

THREE ESSAYS ON CORPORATE GOVERNANCE IN BRAZIL

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ABSTRACT

This thesis presents three essays on corporate governance, which contribute to the literature by examining the following issues: “Do State-owned enterprises have worse governance? Evidence from Brazil”; “Do cross-listed companies have better governance? Evidence from Brazil”; and “Does the governance of banks differ from nonfinancial firms? Evidence from Brazil”.

In the first essay, we analyse the governance practices of state-owned enterprises (SOE) and compare them with those of privately-owned enterprises (POE). Our findings document that SOEs have better governance than POEs. Our results reject the common assumption that SOEs have worse governance than POEs.

The second essay evaluates the governance of Brazilian companies that list shares abroad. We document that cross-listed companies adopt better governance than local peers, but the evidence is stronger for firms traded over the counter rather than on US stock exchanges. We also show that Brazilian cross-listings on US stock exchanges, which are required to adopt high regulation standards, do not improve governance practices.

The final essay examines the governance practices of Brazilian banks. Our findings show that the overall quality of governance is similar for banks and non-financial enterprises. We show that banks have better practices regarding board of directors, more concentrated ownership and fewer shareholders rights compared to non-financial firms. Furthermore, our evidence on bank governance has not changed significantly since the 2008 crisis.

Keywords: governance, state-owned enterprises, cross-listed firms, banks, Brazil.

DECLARATION

I, Andre Luiz Carvalho da Silva, confirm that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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DEDICATION

I would like to dedicate this thesis to my family. To my parents, Vicente and Juraci, for their undying love. To my beloved wife, Flavia, for her unconditional support and patience. To my children, Marina and Pedro, who enlighten my life every day.

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Chapter 1

Introduction

1.1. Motivation and overview of essays

Corporate governance is an important subject and has received a lot of attention from academics, market practitioners, and regulators. The literature on corporate governance usually covers different governance attributes, such as ownership, agency conflicts, board of directors, transparency, executive compensation, among other topics (Shleifer and Vishny, 1997).

This thesis presents three essays on corporate governance in Brazil, and contributes to the governance literature by examining the following issues: “Do State-owned enterprises have worse governance? Evidence from Brazil”; “Do cross-listed companies have better governance? Evidence from Brazil”; and “Does the governance of banks differ from nonfinancial firms? Evidence from Brazil”.

From a governance perspective, the Brazilian market provides interesting insights to answer these questions. First, Brazil has the 8th largest GDP in the world and the three types of companies studied in the essays (state-owned, cross-listed, and banks) have an important role in the country. Second, Brazil adopts the civil-law system, which provides worse governance and legal protection to investors when compared to developed countries (La Porta et al., 2000, 2002). Finally, Brazil has several firms listed on US stock exchanges and many of them belong to the state and are currently involved in corruption scandals and poor governance practices (Bloomberg, 2016; Financial Times, 2016).

We measure governance quality by computing a corporate governance index (CGI), which covers 20 governance items and is based on the governance literature

(Black et al., 2006; Leal and Carvalho, 2007). We also investigate the presence on “New Market”, created by the Brazilian stock exchange (B3) to attract enterprises with improved governance standards.

In the first essay, we analyse the governance of state-owned enterprises (SOEs), which represent 40% of GDP worldwide (World Bank, 2014). Most studies on governance of SOEs focus on their governance challenges, such as multiple goals (financial and/or social), political influence, and low disclosure (Borisova et al., 2012; Guedhami et al., 2009). However, much of the literature on the governance of SOEs examine isolated aspects of corporate governance or analyse short-dated panels (Bruton et al., 2015; Florio and Fecher, 2011; Grossi et al., 2015; Megginson and Netter, 2001).

The first essay fills this gap and examines various governance characteristics of Brazilian SOEs over a period of 16 years. Our hand-collected CGI data allows us to understand better the differences between the governance of SOEs and privately-owned enterprises (POEs). We take into account self-selection because corporate governance may affect the state’s ownership decision (Borisova et al., 2012; Grosman et al., 2016).

Our findings show that SOEs have better governance than POEs. At first sight, these results seem surprising because they contradict the international literature (Grosman et al., 2016; Grossi et al., 2015; Shleifer and Vishny, 1994). However, we argue that SOEs have better governance than POEs because the Brazilian regulation for SOEs is stricter than for POEs, and the number of governmental bodies monitoring SOEs is much larger than that for POEs.

The second essay examines the governance of cross-listed companies and compares it with that of domestic-listed enterprises. The corporate finance literature

shows the main benefits of cross-listing, such as increase of liquidity, diversification of investor base, decrease of cost of funding, and better governance (Berkman and Nguyen, 2010; Karolyi, 1998). Many studies document that the governance improves after cross-listing in developed countries (“bonding hypothesis”) because firms must comply (“bond”) with stricter securities laws (Doidge et al., 2004).

In contrast, Licht (2001, 2003) and Siegel (2005) show that cross-list companies raise capital abroad but avoid stricter governance rules (“avoiding hypothesis”). These authors argue that the enforcement of securities rules against foreign companies is not strong and many foreign companies do not comply with all securities and governance regulation.

Many Brazilian firms that list on US stock exchanges benefit from various exemptions, such as no requirement to have majority of independent board members and board committees (audit, nominating, and compensation). To our knowledge, this essay is the first to use a firm-level governance index to analyse these exemptions and multiple aspects of governance practices for cross-listed enterprises.

We show that cross-listed companies adopt better governance than domestic enterprises, which supports the bonding hypothesis. Moreover, cross-listed firms traded over the counter, which are not required to adopt stricter governance standards, have better governance than those traded on US stock exchanges, which is in line with the avoiding argument. When we analyse the governance attributes separately, cross-listed companies have better disclosure than domestic firms, but the practices regarding board of directors and shareholder rights are not statistically different between cross-listed and domestic peers..

In the third essay, we analyse the governance practices of banks, which have an important role worldwide. In Brazil, the banks represent 90% of GDP and have one

of the highest profitability in the world (The Banker, 2018; The Economist, 2018; The New York Times, 2015).

The governance literature usually excludes banks from their sample (Adams and Mehran, 2003, 2012). Although the number of studies on bank governance has increased since the financial crisis of 2008, most papers discuss theoretical issues related to banks such as complexity of activities, capital structure, and regulation (Becht et al., 2012; Caprio and Levine, 2002; De Haan and Vlahu, 2016; John, Masi and Paci, 2016; Laeven, 2013; Levine, 2004).

We extend the literature on governance of banks and use a firm-level governance index to compare empirically multiple aspects of governance between bank and non-financial enterprises. We document that the governance quality is not significantly different for banks and non-financial institutions. Banks have better practices regarding board of directors, more concentrated ownership and fewer shareholders rights when compared to non-financial firms. We also provide evidence that the governance of banks has not changed substantially after the 2008 crisis.

1.2. Thesis structure

This thesis uses the journal format allowed by Alliance Manchester Business School at the University of Manchester. This thesis is composed of three self-contained essays, each of which containing a separate introduction, literature review, presentation of data and methodology, discussion of results and robustness tests, conclusions, and reference list.

This thesis is structured as follows. The next chapter elaborates the first essay, which investigates the governance of state-owned enterprises. Chapter 3 presents the second essay, which examines the governance of Brazilian companies that list shares

in the US. Chapter 4 contains the third essay, which analyses the governance practices of Brazilian banks. Chapter 5 provides a conclusion of the major findings.

Furthermore, in the essays the terms “we” and “our” are used instead of “I” and “my” respectively to reflect that each essay is associated with working papers co-authored with my supervisors at Alliance Manchester Business School.

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Chapter 2

Do State-Owned Enterprises Have Worse Governance? Evidence from Brazil

Abstract

This essay analyses the governance of state-owned enterprises (SOEs) in Brazil, which have been plagued by corruption scandals recently uncovered in the press (Bloomberg, 2016; Financial Times, 2016). We consider various governance attributes of SOEs and non-state privately-owned enterprises (POEs) to construct a broad governance index. We find that SOEs have better governance than that of POEs. Our results seem surprising because they reject the common assumption that SOEs have worse governance than POEs. Our findings may be explained by the fact that the Brazilian regulation and external monitoring for SOEs are stricter than for POEs. We conclude that both Brazilian SOEs and POEs have poor governance practices.

2.1. Introduction

Even though privatizations have swept many countries historically, SOEs are important companies in several markets (Florio, 2013). According to the World Bank (2014), SOEs make 20% of the investments and represent 40% of GDP worldwide.

SOEs are associated with major challenges, which are different from those of privately-owned enterprises (POEs). Borisova et al. (2012) show that SOEs usually have various objectives (financial and/or social returns), suffer political influence, have lower transparency and worse governance. The governance of SOEs has also been studied by multinational agencies (OECD, 2005; World Bank, 2014).

Black et al. (2006) argue that corporate governance should be analysed through multiple aspects and not only through isolated attributes. However, much of the literature on SOEs study specific governance attributes over short time periods (Bruton et al., 2015; Florio and Fecher, 2011; Grosman et al., 2016; Grossi et al., 2015; Megginson and Netter, 2001; Papenfuß, 2014).

Our essay fills this gap and compares several governance aspects for Brazilian SOEs and POEs over a period of 16 years. The Brazilian case study is important, because many SOEs are being accused of poor governance and corruption (Bloomberg, 2016; Financial Times, 2016).

We evaluate several governance aspects through a corporate governance index (CGI), which is calculated based on the finance literature (Black et al., 2006; Leal and Carvalhal, 2007). We also consider the presence on “New Market” (NM), created by the Brazilian stock exchange (B3) to foster better governance.

It is important to highlight that both governance measures (CGI and NM listing) are complementary because they do not contain the same best governance practices. Our hand-collected data allow us to analyze the governance of SOEs in more detail

than previous papers. We also control for self-selection bias (Borisova et al., 2012; Grosman et al., 2016).

Surprisingly, our results suggest that SOEs have better governance than POEs. The CGI and its four sub-indexes of SOEs are significantly higher than those of POEs. Further, the percentage of SOEs listed on NM is similar to that of POEs, although POEs are more likely to list on stricter NM segments.

These results contradict the international evidence on poor governance of SOEs (Grosman et al., 2016; Grossi et al., 2015; Shleifer and Vishny, 1994, among others). However, since the Brazilian regulation for SOEs is stricter than for POEs, and the number of governmental bodies monitoring SOEs is much larger than that for POEs, the governance practices of SOEs should be better than those of POEs. Furthermore, we claim that the governance of POEs is so poor in Brazil that its quality needs to be improved together with that of SOEs.

2.2. Literature review

2.2.1. Governance of SOEs

Since the seminal work of Jensen and Meckling (1976), there have been many researches on agency theory and on the importance of an efficient corporate governance system to reduce conflicts of interest in the firm. In general, the conflicts and agency problems arise between shareholders, managers, and creditors. In countries with high ownership concentration, such as Brazil, agency conflicts can also occur between large and minority investors (Claessens et al., 2002).

Many studies analyse the agency problems by the ownership and origin of the controlling shareholder (family, state, institutional investors, foreigners) and

conclude that control concentration affects negatively firm valuation (La Porta et al., 2002).

Shleifer and Vishny (1994) show that SOEs have poor governance because they are owned by the population of a country but are controlled by politicians. Moreover, SOEs may pursue political and social goals that may conflict with financial returns, such as reducing unemployment, increasing wages, controlling inflation, giving subsidies, political donations, and bribes (Bennedsen, 2000; Boubakri et al., 2008; John et al., 2008; Shleifer, 1998; Vickers and Yarrow, 1991).

Information asymmetry problems are also very common in SOEs, because politicians appoint managers to hide value-destroying activities, manipulate accounting results, and decrease the transparency of information (Boycko et al., 1996; Bushman et al., 2004). Furthermore, SOEs usually operate in industries with limited competition, are not exposed to market monitoring, have low efficiency (Chen et al., 2011a,b) and high cost of capital (Ben-Nasr et al., 2012).

2.2.2. Empirical evidence

Several studies document that privatization increases firm performance (Chen et al., 2017; Megginson and Netter, 2001; Megginson and Sutter, 2006). Grosman et al. (2016) analyze more than 100 papers on SOEs in developing countries and show that SOEs usually have worse governance practices. Borisova et al. (2012) show that the governance and transparency of SOEs are weak.

Bell et al. (2014) and Khanna et al. (2004) show that the governance of SOE may be enhanced by listing shares in developed countries with stricter governance rules and framework. Borisova et al. (2012) document that SOEs have good governance practices in common-law countries and poor standards in civil-law systems. Brazil

adopts the civil-law structure, which provides worse legal protection to investors and creditors.

Guedhami et al. (2009) report that SOEs tend not to engage large auditing companies, whereas Liu and Subramaniam (2013) document that the audit remuneration is smaller in SOEs than in POEs. Moreover, SOE performance increases with the number of independent directors (Liu et al., 2015).

Several studies analyze the causes and impacts of corruption (Fisman and Svensson, 2007; Frye and Iwasaki, 2011; Glaeser and Saks, 2006; Grosman et al., 2016; Nguyen and Van Dijk, 2012; Shleifer and Vishny, 1993; Svensson, 2003).

The state ownership is positive for SOEs because it reduces uncertainties during international crises, minimize the firm's credit risk, and increase the access to debt and equity markets (Agrawal and Knoeber, 2001; Borisova and Megginson, 2011; Faccio, 2006; Hillman et al., 2009; Khwaja and Mian, 2005). Beuselinck et al. (2017) document that the firm value of SOEs decreases less than that of POEs during financial crises.

There is also evidence that political connections increase firm value, reduce cash-flow mismatches and expand access to credit (Brandt and Li, 2003; Faccio et al., 2006; Fan et al., 2008; Fisman, 2001; Sapienza, 2004; Xu et al., 2013). The donations to politicians and the appointment of politicized boards and senior management are common means of political connections. However, political connections can also affect firm performance negatively (Danis et al., 2010; Fan et al., 2007; Sun et al., 2012; Fan et al., 2007).

2.2.3. Research hypotheses

There is empirical evidence that SOEs have worse governance and higher asymmetry problems than POEs (Borisova et al., 2012; Grosman et al., 2016; Shleifer and Vishny, 1994). Our goal is to investigate the governance differences between SOEs and POEs, and not the relationship between state ownership, firm performance, and valuation. Our first hypothesis is:

H1a: The governance of SOEs is worse than that of POEs.

Although many studies report the benefits of privatization of SOEs (Chen et al., 2017; Megginson and Netter, 2001), the state ownership may have a positive impact on corporate performance and governance by minimizing uncertainties during crises, reducing the firm's risk, and broadening the access to funds (Beuselinck et al., 2017; Borisova and Megginson, 2011; Hillman et al., 2009). Furthermore, as explained in section 2.3, the regulation and monitoring of SOEs are stricter than for POEs in Brazil, which may improve the governance of state ownership. This reasoning leads to our second hypothesis:

H1b: The governance of SOEs is similar or better than that of POEs.

2.3. Data sources and description

We study 327 Brazilian companies (23 SOEs) from 2000 to 2015. We select all firms traded on the Brazilian stock exchange (B3) with public information, and build an unbalanced panel that represents 94% of listed companies in Brazil.

We compute a modified version of the corporate governance index (CGI) proposed and empirically tested by Leal and Carvalhal (2007). We select a smaller

number of questions (20 instead of 24), focusing on the items that are more statistically significant to explain the governance quality in Brazil.

The index contains questions that can be answered ‘yes’ or ‘no’ (1 and 0, respectively) using public sources (see Table 2.4). The CGI is the sum of all 20 items (reported on a 0–10 scale) and is grouped into 4 sub-indexes: disclosure, board, ownership, and shareholder’s rights. We follow the governance literature and compute an unweighted index (Black et al., 2006). We also implement different weighting schemes, but our empirical results do not change significantly.

We also employ other governance metrics. We investigate whether the companies list on New Market (NM), created by the Brazilian stock exchange to improve corporate governance in Brazil. Depending on the degree and quality of governance practices, NM has three segments: Levels 1, 2 and 3. Level 1 requires higher liquidity and disclosure such as the publication of a code of ethics, related party transactions, and a minimum liquidity of 25% of capital. To list on Level 2, companies must comply with all Level 1 requirements plus at least 20% independent directors, bid rule for minority investors after a change of control, arbitration, among other practices. On Level 3, the company must issue only voting shares in addition to all Levels 1 and 2 requirements.

Besides CGI, we analyse both listing on NM as a whole and listing on the stricter segments (Levels 2 and 3). The CGI and NM listing are complementary governance measures, but CGI can be considered a more complete proxy, because it contains both Brazilian and international best governance practices. We obtain financial and accounting data from Bloomberg, and hand-collect CGI from the Brazilian Securities Commission (CVM) website.

In Brazil, SOEs must comply with stricter regulation and are monitored by more governmental bodies than POEs. In general, SOEs are supervised and subject to the regulation by the President of Brazil's Cabinet, Brazilian Congress, Brazilian Securities Commission (CVM), Brazilian Central Bank (BACEN), Federal Court of Auditors (TCU), Office of the Comptroller General (CGU), Federal Prosecution Service (MPF), among others. In contrast, POEs are monitored by only CVM and BACEN. Furthermore, SOEs must comply with the rules established by The Inter-ministerial Committee on Corporate Governance and Administration of Federal Participations (CGPAR), which was created in 2007 to foster better governance practices for SOEs. These different requirements can influence the governance quality of SOEs and POEs, as measured by CGI and NM listing.

We calculate the variables CGI (governance index), NM (New Market), NM23 (NM's Levels 2 and 3), P/B (price-to-book as a valuation proxy), VOT (percentage of voting concentration), LEV (leverage), ROA (return on assets as a performance proxy), SIZE (firm size), GRO (sales growth), and FIX (fixed assets). Appendix 2.1 shows the definition of each variable.

Table 2.1 shows the summary statistics. We can see that 7% of the companies in the sample are SOEs. The average CGI is 5.42 (out of 10) and the minimum and maximum CGI are 1.00 and 9.50, respectively. The average CGI is consistent with other governance indexes calculated for Brazil: 3 out of 6 (La Porta et al., 1998) and 61.91 out of 100 (Doidge et al., 2007). The governance index is much smaller in Brazil (3 out of 6) than in the US and UK (5 out of 6).

Regarding CGI sub-indexes, the average score is higher for disclosure (6.57) followed by board of directors (6.09), shareholder rights (5.19), and ownership structure (3.27). Only 38% of the companies are listed on NM (Levels 1, 2 and 3)

and 28% of them are listed on Levels 2 and 3. Further, the ownership is very concentrated, and the controlling shareholder has 56.20% of the votes on average. These results indicate that overall governance practices can be much improved in Brazil. Regarding the control variables, on average, firms are profitable (ROA of 4.04%, growth of 14.88%, and P/B of 1.56), and have moderate leverage (58.43%).

Table 2.1 – Summary Statistics

Variable	Average	Median	Minimum	Maximum	Std Deviation
SOE	0.07	0.00	0.00	1.00	0.25
CGI	5.42	5.25	1.00	9.50	1.89
DISCL	6.57	7.50	0.00	10.00	2.60
BOARD	6.09	6.00	0.00	10.00	2.71
OWN	3.27	3.33	0.00	8.75	2.33
RIGHT	5.19	5.00	0.00	10.00	2.62
NM	0.38	0.00	0.00	1.00	0.49
NM23	0.28	0.00	0.00	1.00	0.45
P/B	1.56	1.16	0.00	7.20	1.29
VOT	56.20	54.00	0.10	100.00	27.11
LEV	58.43	59.73	0.01	99.63	21.49
ROA	4.04	3.40	-30.70	35.20	6.78
SIZE	7.70	7.68	1.27	14.18	1.87
GRO	14.88	12.96	-51.69	77.35	16.88
FIX	38.93	40.87	0.00	99.87	25.92

Notes: descriptive statistics for our sample of 327 Brazilian companies from 2000 to 2015. The definition of each variable is described in Appendix 2.1.

We classify the firms into two groups: SOEs and POEs. Following Claessens et al. (2002), we determine the ultimate controlling shareholder. The company is classified as SOE if the state owns at least 50% of the voting capital. The cut-off point of 50% is higher than 10% and 20% used in studies for developed countries because the ownership is much more concentrated in Brazil than in developed countries (La Porta et al., 1998, 1999).

Table 2.2 shows the average and median statistics for SOEs and POEs. The average (median) CGI is 6.20 (6.25) for SOEs and 5.34 (5.18) for POEs. The CGI

differential between both groups is significant at 1% and similar results are reported for each CGI dimension (DISC, BOARD, OWN, and RIGHT).

Table 2.2 - Characteristics of State and Privately-Owned Enterprises

Variable	SOEs		POEs		P-value of differences	
	Average	Median	Average	Median	Average	Median
CGI	6.20	6.25	5.34	5.18	0.00***	0.00***
DISCL	7.23	7.50	6.51	7.50	0.00***	0.00***
BOARD	7.21	8.00	5.99	6.00	0.00***	0.00***
OWN	3.62	3.33	3.20	3.33	0.01***	0.02**
RIGHT	6.10	6.00	5.10	5.00	0.00***	0.00***
NM	0.41	0.00	0.38	0.00	0.35	0.35
NM23	0.15	0.00	0.29	0.00	0.00***	0.00***
P/B	1.20	0.90	1.58	1.20	0.00***	0.00***
VOT	73.28	71.65	54.91	52.70	0.00***	0.00***
LEV	65.15	61.51	58.17	59.66	0.00***	0.00***
ROA	2.63	1.93	4.27	3.70	0.00***	0.00***
SIZE	9.58	9.70	7.61	7.61	0.00***	0.00***
GRO	11.79	10.52	14.94	12.99	0.06*	0.05**
FIX	34.28	35.37	38.59	40.20	0.05**	0.05**

Notes: descriptive statistics for SOEs and POEs. The definition of each variable is described in Appendix 2.1. The table documents the coefficients, p-values, and highlights the significance levels of the differences between SOE and POE (*** for 1%, ** for 5% and * for 10%).

Our results are different when we measure governance practices through NM and NM23. The percentage of firms on NM is similar for SOEs (41%) and POEs (38%) and the difference is not statistically significant. In contrast, when we analyse only listing on Levels 2 and 3, the percentage is higher for POEs (29%) than SOEs (15%), and the difference between both groups is significant at 1%. These results indicate that SOEs and POEs have similar presence on New Market as a whole, but POEs are more likely to list on the stricter segments.

As for control variables, SOEs have lower P/B, ROA and growth when compared to POEs and most differences are statistically significant at 1% or 5%. Furthermore, SOEs are bigger, have more leverage, fewer tangible assets, and larger ownership than POEs.

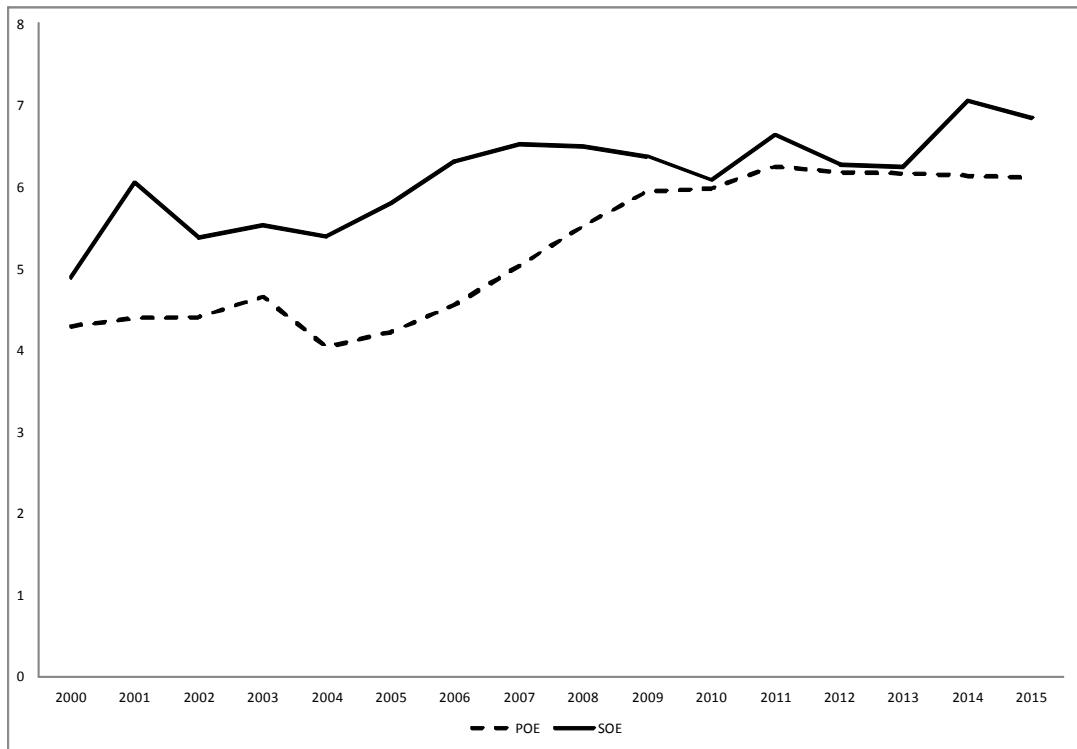
The Brazilian SOEs operate in four industries: banking (38%), energy (37%), oil & gas (7%), and telecommunication (3%). These economic sectors are considered strategic by the government of many countries (Boubakri et al., 2017; Megginson et al., 1994, 2004) because of their systemic importance to the economy (banking), energy security (oil & gas), public goods and service (telecommunication, electricity, transportation), among others. Since many SOEs are from the banking sector, we follow the corporate finance literature and also exclude banks from our sample as a robustness test.

Figure 2.1 shows the average CGI of SOEs and POEs from 2000 to 2015. We can see that the average CGI of SOEs is always higher than that of POEs. In 2000, the average CGI of SOEs was 4.88, significantly greater than 4.28 for POEs. In 2015, the average CGI of SOEs increased to 6.84, whereas that of POEs increased to 6.10, and the difference was significant at 1%.

Figure 2.2 shows the percentage of SOEs and POEs listed on NM from 2000 to 2015. We can see that the SOEs listed more on NM from 2000 to 2011, and POEs started to have more presence on NM after 2012. In 2001, 14% of SOEs were listed on NM, compared to only 4% of POEs. In 2011, the percentage of companies listed on NM was around 56% for both SOEs and POEs. In 2015, there was more presence of POEs (64%) than SOEs (56%) on NM.

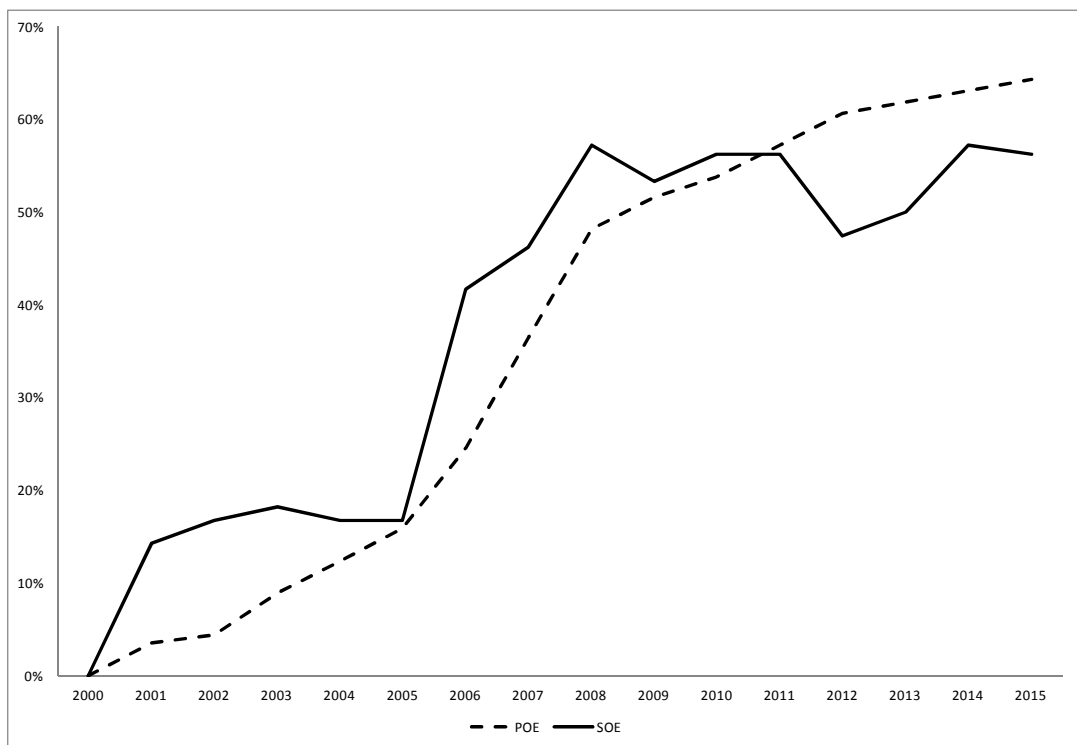
Table 2.3 presents the correlations among variables. The correlation of SOE with CGI is positive (0.12) and significant at 1%. The CGI sub-indexes also have positive and significant correlations with SOE (from 0.05 to 0.11). Moreover, the correlation of SOE is positive with NM (0.02) and negative with NM23 (-0.08), but only the latter is statistically significant.

Figure 2.1 – Corporate Governance Index of SOEs and POEs



Notes: average corporate governance index of SOEs and POEs from 2000 to 2015.

Figure 2.2 – Percentage of SOEs and POEs on New Market



Notes: percentage of SOEs and POEs listed on New Market from 2000 to 2015.

Table 2.3 - Correlations among Variables

Variable	SOE	CGI	DISCL	BOARD	OWN	RIGHT	NM23	NM	P/B	VOT	LEV	ROA	SIZE	GRO	FIX
SOE	1.00														
CGI	0.12***	1.00													
DISCL	0.07***	0.78***	1.00												
BOARD	0.11***	0.76***	0.47***	1.00											
OWN	0.05**	0.54***	0.28***	0.14***	1.00										
RIGHT	0.10***	0.77***	0.39***	0.45***	0.36***	1.00									
NM23	-0.08***	0.72***	0.47***	0.49***	0.43***	0.67***	1.00								
NM	0.02	0.71***	0.58***	0.55***	0.23***	0.60***	0.80***	1.00							
P/B	-0.07***	0.27***	0.21***	0.23***	0.12***	0.20***	0.20***	0.17***	1.00						
VOT	0.17***	-0.38***	-0.21***	-0.20***	-0.31***	-0.41***	-0.40***	-0.34***	-0.12***	1.00					
LEV	0.08***	0.00	0.01	0.06***	-0.02	-0.04	-0.08***	-0.01	0.03	0.08***	1.00				
ROA	-0.06***	0.02	0.08***	0.02	-0.03	-0.04	-0.01	-0.02	0.32***	0.00	-0.36***	1.00			
SIZE	0.26***	0.41***	0.50***	0.42***	0.00	0.14***	0.16***	0.36***	0.12***	-0.03	0.36***	0.01	1.00		
GRO	-0.04	0.17***	0.19***	0.06***	0.16***	0.11***	0.11***	0.08***	0.17***	-0.08***	0.08***	0.14***	0.11***	1.00	
FIX	-0.04	0.00	0.06***	0.03	0.02	-0.12***	-0.04	-0.05**	0.01	0.00	-0.22***	-0.04	0.00	0.14***	1.00

Notes: the table documents the correlations and highlights the significance levels (***) for 1%, (**) for 5% and (*) for 10%). The definition of each variable is described in Appendix 2.1.

The correlations of SOE are positive with SIZE, LEV, and VOT, and are negative with P/B, ROA, GRO, and FIX. These results suggest that SOEs are bigger, have better governance, more debt, higher ownership, fewer fixed assets, lower valuation, profitability, and growth compared to POEs.

Table 2.4 shows the proportion of companies that answer “yes” to each CGI question in 2015. The governance SOEs is much better than that of POEs. Overall, SOEs score higher in 14 out of 20 questions, such as annual report, bid rights for minority shareholders, higher free-float, absence of indirect control structure, shareholder agreement and loan to shareholders, and better board practices (different CEO and Chairman, board committees, external directors, board size and tenor).

Table 2.4 – Proportion of Companies Answering “Yes” to Governance Questions

Question	POE	SOE
<i>Disclosure</i>		
1. Are there policies for related party operations?	72%	75%
2. Is the detailed executive compensation disclosed publicly?	97%	100%
3. Is there only unqualified auditor opinion in the last 5 years?	87%	69%
4. Is the annual report disclosed publicly?	45%	81%
5. Are the investor presentations disclosed publicly?	73%	56%
6. Is there a governance section in the annual report?	77%	88%
<i>Board of Directors</i>		
7. Is there no CEO duality (different Chairman and CEO)?	88%	100%
8. Are there board committees?	48%	56%
9. Are there only external directors (except CEO)?	44%	94%
10. Is the board size between 5 and 11?	84%	88%
11. Is the board tenor between 1 and 2 years?	87%	94%
<i>Ownership Structure</i>		
12. Is there a maximum limit (i.e.20%) for non-voting shares?	55%	50%
13. Is the largest shareholder’s control equal to his ownership?	54%	44%
14. Is there no loan to controlling shareholders?	7%	31%
15. Is shareholder participation facilitated in the annual meetings?	33%	19%
<i>Shareholder’s Rights</i>		
16. Are there voting rights to all shareholders in major subjects?	64%	56%
17. Is there bid rule to minority investors in control transfer?	65%	100%
18. Is there no indirect structure?	59%	88%
19. Is there no shareholder agreement that constrains votes?	65%	94%
20. Is the share liquidity higher than 25% of total capital?	70%	75%

In contrast, POEs tend to have better practices in only six attributes, such as unqualified auditor opinion, disclosure of corporate presentations, more presence of voting shares, and facilitation of shareholder participation in meetings.

2.4. Multivariate results

We estimate the model below to evaluate the effect of state ownership on governance quality:

$$CGI_{i,t} = \beta_0 + \beta_1 SOE_{i,t} + \beta_2 X_{i,t} + \mu_{i,t}$$

where $CGI_{i,t}$ is the governance index of enterprise i at year end t , $SOE_{i,t}$ indicates state-owned enterprises, $X_{i,t}$ represents enterprise's characteristics, and $\mu_{i,t}$ accounts for the residual term.

We estimate ordinary least squares (OLS) together with fixed-effects (FE) and self-selection models to account for endogeneity (Campa and Kedia, 2002; Heckman, 1979). We add industry and year dummies (not reported), and calculate clustered robust standard errors (Petersen, 2009; Thompson, 2011).

Table 2.5 reports the OLS and FE specifications. We can note that SOE is positive: 0.23 for OLS and 0.54 for fixed-effects. Although SOE is not significant in OLS estimation, it is highly significant at 1% in fixed-effects. This finding supports our second hypothesis and reveals that the governance of SOEs is either similar to that of POEs (OLS) or significantly better than that of POEs (fixed-effects). Furthermore, CGI is negatively associated with ownership and leverage, and positively related to size, profitability and growth.

It is important to highlight that our fixed-effects method removes any time-invariant firm characteristic and excludes firms that do not change their status over

time. Therefore, we focus only on firms that were SOEs and then became POEs (and vice-versa), so our results may be associated with this smaller transition sample. As a robustness check, we estimate alternative models adding industry and year dummies, and the results (not reported) do not change significantly.

Table 2.5 - State Ownership and Governance

Variable	OLS	Fixed-Effects	Self-Selection
SOE	0.23 (0.14)	0.54*** (0.00)	0.81*** (0.00)
VOT	-0.03*** (0.00)	-0.02*** (0.00)	-0.01*** (0.00)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.10)
SIZE	0.42*** (0.00)	0.35*** (0.00)	0.28*** (0.00)
ROA	0.00 (0.84)	0.01** (0.03)	0.02** (0.03)
GRO	0.01*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Mills			-0.07 (0.36)
Obs	2,205	1,337	1,337
Adj R ²	0.35	0.49	0.42

Notes: regression models for corporate governance (CGI) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 2.1.

Table 2.6 shows the probit model with the determinants of SOEs. We create a “strategic industry” dummy that indicates if the firm operates in banking, energy, oil & gas, and telecommunication. We select these industries because they represent 85% of Brazilian SOEs. We use strategic industry as an instrument for SOE, because SOEs usually operate in strategic sectors and there is no conclusive evidence that these sectors should have better governance than other industries (Megginson et al., 1994, 2004). In fact, our strategic industry dummy has a low correlation with CGI (0.01) and significant correlation with SOE (0.33).

The model classifies 97% of the data correctly. The strategic industry dummy is positive and significant at 1% and shows that firms operating in strategic sectors are more likely to be SOE.

Table 2.6 - Probit Model for State Ownership

Variable	SOE
VOT	0.01 (0.14)
LEV	-0.02*** (0.00)
SIZE	0.56*** (0.00)
ROA	-0.04*** (0.01)
GRO	-0.01 (0.12)
FIX	0.03*** (0.00)
Strategic industry	0.52*** (0.01)
Obs	1,474
McFadden R ²	0.51
% Correct	97.15

Notes: probit model for state ownership (SOE) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 2.1.

The coefficients of SIZE and FIX, are positive and significant at 1%, which suggest that state shareholding is related to bigger firms and more fixed assets. The coefficients of LEV and ROA are significantly negative and indicate that SOEs tend to be less profitable and leveraged.

The last column of Table 2.5 shows the self-selection model. We add the inverse mills in the governance regression using Heckman (1979) model. We note that SOE is positive (0.81) and significant at 1%. The inverse mills are not statistically significant, which indicate no self-selection bias. In summary, our econometric specifications indicate that SOEs have better governance than POEs.

2.5. Extensions and robustness checks

Table 2.7 reports the coefficients of SOE using different governance metrics as dependent variables (CGI and its four sub-indexes). All SOE coefficients are positive and significant at 1%, which show that SOEs have better governance than POEs. The control variables are omitted but their coefficients do not change significantly from those in Table 2.5.

Table 2.7 - State Ownership and Governance Dimensions

Method	CGI	DISC	BOARD	OWN	RIGHT
Fixed-Effects	0.54*** (0.00)	0.51*** (0.00)	0.43*** (0.00)	0.42*** (0.00)	0.48*** (0.00)
Self-Selection	0.81*** (0.00)	0.47*** (0.00)	0.39*** (0.00)	0.37*** (0.00)	0.43*** (0.00)

Notes: fixed-effects and self-selection models for corporate governance (CGI and its four sub-indexes) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 2.1.

Table 2.8 reports the probit models for NM and NM23. The SOE coefficient is not significant for NM and is negative for NM23 (significant at 1%). These results indicate that SOEs and POEs have the same likelihood to list on NM, but POEs are more likely to list on the stricter segments Levels 2 and 3. This finding of NM23 seems contrasting with that of CGI, but we argue that CGI is a better governance proxy because it captures international practices that are not present on NM, which is more focused on Brazilian requirements.

We can see that NM and NM23 are negatively associated with leverage, ROA, and voting concentration, which indicates that leveraged, profitable, and controlled firms tend not to list on NM. In contrast, firm size and growth are positively related

to NM and NM23, suggesting that large and fast-growing companies tend to list on New Market.

Table 2.8 - Probit Models for Listing on New Market

Variable	NM	NM23
SOE	0.20 (0.30)	-0.56*** (0.00)
VOT	-0.02*** (0.00)	-0.03*** (0.00)
LEV	-0.01*** (0.00)	-0.01*** (0.00)
SIZE	0.56*** (0.00)	0.30*** (0.00)
ROA	-0.01* (0.10)	-0.01 (0.13)
GRO	0.01*** (0.01)	0.01*** (0.00)
Obs	2,287	2,287
McFadden R ²	0.39	0.39
% Correct	81.07	84.70

Notes: probit models for listing on New Market as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 2.1.

Table 2.9 reports the models for CGI excluding banks from our sample. The results are substantially the same as those in previous tables. We can see that SOE is positive and significant at 1% for most econometric models (except OLS). Overall Brazilian SOEs have better governance than POEs, and this result is robust using CGI, its four sub-indexes and NM listing.

Table 2.9 - State Ownership and Governance Excluding Banks

Variable	OLS	Fixed-Effects	Self-Selection
SOE	0.25 (0.11)	0.55*** (0.00)	0.81*** (0.00)
VOT	-0.03*** (0.00)	-0.02*** (0.00)	-0.01*** (0.00)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.10)
SIZE	0.41*** (0.00)	0.35*** (0.00)	0.28*** (0.00)
ROA	0.00 (0.87)	0.01** (0.02)	0.02** (0.03)
GRO	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Mills			-0.07 (0.36)
Obs	2,190	1,322	1,322
Adj R ²	0.35	0.49	0.42

Notes: regression models for corporate governance (CGI) as dependent variable excluding banks from the sample. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 2.1.

2.6. Conclusion

The literature on corporate governance of SOEs usually evaluate specific aspects of governance or perform analyses with cross-sectional data or short-dated panels (Grosman et al., 2016; Grossi et al., 2015).

This essay contributes to the governance literature by analysing Brazilian SOEs, which have been involved in corruption scandals recently. We measure governance quality using a firm-level index that captures practices based on local and international governance standards. We show that SOEs have better governance than POEs in Brazil, and our findings are robust to different governance proxies and for self-selection.

This essay has a few limitations. We study one country (Brazil), and analyze only SOEs listed on stock exchange, which may have better governance than non-listed

SOEs. Moreover, our focus is on the difference in corporate governance between SOEs and POEs and not on the relation between state ownership and firm value.

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Appendix 2.1 – Definition of Variables

Variable	Definition
CGI	Leal and Carvalhal (2007)'s modified corporate governance index at year end
DISCL	CGI sub-index for disclosure at year end
BOARD	CGI sub-index for board of directors at year end
OWN	CGI sub-index for ownership structure at year end
RIGHT	CGI sub-index for shareholder rights at year end
NM	Dummy variable indicating if the firm lists on New Market at year end
NM23	Dummy variable indicating if the firm lists on NM's Levels 2 and 3 at year end
P/B	Price to book equity at year end
VOT	Controlling shareholder's voting capital at year end (in %)
LEV	Debt to asset at year end (in %)
ROA	Net income to asset at year end (in %)
SIZE	Asset size (log) at year end
GRO	Mean revenue growth in the previous three years (in %)
FIX	Fixed to total asset at year end (in %)

Notes: description of variables. The financial and accounting data are obtained in Bloomberg database.

Chapter 3

Do Cross-Listed Companies Have Better Governance? Evidence from Brazil

Abstract

The objective of this essay is to evaluate whether Brazilian companies that cross-list shares have better governance practices than domestic-listed enterprises. From an empirical perspective, the Brazilian market is of particular interest since it has one of the largest number of liquid American Depositary Receipts (ADR) in the world. Moreover, many Brazilian firms with ADRs on US stock exchanges have been investigated for corruption and poor governance (Bloomberg, 2016; Financial Times, 2016). We compute a firm-level governance index containing different governance attributes. We document that cross-listed companies have better governance than domestic firms, but the evidence is stronger for firms with ADRs traded over the counter rather than on stock exchanges. We also indicate that Brazilian companies do not improve governance practices after listing on US stock exchanges. These findings seem surprising, given that US stock exchanges require increased disclosure and governance standards. Our results support both the bonding and avoiding hypotheses in the context of the Brazilian market..

3.1. Introduction

Many domestic firms list their shares abroad. According to the World Federation of Exchanges (2017), there were 3,391 foreign cross-listings at the end of 2017, which represented approximately 7% of the number of listed companies and 11% of share trading worldwide.

The cross-listing phenomenon has attracted attention from academics and policy makers over the last decades (Ghadhab, 2016; Karolyi, 1998, 2006, 2012). The empirical literature has explored the main benefits of cross-listing: reduction of the cost of funding, more access to international markets, diversification of investor base, increase of stock liquidity, better investor protection, improvement of market exposure, and prestige (Berkman and Nguyen, 2010; Doidge et al., 2004; Karolyi, 1998).

Many studies show the improvement of governance practices after cross-listing on stock exchange of developed countries such as the US (“bonding hypothesis”). According to this hypothesis, cross-listed firms comply (“bond”) with stricter securities laws and are subject to higher monitoring from the market, thereby reducing agency costs (Coffee, 1999, 2002; Stulz, 1999).

On the other hand, the bonding hypothesis has been challenged in the literature. Licht (2001, 2003) and Siegel (2005) argue that the enforcement of securities regulation by the Securities and Exchange Commission (SEC) is weak regarding foreign firms. Furthermore, Licht (2001) points out that foreign enterprises have several exemptions from securities and governance regulation when compared to US listed firms and concludes that foreign companies list shares in the US in order to raise cheaper capital and increase their visibility, and not to enhance governance practices. In Section 3.3 we present the main exemptions for Brazilian cross-listed

companies. For example, unlike US listed firms, Brazilian firms are not required to set up an audit committee and a majority of independent directors.

Licht (2003) proposes the “avoiding hypothesis” stating that foreign companies try to avoid stricter governance rules where possible. Their main goal to cross-list abroad is to access the international market at a lower cost of capital. In this sense, improving governance practices is a second effect when compared to cheaper finance. This hypothesis therefore predicts that cross-listings do not improve governance.

Given the above theoretical arguments, the effect of cross-listing on governance quality is an empirical question. One of the challenges is how to measure corporate governance considering that there are various governance practices that complement or substitute each other. Klapper and Love (2004) argue that the analysis of governance practices should be done through multiple attributes and not isolated factors.

Although there is a large literature on cross-listing, most studies perform multi-country analyses or evaluate specific countries using cross-sectional data or short-dated panels focusing on isolated aspects of corporate governance (Karolyi, 1998, 2006, 2012).

This research fills this gap and contributes to international cross-listing literature by comparing various governance attributes for Brazilian companies that list shares in the US and those that list only domestically. Several aspects make our study relevant to the cross-listing research.

First, Brazil is the country with one of the largest number of sponsored ADRs and represents a significant part of the traded volume of ADRs. According to the World Federation of Exchanges (2017) and J.P. Morgan Chase & Co (2017), there were 83

Brazilian companies with ADRs: 27 on New York Stock Exchange (NYSE) and 56 over the counter (OTC). These ADRs represented 25% of the 334 listed companies in Brazil at the end of 2017. Only three countries have more sponsored ADRs than Brazil (141 in China, 131 in Australia, and 119 in the United Kingdom). Most interestingly, the liquidity of the 27 Brazilian ADRs on NYSE represented 27% of the total volume traded in dollars considering all ADRs listed on US stock exchanges from various countries from January to December 2017 (J.P. Morgan Chase & Co, 2017).

Second, many Brazilian companies listed on US stock exchanges are currently involved in corruption scandals, and their poor governance practices have been investigated by Brazilian and foreign authorities (Bloomberg, 2016; Financial Times, 2016).

Third, our sample is larger than that used in previous papers. Our analysis of a greater number of Brazilian ADRs during a longer period (2000 to 2015) allows us to examine a comprehensive panel dataset of cross-listed companies. We evaluate a total of 75 Brazilian firms with ADRs, a number much larger than the total number of Brazilian firms typically analysed in previous studies, which is usually small and ranges from 10 to 30 firms because they perform cross-country analysis and are not focused on Brazil (Bailey et al., 2006; Fernandes et al., 2010; Ghadhab and Hellara, 2016; Vázquez and Jiménez, 2016).

Since there are four types of ADRs (Levels 1, 2, 3, and 144A), we distinguish them according to their disclosure and governance requirements. ADR Levels 1 and 144A are traded over the counter (OTC) and by qualified institutional investors, respectively, and are exempt from US registration and governance requirements. In contrast, ADR Levels 2 and 3 are traded on US stock exchanges (the latter allows

primary public offerings) and have the same disclosure and governance requirements as for US firms.

Since governance standards differ significantly between the US and Brazil, many Brazilian firms benefit from various SEC and NYSE exemptions (please see section 3.3). Since the companies must disclose in their annual report the main governance differences when compared to US listed firms, our study is able to perform a detailed analysis of the differences in firm-level governance practices and evaluate whether the SEC and NYSE exemptions for US cross-listings affect the governance of Brazilian cross-listed firms.

We compute a corporate governance index (CGI) with multiple and diversified attributes based on the governance literature (Black et al., 2006; Leal and Carvalhal, 2007). The CGI contains 20 governance questions that can be answered objectively, and cover four dimensions: disclosure, board, ownership, and shareholder's rights.

As a robustness check, we also use the listing on Brazilian New Market (NM) as another governance metric. The NM is a governance segment on the Brazilian stock exchange that requires stricter disclosure and investor protection rules. Although there is some overlap between CGI and NM, most governance attributes are different because CGI covers international governance standards that are not necessarily present in Brazil. Therefore, the use of both variables as complementary governance metrics provides a deeper understanding on governance of cross-listed companies when compared to previous studies.

Our research may be subject to the possibility of endogeneity and self-selection bias, since cross-listings can affect and be affected by the firms' governance (Doidge et al., 2004; Karolyi, 2012) and by other unobserved characteristics. To control this

issue, we use Heckman's (1979) approach, which has been vastly used in cross-listing research (see Doidge et al., 2004; Fresard and Salva, 2010; Kusnadi, 2015).

We document that cross-listed companies have better governance than local enterprises, which supports the bonding hypothesis. However, this evidence is mainly driven by Brazilian firms traded on US OTC that do not require stricter governance rules. Surprisingly, we show that the governance practices of firms that have ADRs traded over the counter (Levels 1 and 144A) are better than those of ADRs traded on US stock exchanges (Levels 2 and 3), which is line with the avoiding hypothesis.

When we analyse each governance sub-index separately, the results vary according to the governance attributes. Cross-listed companies have better disclosure when compared to domestic firms, but there is no significant difference between board practices across companies. The ownership practices are better in firms with OTC-traded ADRs and worse in firms with ADRs on US stock exchanges compared to domestic companies. We also document that cross-listed companies do not grant more shareholder rights than domestic firms.

Overall, our findings indicate that firms with ADRs traded over the counter have better governance practices than those firms listed on US stock exchanges and domestically. This evidence is robust to various econometric specifications and governance metrics. Our evidence seems to support both the bonding and avoiding hypotheses.

We also investigate the effect of cross-listing on the cost of debt. We show that firms with ADRs traded over the counter have a lower cost of financing when compared to domestic companies. However, the cost of financing of companies with ADRs traded on US stock exchanges is not significantly lower than that of domestic

firms. We also provide evidence that Brazilian firms do not cross-list in order to issue more bonds or raise capital on US stock exchanges.

Our results indicate that Brazilian cross-listed companies listed in the US markets increase their visibility and prestige without improving their governance practices. In fact, Brazilian companies avoid the highest US governance standards (Levels 2 and 3) and prefer to issue ADRs with the lowest US governance requirements (Level 1 and 144A).

However, although ADRs Level 1 and 144A have weaker governance requirements than ADRs Levels 2 and 3, Brazilian cross-listed companies improve their governance practices by simultaneously listing ADRs Levels 1 and 144A in the US and on NM in Brazil. This finding is supported by Carvalho and Pennacchi (2012) who argue that the New Market is a bonding mechanism to improve governance practices that is cheaper and easier to access than US cross-listings.

3.2. Literature review

3.2.1. Determinants and benefits of cross-listing

There is a vast literature on the motivations of listing shares on stock exchanges abroad (see Karolyi, 1998, 2006 for a survey of the literature). Most studies show that the main effects of cross-listing are larger access to market financing (Karolyi and Stulz, 2002), higher stock liquidity (Berkman and Nguyen, 2010), lower cost of funding (Hail and Leuz, 2009), less shareholder expropriation and lower ownership concentration (Ayyagari and Doidge, 2010), and increased valuation (Doidge et al., 2004).

In general, the cross-listing literature identifies four main hypotheses to explain the benefits and determinants of listing shares on foreign countries: market

segmentation, liquidity, information environment, and “bonding” hypothesis (Bianconi and Tan, 2010; Karolyi, 2006).

The market segmentation hypothesis states that cross-listings allow global investors to overcome cross-border investment restrictions and the lack of information about foreign companies (Merton, 1987). Since the cross-listing increases market integration, asset diversification, and shareholder base, it has a positive impact on stock prices and reduces the cost of capital and risk premium of the firm (Foerster and Karolyi, 1999).

According to the liquidity hypothesis, a cross-listing expands share liquidity and decreases the trading costs because foreign companies gain access to international capital markets, which are deeper and more liquid. Domowitz et al. (1998) show that cross-listing increases the trading volume and reduces the bid-ask spreads of foreign companies.

The cross-listing is also associated with the information environment. In developed countries such as the US, the information disclosure requirements are higher and stricter than in emerging economies. The higher disclosure tends to decrease the information asymmetry and increase the company visibility and the coverage by analysts and the media. Lang et al. (2003a,b) document that US cross-listing increases analyst and media coverage.

The bonding hypothesis states that foreign companies list their shares in developed countries to comply (“bond”) with stricter governance rules so that they can access the international market, increase firm valuation, and reduce the cost of funding. Many studies support this hypothesis (Coffee, 1999, 2002; Doidge et al., 2004; Karolyi, 2012; Stulz, 1999).

Despite the benefits of cross-listings through better governance practices, there are also costs to the controlling shareholders. There are legal costs and SEC reporting and compliance requirements, such as preparing financial statements, accounting reconciliation, implementation of systems, and hiring of consultants/auditors to comply with the additional requirements. Moreover, there is an additional cost to controlling shareholders related to their reduced ability to expropriate wealth from the company.

Doidge et al. (2007) argue that fast-growing firms list their shares abroad because the controlling shareholders are willing to limit their expropriation potential in order to benefit from raising cheaper capital to finance the growth of the firm. If a firm has poor growth opportunities, controlling shareholders do not benefit from limiting their expropriation through cross-listing.

However, several studies cast doubt on the bonding hypothesis. Licht (2001, 2003) argue that foreign companies have exemptions and do not comply with the same governance standards as US firms. Siegel (2005) documents that SEC enforcement against foreign companies is not strong. Further, it is costly and difficult for investors to enforce rights and favourable court decisions when the cross-listed companies do not have major assets in the US (Siegel, 2005).

The weak enforcement and potential impunity can create moral hazard issues, and foreign companies may decide to cross-list for other reasons. Licht (2003) proposes the “avoiding hypothesis” in which improved governance is a second-order effect. The author claims that foreign firms avoid stricter regulations and better governance practices and that their main reason for US cross-listing is to increase the access to cheaper funding.

Doidge et al. (2009) provide evidence that foreign companies that extract private benefits are less likely to list in the US. Licht et al. (2018) and Stulz (2009) state that the bonding and avoidance hypotheses can coexist together, and some companies will cross-list their shares and improve governance practices, whereas other firms will avoid stricter rules. Boubakri et al. (2010) support both hypotheses and show that the cross-listed companies willing to improve governance opt to issue ADRs with the highest governance standards (Levels 2 or 3), while the companies avoiding stringent rules issue ADRs with lowest governance requirements (Level 1 or 144A).

3.2.2. Empirical evidence

Extensive literature provides empirical evidence on the benefits and costs of cross-listing (Karolyi, 2012). Overall, most studies document that cross-listed firms have cheaper funding costs (Hail and Leuz, 2009), more access to capital markets (Reese and Weisbach, 2002), higher valuation (Doidge et al., 2004, 2007), higher abnormal returns (Bailey et al., 2006), larger investor base and share liquidity (Aggarwal et al., 2007), greater visibility (Lang et al., 2003a,b), more transparency (Herrmann et al., 2014), and better governance (Coffee, 1999; Doidge et al., 2009; Stulz, 1999).

Doidge et al. (2007) document that cross-listed companies are more valued than domestic firms and that the cross-listing premium can be 37% for companies on US exchanges, but it is lower for over the counter listings. The authors conclude that ADR listing reduces expropriation by controlling shareholders and allows companies to explore their growth potential, particularly firms from emerging markets with weak investor protection.

Bailey et al. (2006) study 2,503 earnings announcement events for 387 cross-listed firms between 1989 and 2001 and document positive abnormal returns and higher stock liquidity around earnings announcements for cross-listed companies due to the higher disclosure standard in the US.

The market segmentation hypothesis has been vastly tested, but there is no conclusive evidence. Many studies find that the cross-listing increases stock price and reduces the cost of equity and risk premium (Miller, 1999). Foerster and Karolyi (1999) find gains of 10% in the previous year and losses of 9% the following year around US cross-listings

Miller (1999) documents positive abnormal returns around cross-listing, and show that the abnormal returns are higher when the firm is from an emerging market and lists on stock exchanges of developed countries. On the other hand, there is also empirical research that does not support the market segmentation (Lau et al., 1994).

Regarding liquidity, most evidence indicates that cross-listings increase share liquidity and decrease trading costs (Domowitz et al., 1998). Füß et al. (2016) show the market integration reduces the trading of foreign listings.

There is also evidence on the information environment hypothesis. Baker et al. (2002) provide evidence that US cross-listings increase analyst coverage, media exposure, and earnings forecast accuracy. Lang et al. (2003a,b) analyse 235 cross-listed companies and find that analyst coverage is more than double the size of domestic firms. Moreover, the analysts' forecast accuracy is 1.36% higher for cross-listed enterprises.

The transparency and the information environment are also enhanced after cross-listing (Bailey et al., 2006). Ghadhab and Hellara (2016) analyse the relation between cross-listing and stock price discovery and find that firms listed on multiple

exchanges (“multiple-listed”) benefit more from price discovery than cross-listed firms.

Several papers support the bonding hypothesis and show that cross-listings enhance investor protection. Karolyi (2012) presents several studies both in favour and against the bonding hypothesis. He acknowledges the criticisms against the theory but provides many arguments to support and defend the bonding hypothesis.

Doidge et al. (2004, 2009) document that cross-listed enterprises are more valued than domestic ones. On average the valuation premium is 16.5% for cross-listed enterprises, and is significantly higher for companies located in emerging markets that cross-list on exchanges of developed countries.

Reese and Weisbach (2002) report that foreign companies with poor governance framework issue more equity capital after listing abroad. Dyck and Zingales (2004) and Doidge (2004) show that cross-listed companies have lower voting and control premiums than domestic firms. Doidge et al. (2009) document that US cross-listings reduce the control concentration and the difference between cash-flow (ownership) and voting rights (control). King and Segal (2009) report that cross-listed firms consume fewer private benefits. Lel and Miller (2008) document that cross-listed companies with poor practices tend to change underperforming CEOs more likely than their domestic peers.

Roosenboom and Van Dijk (2009) report the following average returns around cross-listings: 1.3% (US), 1.1% (UK), 0.6% (Continental Europe), and 0.5% (Japan). They argue that the higher returns in the US are related to the increased disclosure and governance regulation when compared to the other countries. Ghadhab and Hellara (2016) find that cross-listings provide higher benefits in the US rather than in Europe.

There are many studies challenging the bonding hypothesis and supporting the avoiding argument (Licht, 2001, 2003; Siegel, 2005). Gozzi et al. (2008) document that the value and return of cross-listed companies increase before and during the cross-listing, but these gains are transitory and decrease over time (Sarkissian and Schill, 2009).

Sarkissian and Schill (2012) argue that the higher value of cross-listed companies is not related to better governance standards. They show that the valuation premium also exists for cross-listings in markets with worse governance regulation. Moreover, the valuation premium of foreign companies listed in the US is close to that of US firms cross-listed abroad. The authors report no evidence of the bonding hypothesis and conclude that cross-listings occur when foreign companies have high valuation in the domestic market before the cross-listing.

Abdallah and Ioannidis (2010) study US cross-listings from 47 countries during 1976–2007 and show that cross-listing does not improve investor protection. The authors show that foreign firms list their shares abroad to take advantage of their good moments in the domestic market. The cross-listing occurs during periods of positive financial performance, which disappear after cross-listing. Their findings support the market segmentation but reject the bonding hypothesis.

Boubakri et al. (2016) analyse corporate social responsibility using a sample of 54 countries during 2002–2011. The authors find that the social responsibility is better for cross-listed firms, and the impact is higher for companies from emerging markets with weak legal protection.

Del Bosco and Misani (2016) analyse 1,141 firms from 30 countries and document that cross-listings enhance corporate social responsibility but not governance practices. They argue that corporate social responsibility policies are

easier to change when compared to governance structures, which are less flexible and more challenging to change.

Busaba et al. (2015) study Chinese companies returning to list in China after first listing their shares abroad. They show that these firms underperform domestic-only listed companies in terms of valuation and stock performance. They argue that these firms “dress-up-for-premium” by increasing their visibility and valuation through cross-listing without improving governance practices.

The effect of cross-listing on foreign enterprises is also related to the regulation required by developed countries. Lang et al. (2006) show that the US regulation is not fully enforced for foreign firms, whereas Charest et al. (2013) report that the information environment is not improved after cross-listing.

There is a large debate between academics and policymakers on the benefits and costs of US regulations. In 2002, the Sarbanes-Oxley Act (SOX) increased the compliance requirements regarding corporate governance, accounting, and certification standards. The higher costs associated with SOX are both direct (auditor expenses, implementation of internal systems, among others) and indirect (potential risks of non-compliance, disclosure of proprietary information to the market and competitors, etc).

Many studies examine whether the benefits of SOX exceed its costs, and also evaluate whether the number of delisting in the US have increased after SOX (Leuz et al., 2008; Litvak, 2007; Zingales, 2007). The literature on SOX provides mixed results about its benefits and costs. Berger et al. (2005) and Fernandes et al. (2010) document positive effects, whereas Asthana et al. (2009), Litvak (2007), and Zhang (2007) find negative impacts.

Zhang (2007) argues that SOX has costs larger than benefits, whereas Chhaochharia and Grinstein (2007) show the costs are larger for small and less compliant enterprises. Engel et al. (2007) document small and underperforming firms deregistered after SOX due to its higher compliance costs, and similar results are also reported by Leuz et al. (2008).

Fernandes et al. (2010) analyse SEC Rule 12h-6, which made SEC deregistration easier for foreign firms. They report negative abnormal return, and conclude that US laws provide significant benefits, especially for enterprises with poor legal system.

Li (2014) evaluates the short- and long-term effect of SOX for cross-listed companies and finds significantly negative abnormal returns of -10% on average. He also documents that many cross-listed firms left the US after SOX. Bianconi et al. (2013) document that SOX affects firm value negatively and crowds out markets with stricter regulation. In contrast, Doidge et al. (2009) analyse the cross-listings in the US and UK from 1990 to 2005 and document that, after controlling for firm characteristics, SOX has not reduced US cross-listings.

3.2.3. Research hypotheses

There has been a debate whether cross-listings improve the governance practices of foreign companies listed in developed countries. The literature on the bonding hypothesis presents mixed results and it is not easy to disentangle the benefits of cross-listing and attribute them to the bonding hypothesis because many theories of cross-listing state similar benefits.

In this essay, we aim to analyse the difference of governance practices between cross-listed and domestic firms, so we focus on analysing the bonding hypothesis.

Given the discussions in the previous section that support the bonding argument, our first research hypothesis is:

H1a: The governance of Brazilian firms with ADRs is better than that of domestic-listed companies.

In contrast, given the fact that foreign firms have several exemptions from US securities and governance regulation, we conjecture that Brazilian firms with ADRs on US stock exchanges (Levels 2 and 3) have similar or worse governance practices when compared to firms with ADRs traded over the counter (Levels 1 and 144A) and domestic companies. This argument is supported by the avoiding hypothesis (Licht, 2001, 2003; Siegel, 2005). This reasoning leads to our second research hypothesis:

H1b: The governance of Brazilian firms with ADRs is similar or worse than that of domestic-listed firms.

We test these hypotheses by comparing multiple aspects of governance practices between Brazilian cross-listed firms and domestic companies. The next several sections evaluate our research hypotheses empirically.

3.3. Brazilian cross-listings and regulatory exemptions in the US

Many Brazilian companies list their shares abroad, mainly in the US. According to the World Federation of Exchanges (2017), there were 83 Brazilian companies with ADRs, most of which were ADRs Level 1 and 144A, which have limited liquidity and require minimal SEC disclosure. There were 56 ADRs traded over the counter (Level 1 or 144A) and 27 ADRs listed on stock exchanges (Levels 2 and 3). Most interestingly and surprisingly, the Brazilian ADRs Levels 2 and 3 represented

27% of the total volume traded in dollars considering all ADRs listed on US stock exchanges from various countries from January to December 2017 (J.P. Morgan Chase & Co, 2017).

Although cross-listings on stock exchanges have higher compliance requirements, they are not comparable to US-listed firms. The passage of SOX intended to enhance governance structures in the US markets, and its provisions also apply to cross-listed foreign firms, which should meet the same SEC requirements as US firms.

However, there are various SEC exemptions granted for cross-listed companies. In general, the exemptions take into account the differences between the governance regimes in the US and in the firms' home countries because some practices in the US can contradict or interfere with home country regulation (Li, 2014). The exemptions are valid not only to Brazilian firms, but also to foreign companies from other countries. Moreover, cross-listed firms do not need to apply for the exemptions because they are automatically granted by SEC regulation.

The main governance differences between Brazilian and US firms are due to their legal systems. Brazilian listed companies must comply with the Brazilian corporation law (Law n. 6,404/1976), and Brazilian Securities Commission (CVM) regulation. Appendix 3.1 shows the main differences between the minimum requirements to list shares in Brazil (Brazilian corporation law and New Market) and in the US (ADR Levels 2/3 and US corporation law).

The Brazilian companies listed on NYSE through ADR Levels 2 and 3 have fewer governance requirements when compared to US domestic issuers. In general, Brazilian firms with ADR Levels 2/3 must comply with four NYSE requirements: (i) the firm must have an audit committee; (ii) the Chief Executive Officer must inform any material non-compliance with US governance rules; (iii) the firm must disclose

the main differences between its governance practices and those of US domestic issuers; and (iv) the firm must inform the NYSE of any change in the board of directors or board committees.

We list below the main NYSE governance exemptions for Brazilian cross-listed firms. These exemptions are obtained from the annual reports of Brazilian ADRs listed on NYSE, which do not need to comply with the following rules:

- a) Independence of directors: majority of independent members (rule 303A.01);
- b) Executive sessions: directors should meet without management frequently (rule 303A.03);
- c) Nominating, governance and compensation committees: 100% of independent members (rules 303A.04 and 303A.05);
- d) Audit committee: minimum of 3 independent members (rules 303A.06 and 303A.07);
- e) Shareholder approval of equity compensation plans: shareholders must vote and approve on equity remuneration package (rule 303A.08);
- f) Governance guidelines: disclosure of governance practices that address minimum standards such as director qualification, compensation, and performance evaluation (rule 303A.09);
- g) Code of ethics: mandatory for senior management and employees (rule 303A.10);
- h) Certification requirements: CEO must inform NYSE of any violation with US governance rules (rule 303A.12).

The Brazilian legislation does not require independent directors and board committees (audit, nominating, compensation, etc.). Pursuant to a SEC exemption,

Brazilian cross-listed enterprises are not required to set up an audit committee if they have a similar committee established pursuant to their home country legal system.

The Brazilian law establishes that firms can create a fiscal council (“conselho fiscal”), which should monitor and review the financial statements. The fiscal council representatives are elected by shareholders and cannot be directors of the firm. The fiscal council can have up to five members, and minority shareholders have the right to elect their representatives (up to two members out of five). Despite the SEC exemption, in terms of best governance practices, the Brazilian fiscal council cannot be considered equivalent to an audit committee composed of independent members as set forth in SOX.

3.4. Data sources and description

We analyze 327 Brazilian companies from 2000 to 2015. We select all firms listed on the Brazilian stock exchange (B3) with public information, and build an unbalanced panel that represents 94% of the number of listed companies in Brazil. We study 75 cross-listed firms, of which 23 are listed on NYSE (ADR Levels 2 and 3) and 52 traded OTC (Level 1 and 144A). The information about US cross-listings comes from CVM and company websites.

We measure the governance practices through a modified version of the corporate governance index (CGI) proposed and empirically tested by Leal and Carvalhal (2007). We select a smaller number of questions (20 instead of 24), focusing on the items that are more statistically significant to explain the governance quality in Brazil.

We use a CGI with 20 attributes that can be answered ‘yes’ or ‘no’ (1 and 0, respectively) using public sources (see Table 3.4). The CGI is the sum of all 20

questions. The maximum value of CGI is 20, but we report it on a 0–10 scale. The CGI questions are classified into four groups: disclosure, board, ownership, and shareholder's rights. We use an unweighted index, similar to other governance studies (Black et al., 2006). However, the results do not change significantly when we assign different weights for questions.

We also employ other governance metrics. We analyse whether the companies list on New Market (NM), which has stricter governance requirements and is composed of three levels. To be listed on Level 1, companies must provide more liquidity to their shares and increase their transparency standards such as disclosure of related party transactions, code of conducts, and keeping at least 25% of their shares for trading. Level 2 requires stricter governance rules and more shareholder's rights: boards with at least 20% of independent directors, arbitration to solve corporate disputes (instead of long and costly judicial proceedings), bid rule for minority shareholders in the event of change of control, voting rights to all shares in special cases such as mergers and acquisitions, sale of strategic assets, related party transactions, etc. On the NM strictu sensu (Level 3), the company must comply with all Level 1 and 2 requirements and it is prohibited from issuing non-voting shares.

We analyse listing on both NM and on the stricter NM's Levels 2 and 3. The governance attributes of CGI and NM complement each other, and the CGI has stricter items based on Brazilian and international best governance practices. To construct CGI, we hand-collect firm-level governance data from 2000 to 2015 through CVM website.

We follow the cross-listing literature and group the firms with ADRs traded on stock exchanges (Levels 2 and 3) and over the counter (Level 1 and 144A). We create two dummy variables according to US cross-listings: ADR1 (indicating ADR

Level 1 or 144A) and ADR23 (indicating ADR Levels 2 or 3). We do not distinguish between ADR Level 1 and 144A because both are exempt from US registration and governance requirements. Moreover, we treat ADRs Levels 2 and 3 together since they must comply with the same disclosure and governance rules.

We collect and compute the following variables: ADR1 (listing of ADR Level 1 or 144A), ADR23 (listing of ADR Levels 2 or 3), CGI (governance index), NM (New Market), NM23 (NM's levels 2 and 3), P/B (price-to-book as a valuation proxy), CFIN (cost of financing), LIQ (share liquidity), VOT (percentage of voting concentration), LEV (leverage), ROA (return on asset as a performance proxy), SIZE (firm size), GRO (sales growth), and FIX (fixed assets). The financial and accounting data are obtained in Bloomberg database. Appendix 3.2 shows the definition of each variable.

Table 3.1 presents the overall statistics. Around 11% of the companies list on US exchanges (ADR23) and 28% trade OTC (ADR1). This finding reveals that Brazilian firms prefer to list ADRs without complying with SEC governance standards.

The average CGI is 5.42 (out of 10), which is in line with other governance indexes computed for Brazilian companies: 61.91 out of 100 (Doidge et al., 2007) and 3 out of 6 (La Porta et al., 1998). The governance score is much smaller in Brazil (3 out of 6) than in the US and UK (5 out of 6). The governance quality is also poor when measured by CGI sub-indexes. The average score is 6.6 for disclosure, 6.1 for board of directors, 5.2 for shareholder rights, and 3.3 for ownership structure.

Another way to measure the governance quality is through the presence on NM. Around 38% of the firms trade on NM and 28% list on stricter NM23. The percentage of Brazilian firms listing on NM23 (28%) is higher than ADR23 (11%). This may suggest that Brazilian companies prefer to improve governance standards

without the need to comply with additional SEC requirements. This result is consistent with Carvalho and Pennacchi (2012) who show that NM listing can be an alternative and a less costly bonding mechanism compared to US cross-listings.

Table 3.1 - Summary Statistics

Variable	Average	Median	Minimum	Maximum	Std Deviation
ADR23	0.11	0.00	0.00	1.00	0.32
ADR1	0.28	0.00	0.00	1.00	0.45
CGI	5.42	5.25	1.00	9.50	1.89
DISCL	6.57	7.50	0.00	10.00	2.60
BOARD	6.09	6.00	0.00	10.00	2.71
OWN	3.27	3.33	0.00	8.75	2.33
RIGHT	5.19	5.00	0.00	10.00	2.62
NM	0.38	0.00	0.00	1.00	0.49
NM23	0.28	0.00	0.00	1.00	0.45
P/B	1.56	1.16	0.00	7.20	1.29
CFIN	27.61	21.23	0.00	126.96	21.95
LIQ	0.09	0.00	0.00	13.86	0.46
VOT	56.20	54.00	0.10	100.00	27.11
LEV	58.43	59.73	0.01	99.63	21.49
ROA	4.04	3.40	-30.70	35.20	6.78
SIZE	7.70	7.68	1.27	14.18	1.87
GRO	14.88	12.96	-51.69	77.35	16.88
FIX	38.93	40.87	0.00	99.87	25.92

Notes: descriptive statistics for our sample of 327 Brazilian companies from 2000 to 2015. The definition of each variable is described in Appendix 3.2.

Another component of the governance system is the ownership and control structure, which is very concentrated in Brazil. The majority (56%) of the voting capital is in the hands of one shareholder. Regarding the other variables, Brazilian firms have been profitable (average ROA of 4.0%, growth of 14.9%, and P/B of 1.6), and low leveraged (58.4% of liabilities to assets with an average cost of debt of 27.6% per annum).

The Brazilian firms that list in the US are usually concentrated in a few industries. Most ADR23 companies come from three economic sectors: energy (17%), banking (13%), and telecom (13%). A similar pattern can be seen for ADR1 firms: energy (15%), construction (15%), and transportation (10%).

We group the firms into three categories according to US cross-listings: domestic-listed, listed on US exchanges (ADR23), and over the counter (ADR1). Table 3.2 shows the average and median statistics of the three groups of enterprises.

Table 3.2 - Characteristics of Cross-Listed and Domestic Firms

Variable	ADR23 Firms		ADR1 Firms		Domestic Firms	
	Average	Median	Average	Median	Average	Median
CGI	6.11*** (0.00)	5.83*** (0.00)	6.80*** (0.00)	7.25*** (0.00)	4.99	4.75
DISCL	8.48*** (0.00)	8.33*** (0.00)	8.24*** (0.00)	8.33*** (0.00)	5.87	6.67
BOARD	7.28*** (0.00)	8.00*** (0.00)	7.28*** (0.00)	8.00*** (0.00)	5.61	6.00
OWN	2.56*** (0.00)	2.50*** (0.00)	4.01*** (0.00)	5.00*** (0.00)	3.20	3.33
RIGHT	5.12** (0.02)	5.00** (0.04)	6.87*** (0.00)	7.00*** (0.00)	4.81	4.00
NM	0.54*** (0.00)	1.00*** (0.00)	0.75*** (0.00)	1.00*** (0.00)	0.27	0.00
NM23	0.23 (0.31)	0.00 (0.47)	0.65*** (0.00)	1.00*** (0.00)	0.21	0.00
P/B	1.89*** (0.00)	1.70*** (0.00)	1.69*** (0.00)	1.25*** (0.00)	1.47	1.10
CFIN	21.19*** (0.00)	17.13*** (0.00)	21.49*** (0.00)	16.93*** (0.00)	27.12	21.17
LIQ	1.24*** (0.00)	0.62*** (0.00)	0.37*** (0.00)	0.12*** (0.00)	0.09	0.00
VOT	53.54*** (0.00)	51.00*** (0.00)	47.61*** (0.00)	46.99*** (0.00)	58.51	58.30
LEV	61.98*** (0.00)	61.13** (0.03)	57.77 (0.80)	57.83 (0.11)	58.03	59.85
ROA	4.44 (0.48)	4.00 (0.12)	3.13*** (0.00)	3.13*** (0.01)	4.18	3.40
SIZE	10.12*** (0.00)	9.96*** (0.00)	8.36*** (0.00)	8.36*** (0.00)	7.18	7.19
GRO	17.44*** (0.00)	13.99*** (0.00)	17.00*** (0.00)	13.24** (0.03)	13.92	12.78
FIX	49.04*** (0.00)	55.92*** (0.00)	47.90*** (0.00)	54.33*** (0.00)	36.04	35.78

Notes: descriptive statistics for cross-listed and domestic enterprises. The definition of each variable is described in Appendix 3.2. The table documents the coefficients, p-values (in parentheses), and highlights the significance levels of the differences between cross-listed and domestic enterprises (*** for 1%, ** for 5% and * for 10%).

The highest average (median) CGI is 6.80 (7.25) for ADR1 followed by 6.11 (5.83) for ADR23, and then 4.99 (4.75) for domestic firms. The CGI differential between cross-listed and domestic enterprises is significant at 1%. More interestingly, the average and median CGI of ADR1 are significantly higher than ADR23, indicating that the governance of ADR23 is worse than that of ADR1.

The results for three CGI dimensions DISC, BOARD, and RIGHT are similar to those of CGI. The governance practices of cross-listed firms regarding disclosure, board of directors and shareholder rights are significantly better than those of domestic-listed companies. The shareholder rights are stronger in ADR1 firms than in ADR23 companies. In contrast, the disclosure and board practices do not differ significantly between ADR1 and ADR23 firms. As for the ownership dimension, ADR1 firms have better practices than domestic firms, but ADR23 companies are significantly worse than their domestic peers.

These results are surprising given the general assumption that cross-listings on US exchanges require compliance with SEC governance rules. However, as explained in the previous section, Brazilian firms benefit from several exemptions to list on US stock exchanges, and their governance practices are not comparable to those of US firms. Therefore, there is no guarantee that the governance of ADR23 is better than ADR1 or domestic companies.

The results obtained for CGI and its four dimensions can be better explained by looking at the percentage of firms listed on NM and NM23. More than 75% of ADR1 firms list on NM and 65% list on NM23. These two percentages are higher than ADR23 companies (54% and 23%, respectively) and domestic firms (27% and 21%, respectively), and the results are significant at 1%. Moreover, the percentage of

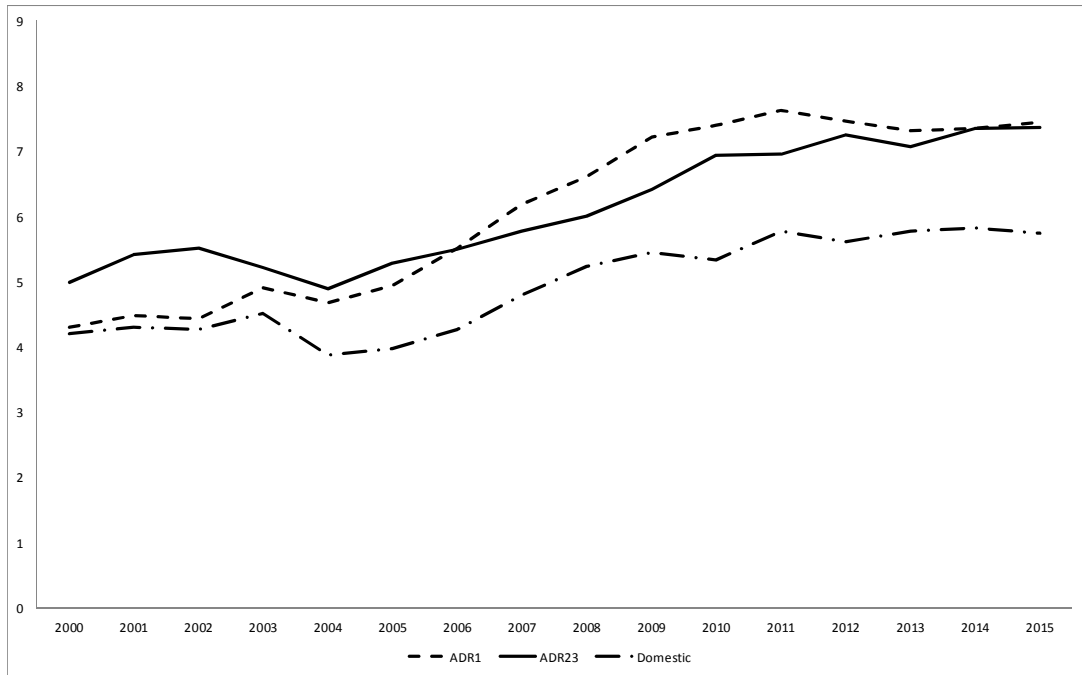
firms on NM23 is similar for ADR23 and domestic firms (23% and 21%, respectively), and the result is not significant at 5%.

These findings show that ADR1 firms adopt better governance practices by listing on NM in Brazil instead of listing on US exchanges and complying with SEC rules. This result seems to reject the bonding hypothesis and support the avoiding argument since cross-listed firms can raise cheap capital abroad without restricting themselves to the US governance rules.

Regarding the control variables, cross-listed firms have higher valuation (P/B) and share liquidity, faster sales growth, more fixed assets, lower cost of debt, and less control concentration when compared to domestic firms, and all the differences are statistically significant at 1% or 5%. Furthermore, ADR23 firms are more leveraged than ADR1 and domestic companies, whereas ADR1 firms have the lowest profitability (ROA) of all three groups of companies.

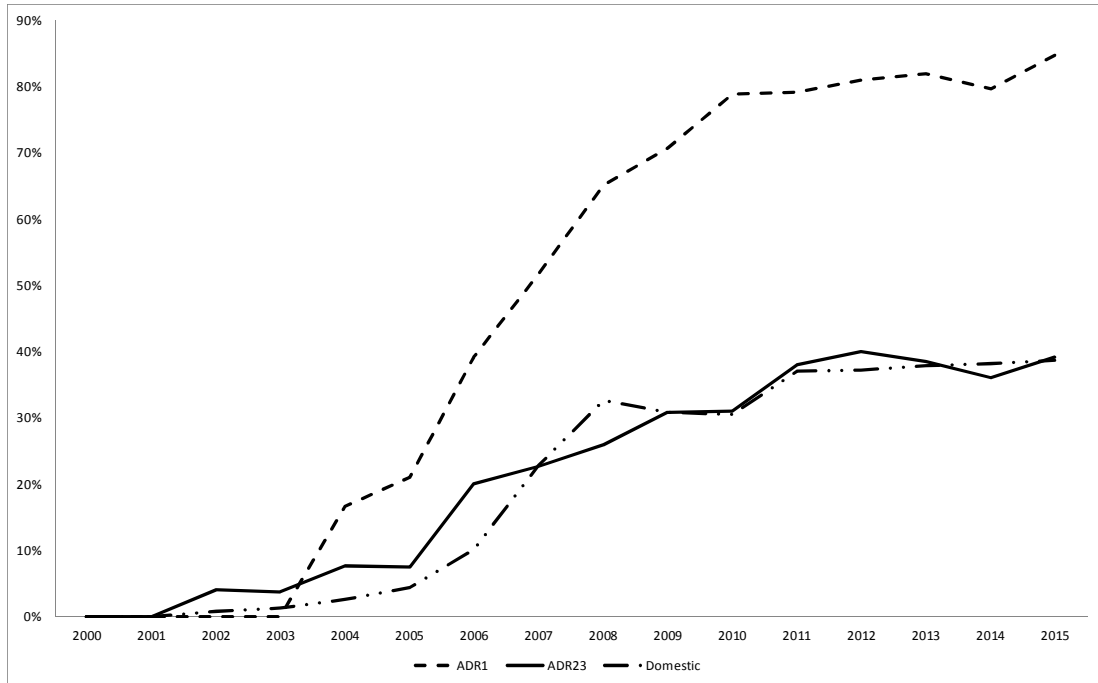
Figure 3.1 shows the average CGI of cross-listed and domestic firms from 2000 to 2015. We can see that the average CGI of ADR23 firms was higher from 2000 to 2005 and that the CGI of ADR1 firms has achieved the highest scores since 2006. In 2000, the average CGI of ADR23 firms (5.0) was significantly greater than that of ADR1 (4.3) and domestic companies (4.2). In 2006, the average CGI of both groups of cross-listed firms was similar (5.5) and higher than that of domestic companies (4.3). From 2006 to 2015, the average CGI of all groups has increased, reaching 7.4 (ADR1 and ADR23) and 5.8 (domestic). The overall increase of CGI in recent years coincides with the launch of the New Market to promote the voluntary adoption of good governance practices in Brazil (Carvalho and Pennacchi, 2012).

Figure 3.1 – Corporate Governance Index of Cross-Listed and Domestic Firms



Notes: average corporate governance index of cross-listed and domestic-listed firms from 2000 to 2015.

Figure 3.2 – Percentage of Cross-Listed and Domestic Firms on New Market



Notes: percentage of cross-listed and domestic-listed firms on New Market's Levels 2 and 3 from 2000 to 2015.

Figure 3.2 shows the percentage of firms listed on NM23 from 2000 to 2015. We can see that the proportion of firms listing on NM23 increased significantly from 2000 to 2010 and have stabilized in more recent years due to the global financial crisis and Brazilian political and economic uncertainty. We note that the percentage of ADR1 firms listed on NM23 is significantly higher and more than double of ADR23 and domestic firms. Moreover, the percentage of ADR23 and domestic firms listing on NM23 are similar. In 2015, 85% of ADR1 firms listed on NM23, which is significantly higher than 39% of ADR23 and domestic firms.

Table 3.3 presents the correlation analysis. We can see the correlations of CGI with ADR1 and ADR23 are positive (0.33 and 0.13, respectively) and significant at 1%. Furthermore, the correlation of ADR1 is almost three times higher than that of ADR23, suggesting that ADR1 firms have better governance practices than ADR23 companies.

The correlations of ADR1 with the four CGI dimensions are also positive and statistically significant at 1%, ranging from 0.14 (ownership) to 0.29 (disclosure and shareholder rights). In contrast, the correlations of ADR23 are positive only for disclosure (0.26) and board of directors (0.16) and are negative for shareholder rights (-0.01) and ownership (-0.11).

As for other governance metrics, the correlations of ADR1 are positive with NM and NM23 (0.34 and 0.36, respectively) and both results are significant at 1%. However, the correlations of ADR23 are positive with NM (0.12) and negative with NM23 (-0.04), but only the first result is statistically significant at 1%.

Table 3.3 – Correlations among Variables

Variable	ADR1	ADR23	CGI	DISCL	BOARD	OWN	RIGHT	NM23	NM	P/B	VOT	LEV	ROA	SIZE	GRO	FIX
ADR1	1.00															
ADR23	-0.16***	1.00														
CGI	0.33***	0.13***	1.00													
DISCL	0.29***	0.26***	0.78***	1.00												
BOARD	0.20***	0.16***	0.76***	0.47***	1.00											
OWN	0.14***	-0.11***	0.54***	0.28***	0.14***	1.00										
RIGHT	0.29***	-0.01	0.77***	0.39***	0.45***	0.36***	1.00									
NM23	0.36***	-0.04	0.72***	0.47***	0.49***	0.43***	0.67***	1.00								
NM	0.34***	0.12***	0.71***	0.58***	0.55***	0.23***	0.60***	0.80***	1.00							
P/B	0.05**	0.09***	0.27***	0.21***	0.23***	0.12***	0.20***	0.20***	0.17***	1.00						
VOT	-0.14***	-0.04	-0.38***	-0.21***	-0.20***	-0.31***	-0.41***	-0.40***	-0.34***	-0.12***	1.00					
LEV	-0.01	0.06***	0.00	0.01	0.06***	-0.02	-0.04	-0.08***	-0.01	0.03	0.08***	1.00				
ROA	-0.06***	0.02	0.02	0.08***	0.02	-0.03	-0.04	-0.01	-0.02	0.32***	0.00	-0.36***	1.00			
SIZE	0.15***	0.46***	0.41***	0.50***	0.42***	0.00	0.14***	0.16***	0.36***	0.12***	-0.03	0.36***	0.01	1.00		
GRO	0.06***	0.06***	0.17***	0.19***	0.06***	0.16***	0.11***	0.11***	0.08***	0.17***	-0.08***	0.08***	0.14***	0.11***	1.00	
FIX	0.13***	0.14***	0.00	0.06***	0.03	0.02	-0.12***	-0.04	-0.05**	0.01	0.00	-0.22***	-0.04	0.00	0.14***	1.00

Notes: the table documents the correlations and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The definition of each variable is described in Appendix 3.2.

The correlation analysis shows significant differences in the governance practices of the three groups of companies. The results seem to suggest that ADR1 firms have the best governance practices, followed by ADR23 companies and then domestic peers. This evidence is valid for the overall CGI, its four dimensions, and NM and NM23 listings.

The correlations of ADR1 and ADR23 are positive with SIZE, P/B, GRO, and FIX and negative with VOT, which suggest that cross-listed enterprises are bigger, have higher valuation, faster growth, more fixed assets, and lower ownership concentration. The correlations with LEV and ROA have mixed signs and indicate that ADR1 firms have lower leverage and profitability, whereas ADR23 companies are more profitable and leveraged.

Table 3.4 shows the proportion of companies that answer “yes” to each CGI question in 2015. The governance practices of cross-listed companies are better than those of domestic firms. Moreover, the governance score of ADR1 firms is higher or similar to that of ADR23 companies in most questions.

Overall ADR1 firms score the highest in 9 out of 20 questions: unqualified auditor opinion, different CEO and Chairman, adequate board size and tenor, more voting shares, less separation between ownership and control, facilitation of shareholder participation in meetings, and voting and bid rights for minority shareholders.

The ADR23 firms score the highest in 8 out of 20 questions such as policies on related party transactions, disclosure of annual report and corporate presentations, presence of board committees, number of external directors, no indirect control structure, no shareholder agreement that constrains voting rights, and higher free-float. Moreover, the weaker governance provisions of ADR23 firms relative to ADR1 firms are mostly under ownership structure.

Table 3.4 – Proportion of Companies Answering “Yes” to Governance Questions

Question	ADR1 Firms	ADR23 Firms	Domestic Firms
<i>Disclosure</i>			
1. Are there policies for related party operations?	92%	100%	66%
2. Is the detailed executive compensation disclosed publicly?	100%	100%	96%
3. Is there only unqualified auditor opinion in the last 5 years?	94%	87%	86%
4. Is the annual report disclosed publicly?	62%	91%	36%
5. Are the investor presentations disclosed publicly?	98%	100%	64%
6. Is there a governance section in the annual report?	100%	100%	73%
<i>Board of Directors</i>			
7. Is there no CEO duality (different Chairman and CEO)?	100%	96%	86%
8. Are there board committees?	65%	100%	41%
9. Are there only external directors (except CEO)?	52%	83%	43%
10. Is the board size between 5 and 11?	92%	87%	86%
11. Is the board tenor between 1 and 2 years?	98%	91%	86%
<i>Ownership Structure</i>			
12. Is there a maximum limit (i.e.20%) for non-voting shares?	79%	52%	55%
13. Is the largest shareholder’s control equal to his ownership?	79%	48%	52%
14. Is there no loan to controlling shareholders?	2%	4%	9%
15. Is shareholder participation facilitated in the annual meetings?	40%	4%	30%
<i>Shareholder’s Rights</i>			
16. Are there voting rights to all shareholders in major subjects?	92%	52%	57%
17. Is there bid rule to minority investors in control transfer?	94%	61%	61%
18. Is there no indirect structure?	67%	70%	68%
19. Is there no shareholder agreement that constrains votes?	56%	65%	64%
20. Is the share liquidity higher than 25% of total capital?	87%	96%	61%

Furthermore, the ADR1 and ADR23 firms have the highest score together in 2 additional questions: disclosure of detailed executive compensation and publication of a governance section in the annual report. Domestic-listed companies score the highest in only one item: prohibition of loans to controlling shareholders.

3.5. Multivariate results

We estimate the specification below to evaluate the effect of ADR listing on governance quality:

$$CGI_{i,t} = \beta_0 + \beta_1ADR1_{i,t} + \beta_2ADR23_{i,t} + \beta_3NM23_{i,t} + \beta_4NM23_{i,t}*ADR_{i,t} + \beta_5X_{i,t} + \mu_{i,t}$$

where $CGI_{i,t}$ is the governance index of enterprise i at year end t , $ADR1_{i,t}$ indicates firms with ADR Levels 1 and 144A, $ADR23_{i,t}$ indicates firms with ADR Levels 2 and 3, $ADR_{i,t}$ indicates firms with ADR, $NM23_{i,t}$ indicates firms listed on New Markets' Levels 2 and 3, $X_{i,t}$ represents enterprise's characteristics, and $\mu_{i,t}$ accounts for the residual term.

We select the firm characteristics based on the cross-listing literature (see Doidge et al., 2004, 2009) such as firm size, ROA, sales growth, leverage, and voting concentration. We run the regressions using ordinary least squares (OLS), and fixed-effects (FE). In each regression we use clustered robust standard errors (Petersen, 2009; Thompson, 2011).

To take into account and mitigate potential endogeneity and self-selection bias associated with cross-listing, we estimate Heckman (1979) two-stage regressions where the first stage refers to the cross-listing decision and the second stage estimates the relation between governance quality and cross-listing. This methodology has been used in the cross-listing literature (see Herrmann et al., 2014).

Finding instruments for the first-stage is difficult because many variables that affect the cross-listing decision may also influence governance practices. We follow previous studies to select the instruments that predict the probability of cross-listing but are unrelated to governance quality. The cross-listing research usually uses

industry- and country-related variables as instruments (Attig et al., 2016; Cheng et al., 2014).

Since we study only one country, we add industry dummies. Most Brazilian cross-listed companies operate in globalized economic sectors and compete with international players. We create a dummy variable called INTIND that indicates the following international industries: banking, energy, food & beverage, oil & gas, pulp & paper, telecom, and transportation. Our probit regressions include INTIND as instrument, since it may affect the cross-listing decision but not necessarily governance practices (Attig et al., 2016; Cheng et al., 2014). In fact, the correlation between INTIND and ADR is 0.13 (statistically significant at 1%), which is four times higher than the correlation between INTIND and CGI of 0.03 (not statistically significant at 5%). We also include as instrument the average price-to-book of each industry (Attig et al., 2016; Cheng et al., 2014), but the results are not statistically significant.

We add the inverse mills in the governance regression using Heckman (1979) model. We include the mills ratio as an additional regressor together with firm characteristics that may influence the cross-listing decision such as firm size, profitability, leverage, sales growth, voting concentration, tangibility of assets, and year fixed effects (Bailey et al., 2006; Doidge et al., 2004).

Table 3.5 shows the results of our governance regressions, which are estimated using three methods: OLS (columns I to III), FE (columns IV to VI), and self-selection (columns VII to IX). Each method has three specifications depending on our cross-listing and NM23 independent variable.

The OLS model shows that ADR1 and ADR23 are positive and significant at 1%. When both ADR and NM23 variables are put together in the model, the coefficients

of ADR1, ADR23, and NM23 continue positive and significant at 1%. The OLS results indicate that the governance of ADR1 and ADR23 companies is better than that of domestic firms. Moreover, listing on New Market improves the governance quality for both domestic and cross-listed firms. Regarding control variables, CGI is positively connected to growth, size, and ROA, and negatively associated to ownership and leverage.

When we add firm and year effects, ADR1 continues positive and significant at 1% or 5%. Regarding ADR23, the coefficients are not significant at 1% or 5%. This finding seems surprising and indicates that ADR23 companies do not have better governance than domestic enterprises. The FE models provide evidence that ADR1 companies have better governance than ADR23 and domestic firms. Furthermore, the New Market enhances governance practices for domestic and cross-listed companies.

Table 3.5 - US Cross-Listing and Governance

Variable	OLS			Fixed-Effects			Self-Selection		
Constant	3.83*** (0.00)	2.98*** (0.00)	2.98*** (0.00)	2.82*** (0.00)	3.08*** (0.00)	2.92*** (0.00)	4.34*** (0.00)	3.53** (0.02)	3.52** (0.02)
ADR1	1.09*** (0.00)	0.25*** (0.00)	0.50*** (0.00)	0.39*** (0.00)	0.27** (0.03)	0.47** (0.02)	0.88*** (0.00)	0.78*** (0.00)	0.79*** (0.00)
ADR23	0.07 (0.51)	0.30*** (0.00)	0.45*** (0.00)	0.59* (0.09)	0.40 (0.25)	0.51 (0.16)	0.88** (0.05)	0.57 (0.20)	0.59 (0.19)
NM23		2.63*** (0.00)	2.83*** (0.00)		1.66*** (0.00)	1.88*** (0.00)		1.67*** (0.00)	1.71*** (0.00)
NM23*ADR			-0.51 (0.11)			-0.40 (0.18)			-0.08 (0.83)
VOT	-0.02*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.06)	-0.01* (0.06)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.10)	0.00 (0.24)	0.00 (0.21)	0.01 (0.20)	0.01 (0.40)	0.01 (0.41)
SIZE	0.38*** (0.00)	0.28*** (0.00)	0.27*** (0.00)	0.43*** (0.00)	0.29*** (0.00)	0.30*** (0.00)	0.20 (0.26)	0.21 (0.25)	0.21 (0.25)
ROA	0.00 (0.47)	0.01** (0.03)	0.01** (0.02)	0.00 (0.42)	0.00 (0.52)	0.00 (0.53)	0.02** (0.02)	0.02 (0.14)	0.02 (0.14)
GRO	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.00 (0.90)	0.00 (0.91)	0.00 (0.83)	0.00 (0.71)	0.00 (0.99)	0.00 (0.99)
Mills							-0.89** (0.04)	-0.51 (0.24)	-0.51 (0.24)
Obs	2,377	2,377	2,377	1,521	1,521	1,521	1,521	1,521	1,521
Adj R ²	0.40	0.66	0.66	0.87	0.88	0.88	0.81	0.83	0.83

Notes: regression models for corporate governance (CGI) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

Since our fixed-effects approach focus on firms that were domestically-listed and then decided to cross-list their shares (and vice-versa), our findings may be biased by this small transition sample. As a robustness check, we remove firm fixed-effects and add industry and year dummies, and our findings (not reported) are substantially the same.

Before estimating the self-selection models, we first determine the probability of cross-listing. We estimate probit models with three different dependent variables (ADR, ADR1, and ADR23). The first model determinates the probability of a firm cross-listing in the US through any type of ADR program. The second and third models estimate the probability of cross-listing over the counter (ADR1) and on stock exchanges (ADR23), respectively.

Table 3.6 shows the probit models with the three ADR dependent variables. The models classify 85% to 89% of the observations correctly. The coefficients of the instrument INTIND are positive and significant at 1%, which confirm that cross-listed enterprises operate in international industries, such as banking, energy, food & beverage, oil & gas, pulp & paper, telecom, and transportation.

Most coefficients on LEV, ROA and VOT are negative and significant at 1% or 5%, whereas most coefficients on SIZE, GRO, and FIX are positive and significant at 1% or 5%. The results of the probit models indicate that cross-listed firms are large, have high growth, more fixed assets, less control concentration, lower leverage and profitability. There is no substantial difference between the determinants of ADR1 and ADR23.

The coefficients on FIX and ROA are statistically significant for ADR1 but not for ADR23. In contrast, the coefficients on GRO and VOT are significant for ADR23 but not for ADR1. Furthermore, INTIND and FIX seem to affect the cross-listing

decision but not governance quality. The correlations of ADR with INTIND and FIX are positive (0.13) and significant at 1%, whereas the correlations of CGI with INTIND and FIX are not significant.

Table 3.6 - Probit Model for US Cross-Listing

Variable	ADR	ADR1	ADR23
Constant	-3.76*** (0.00)	-1.88*** (0.00)	-5.60*** (0.00)
VOT	-0.01*** (0.00)	0.00 (0.11)	-0.01** (0.03)
LEV	-0.02*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
SIZE	0.52*** (0.00)	0.14*** (0.00)	0.62*** (0.00)
ROA	-0.03*** (0.00)	-0.02** (0.02)	-0.01 (0.20)
GRO	0.01** (0.05)	0.00 (0.19)	0.01** (0.02)
FIX	0.01** (0.02)	0.01** (0.04)	0.00 (0.78)
INTIND	0.29*** (0.00)	0.36*** (0.00)	0.55*** (0.00)
Obs	1,585	1,585	1,585
McFadden R ²	0.31	0.07	0.40
% Correct	85.36	88.96	88.71

Notes: probit models for cross-listing (ADR, ADR1 and ADR23) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

The last three columns of Table 3.5 show the self-selection models. All coefficients of ADR1 are positive and significant at 1%, whereas ADR23 is positive and significant at 5% in only one specification. When we include NM23 in the model, ADR1 continues positive and significant at 1%, but ADR23 is not significant.

The inverse mills are negative, but only one coefficient is statistically significant at 5%. These results do not confirm the presence of self-selection bias, but, although the coefficients of the mills ratios are not significant, they suggest there may be

unobservable firm characteristics that increase the probability of cross-listing and at the same time are associated with poor governance quality.

Our main inference relative to the coefficients of ADRs are mostly unaffected when compared to OLS and FE models, even after controlling for self-selection bias. The results of the self-selection models are overall in line with those of OLS and FE regressions. Taken together, the three methods indicate that ADR1 companies have better governance quality than ADR23 and domestic firms. Moreover, listing on New Market improves governance practices for domestic and cross-listed companies. We also find that ADR23 companies do not have better governance than domestic-listed enterprises. These results seem to support both the bonding and avoiding hypotheses and indicate that cross-listing over the counter enhances governance practices, whereas cross-listing on US exchanges and complying with SEC regulation do not mean improved governance quality.

3.6. Extensions and robustness checks

We also test our analysis to different governance measures. First, we estimate the econometric models for the four CGI dimensions separately to check whether the results are robust for different types of governance practices. We also run probit models to analyse the relation between ADR and NM listings. We also exclude banks from our sample to evaluate whether our results are biased by these companies. Moreover, we run a difference-in-difference model to evaluate whether the governance of firms with ADRs Levels 2 and 3 improves after cross-listing. Finally, we analyse the relation between cross-listing, cost of financing, and share liquidity.

Table 3.7 reports the coefficients of ADR1 and ADR23 for different models and governance metrics. In order to facilitate visualization, we report only the coefficients of ADR dummy variables. Panel A shows the models for CGI, which have the same results as those in Table 3.5. Panel B presents the disclosure regressions. All coefficients of ADR1 and ADR23 are positive and significant at 1%, which show that the disclosure of cross-listed companies is better than that of domestic enterprises.

Table 3.7 – US Cross-Listing and Governance Dimensions

Variable	OLS	Fixed-Effects	Self-Selection
<i>Panel A: CGI</i>			
ADR1	0.50*** (0.00)	0.47** (0.02)	0.79*** (0.00)
ADR23	0.45*** (0.00)	0.51 (0.16)	0.59 (0.19)
<i>Panel B: DISC</i>			
ADR1	1.50*** (0.00)	1.59*** (0.00)	1.55*** (0.00)
ADR23	1.39*** (0.00)	1.76*** (0.00)	1.52*** (0.00)
<i>Panel C: BOARD</i>			
ADR1	-0.13 (0.54)	0.24 (0.44)	0.47 (0.27)
ADR23	0.23 (0.20)	-0.17 (0.79)	0.08 (0.91)
<i>Panel D: OWN</i>			
ADR1	-0.05 (0.73)	-0.18 (0.50)	0.54** (0.05)
ADR23	-0.55*** (0.00)	-1.14*** (0.01)	-1.09** (0.02)
<i>Panel E: RIGHT</i>			
ADR1	0.47*** (0.01)	-0.01 (0.97)	0.44 (0.35)
ADR23	0.46*** (0.00)	1.07* (0.09)	1.34 (0.11)

Notes: regression models for corporate governance (CGI and its four sub-indexes) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

Regarding the board of directors (Panel C of Table 3.7), no coefficient of ADR1 and ADR23 is statistically significant. All self-selection specifications show that the coefficients of ADR1 and ADR23 are not statistically significant, which suggest that the quality of board practices is similar for cross-listed and domestic enterprises.

The results for ownership structure are reported in Panel D. Only one coefficient of ADR1 is significant (5% level). In contrast, all coefficients of ADR23 are negative and significant at 1% or 5%. The self-selection models indicate that ADR1 firms have better ownership structure when compared to ADR23 and domestic companies. Moreover, the ownership structure of ADR23 firms is significantly worse than that of domestic companies.

Panel E of Table 3.7 shows the results for shareholder rights and indicates that only the OLS specifications present coefficients of ADR1 and ADR23 statistically significant at 1%. In contrast, the results of the FE and self-selection models indicate that ADR1 and ADR23 are not significant at 1%, which provide evidence that cross-listed firms do not grant more shareholder rights than domestic companies.

Table 3.8 shows the probit models with the determinants of NM listing. The coefficients of ADR are positive and significant for NM and NM23, suggesting that cross-listed companies tend to list their shares on New Market and on NM's Levels 2 and 3.

When we analyse ADR1 and ADR23 firms separately, the coefficients of ADR1 are positive and significant for NM and NM23 at 1% level. On the other hand, the coefficients of ADR23 are negative and significant for NM and NM23 at 5% and 1%, respectively. These results reveal that ADR1 firms tend to improve their governance through NM, whereas ADR23 firms do not list their shares on NM.

As for the control variables, NM and NM23 have a negative relation with voting concentration, leverage, and ROA, and a positive relation with firm size and growth. These results suggest that the companies that list on New Market are usually large, fast-growing, less leveraged, with lower profitability, and less ownership concentration.

Table 3.8 - Probit Models for Listing on New Market

Variable	NM			NM23		
ADR	0.54*** (0.00)			0.70*** (0.00)		
ADR1		0.72*** (0.00)			1.10*** (0.00)	
ADR23			-0.24** (0.04)			-0.52*** (0.00)
VOT	-0.02*** (0.00)	-0.02*** (0.00)	-0.02*** (0.00)	-0.03*** (0.00)	-0.03*** (0.00)	-0.03*** (0.00)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
SIZE	0.47*** (0.00)	0.52*** (0.00)	0.58*** (0.00)	0.18*** (0.00)	0.24*** (0.00)	0.32*** (0.00)
ROA	-0.01** (0.05)	-0.01* (0.09)	-0.01** (0.02)	-0.01 (0.36)	-0.01 (0.57)	-0.01 (0.11)
GRO	0.01*** (0.01)	0.01** (0.02)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Obs	2,469	2,469	2,469	2,469	2,469	2,469
McFadden R ²	0.40	0.41	0.38	0.42	0.44	0.40
% Correct	82.58	83.84	81.00	84.73	85.30	84.37

Notes: probit models for listing on New Market (NM and NM23) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

Since many Brazilian listed companies are from the financial sector, we follow the corporate finance literature and exclude banks from our sample in Table 3.9. The results are substantially the same as those in previous tables. We conclude that ADR1 companies have better governance than domestic firms, and that the governance of ADR23 firms is not better than that of domestic companies. Moreover, the governance practices of domestic and cross-listed companies improve after listing on New Market.

Table 3.9 - US Cross-Listing and Governance Excluding Banks

Variable	OLS			Fixed-Effects			Self-Selection		
Constant	3.84*** (0.00)	2.98*** (0.00)	2.98*** (0.00)	2.81*** (0.00)	3.08*** (0.00)	2.92*** (0.00)	4.24*** (0.01)	3.38** (0.03)	3.37** (0.03)
ADR1	1.11*** (0.00)	0.26*** (0.00)	0.50*** (0.00)	0.39*** (0.00)	0.27** (0.03)	0.47** (0.02)	0.88*** (0.00)	0.78*** (0.00)	0.80*** (0.00)
ADR23	0.11 (0.31)	0.31*** (0.00)	0.45*** (0.00)	0.59* (0.09)	0.40 (0.25)	0.51 (0.16)	0.88** (0.05)	0.57 (0.20)	0.59 (0.19)
NM23		2.62*** (0.00)	2.82*** (0.00)		1.66*** (0.00)	1.88*** (0.00)		1.67*** (0.00)	1.71*** (0.00)
NM23*ADR			-0.01 (0.90)			-0.40 (0.18)			-0.08 (0.83)
VOT	-0.02*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01* (0.06)	-0.01* (0.06)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	0.00 (0.11)	0.00 (0.24)	0.00 (0.21)	0.01 (0.24)	0.00 (0.47)	0.00 (0.48)
SIZE	0.37*** (0.00)	0.28*** (0.00)	0.27*** (0.00)	0.43*** (0.00)	0.29*** (0.00)	0.30*** (0.00)	0.21 (0.24)	0.22 (0.22)	0.22 (0.22)
ROA	0.01 (0.34)	0.01** (0.03)	0.01** (0.02)	0.00 (0.41)	0.00 (0.51)	0.00 (0.52)	0.02** (0.03)	0.01 (0.17)	0.01 (0.17)
GRO	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.00 (0.88)	0.00 (0.94)	0.00 (0.86)	0.00 (0.80)	0.00 (0.88)	0.00 (0.88)
Mills							-0.85* (0.06)	-0.46 (0.29)	-0.46 (0.29)
Obs	2,360	2,360	2,360	1,410	1,410	1,410	1,410	1,410	1,410
Adj R ²	0.40	0.66	0.66	0.86	0.88	0.88	0.81	0.83	0.83

Notes: regression models for corporate governance (CGI) as dependent variable excluding banks from the sample. The table documents the coefficients (p-values) and highlights the significance levels (** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

Table 3.10 shows the list of 25 Brazilian firms with NYSE ADRs and the CGI change after cross-listing in the US. Most firms (13 out of 25) do not improve governance practices after cross-listing. The CGI improves in 9 firms with an average increase of 0.8 (out of 10). In contrast, the CGI decreases in 3 companies, with an average decline of 0.7. We estimate a difference-in-difference model with firm and year effects, and the findings (diff-diff of -0.07 with p-value of 0.34) indicate ADR23 firms do not improve governance after cross-listing.

Table 3.10 – Brazilian Firms with ADR Levels 2 and 3

Company	Sector	Listing Date	ADR Level	CGI Change
AmBev	Food & beverage	6/4/97	2	0.5
Banco Bradesco	Bank	11/21/01	2	0.0
Banco Santander Brasil	Bank	10/7/09	3	0.5
BrasilAgro	Agribusiness	11/8/12	2	0.5
Braskem	Chemical	12/21/98	2	1.0
BRF - Brasil Foods	Food & beverage	10/20/00	2	0.0
Cemig	Electricity	9/18/01	2	0.5
Centrais Eletricas Brasileiras	Electricity	10/31/08	2	-1.0
Cia Brasileira de Distribuicao	Commerce	5/29/97	3	0.0
Cia Siderurgica Nacional	Steel & mining	11/14/97	2	0.5
Copel	Electricity	7/30/97	3	0.0
CPFL Energia	Electricity	9/29/04	3	0.0
Embraer	Transportation	7/21/00	3	0.0
Fibria Celulose	Pulp & paper	4/14/00	3	-0.5
Gafisa	Construction	3/16/07	3	0.5
Gerdaul	Steel & mining	3/10/99	2	0.0
GOL	Transportation	6/24/04	3	0.0
Itau Unibanco	Bank	2/21/02	2	0.5
Oi	Telecommunication	11/16/01	2	0.0
Petrobras	Oil & gas	8/10/00	3	0.0
Sabesp	Water & gas	5/10/02	3	3.0
Telefonica Brasil	Telecommunication	11/16/98	2	0.0
TIM Participacoes	Telecommunication	11/16/98	2	0.0
Ultrapar Participacoes	Water & gas	7/10/99	3	-0.5
Vale	Steel & mining	6/20/00	2	0.0

Notes: list of Brazilian firms with ADR Levels 2 and 3, cross-listing date, ADR level, and governance (CGI) change after cross-listing.

Table 3.11 shows the self-selection models to analyse the effect of cross-listing on share liquidity and cost of financing. Cross-listed companies have more liquid shares than domestic firms (Aggarwal et al., 2007; Pagano et al., 2002). The statistical significance is stronger for ADR1 firms (1% level) than ADR23 firms (10% level), which seems surprising given the fact that ADR Levels 2 and 3 are traded on US stock exchanges.

Regarding the cost of financing, ADR1 is significantly negative at 5%, suggesting ADR1 companies have a lower cost of financing when compared to domestic companies. Surprisingly, the cost of financing of ADR23 companies is not

significantly lower than that of domestic firms. The results for ADR1 firms support the evidence from the international literature (Hail and Leuz, 2009; Karolyi, 2012).

Table 3.11 – Effect of Cross-Listing on Share Liquidity and Cost of Financing

Variable	LIQ		CFIN	
Constant	-8.56*** (0.00)	-8.56*** (0.00)	-10.94 (0.74)	-9.42 (0.78)
ADR1	0.26*** (0.01)	0.26*** (0.01)	-9.22** (0.02)	-10.59** (0.02)
ADR23	0.63* (0.09)	0.64* (0.10)	-0.52 (0.93)	-1.63 (0.80)
NM23	0.05 (0.33)	0.06 (0.15)	10.39** (0.02)	6.96 (0.34)
NM23*ADR		-0.02 (0.78)		5.95 (0.42)
VOT	-0.01*** (0.00)	-0.01*** (0.00)	-0.10* (0.08)	-0.10* (0.08)
LEV	-0.03*** (0.00)	-0.03*** (0.00)	0.41*** (0.00)	0.41*** (0.00)
SIZE	1.08*** (0.00)	1.08*** (0.00)	3.78 (0.30)	3.65 (0.32)
ROA	-0.04*** (0.00)	-0.04*** (0.00)	-0.88*** (0.00)	-0.87*** (0.00)
GRO	0.01*** (0.00)	0.01*** (0.00)	0.17*** (0.01)	0.17*** (0.01)
Mills	2.09*** (0.00)	2.09*** (0.00)	28.62*** (0.00)	28.29*** (0.00)
Obs	1,585	1,585	1,378	1,378
Adj R ²	0.87	0.87	0.54	0.54

Notes: self-selection models for share liquidity (LIQ) and cost of financing (CFIN) as dependent variables. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 3.2.

We also analyse whether ADR23 companies tend to issue more bonds after cross-listing. We compare the number and volume of bonds issued 5 years around the cross-listing date. Regarding the number of bonds, 11 firms (out of 25) issued more bonds after cross-listing, 9 firms had the same number of bonds in both periods, and 5 firms issued fewer bonds. The results are essentially the same for the volume of

bonds: 10 firms increased the volume of bonds, 11 firms kept the same amount, and 4 firms raised less money through bonds after cross-listing.

Since ADR3 firms are able to raise money in the US primary markets, we evaluate whether they have issued new shares in the US after cross-listing. Only 5 (out of 11) ADR3 companies issued new shares in the US. Moreover, most of them (4 out of 5) raised money only once. These results indicate that Brazilian firms overall do not cross-list in order to issue more bonds in the international capital markets or raise capital on US stock exchanges.

3.7. Conclusion

In this essay, we study the governance practices of Brazilian cross-listed companies. We draw our motivation from the debate on the cross-listing literature whether listing on stock exchanges of developed countries such as the US is a signal of better governance and stronger investor protection.

Many authors argue that the governance practices are improved with cross-listings due to more stringent rules imposed by foreign securities authorities (Doidge et al., 2004). In contrast, several papers claim that SEC regulation is not effectively enforced for foreign firms, which have many exemptions to cross-list in the US and show that cross-listings aim to obtain cheaper funding and not to enhance governance practices (Licht, 2001, 2003; Siegel, 2005).

In this study we add to the debate on the bonding hypothesis by analysing the governance practices of Brazilian cross-listed firms. Recent corruption and governance scandals involving Brazilian cross-listed companies put into question the effectiveness of cross-listing to improve governance practices (Bloomberg, 2016; Financial Times, 2016).

We use a governance index to compare various attributes between cross-listed and domestic firms. Our results show that the best governance practices are adopted by Brazilian cross-listed firms traded over the counter, which are not required to comply with SEC regulation but improve their governance standards by listing on the Brazilian New Market (Carvalho and Pennacchi, 2012).

Our findings are robust to several specifications, governance metrics, and to potential endogeneity and selection bias. These results extend evidence in prior literature that cross-listing on stock exchange of developed countries does not necessarily improve corporate governance (Abdallah and Ioannidis, 2010; Busaba et al., 2015; Del Bosco and Misani, 2016; Licht, 2001, 2003; Siegel, 2005; Sarkissian and Schill, 2012).

This essay has implications for firms and regulators. Encouraging firms to voluntarily list shares on the New Market can be an easier and less costly alternative means for improving governance practices compared to cross-listing in developed countries. Furthermore, governance practices can be enhanced through stronger disclosure and governance regulation in the domestic country.

The study has many limitations and points to several potential avenues for future research. First, we evaluate cross-listed firms only in Brazil. Second, we analyse companies listed on stock exchanges, so the overall corporate governance in Brazil may be worse than that reported in our study. Moreover, we do not evaluate the relation between ADR listing and firm valuation. Also, future research could explore the effect of each individual governance practice on the cross-listing premium. Finally, a detailed study of US exemptions for foreign companies would help in understanding better the impact of regulation on the cross-listing decision.

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Appendix 3.1 – Minimum Requirements to List Shares in Brazil and in the US

Requirement	Brazilian corporation law	New Market	ADR Levels 2 and 3	US corporation law
Independence of directors	No	At least 20% of independent members	No	At least 50% of independent members
Audit committee	No	No	No	Yes
Nominating committee	No	No	No	Yes
Governance committee	No	No	No	Yes
Compensation committee	No	No	No	Yes
Board committee with independent directors	No	No	No	Yes
Executive sessions between non-management directors	No	No	No	Yes
Arbitration to solve corporate disputes	No	Yes	No	No
Voting rights to all shares	No	Yes	No	No
Minimum liquidity	No	At least of 25% of shares	No	No
Code of ethics	No	Yes	No	Yes
Financial statements in IFRS or US GAAP	Yes	Yes	Yes	Yes
Bid rule for all shareholders	No	Yes	No	No

Notes: main differences between the minimum requirements to list shares in Brazil (Brazilian corporation law and New Market) and in the US (ADR Levels 2/3 and US corporation law).

Appendix 3.2 – Definition of Variables

Variable	Definition
CGI	Leal and Carvalhal (2007)'s modified corporate governance index at year end
DISCL	CGI sub-index for disclosure at year end
BOARD	CGI sub-index for board of directors at year end
OWN	CGI sub-index for ownership structure at year end
RIGHT	CGI sub-index for shareholder rights at year end
ADR	Dummy indicating if the firm has ADR at year end
ADR1	Dummy indicating if the firm has ADR Level 1 or 144A at year end
ADR23	Dummy indicating if the firm has ADR Level 2 or 3 at year end
NM	Dummy indicating if the firm lists on New Market at year end
NM23	Dummy indicating if the firm lists on NM's levels 2 and 3 at year end
P/B	Price to book equity at year end
CFIN	Cost of financing (ratio of interest expenses to liabilities) at year end (in %)
LIQ	Share liquidity (ratio of number and volume of firm's shares to number and volume of all firms) at year end
VOT	Controlling shareholder's voting capital at year end (in %)
LEV	Debt to asset at year end (in %)
ROA	Net income to asset at year end (in %)
SIZE	Asset size (log) at year end
GRO	Mean revenue growth in the previous three years (in %)
FIX	Fixed to total asset at year end (in %)
INTIND	Dummy indicating if the firm operates in international industries: banking, energy, food & beverage, oil & gas, pulp & paper, telecom, and transportation

Notes: description of variables. The financial and accounting data are obtained in Bloomberg database.

Chapter 4

Does the Governance of Banks Differ from Nonfinancial Firms? Evidence from Brazil

Abstract

This essay evaluates the governance practices of Brazilian banks and non-financial firms. Our data set on Brazil provides an excellent laboratory for examining this research. Brazilian banks are important in the country and have one of the highest profitability among banks worldwide. We measure the governance practices through a firm-level governance index containing multiple attributes. Our findings show that the overall governance quality of banks is not significantly different than that of non-financial institutions. The results are robust to various econometric techniques and hold for many governance practices. We show that banks have better board practices, more concentrated ownership and fewer shareholders rights. We also document that the governance of Brazilian banks has not changed significantly since the 2008 crisis.

4.1. Introduction

Corporate governance is a major subject in the academia (Shleifer and Vishny, 1997). Due to the different nature of banks, the governance research usually analyse only nonfinancial enterprises (Adams and Mehran, 2003). However, bank governance has received heightened attention since the 2008 crisis (Adams and Mehran, 2012; Chen and Lin, 2016; Fahlenbrach and Stulz, 2011; Faleye and Krishnan, 2017; John et al., 2016; Minton et al., 2014; Wang and Hsu, 2013).

Although the literature on governance of banks has increased recently, it is still very limited. Moreover, many papers that examine bank governance discuss theoretical concepts and issues (Becht et al., 2012; Laeven, 2013). Empirical studies that compare the differences of governance practices between financial and nonfinancial firms are often lacking. Consequently, there is little evidence on the extent to which the governance of banks differs from non-financial companies.

The governance mechanisms of banks may differ from those of nonfinancial firms because banks have more complex activities, higher leverage, stronger information asymmetries, and worse agency problems (Becht et al., 2012; Caprio and Levine, 2002; De Haan and Vlahu, 2016; Grove et al., 2011; John et al., 2016; Laeven, 2013; Levine, 2004; Morgan, 2002).

The objective of this study is to measure and compare multiple aspects of firm-level governance practices between bank and non-financial companies. Our sample is composed of 327 banks and non-financial institutions in Brazil from 2000 to 2015. This research contributes to the governance literature and evaluates bank governance in an important emerging market.

The Brazilian market is of particular interest from an empirical perspective. Brazil has the 8th largest GDP in the world, and the banks have a prominent role in the

country. The total assets of Brazilian banks were USD 1.8 trillion in 2017, which represented 90% of Brazil's GDP.

Furthermore, the profitability of Brazilian banks – average return on equity (capital) of 26.60% (2.26%) per year – is the highest of financial institutions among the 10 largest countries (The Banker, 2018). The reasons behind the high profitability of Brazilian banks have attracted the attention from the international press (The Economist, 2018; The New York Times, 2015).

The banking sector is very concentrated in Brazil, where the six largest banks account for more than 80% of banking assets and loans. This oligopoly, associated with high interest rates, help to explain the huge profitability of Brazilian banks. The high interest rates reflect a past of hyper inflation, strong currency changes, and large government deficits in the country. The interest rates of Brazilian government bonds are so high that banks do not need to assume much risk in their loan operations. Further, since the period of hyperinflation in the 1980s and early 1990s, many banks have been privatized and have increased their efficiency. The pricing power of banks associated with high profitability and low default risk explain why the major Brazilian banks were not significantly affected and did not receive capital injection during the 2008 financial crisis.

Moreover, the ownership structure of Brazilian banks is mixed in terms of shareholder origin. Out of the six largest banks in Brazil, three belong to the state and three are owned by private investors. This allows us to examine the ownership structure and governance of banks.

This essay also provides a more complete understanding of the governance practices of banks and non-financial institutions. We examine a comprehensive set of governance characteristics through a corporate governance index (CGI) to capture

their different aspects (Black et al., 2006; Leal and Carvalhal, 2007). We use CGI to compare empirically the differences of multiple aspects of governance practices between banks and nonfinancial firms.

We also use the listing on Brazilian New Market (NM) as another governance metric. The NM is a segment on the Brazilian stock exchange (B3) that requires better governance practices. Although the CGI and NM have a few similarities, most governance attributes are different and complementary because the CGI is inspired in international governance practices that are not necessarily adopted in Brazil.

Our research may be subject to the possibility of endogeneity and self-selection bias since the determinants and characteristics of banks may also affect and be affected by the governance of firms as well as by other unobserved characteristics. We employ the Heckman (1979) two-stage specification to address this issue.

We provide evidence that governance quality is not significantly different for banks and non-financial institutions. Our findings are robust to different econometric models and governance metrics. When we analyse each governance dimension separately, there are differences between banks and non-financial institutions regarding board of directors, ownership structure, and shareholder rights. We document that banks have better boards, worse ownership structure, and fewer shareholders rights compared to non-financial institutions.

We also document that banks and non-financial enterprises are equally likely to list on NM, however banks list less on the stricter NM segments, which require better ownership structure and more shareholder rights. Moreover, the governance of banks is not significantly different before and after the financial crisis of 2008.

4.2. Literature review

4.2.1. Corporate governance of banks

Most corporate governance studies exclude banks because of their special nature (Adams and Mehran, 2012). However, since the global crisis of 2008, the effectiveness of bank governance has been analyzed by academics and regulators, and the number of studies on corporate governance of banks has increased substantially (De Haan and Vlahu, 2016; John et al., 2016).

The research on bank governance shows the main differences between bank and non-financial enterprises such as opacity and complexity of activities, capital structure, regulation, contribution to systemic risk, among other aspects (Caprio and Levine, 2002; De Haan and Vlahu, 2016; John et al., 2016; Laeven, 2013; Levine, 2004).

Banks are opaque and complex institutions (Becht et al., 2012; Laeven, 2013). The opacity and complexity increase information asymmetries, worsen agency problems, and make it more difficult to measure the quality of the assets (Carlin et al., 2013; Dell’Ariccia et al., 2012; Mülbert, 2010; Purnanandam, 2011). The opacity of banks also increases the difficulty of monitoring by shareholders, creditors, and regulators, because the quality of the bank loans and other assets is not readily observable.

In addition, banks are highly leveraged (Adams and Mehran, 2003; Berger and Bouwman, 2013; De Angelo and Stulz, 2015; Laeven, 2013). The average leverage in banks can usually exceed 90%, which is much higher than 20-30% of non-financial firms (Gornall and Strebulaev, 2018).

Depositors are the main source of funding and are important non-shareholding stakeholders of banks. The funding through bank deposits can create agency problems between shareholders and deposit holders, so governance of banks should align the interest of shareholders, managers, and deposit holders (Acharya et al., 2009).

Bankers have distorted incentives to increase high-risk investments because they may generate profits, but, in case of failure the losses will be borne by the depositors. Laeven (2013) argue that this agency problem is exacerbated because there are many small deposit holders who have difficulties to monitor banks individually and to renegotiate debt in case of problems.

The regulation for banks is stricter than for nonfinancial firms because a crisis in the banking sector can cause bank runs, have macroeconomic externalities and generate systemic risk (Caprio and Levine, 2012; Grove et al., 2011). The goal of the regulation in the banking sector is to promote stability of the financial system, however it may reduce the monitoring incentives of shareholders or boards members because they assume the regulators will act on behalf of deposit holders and monitor banks effectively.

Many countries have set up deposit insurances funds, such as the US Federal Deposit Insurance Corporation, to protect depositors in case of bankruptcy (John et al., 2010). Brazil also has a deposit insurance fund called FGC (Guaranteed Credit Fund). On the one hand, these insurance funds can prevent bank runs and avoid systemic risks caused by the failure of individual banks, but on the other, these deposit insurances funds can create governance problems because they reduce the depositors' incentives to monitor banks and increase risk-taking activities by bankers (Levine, 2004; Macey and O'Hara, 2003).

The 2008 crisis proved that regulation alone cannot prevent bank failures and cannot be a substitute for bank governance. Becher and Frye (2011) and Hagendorff et al. (2010) argue that both regulation and bank governance are important to protect the financial system.

The market for corporate control is different in banks (Adams and Mehran, 2003; Prowse, 1997). Hostile takeovers are limited in the banking industry because they usually require regulatory approval. Cheng et al. (1989) and Prowse (1997) argue that the banking regulation in many countries requires approval for mergers, takeovers, reorganizations, and purchase of bank shares by foreign investors. These restrictions protect bank managers and reduce the possibility of their being removed due to poor performance.

Banks and nonfinancial firms provide diverse executive compensation packages (Fahlenbrach and Stulz, 2011; Pi and Timme, 1993). Adams and Mehran (2003) document that the remuneration is higher in banks and show that banks use fewer stock options than non-financial firms because banks are highly leveraged and stock options can affect their cost of debt.

The board of directors is different in banks, due to their opacity and complexity, the lack of market control, and the risk-taking behaviour. Most governance studies on board of directors exclude banks and analyse only non-financial firms. There are only a few studies that examine bank boards (Adams and Mehran, 2003, 2012). There have also been studies on the differences between board size, composition, independence, and committees (Andres and Vallelado, 2008; Liang et al., 2013).

4.2.2. Empirical evidence

There are studies on corporate governance of banks in many countries (Acharya et al., 2009; Fahlenbrach and Stulz, 2011; Laeven, 2013, Levine, 2004; Minton et al., 2014). However, most research examines developed markets, and only a few studies evaluate bank governance in emerging countries. Many studies on bank governance do not consider the differences that exist compared to non-financial institutions. De Haan and Vlahu (2016) show that many empirical results that hold for nonfinancial firms are not applicable for banks.

4.2.2.1. Board of directors in banks

Adams and Mehran (2003, 2012) document that board sizes are bigger in banks than in non-financial institutions. Andres and Vallelado (2008) find similar results in Europe and Canada. The authors argue that banks have bigger boards due to their opaque and complex structure.

Adams and Mehran (2012) and Salim et al. (2016) provide evidence that banks with bigger boards have better performance. In contrast, Pathan and Faff (2013) report that banks with bigger boards have worse efficiency. Extensive literature provides empirical evidence that banks with good governance have higher valuation (Andres and Vallelado, 2008; Caprio et al., 2007; Peni and Vahamaa, 2012).

Board independence and the presence of outside directors are different in banks and non-financial institutions (Pathan and Skully, 2010; Roengpitya, 2011). Most studies document that banks have more outside directors due to the opacity and complexity of their assets (Adams, 2012; Belkhir, 2009; Bhagat and Black, 2002).

Kim et al. (2007) show that banks in common-law jurisdictions have more outside directors than their peers in civil-law systems. Andres and Vallelado (2008) study 69

banks in the UK, US, Canada, Italy, Spain, and France and show that 80% of bank directors are outsiders.

Adams (2012) shows that banks that receive governmental funds during crises have more outside directors. The author claims that board independence is more important in non-financial firms than in banks. Since banks are opaque and complex institutions, and outside directors are not bank employees and do not have a deep knowledge of the daily activities, their effectiveness to monitor the bank business is low.

Studies on the relation between bank performance and board independence present mixed results. Adams and Mehran (2012) study 35 US large banks and find that bank performance is not significantly associated with board independence. Erkens et al. (2012) analyse 296 large banks from 30 countries and document that the performance during crises is worse for banks with more outside directors. Pathan and Faff (2013) find that bank performance is negatively related to board independence. In contrast, Liang et al. (2013) study 50 Chinese banks and find that bank performance is positively associated with board independence.

There are also empirical studies on CEO duality (same person acting as CEO and chairman) in banks. Larcker et al. (2007) document a negative relation between CEO duality and bank profitability. However, Aebi et al. (2012) show that bank returns are not significantly impacted by CEO duality. Pathan (2009) documents that risk taking is negatively related to CEO duality. Berger et al. (2016) and Simpson and Gleason (1999) show that bank default is negatively associated with CEO duality. Grove et al. (2011) study US banks and report that bank performance is negatively influenced by CEO duality.

Adams and Mehran (2003, 2012) find that banks have more board committees than non-financial firms. Sun and Liu (2014) show that banks containing audit committees are less risky, whereas Barakat and Hussainey (2013) document that banks with audit committees have better transparency.

Flannery et al. (2004), Hopt (2013), and John et al. (2010) report that banks are more transparent due to stricter disclosure requirements by regulators. John and Qian (2003) show that the analyst coverage in banks is high, which increases the disclosure of information.

Aebi et al. (2012) study risk committees and chief risk officers (CRO) in banks. The results indicate that the performance is higher for banks with CRO linked to the board. Mongiardino and Plath (2010) study 20 large banks and document that only a few banks had board risk committees and included CRO on the board before the crisis of 2008.

Battaglia and Gallo (2015) study Chinese and Indian banks, and show that banks with large and active risk committee have higher profitability. Faleye and Krishnan (2017) provide evidence that banks that have more effective boards with credit committees lend less to riskier borrowers.

García-Meca et al. (2015) examine 159 banks in 9 countries and find that banks with higher board gender diversity are more profitable. Elyasiani and Zhang (2015) study the busyness of directors (individuals attending several boards) and show that busy boards increase bank performance and decrease bank risk. The authors argue that busy directors have more knowledge, expertise, and monitoring skills, which allow them to improve bank performance and reduce its risk.

4.2.2.2. Executive compensation, and ownership structure in banks

The executive compensation in banks and its effect in risk taking have been vastly studied (Brown, et al., 2015; Cheng et al., 2015). Fahlenbrach and Stulz (2011) document bank performance is not significantly affected by the CEO's pay package. Grove et al. (2011) study 236 US banks and document that the impact of executive remuneration on bank returns is positive in shorter horizons but negative in the long-term.

Cheng et al. (2015), and DeYoung et al. (2013) find that higher executive compensation increases risk-taking in banks. Gropp and Kohler (2010) study 1100 banks in 25 OECD countries and show that risk-taking of banks also increases with the alignment of interest of managers and shareholders.

The literature on ownership structure and bank performance is vast. Iannotta et al. (2007) show that bank performance is not significantly related to ownership structure. In contrast, Haw et al. (2010) find that bank performance decreases with ownership concentration.

Adams and Mehran (2003) show that institutional investors and CEOs have lower shareholdings in banks than in nonfinancial firms, due to the stricter regulation in the banking sector and lack of incentives to monitor banks individually. Barth et al. (2004) and Levine (2004) show that several countries impose restrictions on bank shareholding that affect negatively the monitoring role of large shareholders.

Beltratti and Stulz (2012) provide evidence that higher ownership concentration increases risk taking in banks. Berger et al. (2016) find that high shareholdings of non-CEO management increase risk-taking, which may result in bank failure.

The performance of foreign and domestic banks has also been evaluated in the literature and the results are mixed. Vennet (1996) show that domestic and foreign

banks have similar performance. Lensink et al. (2008) examine 2095 banks in 105 countries and find that bank efficiency is negatively associated with foreign ownership. Peek et al. (1999) and Sathye (2001) show that the performance of domestic banks is higher in developed markets.

Bonin et al. (2005) document that foreign banks outperform domestic ones in emerging markets. This finding is in line with Claessens et al. (2001), but is rejected by Yildirim and Philippatos (2007). Chen and Liao (2011) show that foreign banks outperform local peers if the parent bank is profitable and when the financial sector is less competitive in the host country.

Several studies provide evidence that private banks outperform state-owned financial institutions (Berger et al., 2005; Fries and Taci, 2005; Iannotta et al., 2007). Similar findings have been reported in various countries such as China (Berger et al., 2009; Lin and Zhang, 2009), Indonesia (Shaban and James, 2018), Mexico (Haber, 2005), Taiwan (Chen, 1998), and Turkey (Mercan et al., 2003).

4.2.3. Research hypotheses

The governance literature shows that banks are different than nonfinancial enterprises (Becht et al., 2012; Caprio and Levine, 2002; Hopt, 2013; Laeven, 2013). The international literature show that banks are more transparent than non-financial institutions (Flannery et al., 2004; Hopt, 2013; John et al., 2010) and have better governance practices, more independent directors, and board committees (Adams, 2012; Adams and Mehran, 2003). Given the previous discussions and that governance regulation for banks is stricter than for nonfinancial firms to prevent systemic risk, we conjecture that Brazilian banks should have better governance practices.

H1a: Banks have better governance practices than non-financial firms.

Many studies show that information asymmetries, and agency problems are higher in banks than in non-financial firms (Becht et al., 2012; Grove et al., 2011; Laeven, 2013; Levine, 2004; Morgan, 2002). Further, higher ownership concentration in banks may increase risk-taking, which can harm minority shareholders and creditors (Beltratti and Stulz, 2012). Many countries also impose restrictions on bank shareholding, which decrease the monitoring by large shareholders (Barth et al., 2004; Levine, 2004). Our second hypothesis follows from this discussion.

H1b: Banks have similar or worse governance practices than non-financial firms.

We test these hypotheses by comparing multiple aspects of governance practices between Brazilian banks and non-financial firms. The next several sections evaluate our research hypotheses empirically.

4.3. Data sources and description

We study 327 Brazilian companies from 2000 to 2015. We select all firms traded on the Brazilian stock exchange (B3) with public information. Our unbalanced panel represents 94% of listed companies in Brazil.

Out of the 327 companies, there are 35 banks, which represent 99% of the assets of all banks in Brazil. Most Brazilian banks (27 out of 35) are controlled by private shareholders, whereas 8 banks are state-owned. Regarding the financial sector, we study only banks, because the other types of financial institutions (brokers, dealers, insurance companies, etc) are usually not listed companies in Brazil, so their information is not publicly available.

We measure the governance practices through a modified version of the corporate governance index (CGI) proposed and empirically tested by Leal and Carvalhal (2007). We select a smaller number of questions (20 instead of 24), focusing on the items that are more statistically significant to explain the governance quality in Brazil.

We use 20 CGI questions, which can be answered ‘yes’ or ‘no’ (1 and 0, respectively) using public sources (see Table 4.4). The CGI is the sum of all 20 items (reported on a 0–10 scale) and is grouped into 4 sub-indexes: disclosure, board, ownership, and shareholder’s rights. We hand-collect CGI from CVM website. We follow the governance literature and compute an unweighted index (Black et al., 2006). We also implement various weighting schemes, but our empirical results are significantly the same.

We also employ the listing on New Market (NM) as a robustness check to measure governance quality. The NM is a listing segment that requires stronger governance practices and is composed of three levels. In Level 1, companies must have higher share liquidity (free float of at least 25% of their shares) and better transparency (disclosure of code of conduct, related party transactions, etc.). In Level 2, firms must grant additional shareholder’s rights such as voting rights to all shareholders in important matters, bid rule after a change of control, arbitration to solve corporate disputes, nomination of at least 20% of independent board members, etc. In NM strictu sensu (Level 3), the company can issue only voting shares and must adopt all Level 1 and 2 practices.

We collect and calculate the following variables: CGI (governance index), BANK (dummy indicating if the firm is a bank), NM (New Market), NM23 (NM’s Levels 2 and 3), VOT (percentage of voting concentration), SOE (state-owned enterprise),

FOR (foreign company), P/B (price-to-book as a valuation proxy), LEV (leverage), ROE (return on equity as a performance proxy), SIZE (firm size), and FIX (fixed assets). The financial and accounting data are obtained in Bloomberg database. Appendix 4.1 shows the definition of each variable.

Table 4.1 shows the summary statistics. The average CGI is 5.42 (out of 10) and shows that the governance quality is still poor in Brazil (La Porta et al., 1998). The four CGI sub-indexes also have low average scores: disclosure (6.6), board of directors (6.1), shareholder rights (5.2), and ownership structure (3.3). Another evidence of poor governance is the small percentage of companies that list on NM (38%) or NM23 (28%).

Table 4.1 - Summary Statistics

Variable	Average	Median	Minimum	Maximum	Std Deviation
CGI	5.42	5.25	1.00	9.50	1.89
DISCL	6.57	7.50	0.00	10.00	2.60
BOARD	6.09	6.00	0.00	10.00	2.71
OWN	3.27	3.33	0.00	8.75	2.33
RIGHT	5.19	5.00	0.00	10.00	2.62
BANK	0.03	0.00	0.00	1.00	0.16
VOT	56.20	54.00	0.10	100.00	27.11
SOE	0.07	0.00	0.00	1.00	0.25
FOR	0.09	0.00	0.00	1.00	0.29
NM	0.38	0.00	0.00	1.00	0.49
NM23	0.28	0.00	0.00	1.00	0.45
P/B	1.56	1.16	0.00	7.20	1.29
FIX	38.93	40.87	0.00	99.87	25.92
LEV	58.43	59.73	0.01	99.63	21.49
ROE	11.17	10.86	-65.90	85.10	18.87
SIZE	7.70	7.68	1.27	14.18	1.87

Notes: descriptive statistics for our sample of 327 Brazilian companies from 2000 to 2015. The definition of each variable is described in Appendix 4.1.

The ownership is very concentrated in Brazil and the controlling shareholder has on average 56% of the voting capital. As for the shareholder origin, most Brazilian companies are owned by families or individuals. Only 9% of the firms are controlled by foreign investors and 7% belong to the state.

Table 4.2 shows the average and median (in parentheses) statistics of banks and non-financial institutions. The average (median) CGI is 5.54 (5.50) for banks and 5.38 (5.25) for non-financial institutions, and the differences are not significant at 5%. This finding reveals that the overall governance is similar for banks and non-financial institutions.

The conclusions for CGI also hold for disclosure and shareholder rights sub-indices. The average (median) score in disclosure is 6.78 (7.50) for banks and 6.53 (7.50) for non-financial institutions, and the differences are not significant. The average (median) score in shareholder rights is 5.20 (5.00) for banks and 5.17 (5.00) for non-financial firms, and the differences are not significant. These findings show that the disclosure practices and shareholder rights are significantly the same for banks and non-financial institutions.

Regarding board of directors, the average (median) score is 6.62 (6.00) for banks and 6.00 (6.00) for non-financial institutions, and the differences are significant at 1%. This result seems to indicate that banks have stronger board of directors than non-financial enterprises.

The ownership dimension shows that non-financial firms have scores (average of 3.28 and median of 3.75) higher than those of banks (average of 2.90 and median of 2.50), and the differences are statistically significant at 1%. The variable VOT indicates that the voting capital is more concentrated in banks (average 71% and median 83%) than in non-financial institutions (55% and 53%, respectively).

Table 4.2 - Characteristics of Banks and Non-Financial Firms

Variable	Banks	Non-Financial Firms	P-value of the difference
CGI	5.54 (5.50)	5.38 (5.25)	0.17 (0.10)*
DISCL	6.78 (7.50)	6.53 (7.50)	0.13 (0.25)
BOARD	6.62 (6.00)	6.00 (6.00)	0.00*** (0.00)***
OWN	2.90 (2.50)	3.28 (3.75)	0.01*** (0.00)***
RIGHT	5.20 (5.00)	5.17 (5.00)	0.81 (0.38)
VOT	71.08 (83.30)	54.98 (53.10)	0.00*** (0.00)***
SOE	0.28 (0.00)	0.05 (0.00)	0.00*** (0.00)***
FOR	0.03 (0.00)	0.10 (0.00)	0.00*** (0.05)**
NM	0.38 (0.00)	0.37 (0.00)	0.76 (0.80)
NM23	0.13 (0.00)	0.29 (0.00)	0.00*** (0.00)***
P/B	1.43 (1.04)	1.56 (1.19)	0.08* (0.39)
FIX	2.21 (1.44)	43.75 (45.41)	0.00*** (0.00)***
LEV	84.63 (89.03)	55.94 (57.65)	0.00*** (0.00)***
ROE	15.47 (14.70)	10.67 (10.20)	0.00*** (0.00)***
SIZE	9.50 (9.29)	7.52 (7.50)	0.00*** (0.00)***

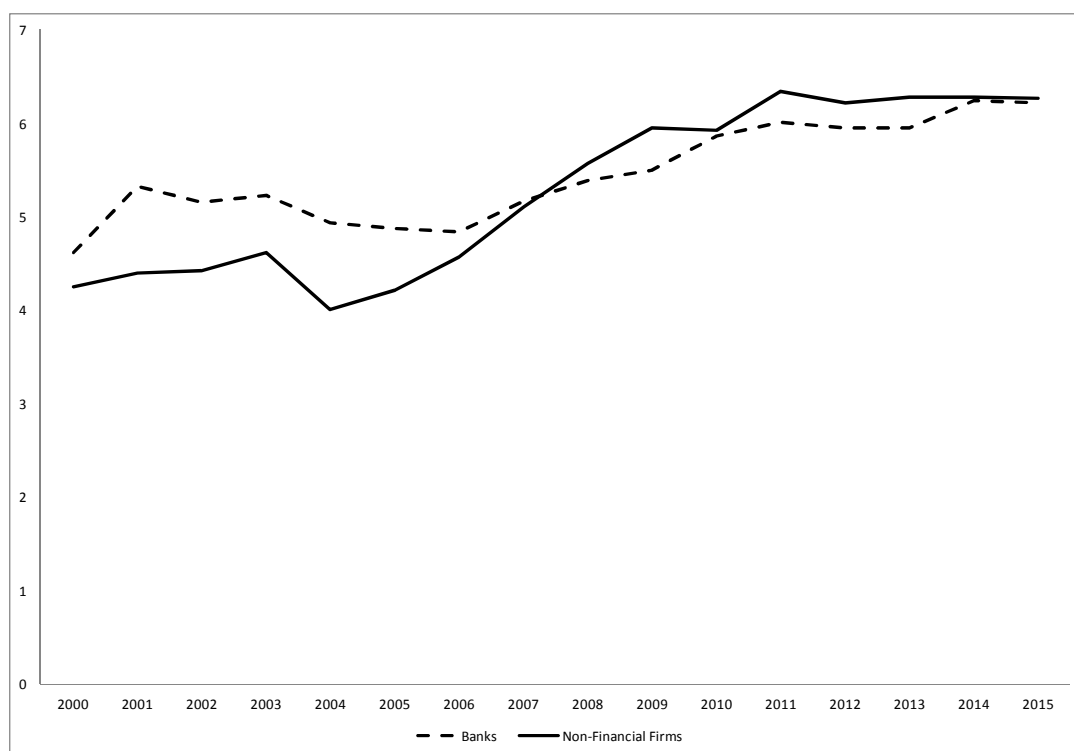
Notes: descriptive statistics for banks and non-financial enterprises. The definition of each variable is described in Appendix 4.1. The table documents the coefficients (average and median in parentheses), p-values, and highlights the significance levels of the differences between both groups (***) for 1%, ** for 5% and * for 10%).

The percentage of banks and non-financial institutions listed on NM are similar (38% and 37%, respectively). However, non-financial firms list more on NM's levels 2 and 3. The percentage of non-financial firms on NM23 (29%) is higher than that of banks (13%), and the difference between them is significant at 1%. Regarding the

control variables, banks are larger, more profitable, have higher leverage and fewer fixed assets, and all the differences are significant at 1%.

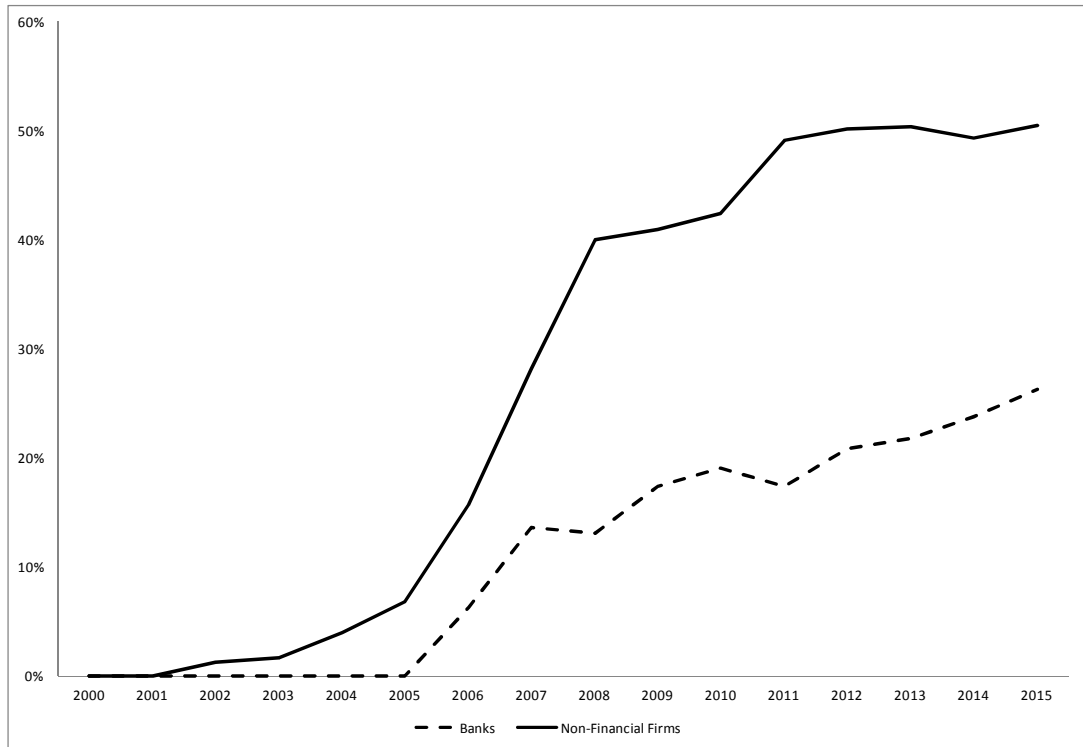
Figure 4.1 shows the average CGI of banks and non-financial institutions from 2000 to 2015. The average CGI of banks was higher than non-financial firms from 2000 to 2007, and then the CGI of non-financial firms has achieved the highest scores since 2008. In 2000, the average CGI of banks (4.62) was significantly greater than that of non-financial firms (4.25). In 2015, the average CGI of non-financial firms (6.27) was slightly higher than that of banks (6.22). There is an overall trend of governance improvement in recent years. However, the governance quality of banks underperformed that of non-financial firms after 2008.

Figure 4.1 – Corporate Governance Index of Banks and Non-Financial Firms



Notes: average corporate governance index of banks and non-financial enterprises from 2000 to 2015.

Figure 4.2 – Percentage of Banks and Non-Financial Firms on New Market



Notes: percentage of banks and non-financial enterprises on New Market's Levels 2 and 3 from 2000 to 2015.

Figure 4.2 shows the percentage of banks and non-financial institutions listed on NM23 from 2000 to 2015. We note that non-financial institutions list more on NM23 when compared to banks. Since the creation of NM, the percentage of non-financial firms on NM23 has always been higher than that of banks. In the beginning of the crisis in 2008, only 13% of banks listed on NM23, compared to 40% of non-financial institutions. In 2015, the percentage of banks listing on NM23 increased to 26%, which was significantly lower than the 51% of non-financial firms.

Table 4.3 presents the correlations analysis. The correlation of BANK with CGI (0.02) is not significant, suggesting that banks do not have better governance practices than non-financial firms. The correlations of BANK with the four CGI dimensions present mixed results. The correlations of BANK with disclosure (0.03) and shareholder rights (0.00) are not statistically significant. The correlations of

BANK with board of directors and ownership structure are significant at 1% (0.06 and -0.05, respectively). Further, the correlations of BANK with NM and NM23 are 0.00 and -0.11, respectively, but only the latter is significant at 1%.

The correlation analysis shows that the overall governance quality is significantly the same for banks and non-financial enterprises. In addition, the percentage of both groups of enterprises on NM is almost the same, but non-financial institutions are more likely to list on NM23.

The correlations of BANK are significantly positive with LEV, SIZE, VOT, and ROE, and significantly negative with FIX, which show that banks are bigger, more leveraged, have larger profitability, higher ownership, and fewer fixed assets compared to non-financial firms.

Table 4.4 shows the proportion of companies that answer “yes” to each CGI question in 2015. Overall banks score the highest in 11 out of 20 questions, mainly in disclosure (5 out of 6) and shareholder rights (3 out of 5). Banks score higher than non-financial institutions in items such as policies on related party transactions, executive compensation, annual report and its governance section, unqualified auditor opinion, different CEO and Chairman, board committees, prohibition of loans to controlling shareholders, mandatory bid rights for minority shareholders, no indirect control structure, and no shareholder agreement that constrains voting rights.

Table 4.3 - Correlations among Variables

Variable	BANK	CGI	DISCL	BOARD	OWN	RIGHT	NM23	NM	VOT	SOE	FOR	P/B	FIX	LEV	ROE	SIZE
BANK	1.00															
CGI	0.02	1.00														
DISCL	0.03	0.78***	1.00													
BOARD	0.06***	0.76***	0.47***	1.00												
OWN	-0.05***	0.54***	0.28***	0.14***	1.00											
RIGHT	0.00	0.77***	0.39***	0.45***	0.36***	1.00										
NM23	-0.11***	0.72***	0.47***	0.49***	0.43***	0.67***	1.00									
NM	0.00	0.71***	0.58***	0.55***	0.23***	0.60***	0.80***	1.00								
VOT	0.17***	-0.38***	-0.21***	-0.20***	-0.31***	-0.41***	-0.40***	-0.34***	1.00							
SOE	0.27***	0.12***	0.07***	0.11***	0.04**	0.10***	-0.08***	0.02	0.17***	1.00						
FOR	-0.07***	-0.05***	0.00	-0.02	-0.06***	-0.08***	-0.07***	-0.12***	0.24***	0.00	1.00					
P/B	-0.03	0.27***	0.21***	0.23***	0.12***	0.20***	0.20***	0.17***	-0.12***	-0.07***	0.08***	1.00				
FIX	-0.50***	0.00	0.06***	0.03	0.02	-0.12***	-0.04**	-0.05***	0.00	-0.04**	0.16	0.01	1.00			
LEV	0.38***	0.00	0.01	0.06***	-0.02	-0.04**	-0.08***	-0.01	0.08***	0.08***	-0.08***	0.03	-0.22***	1.00		
ROE	0.07***	0.06***	0.11***	0.07***	-0.02	-0.02	-0.01	0.02	0.03	0.02	0.09***	0.33***	-0.14***	-0.10***	1.00	
SIZE	0.30***	0.41***	0.50***	0.42***	0.00	0.14***	0.16***	0.36***	-0.03	0.26***	0.04**	0.12***	0.00	0.36***	0.15***	1.00

Notes: the table documents the correlations and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The definition of each variable is described in Appendix 4.1.

Table 4.4 – Proportion of Companies Answering “Yes” to Governance Questions

Question	Banks	Non-Financial Firms
<i>Disclosure</i>		
1. Are there policies for related party operations?	83%	68%
2. Is the detailed executive compensation disclosed publicly?	100%	92%
3. Is there only unqualified auditor opinion in the last 5 years?	88%	83%
4. Is the annual report disclosed publicly?	46%	39%
5. Are the investor presentations disclosed publicly?	63%	65%
6. Is there a governance section in the annual report?	75%	71%
<i>Board of Directors</i>		
7. Is there no CEO duality (different Chairman and CEO)?	83%	81%
8. Are there board committees?	67%	41%
9. Are there only external directors (except CEO)?	25%	40%
10. Is the board size between 5 and 11?	75%	77%
11. Is the board tenor between 1 and 2 years?	71%	81%
<i>Ownership Structure</i>		
12. Is there a maximum limit (i.e.20%) for non-voting shares?	13%	60%
13. Is the largest shareholder’s control equal to his ownership?	25%	55%
14. Is there no loan to controlling shareholders?	88%	2%
15. Is shareholder participation facilitated in the annual meetings?	29%	33%
<i>Shareholder’s Rights</i>		
16. Are there voting rights to all shareholders in major subjects?	38%	60%
17. Is there bid rule to minority investors in control transfer?	71%	61%
18. Is there no indirect structure?	92%	66%
19. Is there no shareholder agreement that constrains votes?	75%	69%
20. Is the share liquidity higher than 25% of total capital?	38%	66%

On the other hand, non-financial institutions score higher in 9 out of 20 questions, mainly in board of directors (3 out of 5) and ownerships structure (3 out of 4). Non-financial institutions perform better in disclosure of corporate presentations, presence of external directors, adequate board size and tenor, more presence of voting shares, less separation between ownership and control, facilitation of shareholder participation in meetings, additional voting rights for minority shareholders, and higher free-float in the secondary market.

4.4. Multivariate results

We estimate the model below to evaluate the effect of bank on governance quality:

$$CGI_{i,t} = \beta_0 + \beta_1 BANK_{i,t} + \beta_2 X_{i,t} + \mu_{i,t}$$

where $CGI_{i,t}$ is the governance index of enterprise i at year end t , $BANK_{i,t}$ indicates financial institutions, $X_{i,t}$ represents enterprise's characteristics, and $\mu_{i,t}$ accounts for the residual term. We select the firm characteristics based on the governance literature such as size, ownership, profitability, leverage, and valuation (see Adams and Mehran, 2003, 2012; Shleifer and Vishny, 1997).

We run the regressions using ordinary least squares (OLS), fixed-effects (FE), and Heckman (1979) models. In the FE approach, we do not include firm-effects and add only industry and year dummies (not reported). In each regression we use clustered robust standard errors (Petersen, 2009; Thompson, 2011). To take into account and mitigate potential endogeneity and self-selection bias, we estimate two-stage regressions where the first stage refers to the probit model with bank characteristics and the second stage estimates the relation between governance quality and banks.

Finding instruments for the first-stage is not easy because many variables that are characteristics of banks may also influence governance practices. Our probit regressions include FIX as instrument since the tangibility of assets is negatively associated with the banking business and is usually unrelated to governance practices (Adams and Mehran, 2003, 2012; De Haan and Vlahu, 2016; John et al., 2016). In fact, the correlation between FIX and BANK is -0.50 (significant at 1%), whereas the correlation between FIX and CGI is 0.00 (not statistically significant).

We add the inverse mills in the governance equation using Heckman (1979) model. We include the mills as an additional regressor together with firm size, profitability, leverage, voting concentration, and price-to-book.

Table 4.5 shows our governance regressions, which are estimated using three methods: OLS, FE, and self-selection. All coefficients of BANK are not significant at 5%, which indicate that the governance quality of banks and non-financial institutions is significantly the same.

Table 4.5 - Governance of Banks and Non-Financial Firms

Variable	OLS	Fixed-Effects	Self-Selection
Constant	3.72*** (0.00)	3.94*** (0.00)	4.06*** (0.00)
BANK	-0.01 (0.95)	-0.11 (0.32)	-0.22 (0.21)
VOT	-0.02*** (0.00)	-0.02*** (0.00)	-0.01*** (0.00)
SOE	0.60*** (0.00)	0.68*** (0.00)	1.40*** (0.00)
FOR	-0.01 (0.97)	-0.05 (0.61)	0.18 (0.52)
LEV	-0.01*** (0.00)	-0.01*** (0.00)	-0.03*** (0.00)
SIZE	0.41*** (0.00)	0.34*** (0.00)	0.40*** (0.00)
ROE	-0.01*** (0.00)	-0.01* (0.09)	-0.01* (0.10)
P/B	0.32*** (0.00)	0.30*** (0.00)	0.55*** (0.00)
Mills			-0.06** (0.05)
Obs	2,751	2,751	2,751
Adj R ²	0.36	0.44	0.50

Notes: regression models for corporate governance (CGI) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

The inverse mills ratio is significantly negative at 5%. Our evidence confirms the presence of self-selection bias and suggest there may be unobservable firm characteristics that are more likely present in banks and at the same time are associated with poor governance quality.

Regarding control variables, governance quality is negatively associated with ownership, leverage, and profitability, and positively connected with size and valuation. These results are in line with Adams and Mehran (2003, 2012), and Shleifer and Vishny (1997).

Table 4.6 shows the probit models with the determinants and characteristics of Brazilian banks. The model classifies 97% of the data correctly. The coefficients of VOT, LEV, and SIZE are positive and significant at 1%, whereas the coefficients of SOE and P/B are also positive but have lower statistical significance (10%). We also note that FIX is significantly negative at 1%. The probit model indicates that banks are large and highly leveraged companies with more control concentration and fewer fixed assets when compared to non-financial firms.

4.5. Extensions and robustness checks

We estimate our models for different time periods using various governance measures. First, we split our sample in two separate sub-periods to check whether the results differ before and after the global crisis of 2008. We also estimate the governance regressions using CGI sub-indexes, NM, and NM23 as dependent variables to check whether the results are robust for different types of governance practices. Finally, we analyse the relation between governance, profitability, and valuation for banks and non-financial firms.

Table 4.6 - Probit Model with Bank Characteristics

Variable	BANK
Constant	-4.21*** (0.00)
VOT	0.02*** (0.00)
SOE	0.61* (0.06)
FOR	-0.17 (0.81)
LEV	0.04*** (0.00)
SIZE	0.15*** (0.01)
ROE	0.00 (0.97)
P/B	0.22* (0.07)
FIX	-0.30*** (0.00)
Obs	1,926
McFadden R ²	0.81
% Correct	96.63

Notes: probit model for being a bank (BANK) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

Table 4.7 reports the self-selection models before and after 2008. The first column shows the results for the entire period (2000-2015), whereas the second and third columns present the results for 2000-2008 and 2009-2015, respectively. The self-selection estimations show that the coefficients of BANK are not significant in both sub-periods. This finding reveals that the governance quality of banks and non-financial institutions does not change significantly before and after the 2008 crisis.

Table 4.7 – Governance of Banks Before and After 2008

Variable	All Sample	2000-2008	2009-2015
Constant	4.06*** (0.00)	3.51*** (0.00)	6.26*** (0.00)
BANK	-0.22 (0.21)	-0.37 (0.11)	-0.05 (0.91)
VOT	-0.01*** (0.00)	-0.01*** (0.00)	-0.02*** (0.00)
SOE	1.40*** (0.00)	1.36*** (0.00)	1.89*** (0.00)
FOR	0.18 (0.52)	-0.01 (0.97)	1.28** (0.02)
LEV	-0.03*** (0.00)	-0.03*** (0.00)	-0.03*** (0.00)
SIZE	0.40*** (0.00)	0.45*** (0.00)	0.15 (0.15)
ROE	-0.01* (0.10)	-0.01* (0.08)	0.00 (0.92)
P/B	0.55*** (0.00)	0.48*** (0.00)	0.98*** (0.00)
Mills	-0.06** (0.05)	-0.04 (0.24)	-0.18** (0.03)
Obs	2,751	1,547	1,204
Adj R ²	0.50	0.50	0.49

Notes: self-selection models for corporate governance (CGI) as dependent variable before and after the 2008 crisis. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

We also check additional models using different governance measures. First, we estimate the econometric models for each CGI sub-index separately to evaluate whether the results are robust for different governance dimensions. We also estimate probit models using New Market listings (NM and NM23) as dependent variables.

Table 4.8 reports the self-selection regressions using CGI and its four sub-indexes as dependent variables. The coefficient of BANK is not statistically significant for CGI and disclosure but is positively associated with board of directors (significant at 1%), and negatively related to ownership structure and shareholder rights (significant at 1% and 5%, respectively).

Table 4.8 – Governance Dimensions of Banks and Non-Financial Firms

Variable	CGI	DISC	BOARD	OWN	RIGHT
Constant	4.06*** (0.00)	3.21*** (0.00)	2.29*** (0.00)	4.78*** (0.00)	6.11*** (0.00)
BANK	-0.22 (0.21)	0.02 (0.94)	0.76*** (0.01)	-1.33*** (0.00)	-0.56** (0.03)
VOT	-0.01*** (0.00)	-0.01*** (0.00)	-0.01 (0.18)	-0.02*** (0.00)	-0.03*** (0.00)
SOE	1.40*** (0.00)	0.15 (0.58)	0.98*** (0.00)	2.96*** (0.00)	1.91*** (0.00)
FOR	0.18 (0.52)	-0.12 (0.76)	0.67 (0.19)	-0.39 (0.37)	0.53 (0.17)
LEV	-0.03*** (0.00)	-0.04*** (0.00)	-0.02*** (0.00)	-0.03*** (0.00)	-0.02*** (0.00)
SIZE	0.40*** (0.00)	0.70*** (0.00)	0.46*** (0.00)	0.16*** (0.00)	0.20*** (0.00)
ROE	-0.01* (0.10)	0.00 (0.91)	-0.01* (0.08)	-0.02*** (0.00)	0.00 (0.89)
P/B	0.55*** (0.00)	0.61*** (0.00)	0.56*** (0.00)	0.67*** (0.00)	0.36*** (0.00)
Mills	-0.06** (0.05)	-0.07 (0.14)	0.05 (0.32)	-0.15*** (0.00)	-0.10** (0.03)
Obs	2,751	2,751	2,751	2,751	2,751
Adj R ²	0.50	0.49	0.41	0.40	0.43

Notes: self-selection models for corporate governance (CGI and its four sub-indexes) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (*** for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

These findings show that banks and non-financial enterprises have similar overall governance quality and disclosure practices, which supports our second hypothesis. With regard to disclosure, our results contradict the studies of Flannery et al. (2004) and Hopt (2013), who show that the governance and transparency of banks are better than those of non-financial firms due to stricter regulation requirements. We argue that our results in Brazil should be different than the international literature, because the Brazilian regulation regarding the governance and disclosure of information by publicly-listed companies is similar for banks and non-financial enterprises.

We provide evidence that Brazilian banks have better board practices than non-financial firms. This conclusion is in line with our first hypothesis and with Adams and Mehran (2003), who report that banks have more board committees and outside directors.

We also show that banks have more concentrated ownership and grant fewer rights to shareholders when compared to non-financial enterprises. These findings support our second hypothesis and are in accordance with international studies that show that banks have more information asymmetries, agency problems, and risk-taking than non-financial firms (Becht et al., 2012; Grove et al., 2011; Laeven, 2013; Levine, 2004; Morgan, 2002).

Table 4.9 shows the probit models with two NM dependent variables to analyse whether banks are more likely to list on New Market when compared to non-financial institutions. The models classify 80% to 81% of the observations correctly. The coefficient of BANK is not significant for NM, but it is negative and significant at 1% for NM23. This evidence shows that banks and non-financial institutions have similar likelihood to list shares on New Market, however banks are less likely to list on the stricter segments NM's Levels 2 and 3.

The probit models corroborate the results of Table 4.8 and suggest that the governance practices of banks when measured by NM listing is similar to that of non-financial institutions. When N23 is used as governance proxy, banks have worse governance practices than non-financial firms because banks have higher ownership concentration and grant fewer rights to minority shareholders.

As for the control variables, NM and NM23 have a positive relation with firm size and price-to-book and a negative relation with voting concentration, state and foreign shareholdings, leverage, and ROE. These results suggest that the companies that list

on NM are usually large, highly valued, less leveraged, with low profitability and less ownership concentration.

Table 4.9 - Probit Models for Listing on New Market

Variable	NM	NM23
Constant	-9.44 (0.99)	-7.57 (0.99)
BANK	0.00 (0.99)	-0.35*** (0.01)
VOT	-0.01*** (0.00)	-0.02*** (0.00)
SOE	-0.27** (0.03)	-0.08 (0.57)
FOR	-0.66*** (0.00)	-0.02 (0.89)
LEV	-0.01*** (0.00)	-0.01*** (0.00)
SIZE	0.35*** (0.01)	0.12*** (0.00)
ROE	-0.01* (0.06)	-0.01** (0.03)
P/B	0.13*** (0.00)	0.19*** (0.00)
Obs	2,879	2,879
McFadden R ²	0.38	0.37
% Correct	81.10	80.13

Notes: probit models for listing on New Market (NM and NM23) as dependent variable. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

Table 4.10 shows the self-selection models to analyse bank governance, valuation, and profitability. There is a positive effect of CGI on P/B, and the result is significant at 1%. In contrast, there is no significant impact of CGI on ROE. Furthermore, the coefficients of BANK are not significant for both P/B and ROE, which indicate that banks and non-financial institutions have similar valuation and profitability in Brazil.

Table 4.10 – Effect of Governance on Valuation and Profitability of Banks

Variable	P/B	ROE
Constant	-1.98*** (0.00)	-6.78 (0.15)
BANK	0.20 (0.13)	2.55 (0.25)
CGI	0.30*** (0.00)	0.71 (0.14)
VOT	0.01** (0.02)	0.01 (0.60)
SOE	-0.55*** (0.00)	3.61 (0.17)
FOR	0.57*** (0.00)	10.34*** (0.00)
LEV	0.01*** (0.00)	-0.13*** (0.00)
SIZE	0.09*** (0.01)	2.99*** (0.00)
Mills	0.14*** (0.00)	0.84** (0.03)
Obs	2,751	2,751
Adj R ²	0.40	0.15

Notes: self-selection models for valuation (P/B) and profitability (ROE) as dependent variables. The table documents the coefficients (p-values) and highlights the significance levels (***) for 1%, ** for 5% and * for 10%). The p-values are calculated based on clustered standard errors. The definition of each variable is described in Appendix 4.1.

4.6. Conclusion

The financial crisis of 2008 has raised several questions about the effectiveness of bank governance, which has been a topic of intense academic and policy discussions in recent years (Adams and Mehran, 2012; Chen and Lin, 2016; Faleye and Krishnan, 2017; John et al., 2016; Minton et al., 2014; Wang and Hsu, 2013).

The research on corporate governance usually excludes banks and analyses only nonfinancial firms. There are only a few studies that evaluate the differences of governance practices between financial and nonfinancial firms (Adams and Mehran, 2012; Laeven, 2013).

We contribute to the corporate governance literature by studying and comparing the governance practices of banks and non-financial institutions in Brazil from 2000 to 2015. We use a firm-level governance index to measure multiple governance aspects.

Our findings show that banks and non-financial institutions have similar overall governance quality. However, we document that banks have better board practices, more concentrated ownership, and fewer shareholders rights when compared to non-financial institutions. We also show that the governance quality is not different before and after the 2008 crisis. Our evidence is robust to several econometric specifications, governance proxies, and for potential endogeneity.

Our research has a few limitations. First, we study only Brazilian banks and non-financial firms, and it would be interesting to perform this analysis in other countries. Second, we study only firms listed on stock exchanges, which have publicly available information. It would be useful to evaluate whether the results are valid for non-listed firms. Finally, future research could evaluate the differences in each individual governance practice between banks and non-financial firms.

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Appendix 4.1 – Definition of Variables

Variable	Definition
CGI	Leal and Carvalhal (2007)'s modified corporate governance index at year end
DISCL	CGI sub-index for disclosure at year end
BOARD	CGI sub-index for board of directors at year end
OWN	CGI sub-index for ownership structure at year end
RIGHT	CGI sub-index for shareholder rights at year end
BANK	Dummy indicating if the firm is a bank
NM	Dummy indicating if the firm lists on New Market at year end
NM23	Dummy indicating if the firm lists on NM's levels 2 and 3 at year end
VOT	Controlling shareholder's voting capital at year end (in %)
SOE	Dummy indicating if the firm is owned by the state at year end
FOR	Dummy indicating if the firm is owned by foreign investors at year end
P/B	Price to book equity at year end
LEV	Debt to asset at year end (in %)
ROE	Net income to shareholder's equity at year end (in %)
SIZE	Asset size (log) at year end
FIX	Fixed to total asset at year end (in %)

Notes: description of variables. The financial and accounting data are obtained in Bloomberg database.

Chapter 5

Conclusion

5.1. Summary of findings

This thesis presents three essays on corporate governance in Brazil. We analyse the governance practices of state-owned enterprises and privately-owned enterprises in chapter 2. We examine whether Brazilian companies that list shares abroad have better governance than domestic peers in chapter 3. We study the differences of governance practices between Brazilian banks and non-financial enterprises in chapter 4.

In chapter 2 we measure multiple governance attributes through a firm-level governance index and extend the governance literature of state-owned enterprises (Borisova et al., 2012; Bruton et al., 2015; Florio and Fecher, 2011; Grosman et al., 2016; Grossi et al., 2015; Megginson and Netter, 2001). We find that the governance of SOEs is better than that of POEs. We also provide evidence that the quality of governance is weak for both SOEs and POEs in Brazil.

In chapter 3 we examine various governance practices of cross-listed and domestic firms (Doidge et al., 2004; Siegel, 2005). Our findings support both the bonding and avoiding hypotheses. We document that listing on US stock exchanges does not improve governance practices, and that the governance quality of cross-listed firms traded over the counter is better than that of foreign companies listed on US stock exchanges. We show that cross-listed enterprises traded over the counter list on the Brazilian New Market to improve governance practices (Carvalho and Pennacchi, 2012).

In chapter 4 we complement the literature on bank governance and evaluate the differences of governance practices between banks and nonfinancial institutions (Adams and Mehran, 2003, 2012; Chen and Lin, 2016; Fahlenbrach and Stulz, 2011; Faleye and Krishnan, 2017; John et al., 2016). We document that banks and non-financial institutions have similar overall governance quality. Furthermore, banks have better board practices, more concentrated ownership, and fewer shareholders rights compared to non-financial firms.

5.2. Implications for market practitioners and policy makers

Besides the academic contribution, this thesis's three essays offer several implications for market analysts and policy makers. The use of a corporate governance index allows us to identify in detail which governance attribute is different between SOEs and POEs (chapter 2), cross-listed and domestic firms (chapter 3), and banks and non-financial firms (chapter 4).

In chapter 2 we show that SOEs have better governance than POEs. However, both groups of companies have poor governance practices when compared to developed countries. Since our findings identify the weakest governance practices, policy makers and regulators can design laws or rules to improve the governance of both SOEs and POEs in Brazil. Investors and analysts can also implement investment strategies focusing on the differences between the governance of SOEs and POEs.

In chapter 3 we document that firms do not enhance governance quality after cross-listing on US stock exchanges. We also show that listing on the Brazilian New Market can substitute cross-listing to reduce the firm's financing costs. The Brazilian stock exchange and regulators should encourage firms to list shares on New Market, as an easier and cheaper means for improving governance quality compared to cross-

listing. Furthermore, investors and analysts should require stronger governance for cross-listed companies that benefit from SEC exemptions to cross-list in the US.

In chapter 4 we show that banks and non-financial firms have similar overall governance quality. However, when we look at individual governance attributes, we find that banks have better board practices, worse ownership structure, and grant fewer shareholders rights compared to non-financial firms. Since an effective bank governance is important to prevent systemic crises (Caprio and Levine, 2012; Grove et al., 2011), the Brazilian regulators should implement and enforce policies to improve the governance practices of banks, especially their ownership structure and shareholder rights. The same behaviour should be expected from market analysts, because Brazilian banks are highly profitable and very important in the economy.

5.3. Limitations and suggestions for potential research

This thesis has several limitations and points to various potential avenues for future research on corporate governance. First, we study only Brazilian firms, and it could be interesting to perform similar analyses in developed countries and in other emerging markets.

Second, we examine only companies listed on stock exchanges because we need publicly available data to estimate the econometric models. However, we expect that listed companies should have better disclosure and governance practices when compared to non-listed firms. Therefore, we argue that the overall governance of Brazilian companies (SOE and POEs, cross-listed and domestic, banks and non-financial firms) may be worse than that reported in our three essays.

Third, we measure the governance quality through a firm-level governance index (CGI) with 20 governance attributes, which can be answered objectively from

publicly available data sources. One of the challenges is how to measure corporate governance considering that there are various governance practices that complement or substitute each other. Our CGI assumes that all questions have a linearly additive and symmetric effect, such that higher values suggest uniformly better quality governance. We do not account for substitutive or complementary effects of governance, and consider that the addition (removal) of any governance provision suggests an equal improvement (weakening) in governance quality. Future research could explore the effect of each individual governance practice on our results as well as the substitution and complementary effects among governance mechanisms. Moreover, existing provisions could be removed and additional questions could be added to the index to analyze the impact of broader governance attributes. Furthermore, factor analysis can be a useful tool to reduce the CGI questions into fewer numbers of factors that can explain better governance quality.

Fourth, although we estimate fixed-effect and self-selection models to account for endogeneity, our analysis may be biased because some of the instruments used in the Heckman two-stage procedure may be weakly exogenous. It would be interesting to test other instruments as well as additional econometric techniques, such as matching analysis, in order to analyze the robustness of our results. Finally, future research could examine further aspects of the SEC exemptions for foreign companies to understand the impact of regulation on the cross-listing decision. Research can evaluate whether cross-listed companies from other countries that benefit from the exemptions have different governance practices when compared to domestic-listed firms.

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