with 42 shares from 33 companies and 14 sectors, totaling R \$ 996 billion in market value, which is 42.6% of the total market value. Other years' portfolio composition is summarized below.

Table 1. Summary of ISE portfolios from 2006 to 2013

ISE	2006	2007	2008	2009	2010	2011	2012	2013
Companies	33	32	30	34	38	38	37	40
Shares	42	40	38	43	47	51	51	51
Sectors	14	13	12	15	18	18	16	18
Market Value (R\$trillion)	0.996	0.927	0.372	0.730	1.170	0.961	1.000	1.14
Part.% (Total Cap.)	42.6%	39.6%	30.7%	32.21%	46.1%	43.72%	44.81%	47.16%

Source: the ISE reports, 2007-2013

2.5. Corporate Sustainability and employee behavior

This part is a bridge between the macro concept of corporate social responsibility and micro research on organizations and employees, trying to understand the impacts of CSP on employees.

In this research area, there are two broad categories. The first category is studying how CS influence prospective employees (Albinger & Freeman, 2000; Backhaus, Stone, & Heiner, 2002; Greening & Turban, 2000). A sustainable company will give people an impression that it is trustworthy and reliable; in other word, the company may have a good reputation among job seekers. So a job seeker may receive the signals of the company sending and be attracted by this good company image. However, as our research focus is on the current employees, so we go directly to the second category and only talking about the employees that are currently working in the companies.

2.5.1. Fairness theory and organization justice

The previous study shows that employees' perception of how fair their company's actions would heavily impact their attitudes and behavior (Cropanzano, Byrne, Bobocel, & Rupp, 2001). The modern fair theory holds that when people face injustice, even if they are not direct victims, they will respond automatically driven by the moral sense, sometimes this can even go beyond economic rationality and self-interests. It is this extension of fairness theory that makes us believe that employees will respond emotionally, attitudinally and behaviorally upon the company's socially responsible behavior.

Based on the fairness theory, Rupp proposed an organizational justice model, which go deeper to explain the roots of employees' concern for fairness and break down the employees' motivations into three parts: instrumental, relational, and morality-based incentives. In other words, the employees' fairness and justice incentives may stem from three needs: control, belongingness, and meaningful existence, which have a one-to-one correspondence with those motivations.

To be specific, the instrumental incentive can satisfy employees' control needs. If the company is committed to CS, it conveys messages that this organization is willing to take responsibility, no matter it is inside the company or outside the company. If this process lasts for a long time, employees will have a feeling that he knows the company's values and culture, and he can predict the company's next move, which gives employee a sense of control and the

confidence that they can choose the best individual strategy accordingly and maximize the outcomes; Relational incentives can satisfy employees' psychological belongingness needs. CS can represent a positive relationship between the society and the company, which possibly leads to a better relationship between the company and the employees working in it through mediating factors like trust and perceived support. Perceiving high levels of CS and living in good relationships can strengthen the sense of belonging of employees and improve psychological satisfaction. One thing worth mention is that how good is the relationship depends on how much importance the employees attach to social responsibility; Morality-based incentives can satisfy employees' needs for a meaningful existence. Although the essence of business is profit-seeking, some companies are also pursuing "do the right thing," even if these things do not directly bring profits. Committed to CS is the right thing, it can give the employees a feeling that working in the company is meaningful and ethically appropriate (Rupp, Ganapathi, Aguilera, & Williams, 2006).

2.5.2. Social identity theory

There is a large body of literature explaining how social identity theory explains the link between CSR and employees' attitudes. The theory suggests people tend to divide themselves into different social categories and describe themselves in a certain social context (Ashforth & Mael, 1989; Dutton, Dukerich, & Harquail, 1994). Such social categories can be nationalities, political groups, and sports teams. Different social categories give their members a different social identity that represents the attributes of the members, such as how does the person think and feel? What will the person value the most? How will the person behave in the face of specific situations (Hogg, Terry, & White, 1995)? Belonging to a certain group means that individuals may attach their honor and success to the group and compare the characteristics of this group with other counterpart groups. As seeking positive social identity are always the psychological needs for individuals, so people naturally hope that their group can have a good reputation, which can give them a psychological satisfaction and a good feeling of happiness and pride (Turker, 2009).

The company can also be considered as a social category. So the social identity theory supports that there is a connection between employees' perception of CS and their organizational commitment. If an organization is actively involved in socially responsible activities and have a good reputation, employees working for it will gain psychological satisfaction from belonging to such a group (Brammer et al., 2007). Moreover, as the companies

care about outsiders even if this is not a profitable decision for the organization in the short term, employees would have reason to believe that companies will care about the employees too. In recent years, the whole society has paid more and more attention to the problem of CS, which makes the positive relationship even more remarkable. Evidence shows that the company's CS, as part of the company image and company culture, is an important attraction factor to both active staff and potential staff. (Choi & Yu, 2014). In short, a reputable corporate organization can enhance the social identity and self-concepts of its members, which will affect employees' work attitudes, such as organizational commitment (Turker, 2009).

2.5.3. Empirical evidence

There is much empirical evidence supporting the positive relationship between CS and organizational commitment (Brammer et al., 2007; Colquitt, Wesson, Porter, Conlon, & Ng, 2001; Maignan, O.C.Ferrell, & M.Hult, 1999; Turker, 2009).

Colquitt did a meta-analytic review of 183 justice research and find that employees' perception of organizational justice enhances job satisfaction, organizational commitment, and job performance (Colquitt et al., 2001).

Peterson conducted a survey of business professionals to verified a relationship between perceptions of CSR and organizational commitment. Also, he also shows that the more the employees believe in the significance of CSR, the stronger the relationship is (Peterson, 2004).

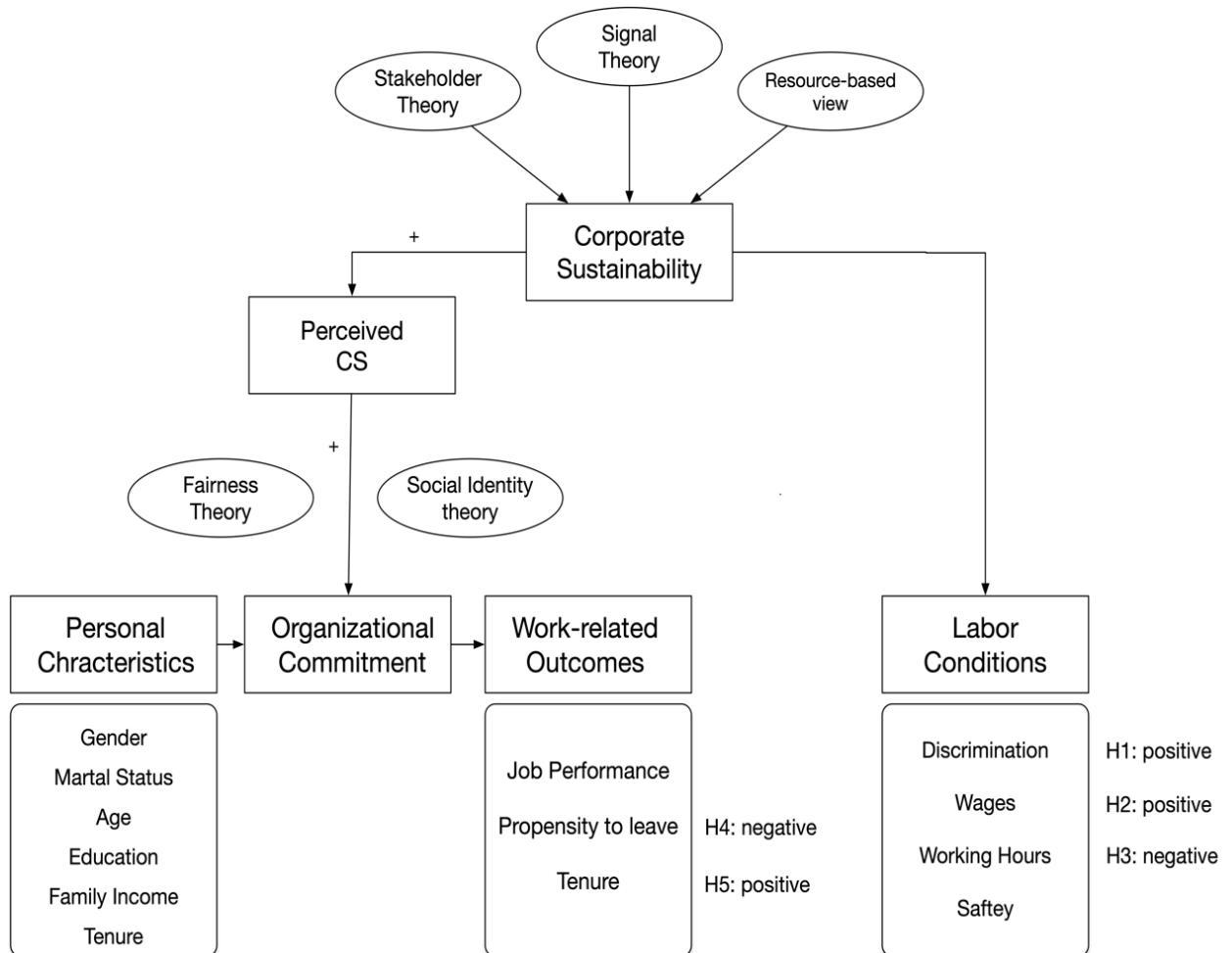
Maignan suggests that market-oriented culture and humanistic culture lead to proactive corporate citizenship, which in turn is associated with improved levels of employee commitment, customer loyalty, and business performance (Maignan et al., 1999).

Based on the theory of social identity, Brammer collected a sample of 4,712 employees from a financial services company and found that there is a positive relationship between CSR and organizational commitment and the CSR's impact on organizational commitment is even higher than job satisfaction (Brammer et al., 2007).

Similarly, Turker proposed a framework also based on social identity theory and surveyed a sample of 269 formal employees in Turkey. He classified the CSR according to different stakeholders and measured the CSR through a scale. The empirical evidence shows the CSR to employees is a significant predictor of organizational commitment. (Turker, 2009).

2.5.4. Theoretical framework

Figure 7. Theoretical Framework



Source: from the author

3. Methodology

The general objective of this study is to verify whether companies' commitment to ISE influences the labor condition and organizational commitment related variables such as wages, working hours, turnover rate and tenure.

In order to meet the general objective, the following specific steps are taken:

- Select two groups of companies. One is the treatment group, and the other is the control group.
- Extract all the employee data of the sample companies from RAIS database.
- Convert individual-level data into company-level data, and combine with financial data from Economatic.

- Choose independent variables and control variables based on literature.
- Do the descriptive statistics on the data from different perspectives.
- Apply the logit regression model on the data and analyze the results.
- Apply the probit regression model as a robustness test.

3.1. Database

3.1.1. Selection of two groups

We want to divide the companies into two groups, depending on the level of corporate sustainability performance, and we use the company's commitment to ISE as a proxy of corporate social responsibility. However, there is a problem here; very few companies can stay in ISE all the time, most companies are in ISE portfolio for some years, and disappear from ISE portfolio for other years. So we set a criteria to choose the treatment group, that is: during the seven-year period, if one company appears in ISE portfolio for more than 4 times (must including the latest year 2013), it can be treated as committed to ISE and can be chosen to be the member of the treatment group.

For the selection of the control group, we set the following criteria:

- All the companies must be on the list of ISE eligible companies, which is a list of 200 most traded companies. ISE regards these companies as eligible to receive a questionnaire.
- The companies must have never participated in ISE during the sample period.
- The control group companies should come from the same segment according to the Bovespa ' industry classification in order to keep a relative balance sector structure between the two groups.
- If we can not find enough companies from a certain segment, we just keep it as it is, and not relax this segment requirement. Some people think it is acceptable to choose a company from the same sub-sector, but in this paper, we think even if two companies are from the same sub-sector, the difference in segments may lead to a big difference, so we cannot accept that.
- If there are more candidate companies in a certain segment, we choose the ones with the biggest total assets value.

Then, after excluding firms that lacked sufficient RAIS or financial data, 47 valid firm observations remained. The final sample is composed of 30 companies as ISE companies and 17 companies as non-ISE companies.

Table 2. Treatment group and control group

Segments	ISE companies	Non-ISE companies
Electric Power, Banks, Pulp and Paper, Iron and Steel, Telecommunications, Insurance, Personal Products, Petrochemicals, Aeronautical and Defense Material, Wood, Exploration, Refining and Distribution, Roads Exploration, Buildings, Meat and Derivatives, Water and Sanitation	AES Tietê, Cemig, Cesp, Coelce, Copel, CPFL Energia, ENERGIAS BR, Eletrobrás, Eletropaulo, Light, Tractebel, Banco do Brasil, Bradesco, Itaú Unibanco, Itaúsa, Suzano Papel, Gerdau MET, Gerdau, Telemar/OI, Tim, SulAmerica, Natura, Braskem, Embraer, Duratex, Ultrapar, CCR Rodovias, Even, BRF Foods, Sabesp	Eneva, Tran Paulist, ABC Brasil, Banestes, BTGP Banco, Pine, Klabin, Ferbasa, Sid Nacional, Telef Brasil, Porto Seguro, GPC Part, Eucatex, Cosan, Ecorodovias, Cyrela Realt, JBS

Source: ISE report, 2014

3.1.2. The RAIS database

The employee data is extracted from RAIS database (Relação Anual de Informações Sociais), which is a comprehensive linked employer-employee database and is collected annually by the Brazilian Labor Ministry. Considering the large labor force in Brazil, RAIS is one of the biggest employer-employee matching databases in the world, and it is the only such database in large developing countries.

Under Brazilian law, each employer is required to report employment information to RAIS every year. RAIS mainly provides information to the Federal Wage Supplement Program (Abono Salarial), through which every formally employed worker receives a salary equivalent to the monthly minimum wage. The RAIS records are then shared among government agencies. The failure of employers to report complete labor force information may, in principle, result in fines in proportion to the size of the workforce, but fines are rarely paid. In practice, employees and employers have strong incentives to complete RAIS records; according to the Labor Ministry's estimation, RAIS records cover more than 90% of formal employees.

RAIS is used as the primary database in this paper because it has many advantages: First, in RAIS database, employees are identified by worker ID number (PIS) and companies are identified by firm registration number (CNPJ). These identifiers are unique and do not change over time, which allows us to track workers over time and across the enterprises. Also, the database has very rich variables describing characteristics of companies and workers. For

example, information about companies includes geographical location, company size, and industry; information about workers include their level of education, gender, age, occupation, income (December income, average monthly income), type of employment contract, and tenure. A limitation of the RAIS dataset is that it covers only the formal sector, not the informal sector. However, the definition of the formal sector in RAIS is broad, including many worker categories, such as temporary workers and apprentices.

As to the selection of sample period, from the Brazilian economy introduction part, we know that the year 1994 and 2013 can be seen as two boundary lines, between this period, the economic performance and the price is relatively stable; there are thirteen ISE portfolios in total, from 2006 to 2017; The RAIS database has a big change of variables in 2006, and the full version with PIS information is only accessible till 2013. So, considering the macroeconomic stability and the data availability, the sample period is chosen from 2007 to 2013. During these seven years, we have 461.92million employees observations; Then we extracted 47 companies' employee data and got a data set of 4.3million employees.

3.2. Variables

3.2.1. Dependent Variables

The dependent variable (ISE) is a dummy variable, which equals 1 if the company is committed to ISE and equals 0 if the company is not.

One thing worth mention is that the RAIS database allows us the trace the company through CNPJ. CNPJ is short for Cadastro Nacional de Pessoa Juridica, which is a unique identification number. CNPJ number has 14 digits, the first eight digits represent the firm, and the last six digits represent the branches within the firm.

3.2.2. Independence Variables:

Gender

Based on previous literature, we know that discrimination is an important part of labor conditions (Flanagan, 2006; Franc,oise J Carre, 2015). Discrimination at work mainly includes sex, origin, race, color, marital status, family situation, disability, professional rehabilitation, and age. However, Brazilian Law 9.029/1995 prohibits any kind of discriminatory practice

which may limit the access or the maintenance of employment (Brazilian employment law, 2017). We are interested to see whether this nondiscrimination is true in real life.

In the RAIS database, there is a related variable, the color of the skin. However, this variable does not have a uniform, measurable standard in the statistical process, which means the result is not reliable. RAIS also has some individual characteristic variables, such as education and profession; however, as the research object is a company, these individual-level variables are not directly related. So among all these variables for individuals, this paper only chooses gender as an indicator of discrimination condition, because gender is special, if we assign female to 1 and male to 0, and then take the average of the whole company, the mean value can represent the company's gender structure. As non-discrimination is an important part of sustainable development, we propose that:

Hypotheses 1: The level of corporate sustainability performance is positively related to the company's gender equality (Gender).

Wages

For RAIS database, as the objective of collecting this data is to know the employee's total compensation, so the earnings is not only regular salaries, it also include other forms of compensation like extraordinary additions, supplements, and bonuses; tips and gratuities; commissions and fees; overtime earnings; hazard earnings; executive earnings. There are four variables in RAIS related to the monthly average wage: monthly wage in nominal value; monthly wage in the multiples of the current minimum wage; December wage in nominal value; December wage in the multiples of current minimum wage. We choose the second one as the indicator of wages, as it considers the changing effects of minimum wage, and multiple forms can also eliminate the effects of price changes.

According to stakeholder theory, the employee is an important part of stakeholders. A sustainable company tends to pay more attention to employee benefits, and for most employees, earnings are the key to employee benefits. So we proposed that:

Hypotheses 2: The level of corporate sustainability performance is positively related to its employees' average monthly wages (Wages).

Working hours

If we see the labor market from a historical perspective, we can find a slow downward trend in employees' working hours. The labor market has experienced changes from the initial disorder to a more mature condition. The labor laws all over the world are committed to protecting the rights and interests of employees.

However, until now, working hours is still an important issue, due to the increasing workloads, job insecurity, and other kinds of pressure (Sparks, Cooper, Fried, & Shirom, 1997), especially in a highly competitive market. Heavy workload and long working hours have been linked by many researchers with stress, complaints, and fatigue (Cooper, Davidson & Robinson, 1982; McCall, 1988). Working long hours can overtake an individual mentally and physically. This, together with the prolonged exposure to any workplace stressors can affect one's health (Sparks et al., 1997).

In RAIS database, the only one variable that related to working hours is contract working hours, this is not as good as actual working hours or overtime, but it is still valuable to use it. Because relatively less working hours are often associated with working comfort and good employee benefits (Quinn & Shepard, 1972), we proposed that:

Hypotheses 3: The level of corporate sustainability performance is negatively associated with employees' working hours (Hours).

Turnover

Previous literature shows that there is a positive relationship between corporate sustainability and organizational commitment. Also, organizational commitment may lead to positive work outcomes, such as less absenteeism, lower turnover, and better job performance (Meyer & Herscovitch, 2001). This paper chooses two variables as a proxy of organizational commitment: turnover rate and duration; however, they are like two sides of a coin. We assume that if an employee agrees with the company's value and culture, he will have an organizational commitment towards the company, so, as a result, he tends to stay in this company for a long time and will not leave easily.

One advantage of the RAIS database is that it has the unique identification PIS number for every observation, which enables us to trace every single worker, observing when he entered the company and when he left.

We calculate the annual turnover rate by calculating the percentage of employees who leave an organization during this year.

$$\text{Annual turnover rate} = \frac{\text{numbers of employees who left}}{\text{number of employees in the beginning of the year}}$$

Hypotheses 4: The level of corporate sustainability performance is negatively associated with the company's turnover rate (TO).

Duration

In the RAIS database, there is a variable called time range of employment, we combine all the individual data into company data, and take an average of it by the year. This value represents the average duration of an employee staying in this company, which can be regarded as tenure.

Previous researchers investigate the relationship of organizational commitment and tenure, they collect sample both from a high demanding job like Ph.D. scientists (Lawler & Hall, 1970; Sheldon, 1971) and from a low demanding job like salesmen (Bashaw & Grant, 1994), and both results show that organizational commitment and tenure are positively related.

The relationship between these two variables may be interactive and complex. On the one hand, most people regard tenure as a work-related outcome which was influenced by organizational commitment, that is, if the employees have a high level of commitment to the company, he would have the propensity to stay there longer. On the other hand, some people treat tenure as a personal characteristics factor, which is one of the prerequisites for employees to have organizational commitment (Bashaw & Grant, 1994), that is, if the employee already stayed in the company for a long time, he will cherish the accumulation of experience and is not willing to change to a new company. Because if he chooses to change jobs, this specific experience may depreciate due to the difficulty of conversion between experiences. However, the two ways support the positive relationship between organizational commitment and tenure.

Hypotheses 5: The level of corporate sustainability performance is positively related to the time range an employee staying in the company (Duration).

3.2.3. Control variables

Many people research on the determination of corporate sustainability performance and have found different related factors (Hackston & J.Milne, 1996; Neu, Warsame, & Pedwell, 1998; Sternberg 1999; Nossa 2002; Kent and Chan 2003). For example, Cowen uses a sample

of US companies' annual report and research on whether social responsibility disclosures is influenced by several corporate characteristics. Empirical evidence indicates that company size and industry classification are related. (Cowen, Ferreri, & Parker, 1987). Nunes investigates the factors that influence the companies' commitment to ISE. A sample of 124 companies was selected to test a range of variables: company size, activity sectors, stock concentration, cross-listing, and state ownership. The regression result shows that only the company size and activity sectors are significantly related to the company's commitment to ISE.

Taking into consideration the Brazilian situation, we decide to use company size, financial performance, future growth, activity sector, stock concentration and issuance of ADR as our control variables.

Company size

Many previous researches have found that company size is positively associated with corporate sustainability performance. The reasons behind are as follows: Firstly, because of the greater visibility and greater public scrutiny, large companies usually have greater pressure to care more and behave better on social and environmental aspects comparing with smaller companies. Also, large companies may have more shareholders interested in the corporate social activity. Secondly, large companies operate in diversified markets and do more transactions, which increase the probability of involving in negative events.

So as a consequence, the larger companies tend to engage more actively in sustainability activities in order to cover these risks (Artiach, Lee, Nelson, & Walker, 2010; C.Godfrey et al., 2009). Thirdly, engaging in social and environmental activities may be costly, small companies may not be able to afford this cost. So the ability of large companies to become sustainable is much stronger, this is especially true if we take into consideration that, a large portion of the total cost is fixed cost (Ziegler & Schröder, 2010). So in order to control possible corporate size effects, the variable size is included in the logistic regression.

As to the measure of size, we found that the most widely used indicators for it are: total asset, number of employees, market capitalization, sales revenue and ranking of journals (Kimberly, 1976; Belkaoui & G.Karpik, 1989; Cowen et al., 1987; Nunes et al., 2013). Some of the authors use only one indicator, while others use several indicators together. Here in this paper, because the company size is a control variable, we think using only one indicator is enough, so we choose the total asset as the proxy of company size.

It is expected that the company's total asset (Size) is positively related to corporate sustainability performance.

Financial performance

The relationship between corporate sustainability performance (SP) and financial performance (FP) has been a debating topic since 1960 (Castelo et al., 2012). The empirical results are different in different contexts, showing positive, neutral, and even negative connections. So there is no widely accepted conclusion so far.

Some authors review and summarize the previous empirical evidence and conceptual explanations for these three relationships (Preston & O'Bannon, 1997; Simpson & Kohers, 2002; Waddock & Graves, 1997), this paper summarizes the key points in the following table.

Table 3. The link between SP & FP

Relationship	Theoretical Arguments	Empirical Evidence
Negative	<ul style="list-style-type: none"> • Neoclassical economist's view: SP incur costs and reduce profits. • Manager's opportunism theory: managers' compensation is tied to short term profitability. 	Waddock and Graves 1997; Preston and O'Bannon 1997; Simpson and Kohers 2009;
Positive	<ul style="list-style-type: none"> • Social impact hypothesis: meeting the needs of various nonowner corporate stakeholders will have a positive impact on FP • Cost-benefit theory: Actual costs of CSP are minimal compared to the potential benefits. • Good management theory: Social and financial performance are both influenced by good management. • Slack resources theory: Good FP results in slack resources which can be devoted to SP. 	Wokutch and Spencer 1987; McGuire, Schneeweiss and Sundgren 1988;
Neutral	<ul style="list-style-type: none"> • It is so complex that a simple relationship does not exist. • Supply and demand theory: firm always pursue the FP maximized; but supply SF only based on the needed demand 	Waddock and Graves, 1997; McWilliams and Siegel 2001

Source: Waddock and Graves 1997; Preston and O'Bannon 1997

This inconsistent relationship may be caused by several reasons. Wood reviews many related papers and offer some explanations for this ambiguous relationships, such as unclear concepts, lack of theory, lack of rigor methodology and confusion of measurement of social performance (Wood and Jones 1995, P. 261). Apart from that, Choi thinks the reason may be the different mediating variables' influence (Choi & Yu, 2014).

This paper tends to think the relationship between economic performance and corporate sustainability performance is positive; for the following reasons: As this paper is mainly based on the stakeholder theory (Artiach et al., 2010; Ullmann, 1985; W.Roberts, 1992) and resource-based perspective (Choi & Yu, 2014; Ruf et al., 2001), we consider that the organizational commitment may act as a major mediator in the relationship between a company's financial performance and CS, which supports a positive relationship. Also, if the company is not performing well on economic aspects, the priority of it is to meet the economic demands.; if the company has achieved economic success, the pressure from the major stakeholders will be relatively low, and the good financial capability can provide the company with more resources to undertake sustainability activities; Besides that, companies with better economic performance tend to invest more in R&D, which may contribute the sustainability performance indirectly (Ziegler & Schröder, 2010).

There are several metrics can be used to measure financial performance, such as return on assets, return on equity, return on sales, loan losses to total loans (Simpson & Kohers, 2002; Waddock & Graves, 1997). Here we choose a broadly available financial measure of ROA to assess company performance, which can capture the fundamentals of business performance holistically, looking at both income statement performance and the assets required to run a business. Also, ROA is less vulnerable to financial engineering and short-term gaming compared with other metrics like ROE.

So, in summary, it is expected that there is a positive relationship between economic performance (ROA) and corporate sustainability performance.

Future growth

Artiach contends that if a company has a high level of future growth opportunities, it will be more willing to incorporate sustainability practice into its corporate strategy (Artiach et al., 2010). Besides, R&D, as an important part of company's future growth, can contribute to more effective and sustainable products and processes, which may reduce cost, pollution, and

energy consumed (Padgett & Galan, 2010). In this paper, we choose the price to book value to represent the company's future growth.

It is expected that the firm's future growth options (PB) are positively related to corporate sustainability performance.

Activity sector

Dividing activities into different sectors are aimed to "capture some systematic relation between broad industry characteristics, such as intensity of competition, consumer visibility, or regulatory risk, and social responsibility activities." (W. Roberts, 1992)

The most popular way is to use the industry classifications, which information is easy to obtain and particular industry is perceived to face similar social pressures. However, in this study, because of the special characteristics of ISE, we have a better way to deal with the activity sector. During the ISE selection procedure, companies were divided into six groups based on their subsector, and these six groups have questionnaires adapted to their sector characteristics. In these questionnaires, every group is labeled as either "high impact" (equals 1) or "modest impact" (equals 0) based on their activities' influence on the environment.

Companies in high impact sector will attract special attention from the government, social groups and the public, with the high visibility and relatively strict supervision, the companies will be more cautious about their attitude and behavior in the sustainability aspects. In addition, the economic activities of these companies are inherently more damaging to the environment, so they have a greater responsibility to deal with socio-environmental issues, which can be seen as some degree of compensation.

It is expected that the activity sector (Sector) is positively related to corporate sustainability performance.

Stock concentration

In Brazil, the ownership structure has its characteristics compared with developed countries like the US. Firstly, the stock of Brazilian companies is highly concentrated. The possible reason is that Brazil is a code law country with weak investor protection and law enforcement, and previous research shows that stock concentration is a natural response to this kind of environments (Lopes and de Alencar, 2010). Secondly, many companies are family companies, which means the owner of a company is the controller of the company and has extremely strong power (Procianoy, 1994).

Stock concentration is an issue about stakeholder power, which is one of the three dimensions in Ullamm's model. As we already mentioned, if a stakeholder is more powerful, there will be a greater possibility that his demand will be addressed. Here, if the stock is concentrated, the key shareholders will have a significant influence on the company's management decisions, including social aspect decisions. Usually, they care more about their profits, instead of social and sustainable practices. On the contrary, if the share of the company is more dispersed, public accountability and social responsibility may become more significant because it is more likely that these companies are being held by the public at large (Ghazali, 2007), and considering that there may be more ethical investors or social funds involving as stakeholders, the company will care more about social issues (Sánchez et al. 2011).

There is no unanimity in previous research on the measurement of stock concentration (Okimura, 2003, p.44). For example, Roberts states that the stock concentration is measured considering ordinary shareholders are holding a percentage greater than 5% of the shares (W.Roberts, 1992). Okimura measures the stock concentration through the percentage sum of common shares held by major investors. This paper adopts Okimura's standard and uses the top five as the major investors.

It is expected that a negative relationship exists between stock concentration (Con) and socially responsible practices.

Issuance of ADR

ADR, the American depositary receipt, is a negotiable certificate issued by a U.S. bank representing a specified number of shares in a foreign stock traded on a U.S. exchange. For investors in the US, it is one of the most popular and convenient ways to buy stock of foreign companies without worrying about currency exchange and regulatory difference issues. In the US, the regulatory body is the Securities Exchange Commission (SEC), which implements and enforces rules on companies. So the foreign companies have to report to SEC detailed financial information and adhere to superior corporate governance practices (Investopedia, 2019). ADR is considered to be the control variable because it relates to good corporate governance, which is one of the six dimensions of ISE evaluation standards. Also, besides, Brazil is one of the foreign countries with the largest number of companies issuing ADRs (Silveira et al., 2004). Literature shows that companies listed on the international stock exchange usually have better corporate governance compared with their counterparts originated from the same country because the major stock exchange has strong investor protections (Lel and Miller, 2009). Black

researches on the Brazilian cases and states that listing abroad is a good way for Brazilian companies to show their intentions to have a better corporate sustainability practice (Black et al. 2010)

It is expected that being an ADR issuer can positively influence companies' adherence to the index.

Table 4. Summary of variables

Variable Type	Variable Name	Variable Label	Expected sign
Dependent	ISE	Corporate sustainability	
Independent	Gender	Gender nondiscrimination	+
Independent	Wages	Wages	+
Independent	Hours	Working hours	-
Independent	Turnover	Tureover rate	-
Independent	Duration	Duration	+
Control	Size	Size	+
Control	ROA	Return on asset	+
Control	PB	Price to book value	+
Control	Sector	Activity sector	+
Control	Con	Stock concentration	-
Control	ADR	Issuance of ADR	+

Source: from the author

3.3. Descriptive Statistics

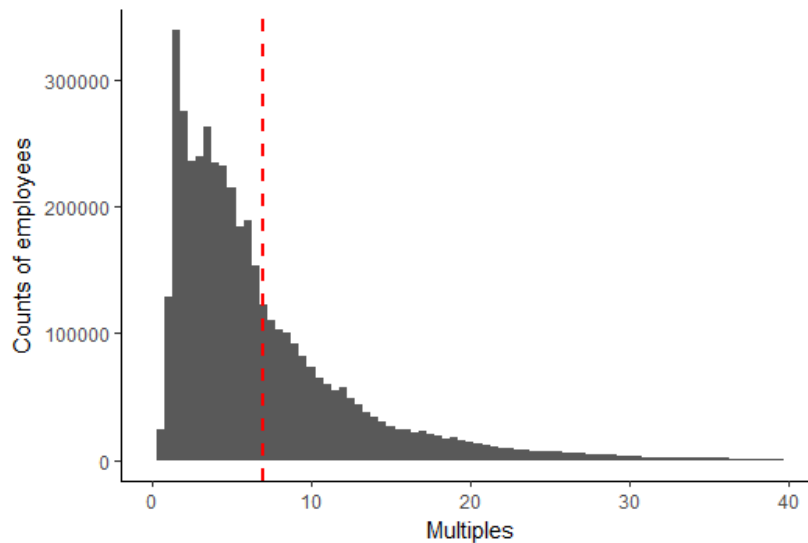
3.3.1. Individual-level

The RAIS database is a really large database, and we managed to extract all the individual data from the 47 companies, that is approximately 4.33 million observations in total. So as we already talked, we choose five variables: gender (Sexo Trabalhador), compensation (VI Remun Média (SM)), working hours (Qtd Hora Contr), duration (Tempo Emprego) and turnover rate (calculated through PIS) as our research focus.

Among these variables, gender is always treated as a category variable, only taking two values: 1 for female and 0 for a male. Here in this case, for easy calculation and explain, we change the data type to numeric and calculate that the mean of gender is 0.37, which represents

that among the 4.3 million workers, 37% of them are female. The result shows that the gender structure is not very balanced, but we think this is consistent with reality. In the job market, gender discrimination is a problem all over the world, especially for important positions. As to the variable turnover, it is a company level measure, not an individual level, so we leave it to the next part; for the other three variables, we map the following histograms in order to get a better understanding of them.

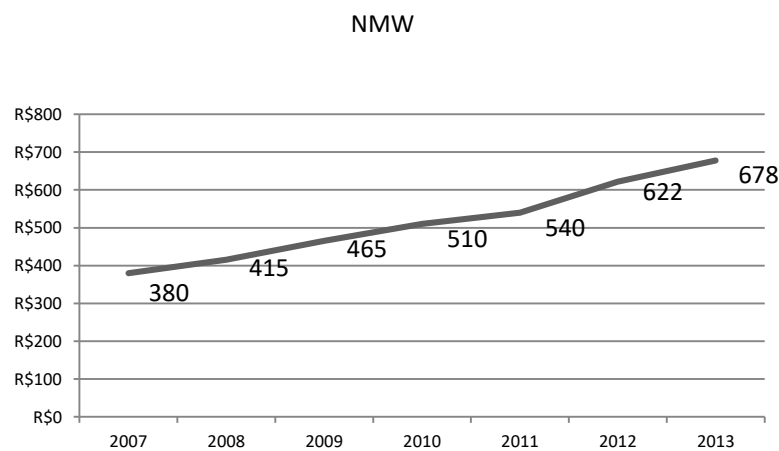
Figure 8. The Distribution of Wages and the Changes of NMW
Average monthly compensation in minimum wages



Note: The red dotted line is the mean

Source: from the author

Figure 9. The Changes of National Minimal Wages

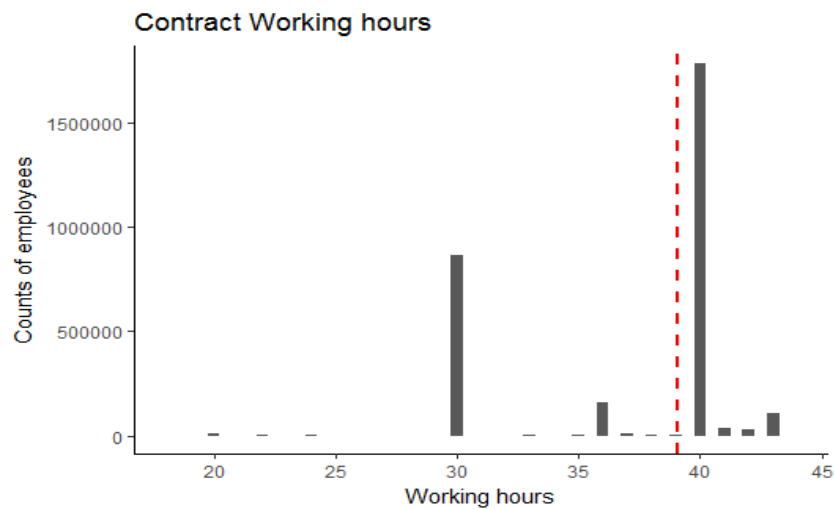


Source: from the author

Remuneration is calculated by month and presented in multiples of minimum wages. There are several variables related to remuneration in RAIS, and we think this variable is the most representative because it eliminated the effects of changes in the minimum wage and also removed the effects of price changes to a certain extent.

The data shows that the average monthly compensation is 6.95 times the national minimal wage (NMW). Take the year 2012 for example, in that year, the NMW is R\$ 622, and the average employees' payment is R\$ 1943.16 per month, which is an equivalent to 3.1 minimal wages (IBGE, 2019). Our sample companies tend to have much higher wages than other companies; the reason may be (1) all the sample companies are among the 200 most traded companies. Usually, big and good-performing companies tend to pay more to the employees. (2) The ISE group is comprised mainly by energy and financial companies, and in order to keep a relatively balanced structure, the control group is also from the same sector. In the job market, these two industries are recognized as high-paying industries.

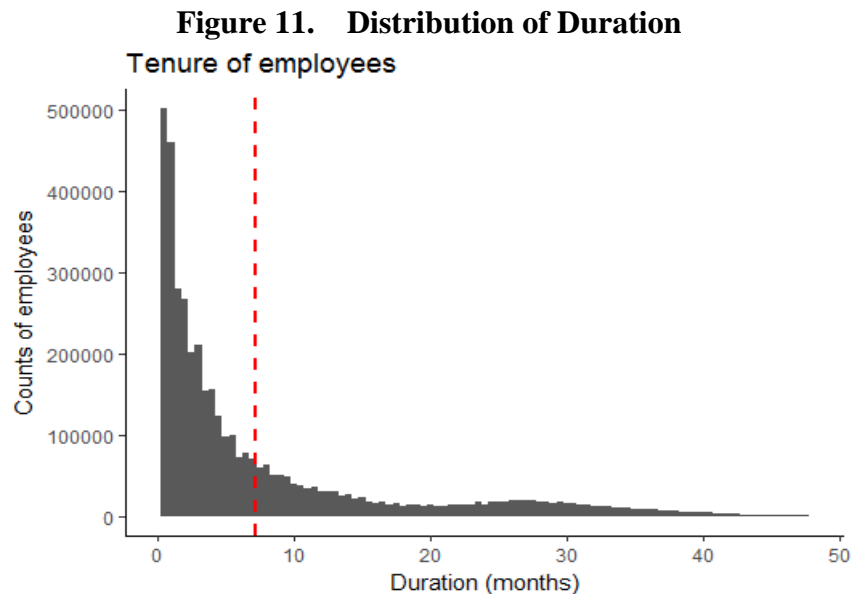
Figure 10. Distribution of Working Hours



Source: from the author

Another interesting variable is the contract working hours per week of employees. We are interested in the actual working hours. However, this data is hard to find, and if taking into account Brazilian labor law and the true situations in the labor market, contract work hours can be approximated as agents for real working hours. The upper limit of working hours is 44 hours per week regulated by law; the data shows that some individual's working hours are extremely low (below 20 hours), which we treated them as outliers;

We notice that the average working hours is 40, which is mean and at the same time the mode. Apart from the 40 hours, 30 hours is also a common working hour. We believe the characteristics of the distribution is because the majority of the sample companies are energy and finance company, and the working hours are closely related to sectors.



Based on the literature above, we also want to know how long an employee is staying in the same company, which can be seen as a proxy of organizational commitment. The data shows the average duration time of one employee is 7.23 months; the maximum is 59.99 months, but very few people do this, most employees stay in the same company for less than 30 months.

3.3.2. Company-level

Then the individual-level data were converted to company-level data, which is 329 observations in total, comprising of 47 companies during seven years period from 2007 to 2013. The previous analysis is based on individual data, and it can help us understand the data's overall characteristics. Here, we further study the independent variables from the company's point of view. As all the companies are well-known large companies, we already have an image or some understandings about the companies maybe through advertising or product purchase, so this company-level analysis can provide us with some intuitive implications which the individual data cannot do.

In order to understand how each company behaves on our main variables, we plot several bar chart. The Y axis is in turns the multiples of minimum wages, working hours, gender

structure, duration, and turnover. The X axis is companies' ID, from 1 to 47, arranged in ascending order of 8-digits CNPJ, this code does not have special meanings; it is just something we attribute to the companies for convenience. The correspondence between ID and a specific company is shown in the table below.

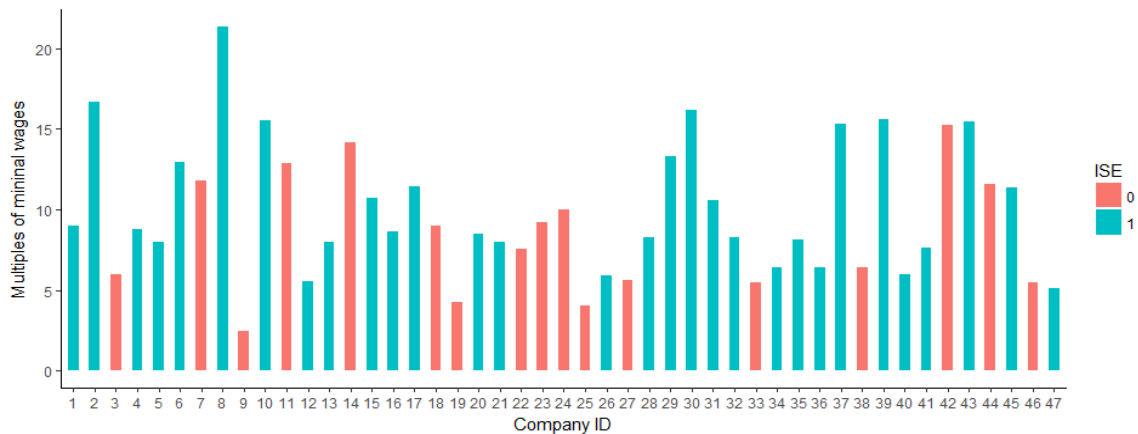
Table 5. Company name & ID numbers

0	1	2	3	4	5	6	7	8	9
0	Banco do Brasil	Eletrobras	Euatorial	BRF	Energias BR	Tractebel	Telef Brasil	CCR Rodovias	JBS
1	AES Tiete	Tran Paulist	Tim	Copel	Eneva	Cemig	Coelce	Embraer	Ecorodovias
2	Suzano Papel	Gerdau MET	Banestes	ABC Brazil	BTGP Banco	GPC Part	SulAmerica	Sid Nacional	CPFL Energia
3	Braskem	Even	Sabesp	Cosan	Light	Itau Unibanco	Bradesco	Cesp	Porto Seguro
4	Ultrapar	Eletropaulo	Pine	Natura	Cyrela Realt	Telemar/OI	Klabin	Duratex	

Note: The first column represents ten digits, and the first row represents single digits

Source: from the author

Figure 12. Company-level Analysis of Wages



Source: from the author

Table 6. Top 3 and Bottom 3 companies on Wages

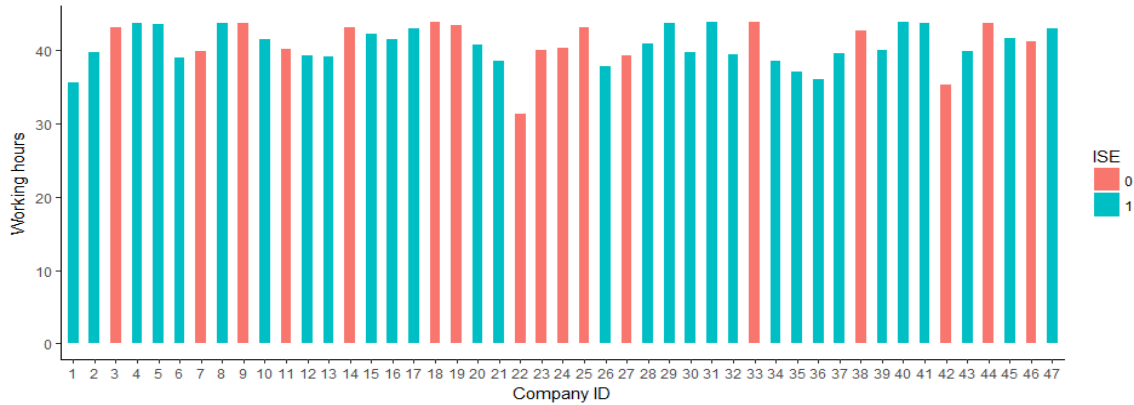
	1	2	3
Top 3	CCR Rodovis (Y)	Eletrobras (Y)	Braskem (Y)
Bottom3	JBS (N)	Ferbasa (N)	GPC Part (N)

Note: Y means the company is ISE company and N means it is not

Source: from the author

From the wages graph, we can see that most of the top companies are energy companies, such as Eletrobras and Braskem, which is consistent with our hypothesis and real-life experience that the energy industry is a relatively high-paying industry.

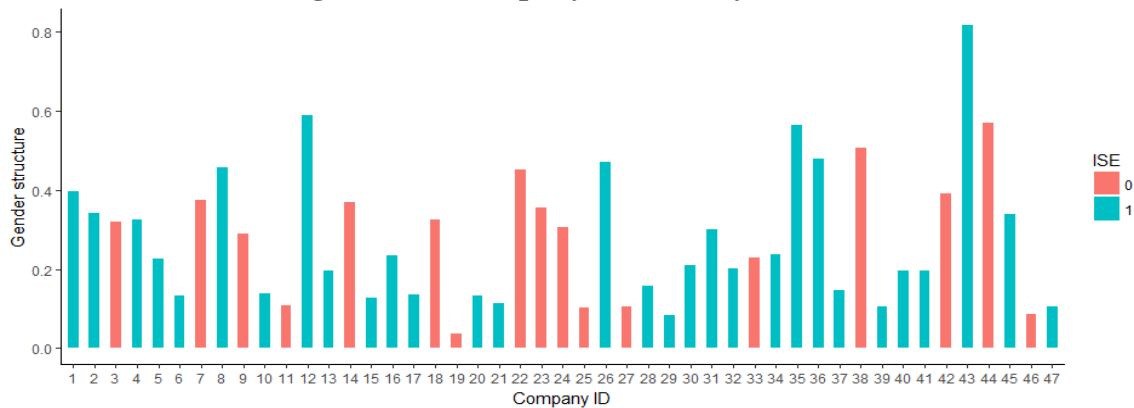
Figure 13. Company-level Analysis of Hours



Source: from the author

As the working hours is mostly influenced by sectors, for example, according to the law, the standard working hours for the energy sector is 40 hours per week, while the bank sector is only 30 hours per week. There is no need to pick up specific companies.

Figure 14. Company-level Analysis of Gender



Source: from the author

Table 7. Top 3 and Bottom 3 companies on Wages

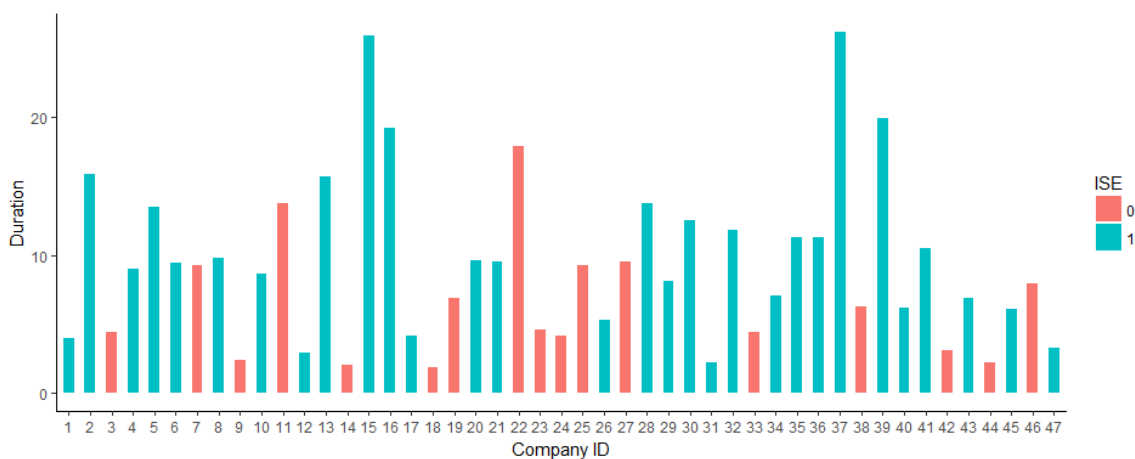
	1	2	3
Top 3	Natura (Y)	Tim (Y)	Itau Unibanco (Y)
Bottom3	Ferbasa (N)	Klabin (N)	GPC Part (N)

Note: Y means the company is ISE company and N means it is not

Source: from the author

From the gender graph, we can see that companies with the least gender discrimination are Natura, which is personal use products company, and the following companies are Tim and Itau. All these companies are in the sector that women tend to have special competitive advantages.

Figure 15. Company-level Analysis of Duration



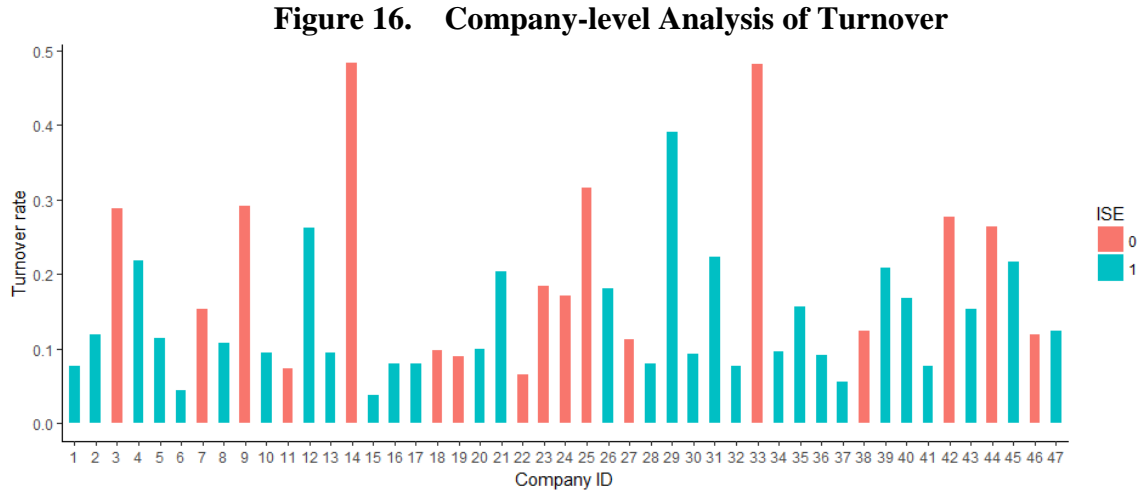
Source: from the author

Table 8. Top 3 and Bottom 3 companies on Duration

	1	2	3
Top 3	Cesp (Y)	Cemig (Y)	Porto Seguro (Y)
Bottom3	Ecorodovias (N)	Eneva (N)	JBS (N)

Note: Y means the company is ISE company and N means it is not

Source: from the author



Source: from the author

Table 9. Top 3 and Bottom 3 companies on Turnover

	1	2	3
Top 3	Cosan (N)	Eneva (N)	GPC Part (N)
Bottom3	Cemig (Y)	Tractebel (Y)	Cesp (Y)

Note: Y means the company is ISE company and N means it is not

Source: from the author

It is worth mention that, for these representative companies, no matter they are top or bottom, the relationships between their performance and whether they committed to ISE are all consistent with our hypothesis. For example, like the duration, all the top three companies with the longest duration time are ISE companies, all the bottom three companies are non-ISE companies. Like the turnover, all the top three companies with the highest turnover rate are non-ISE companies, all the bottom three companies with the lowest turnover rate are all ISE companies.

3.3.3. Comparison between ISE and non-ISE groups

By the previous step, we divided the company into ISE and non-ISE companies for further analysis. First, we calculate the mean of the two groups variable by variable (See table 10).

Second, we used Wilcoxon test to check whether the difference between the two groups is statistically significant; Finally, we draw box plots of each pair to observe its characteristics from another perspective. Here we still use the original 4.33 million individual data to guarantee no loss of any important information.

Table 10. Comparison between two groups

ISE	Year	Gender	Rem_SM	Hours	Duration	Turnover
0	2013	0.31	4.33	41.88 *	448.60	0.23 *
1	2013	0.41 *	6.29 *	38.90	700.60 *	0.20
0	2012	0.28	4.38	42.08 *	486.39	0.25 *
1	2012	0.41 *	6.79 *	38.35	755.84 *	0.14
0	2011	0.26	4.51	42.20 *	508.18	0.22 *
1	2011	0.40 *	7.18 *	38.38	729.87 *	0.13
0	2010	0.25	4.35	42.37 *	472.42	0.23 *
1	2010	*	7.27 *	38.21	737.83 *	0.13
0	2009	0.21	5.18	41.91 *	607.63	0.24 *
1	2009	0.38 *	7.73 *	38.60	764.05 *	0.13
0	2008	0.21	5.44	41.91 *	624.11	0.26 *
1	2008	0.38 *	8.77 *	37.79	867.71 *	0.10
0	2007	0.21	5.78	42.10 *	678.89	0.21 *
1	2007	0.36 *	9.62 *	37.67	909.45 *	0.07
0	7 years	0.25	4.76	42.07 *	532.50	0.23 *
1	7 years	0.40 *	7.47 *	38.33	768.34 *	0.14

Note: 1. * denote significance at 1% of a Wilcoxon rank-sum test of the sample.
2. Asterisks are placed above the higher value.

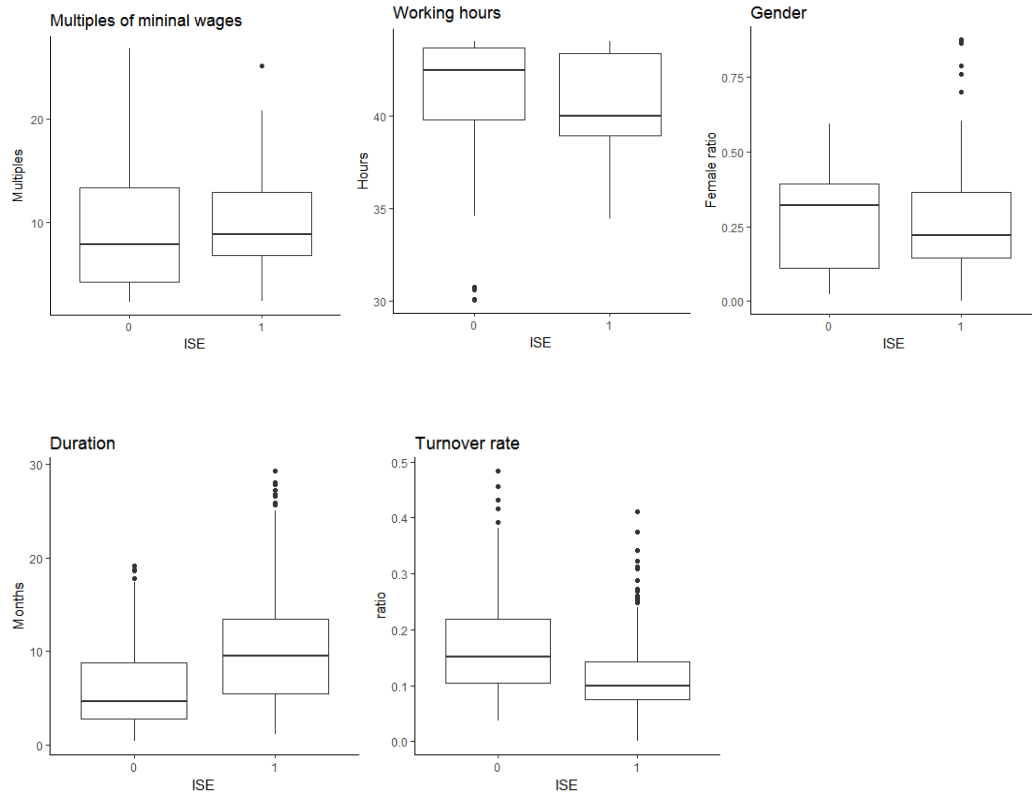
Source: from the author

The Wilcoxon rank-sum tell us that the mean value for every variable is significantly different at the 1% level. Also, all the result is consistent with our hypothesis, that is, a company with high-level corporate sustainability performance are always associated with more wages, less contract working hours, more balanced gender structure, longer employee tenure, and lower turnover rate.

Then, in order to see the distributional characteristics of the data, we draw box plots. The box plot divides data into four equal size groups arranged by the ordered variable value. The horizontal line in the middle of each box marks the median (middle quartile), half the values are greater than or equal to this value, and half are less. The median is kind of similar to mean in the sense that both of them are common metrics for concentration trends. The advantage of

box plots is that in addition to this metric, it can also visualize the range and other characteristics of the data, and provide an overall pattern.

Figure 17. Boxplots of Independent Variables



Source: from the author

First, look at the length of the boxes, some boxes are comparatively short in its pair. Like the ISE box on turnover rate, which means the range of turnover rate for ISE companies is not as large as the non-ISE group, representing a more stable performance in this aspect. It also happens to wages box plot; the ISE box is shorter compared with the non-ISE group.

If we compare the median of each pair, the conclusion is similar to the mean. That is, the ISE group tends to have higher wages, lower working hours, longer duration and less turnover rate. However, the only exception is gender. The mean shows ISE group has more female in companies than the non-ISE group; however, the median is the opposite. The box plot shows the reason is, for the majority of the ISE companies, they do not behave better than non-ISE companies, but there are several ISE companies have extremely high ratio of female, which pull the mean value up.

4. Regression

4.1. Pearson correlation coefficient

Before we run the model, we want to see whether there are linear correlations between these variables, so we calculate the Pearson correlation coefficient and test it. This method was developed by Karl Pearson from a related idea introduced by Francis Galton in the 1880s (Karl Pearson, 1895) and is widely used in statistics. The correlation coefficient matrix is as follows:

Table 11. Correlation coefficient matrix

	ISE	Gender	Hours	Wages	Tenure	TO	Size	ROA	PB	Con	ADR
Gender	-0.03 (0.61)										
Hours	0.03 (0.60)	-0.24 (0.00)									
Wages	0.06 (0.29)	0.14 (0.01)	-0.25 (0.00)								
Duratio n	0.31 (0.00)	-0.25 (0.00)	-0.19 (0.00)	0.15 (0.01)							
TO	-0.32 (0.00)	0.28 (0.00)	0.17 (0.00)	-0.08 (0.15)	-0.49 (0.00)						
Size	0.21 (0.00)	0.28 (0.00)	-0.36 (0.00)	0.02 (0.02)	0.06 (0.00)	-0.05 (0.39)					
ROA	0.10 (0.08)	0.09 (0.10)	0.14 (0.01)	0.03 (0.64)	0.03 (0.57)	-0.14 (0.01)	-0.19 (0.00)				
PB	0.12 (0.03)	0.43 (0.00)	0.07 (0.00)	0.14 (0.00)	-0.15 (0.01)	-0.01 (0.81)	-0.06 (0.01)	0.43 (0.00)			
Con	-0.26 (0.00)	0.08 (0.14)	-0.26 (0.00)	0.23 (0.00)	-0.13 (0.02)	0.09 (0.12)	-0.16 (0.00)	0.02 (0.71)	-0.01 (0.87)		
ADR	0.23 (0.00)	-0.04 (0.47)	0.06 (0.30)	-0.22 (0.00)	0.09 (0.11)	0.10 (0.06)	0.14 (0.00)	0.05 (0.34)	0.01 (0.83)	-0.23 (0.00)	
Sector	0.15 (0.01)	-0.41 (0.00)	0.53 (0.00)	-0.13 (0.02)	0.11 (0.04)	-0.08 (0.14)	-0.40 (0.00)	0.20 (0.00)	0.07 (0.21)	-0.07 (0.205)	-0.12 (0.03)

Note: The top number represents the degree of correlation, and the bottom number represents the level of significance

Source: from the author

Many scholars have proposed criteria for judging the correlation of variables by the size of correlation coefficients. Most people do not consider correlations significant until the value surpasses at least 0.8, but as Cohen pointed out, these standards are more or less arbitrary and

should not be strictly obeyed. Whether two variables are related depends on the background and purpose. The same 0.9 correlation coefficient may be considered low when using very accurate instruments to verify the laws of physics, but in the social sciences, when assessing the contribution of many complex factors, it may be considered as highly correlated (Cohen, 1988).

So, taking a cautious attitude and taking into consideration this specific case, I chose 0.5 as a threshold, the two variables would be regarded as highly correlated, is the correlation coefficient is more than 0.5. The matrix shows that the only value that exceeds 0.5 is between Hours and Sector. In combination with the reality, the contract work time is relatively fixed, and it is mainly influenced by the industry, not ISE, so we deleted the Hours variable.

4.2. Logit model

As our dependent variable is a binary dummy variable, we cannot use the linear regression model. Because first, the regression line may lead to predictions lower than 0 or bigger than 1; Second, the linear model assumes the marginal effect is constant, which is obviously not true; Third, “the errors from the linear probability model violate the homoskedasticity and normality of errors assumptions of OLS regression, resulting in invalid standard errors and hypothesis tests” (Long 1997, p. 38-40).

So we should think of the non-linear model: logit and probit model, both of them can solve these problems by introducing a link function, so the straight can be replaced by an S-shaped curve and rescale any number to fall between 0 and 1. We will do the logit regression first, which is our main focus, then we will also include the profit regression as a robustness test, and try to compare them.

In the logit model, the log odds of the outcome is modeled as a linear combination of the predictor variables. In our case, P is defined as the probability that the company is committed to ISE and this probability can be determined by several factors, represented by X_i . In statistics, the logit function is the logarithm of the odds $p/(1-p)$.

$$\log\left(\frac{p}{1-p}\right) = \sum \beta X_i$$

Thus, based on the previous literature and in order to verify the existence of a significant influence of the company’s commitment to ISE on the labor conditions and organizational commitment, an initial model was proposed like this:

ISE = f (labor conditions; organizational commitment; company size; profitability; future growth; stock concentration; issuance of ADR; activity sector)

Then, based on the variable analysis above, the equation can be developed into the following form:

$$\text{ISE} = \beta_0 + \beta_1\text{Gender} + \beta_2\text{Wages} + \beta_3\text{Duration} + \beta_4\text{To} + \beta_5\text{Size} + \beta_6\text{ROA} + \beta_7\text{PB} + \beta_8\text{Con} + \beta_9\text{ADR} + \beta_{10}\text{Sector} + \mu$$

The dependent variable is a binary variable which is set to 1 if the company have a high level of CSP, and 0 otherwise. In order to investigate the relationship between labor issues and corporate sustainability, four independent variables are used: wages, working hours, gender, duration, and turnover rate. We also include a set of control variables.

We run the logit model in R; the result is shown in the table below.

Table 12. Logistic regression result

	Estimate	Std. Error	Z value	P value
Intercept	-8.97	2.29	-3.91	0.0001 ***
Gender	2.18	1.16	1.87	0.0611 .
Wages	0.03	0.03	0.94	0.3459
Duration	0.07	0.03	2.05	0.0403 *
To	-0.09	0.02	-4.02	0.0001 ***
Log(size)	0.59	0.14	4.35	0.0000 ***
ROA	-0.09	3.01	-0.03	0.9764
PB	0.09	0.09	0.97	0.3316
Con	-3.09	0.93	-3.34	0.0008 ***
ADR	1.21	0.42	2.85	0.004 **
Sector	1.67	0.39	4.31	0.0000 ***

Notes: 1. * refers to the significant level: '***' 0.001; '**' 0.01; '*' 0.05; '.' 0.1; ' ' 1

2. Size is the natural logarithm of the firm's total assets at the end of the year;

ROA is the firm's return on asset;

PB is the firm's price-to-book ratio;

Con is the percentage of share of the five biggest stockholders;

ADR equals 1 means the firm issue ADR in the US stock market;

Sector equals 1 means the sector has a high impact on the environment according to ISE's standard and it equals 0 if the sector has a modest impact on the environment.

Source: from the author

The main part of the output shows the coefficients, their standard errors, the Wald z-statistic, and the associated p-values. First of all, we can see that Wages, ROA, and PB are not statistically significant. All the rest are statistically significant. With To, Size, Con and Sector have the lowest p-value.

Let us first see the control variables, we have six control variables in total, and four of them are significant. These four variables' signs are consistent with our hypothesis. If a company has higher total assets, lower stock concentration, issues ADR and in a high environmental impact sector, it has more probabilities to be an ISE company.

The Size Variable is positively significant at the 0.1% level, indicating that for every one unit increase in $\log(\text{Size})$, the log odds of the company to be ISE (versus non-ISE) increases by 0.59. This is in line with the previous research, the big company tends to have greater visibility, greater public scrutiny, greater pressure, more risk exposures, and more adequate resources, all these factors are associated with the higher possibility to do sustainability practices.

The Con Variable is negatively significant at the 0.1% level, indicating that for every one unit increase in Con, the log odds of the company to be ISE (versus non-ISE) decreases by -3.09. This negative relationship is consistent with the hypothesis, cause the more dispersed the company's stocks, public accountability and social responsibility tend to become more significant; on the contrary, if several key shareholders hold majority of stocks, their opinions and interests will profoundly influence the company's management decisions, which tend to focus more on financial performance instead of social responsibilities (Ghazali, 2007).

The ADR Variable is positively significant at the 0.1% level, indicating that having issued ADR (equals 1) versus not issued ADR (equals 0), changes the log odds of the company to be ISE by 1.21; The positive relationship is also consistent with hypothesis, because issuing ADR is positively related to good corporate governance, which is an essential dimension of CS.

The Sector variable is considered positively significant at the 0.1% level, indicating that being in the high impact sector (equals 1) versus modest impact sector (equals 0), changes the log odds of the company to be ISE by 1.67. In line with the previous studies on the subject, the high environmental impact sector is a determining factor of companies' sustainability practice. Since companies in this sector will attract special attention from the government, social groups and the public, with the high visibility and relatively strict supervision, the companies will be more cautious about their attitude and behavior in the sustainability aspects; In addition, the economic activities of these companies are inherently more damaging to the environment, so

they have a greater responsibility to deal with socio-environmental issues, which can be seen as some degree of compensation.

The ROA variable does not present significance with a significant level of 0.1%, 1%, 5% and 10% in the sample studied. That is, it does not influence the adherence of the companies to the ISE, which supports a neutral relationship between a company's financial performance and social performance. This result seems inconsistent with the stakeholder theory and RBV theory. However, the reason may be the relationship between FP and SP is so complex that a simple relationship doesn't exist (Waddock & Graves, 1997); McWilliams explained the neutral relationship based on a supply-demand theory, arguing that in equilibrium, the company's profitability level will be maximized and equal, while the social performance is provided in responding to the unique CSP demand (McWilliams & Siegel, 2001). Besides, the inconsistent result may be caused by some other reasons, such as the choice of methodology and measurement. This paper is using ISE and ROA as the proxy of the company's SP and FP respectively. However, there are a lot of other indicators and measurements. In future, we can consider choosing different measurements to test and compare; Another possibility is that the assumed positive relationship is the situation for other countries, which is different from Brazil's situation from 2007 to 2013.

The PB variable also does not present significance, with a significant level of 0.1%, 1%, 5%, and 10%. The price to book value does not influence the companies' adherence to ISE. This paper is using PB as a proxy of the company's future growth. However, future growth is a broad topic which is not easy to be represented by a single variable, and there may be some mediating variables between company's PB and future growth, which influence the relationship. For the previous literature, although there are some people who think future growth is related to companies' sustainability practice (Artiach et al., 2010), the majority of the research does not mention this factor.

Also, the interpretation above is using the concept log odds. However, this is not very intuitive, to make it easier to understand, we can change the log odds formation to odds.

Table 13. Odds transformed coefficients

	Intercept	Gender	Wages	Duration	To	log(Size)	ROA	PB	Con	ADR	Sector
Original	-8.97	2.18	0.03	0.07	-	0.59	-0.09	0.09	-	1.21	1.67
					0.09				3.10		
Transformed	0.00	8.84	1.03	1.07	0.92	1.81	0.92	1.09	0.05	3.34	5.33

Source: from the author

Now we can say that for a one unit increase in $\log(\text{Size})$, the odds of being ISE company (versus non-ISE) increase by a factor of 1.81. Similarly, for a one unit increase in Con , the odds of being ISE company (versus non-ISE) decrease by a factor of 0.05.

As to the independent variables, organizational commitment related variables perform better. Duration and Turnover rate are all significantly related to the company's CSP, the former is positively significant at the 5% level, and the latter is negatively significant at the 0.1% level, both signs is the same with the hypothesis. CSP tends to be a value-added characteristic for companies, leading to a good reputation and company image. Moreover, a good reputation can make employees feel happy and psychologically satisfied. As a result, the employees are willing to stay in this company for a longer period (Porter et al., 1976), and the company will have a reduced turnover rate.

The labor condition related variables seem not so related to the company's CSP. Wages are not significant at all and Gender is just barely statistically significant at the 10% level, which is almost the limit, whether it is significant depends on the individual's personal choice.

For the independent variables in our case, as they are not the determining factors of company's CSP level, the meaning of the coefficient cannot be interpreted like those control variables. The purpose for us to analyze independent variables is to see whether they are correlated with CSP.

Then we need to assess the model fit. Unlike linear regression with OLS estimation, there is no exact equivalent to R^2 which explains the proportion of variance in the dependent variable that is explained by the predictors. However, there are some pseudo R^2 metrics that can be useful. Most notable is McFadden's R^2 , which is defined as:

$$R_{McFadden}^2 = 1 - \frac{\log(L_c)}{\log(L_{null})}$$

where $\log(L_c)$ is the log likelihood value for the current fitted model and $\log(L_{null})$ is the log likelihood value for the null model with only an intercept as a predictor.

Similar to R^2 , the value indicates the model's predictive power. However, McFadden states "its values tend to be considerably lower than those of the R^2 index...For example, values of 0.2 to 0.4 for R^2 represent excellent fit." (McFadden, 1979, P.306). In our model, the McFadden's R^2 is 0.3096, which is pretty good according to the author's standard.

4.3. Probit model

The probit model is another widely used model for the categorical dependent variable.

The difference between logit and probit model lies in the link function and the assumption about the distribution of the model.

Logit:

$$\ln\left(\frac{p_i}{1-p_i}\right) = \sum_{k=0}^{k=n} \beta_k x_{ik}$$

Standard logistic distribution of errors

Probit:

$$\Phi^{-1}(p_i) = \sum_{k=0}^{k=n} \beta_k x_{ik}$$

Normal distribution of errors

However, there is no significant difference in the result of these two models in most cases. Anyhow, We carry out both analysis as a robustness test, showing that the results are not driven by the choice of the link function.

We run the probit model, and the result is shown below:

Table 14. Probit Regression Result

	Estimate	Std. Error	Z value	P value
Intercept	-5.08	1.29	-3.92	0.0000 ***
Gender	1.48	0.68	2.18	0.0296 *
Wages	0.02	0.02	1.24	0.2143
Duration	0.04	0.02	2.14	0.3253 *
To	-0.05	0.01	-4.06	0.0000 ***
Log(size)	0.33	0.08	4.36	0.0000 ***
ROA	-0.18	1.76	-0.11	0.9189
PB	0.04	0.05	0.84	0.3001
Con	-1.76	0.53	-3.35	0.0008 ***
ADR	0.63	0.23	2.7	0.0069 **
Sector	0.97	0.22	4.39	0.0000 ***

Note: * refers to the significant level: '***' 0.001; '**' 0.01; '*' 0.05; '.' 0.1; ' ' 1

Source: from the author

The coefficients of probit regression look different than logit regression. The reason is that the variance of the standard normal CDF is one while the variance of the logistic distribution is

$\pi^2/3$, thus to make the coefficients of the two models comparable, we should divide the coefficients from the logit model by $\sqrt{\pi^2/3} \approx 1.8$. However, Amemiya states that dividing by 1.6 tends to give a better approximation for most cases, so you should use that instead.

Table 15. Comparison of coefficients from the logit and probit

	Intercept	Gender	Wages	Duration	To	log(Size)	ROA	PB	Con	ADR	Sector
Logit	-8.97	2.18	0.03	0.07	-0.09	0.59	-0.09	0.09	-3.10	1.21	1.67
Probit	-5.08	1.48	0.02	0.04	-0.05	0.33	-0.18	0.04	-1.76	0.63	0.97
Probit*1.6	-8.13	2.36	0.04	0.06	-0.08	0.53	-0.29	0.07	-2.82	1.01	1.55
Probit*1.8	-9.15	2.65	0.04	0.07	-0.09	0.59	-0.32	0.08	-3.17	1.14	1.75

Source: from the author

After the transformation, we can find that the two models are essentially telling the same thing. The coefficients are similar; The significant levels shown in * are almost the same, the only exception is the Gender become a little more significant than before; The McFadden value is also similar, with the logit model (0.3096) a little higher than the probit model (0.3052).

To sum up, the logit and probit are similar; the choice between them largely depends on personal preference. However, here we prefer the logit model because the log-odds can be back transformed into odds ratios; we can have an intuitive way to interpret the coefficient. In contrast, probit coefficients are essentially uninterpretable. For example, for a one unit increase in Con, the z-score decreases by -1.73.

5. Conclusions

This study analyzes whether employee's organizational commitment and labor conditions are influenced by the company's corporate sustainability level. We select a sample of Brazilian companies and group them into treatment and control group, depending on whether they belong to or not to the Bovespa Corporate Sustainability Index. This classification gives rise to our dependent variable, a proxy for the level of corporate sustainability performance.

After using some proxies to control company size, financial performance, future growth, activity sector, stock concentration and issuance of ADR, we find that the corporate sustainability level is positively associated with organizational commitment, which is reflected in that ISE companies are always accompanied by low turnover rates and longer tenure. This is consistent with our hypothesis. However, although descriptive results and Wilcox test shows labor conditions related variables are affected by whether the company belong to or not to ISE,

the logit regression result does not prove the statistical significance of the relationship. Follows are some possible reasons that can be used to explain it, by taking into consideration the Brazilian context, especially the Brazilian Labor Law.

Working hours are heavily influenced by sectors, for example, according to the labor law, the standard working hours for the energy sector is 40 hours per week, while the bank sector is only 30 hours per week. There is a possibility that the decisive sector factor has taken away the significance of sustainability. Also, in this paper, we have to use the contract working hours because of the data availability. However, this variable does not include the overtime. According to the International Stress Management Association's survey, in 2012, the working time in Brazil varies from 50 to 54 hours per week, much higher than the maximum 44 hours per week allowed by law (Juliana Mello, 2012). If we can find the actual working hours data, the relationship between corporate sustainability and working hours may be different. From the correlation matrix, we can see wages are more influenced by duration, price/book value, stock concentration and sectors than sustainability. This may relate to the selection of the two groups. All the companies are large companies and highly concentrated in energy and bank sectors. Also, the two groups are not balanced.

Then, as to the implications and policy suggestions, they are described from different perspectives as follows.

For ordinary people, he can be an employee or a consumer. As an employee, it is reasonable to care about good working conditions like high salary and reasonable working hours, but these things are not the only attractions for employees. This paper shows that employees can also be attracted by the company's commitment to sustainability, which is always associated with employees' good self-image and psychological satisfaction. So as a result, employees tend to stay in that company for a longer time. Then, as a customer, we could also enhance our awareness of sustainability and bring it to everyday life, such as consuming green productions and service.

For companies, there are many benefits of being sustainable. Firstly, the most obvious one we can get from this paper is the improved ability to attract and keep employees, which is often associated with employees' enhanced loyalty, reduced absenteeism, cutted recruitment and training costs, and increased employee productivity. All these factors can help the company obtain competitive advantages. Secondly, from the explanation of the paper, we know that the macro concept of sustainability and the micro level employees are not directly related, there are some mediating variables and mechanisms between them, which can also give us implications

about what kinds of benefits the company can have if they are committed to sustainability (Branco & Rodrigues, 2006; Orlitzky et al., 2003), such as corporate reputation, media visibility and improved relationships with different kinds of stakeholders. Thirdly, what the companies care about the most is the financial benefit. There are many theories and empirical evidence supporting a positive relationship between a company's financial performance and social performance. Although our data do not show a significant relationship between these two, we cannot conclude that social performance does not contribute to economic performance in Brazil. We need to research more on that, like, a comparison between different countries, to try to identify which mediating factors influence this relationship. For example, if we found that most of the developed countries show a positive relationship because of their good corporate governance or mature market mechanism, we can improve those areas in the future.

Apart from companies, there is another key player involved – the institutional or retail investors. To investors, sustainability represents an opportunity as the Sustainable and Responsible Investment (SRI) market grows and substantiates a demand for companies whose activities can be sustained in the long run by reaping environmental, social and economic gains. The previous research shows that the SRI segment has been growing at a fast pace and has performed better than traditional investments. While usually greater profitability comes with greater risk, SRI is less volatile than other types of investment (Eurosif, 2010). SRI has the potential to bring some answers to the growing concern by society and policy-makers about reconciling finance with long-term, sustainable growth. In 2012, more than one out of every nine dollars under professional management in the US market were invested according to SRI strategies. (Macedo, Barbosa, Callegari, Monzoni, & Simonetti, 2012). Compared to the US market, Brazil's SRI market still has a huge potential.

For the institutions who are responsible for ISE, improving the influence of the index and the participation of the companies is very important. For now, every year ISE send questionnaires to big companies, but many companies do not answer it. It is valuable to make efforts to understand why those companies do not have the initiatives to participate. Besides, the ISE uses both qualitative and quantitative methods to select companies, and the questionnaires are structured into 7 dimensions, 30 criteria and 70 indicators. It is well organized, however, the index is simplifying tools designed to capture the complexity and help convey information to specialists and non-specialists alike (Bell & Morse, 2018), we need to take a cautious attitude towards this simplification and tradeoffs. Also, to join the ISE, a company must first meet a liquidity condition as the issuer of one of the 200 most liquid stocks listed on BM&FBOVESPA,

we can understand this criterion because it is necessary for investors to be able to replicate the ISE index and trade this company's stock. However, the ultimate objective of ISE is to incorporate sustainability on Brazilian companies' agendas, not only the big companies, so it would be better if ISE can design something for the medium and small companies.

In the end, there are some limitations of the study. Firstly, our sample only includes big companies, which is due to the selection criteria of ISE. However, Brazil is an extremely large country, and there are many corporations with different size. Also, company size is proved to be positively associated with corporate sustainability level. So in the future, if we use a different way to measure CSP instead of ISE, we would be able to enlarge the sample and include media and small companies, which allows us to see whether the pattern changes along with company size.

Secondly, limitations of the findings may arise from the RAIS database, which only includes formal employment; the paper does not consider informal employment. However, informal employment is an important part of the Brazilian economy. We can combine the RAIS database with other databases which includes informal employment later to see the problem in a more comprehensive way. Also, for now, we can only access the data to 2013, which limits the ability to expand the period of the study. It would be interesting if in the future I can continue the study with more recent data which can capture trends in recent years and provide more solid data support for my conclusions. For example, taking into consideration the labor reform in 2017, it would be interesting to see what had been changed after the new law. The main concept of the labor reform is to enhance the autonomy of the negotiating terms and conditions of employment, covering a variety of different aspects in the employer-employee relationship. Researching on the RAIS database would be a great way to capture the changes.

Thirdly, this study is based on the Brazilian context, so the conclusion cannot be generalized to other countries because of different social and cultural factors. For example, the USA has low ownership concentration, strict corporate governance practice, and high investor protection; In China, state ownership is an influential factor that cannot be ignored in corporate-related research. So in the future, a comparative study on other countries with different contextual characteristics could be interesting and provides more comprehensive implications.

Fourthly, in this study, the treatment group and control group are not balanced. Although we want to select the same number of companies for the same segment, however, sometime we cannot find enough candidate companies, so after the selecting process, the treatment group has 30 companies and the control group has 17 companis. The unbalanced part is highly

concentrated in energy sector, which may influence the result. So, in the future, we can consider changing the criteria, such as looking for relatively small companies that are not in the 200 most traded list, or accepting companies that from the different segments but belong to the same sub-sector.

Last but not least, this paper uses the traditional statistic model logit and probit, which are the most mature and widely used tools to find relationships between variables. However, recent development in machine learning gives us another way to research this problem. Since the 1990s, steady advances in digitization and cheap computing power enabled data scientists to stop building finished models and instead train computers to do so. Machine learning techniques like the neural network has its advantages like good at dealing with huge amount of data and do not need to set too many assumptions. So, in the future, it is worthy to use the neural network to continue the research and compare these two methods.

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