

FUNDAÇÃO GETULIO VARGAS
ESCOLA DE ADMINISTRAÇÃO DE EMPRESAS DE SÃO PAULO

AMÉLIE PEDERSEN

**THE IMPACT OF CORRUPTION ON THE PERFORMANCE OF STATE-OWNED
COMPANIES**
Case of Petrobras Brasil

SÃO PAULO

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SÃO PAULO

2016

Pedersen, Amelie

The impact of corruption on the performance of state-owned companies
– case of Petrobras Brasil / Amelie Pedersen – 2016.

112 f.

Orientador: Julia Von Maltzan Pacheco

Dissertação (MPGI) - Escola de Administração de Empresas de São
Paulo.

1. Corrupção. 2. Corrupção administrativa - Brasil. 3. Empresas públicas –
Brasil. 4. Indústria petrolífera. 5. Desempenho. I. Pacheco, Julia Von Maltzan.
II. Dissertação (MPGI) - Escola de Administração de Empresas de São Paulo.
III. Título.

CDU 343.352(81)

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Approval Date

14/04/2016

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ACKNOWLEDGMENTS

Firstly, I would like to express all my gratitude to my advisor, Prof. Julia Von Maltzan Pacheco, for her extremely valuable advice and her dedicated support on my thesis and related research. I would also like to thank her for her incredible patience and readiness to help which I was very touched by. Her guidance was essential for the writing of this thesis.

A special acknowledgment goes to Prof. Dr. Felipe Zambaldi at FGV for his instructions and counsel on establishing the methodology for this thesis.

My immense gratitude goes to my friends (especially my best friend Rose Ebequoi), who were an incredible moral support throughout the entire process. Their encouragement and generous advice means a lot to me.

Last but not least, the most profound thanks go to my parents who have always taught me to believe in myself, to follow my ambitions and hopes and to ultimately strive for happiness. I will never be able to express properly the gratitude I have for my mother, Maryse Igout. She is my backbone and has always been the biggest help and support in every endeavor of my life. I could never have imagined and hoped for such love and encouragement. From her taking me to ballet classes when I was a child to her travelling the world to help me move in wherever I would live, and finally for her incredible moral support on this thesis and for so much more, I will be forever grateful.

ABSTRACT

State-owned companies are often considered as crucial components of a country's economy. They are responsible for the creation of numerous jobs and are often providing essential services that require heavy capital investment. However, in countries with weak institutions where the accountability of politicians is poor and the management of SOEs' financial resources undergo little control, officials are often inclined towards corruption. Huge amounts of public funds are easily diverted, and money which should have been invested in capital expenditure, in paying back company debt or in increasing shareholder return, are used to increase private patrimony or illegally fund political parties. Company performance suffers from such divestments as parts of the company's profits are not reinvested in the company and as managers' incentives are unaligned with shareholder interests.

Petrobras, Latin America's biggest company in terms of assets and annual revenues, suffered in 2014 and 2015 from an immense corruption scandal the economic impact of which is considerable, as investor confidence in Brazil weakened following the event. The scandal exposed an extensive corruption scheme through which contractors were colluding to increase prices of construction contracts, with the approval of Petrobras' management who required in return either personal gains or funds for the Partido dos Trabalhadores (PT). The exposure of the scandal in the Brazilian press has had a great impact on Petrobras' credibility as a firm: the company's accounts were hiding immense irregularities as it had been paying too much for construction contracts which weren't priced at market value. Throughout this paper, we will use the example of Petrobras to illustrate how corruption within State-Owned companies undermines company's performance and how it impacts the company's various stakeholders.

KEY WORDS: Corruption, Performance, Petrobras, State-owned Companies, Oil and Gas Sector, Shareholder Interests

RESUMO

As empresas estatais são freqüentemente consideradas como componentes cruciais da economia de um país. Eles são responsáveis pela criação de vários postos de trabalho e proveem serviços essenciais que exigem um grande investimento de capital. Porém, em países com instituições fracas, onde a responsabilidade dos políticos é limitada e a gestão dos recursos financeiros das empresas estatais sofre pouco controle, os funcionários são muitas vezes tentados pela corrupção. Enormes quantidades de fundos públicos são facilmente desviados, e dinheiro que deveria ter sido investido nas despesas de capital, no pagamento de dívida da empresa ou no aumento do retorno para os acionistas, é usado para aumentar a riqueza privada de indivíduos ou para financiar ilegalmente partidos políticos. O desempenho da empresa sofre com essas alienações visto que parte dos lucros da empresa não são reinvestidos na empresa e dado que incentivos dos gestores estão desalinhados com os interesses dos acionistas.

Petrobras, a maior empresa da América Latina em termos de ativos e receitas anuais, sofreu em 2014 e 2015 um escândalo de corrupção imenso, cujo impacto económico foi considerável, levando ao enfraquecimento da confiança de muitos investidores no Brasil após o evento. O escândalo expôs um extenso esquema de corrupção através do qual os contratantes foram conspirando para aumentar os preços de contratos de construção, com a aprovação da administração da Petrobras que pediu em troca ganhos pessoais ou fundos para o Partido dos Trabalhadores (PT). A exposição do escândalo na imprensa brasileira teve um grande impacto sobre a credibilidade da Petrobras: as contas da empresa estavam escondendo imensas irregularidades dado que a empresa tinha pago demais para os contratos de construção que não foram precificados no valor do mercado. Ao longo deste estudo, usamos o exemplo da Petrobras para ilustrar como a corrupção dentro empresas estatais prejudica o desempenho da empresa e como ela afeta as várias partes interessadas da empresa.

PALAVRAS CHAVE: Corrupção, Desempenho, Petrobras, Empresas Estatais, Indústria petrolífera, Interesse dos Accionistas

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Abbreviations

- *BNDES*: Banco Nacional de Desenvolvimento
- *Bn*: billion
- *Bp*: basis point (100 basis points equal to 1%)
- *EBITDA*: Earnings Before Interests Taxes Depreciation and Amortization
- *Folha*: Folha de Sao Paulo, Brazilian Newspaper
- *M*: million
- *PT*: Partido dos Trabalhadores
- *PMDB*: Partido do Movimento Democrático Brasileiro
- *PP*: Partido Progressista
- *R\$*: Brazilian Real currency
- *US\$*: US Dollars
- *Veja*: Brazilian news magazine

Definitions

- *Dividend yield*: A financial ratio that indicates how much a company pays out in dividends each year relative to its share price. The formula for calculating dividend yield is as follows: Annual Dividends per share / Price Per Share.
- *Enterprise Value*: Enterprise Value, or EV for short, is a measure of a company's total value, often used as a more comprehensive alternative to equity market capitalization. Enterprise value is calculated as the market capitalization plus debt, minority interest and preferred shares, minus total cash and cash equivalent.
- *EPS*: Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serves as an indicator of a company's profitability. Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serves as an indicator of a company's profitability: $(\text{Net Income} - \text{Dividends on Preferred Stock}) / \text{Average Outstanding Share}$.
- *Impairment*: Impairment is reduction in a company's stated capital. This is usually reduced because of poorly estimated losses or gains

- *Market Capitalization*: Market capitalization is the total dollar market value of all of a company's outstanding shares. Market capitalization is calculated by multiplying a company's shares outstanding by the current market price of one share.
- *Net Debt*: total debt minus cash, cash equivalents and short-term investments.
- *Return on Equity*: Return on equity (ROE) is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.
- *Write-offs*: A write-off is a reduction in the value of an asset or earnings by the amount of an expense or loss. Companies are able to write off certain expenses that are required to run the business, or have been incurred in the operation of the business and detract from retained revenues.

1. Introduction

Petrobras is the world's sixth-biggest energy company by assets, and is involved across the world in the exploration, production, refining and sale of oil and gas. It is a bedrock of the Brazilian economy and one of South America's best-known companies.

Petrobras is state-backed and until 1997 held a monopoly over the Brazilian oil industry. Its close links with government have bolstered its financial security in the eyes of investors and regulators—but may have also contributed to its current crisis.

Indeed, in November 2014, a huge scandal was revealed. It created a maelstrom which shook the entire country. As it turned out, it was unique in Brazil's history since it involved both Petrobras' executives and politicians from the political party in power.

This paper will use the example of the Petrobras scandal to examine whether corruption within State-Owned companies undermines company performance and how it impacts the company's various shareholders.

Most research papers studying the theme of corruption focus on the impact of corruption on wider macro-economic factors such as market efficiency or overall economic activity. This study intends to focus on the impact of corruption on a micro-economic level: this includes the nonalignment of management incentives and shareholder interests, reduced profits due to bad management decisions (in this case, the overcharging of construction contracts), tolerance of extremely high leverage detrimental for profits, and constrained equity and debt markets for financing once the scandal was revealed. In order to be more precise in its findings, this study will also endeavor to distinguish between on the one hand, the endogenous effects of the bribery scheme before its disclosure (pre March-2014) and on the other hand, the consequences of its revelation to the public (March-2014 to Sept-2015).

The Petrobras scandal is an interesting case study as it illustrates the ways by which corrupt practices can negatively impact performance in state-owned companies and/ or listed companies

as Petrobras has the particularity of being both. Hence, the study will include in its analysis the strong ties Petrobras has with the Brazilian Government and the risk the company faces of being used as a mean to serve political goals rather than seek financial profitability; the study will also take into account the fact that the company is a listed entity and therefore has to comply with market regulations and is subject to wider investor scrutiny.

The paper starts off in the 2nd chapter with a literature review which intends to (i) define the concept of corruption and company performance and explain how markets are indicators of company performance, (ii) review the previous academic work which has been led on the effects of corruption on company performance, (iii) examine whether Brazil's legal framework made Petrobras vulnerable and facilitated the implementation of this large scale bribery scheme, (iv) explore the different means of fighting corruption within corporations.

An overview of the events surrounding the Petrobras Scandal is given in the 3rd chapter in order to shed light on the organization of the bribery scheme, and thereby identify the corrupt management practices which were likely to impact the company's performance.

The 4th chapter explains in detail how a mixed methodology of qualitative and quantitative analysis enables to (i) identify ways by which corruption at Petrobras created non-alignment between management and shareholder interests and (ii) compute the impact of the revelation of the scandal on various financial metrics (share price performance, income statement items, access to financing and level of leverage).

The 5th chapter of the study shows how the bribery scheme created non-alignment between management incentives and shareholder interests as the scheme was resulting in (i) opportunity costs and excessive transaction costs (ii) misallocation of production factors (iii) lack of competition among suppliers and (iv) operational inefficiency, which all had a negative impact on the company's financials. The revelation of the scandal also resulted in a steep decrease in shareholder return through a decline in share price, negative earnings resulting from write-offs of overpriced contracts and impairment of delayed construction projects.

Finally, a summary of the conclusions drawn from the study will be presented in the 6th chapter as well as an outlook on further research, which could be led on the subject.

2. Literature review

The following chapters aim to shed light on the existing literature and research on the subject of corruption and its impact on company performance.

2.1 Definitions of Corruption and Performance

Many studies and research papers have been written on both corruption and performance. The studies on corruption have often been turned towards the impact of corruption on economic development and social welfare, whereas those on company's performance are often focused on identifying practical and pragmatic ways by which managers can measure and improve operational efficiency. However, before engaging the discussion upon the impact of corruption, it is important to define the concept itself.

2.1.1 The concept of corruption

Corruption is defined as dishonest behavior by those in positions of power, such as government officials or managers. Corruption can include giving or accepting bribes or inappropriate gifts, double dealing, under the table transaction, manipulating elections, diverting funds, laundering money and defrauding investors.

However, the concept of corruption appears to entail a great deal of scholarly discussion. Oskar Kurer states that most definitions of corruption are based on the idea of distributive justice and rest mainly on one principle— namely the 'impartiality principle'. According to this principle, the State ought to treat all its citizens equally. The impartiality principle calls for rule-bound administration and thus underpins the public office definition of corruption. Kurer considers the study of specific non-

discrimination norms and their comparison across time and place a central element of the analysis of corruption (Kurer, 2005).

A number of scholars, Caiden (2001), Mauro (1997), Hellman, Jones and Kaufman (2000), Rotberg (2004) and Tanzi (1998) (all quoted in (Johnson & Sharma, 2004)) have identified corrupt practices. These practices have been gathered in a list by Johnson & Sharma 2004. They include:

- Bribery and graft (extortion and kickbacks)
- Misappropriation (forgery, embezzlement, misuse of public funds)
- Kleptocracy (stealing and privatizing private funds)
- Nonperformance of duties (cronyism)
- Influence peddling (favor brokering and conflict interest)
- Acceptance of improper gifts (speed money)
- Protecting maladministration (cover up and perjury)
- Abuse of power (intimidation and torture)
- Manipulation of regulations the study of specific non-discrimination norms and their comparison across time and place.
- Bias and favoritism
- Electoral malpractice (vote buying and election rigging)
- Rent seeking (officials illegally charging for services after creating artificial shortage)
- Clientelism and patronage (politicians giving favors in exchange for citizen support)
- Illegal campaign contributions (giving irregular gifts to influence politicians and regulations).

As seen from the above these practices are numerous and they also vary in other ways. Thus, the incidence of corruption differs widely among countries ranging from rare, to widespread to systemic. If it is rare it may be relatively easy to detect, while if it is systemic the likelihood of detection and punishment decrease and incentives are created for corruption to increase further (Gray & Kaufman, 1998).

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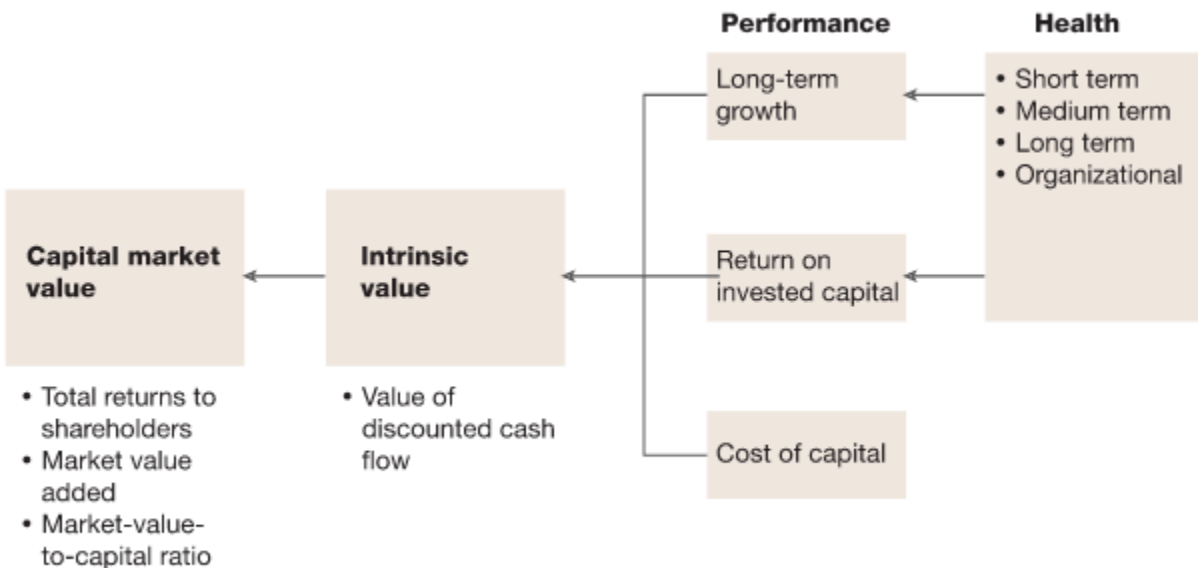
detection and punishment decrease and incentives are created for corruption to increase further (Gray & Kaufman, 1998).

Corruption is broadly perceived as a phenomenon that ought to be fought by all possible means since it diverts funds that would normally be used for the benefit of a country’s whole population towards the hands of a few and thereby constitute a primary barrier to economic growth and development (Wilhelm, 2002).

2.1.2 Company performance and ways to measure it

In order to understand the ways by which corruption can affect a company’s performance and to measure its impact, it is essential to define performance and the ways by which it can be measured within a company.

Figure 1: Factors that drive value in a company



Source: Dobbs & Koller (2005)

According to Dobbs & Koller (2005), it is possible to measure performance through three different perspectives: (i) the economic value a company has generated historically which can be studied through a company's financial metrics (income statement, balance sheet and cash flow statement) which Dobbs and Koller label **company performance**, (ii) the ability of a company to generate economic value in the future and the risks that may stand in its way of succeeding it, defined as a **company's health**, and finally (iii) a company's **capital market performance** which takes into account market expectations factored into the share price, which should be compared to independent valuations based on a company's Business Plan.

Dobbs & Koller also emphasize the fact that when using these metrics, it is important to acknowledge factors which are beyond management's control. They give the example of an oil company for which profitability depends more on rising oil prices than on the quality of exploration techniques.

2.1.3 Markets perception of performance

According to Dobbs and Koller (Dobbs & Koller, 2005), an important component of a listed company's performance is its capital market performance. From the perspective of a shareholder who owns a stock, a company's performance will be determined by the Total Return to Shareholder ("TSR") which is defined as share price appreciation plus dividend yield over time.

However, it is important to discuss in what way TSR represents a valuable indicator of a company's inherent performance, and how it can be used to measure the impact of the revelation of the corruption scandal. The following chapter aims to explain how markets' perception of a company serves as a pertinent measure of performance and why the revelation of important information such as a corruption scandal may bear a certain weight on markets in their determination of a company's performance.

A company's share price or credit spread can be efficient ways to measure market perception of a company's performance. Markets react to news on companies such as the publication of filings

and reports but also the company's coverage in the press, as markets use present knowledge about the company to value what the company will be able to deliver in terms of future cash flows. The hypothesis behind market's reactions to information is called the efficient market hypothesis.

The efficient market hypothesis (EMH)

According to the efficient markets hypothesis (EMH), popularly known as the Random Walk Theory, the securities markets are extremely efficient in reflecting information about individual stocks and about the stock market as a whole. The accepted view is that when information arises, the news spreads very quickly and is incorporated into the prices of securities without delay.

The efficient markets hypothesis (EMH) also suggests that profiting from predicting price movements is very difficult and unlikely. The main engine behind price changes is the arrival of new information. A market is said to be "efficient" if prices adjust quickly and, on average, without bias, to new information. As a result, the current prices of securities reflect all available information at any given point in time. Consequently, there is no reason to believe that prices are too high or too low (Jandik, Madelker, & Clarke, 2001).

The most crucial implication of the EMH is that market prices must be trusted. At any point in time, prices of securities in efficient markets reflect all known information available to investors. There is no room for fooling investors, and as a result, all investments in efficient markets are fairly priced, i.e. on average investors get exactly what they pay for. Fair pricing of all securities does not mean that they will all perform similarly, or that even the likelihood of rising or falling in price is the same for all securities. According to capital markets theory, the expected return from a security is primarily a function of its risk. The price of the security reflects the present value of its expected future cash flows, which incorporates many factors such as volatility, liquidity, and risk of bankruptcy. However, while prices are rationally based, changes in prices are expected to be random and unpredictable, because new information, by its very nature, is unpredictable. Therefore stock prices are said to follow a random walk.

Since its introduction into the financial economics literature over almost 40 years ago, the efficient markets hypothesis has been examined extensively in numerous studies. The vast majority of this research indicates that stock markets are indeed efficient.

The efficient markets hypothesis implies that investors react quickly and in an unbiased manner to new information. There are however opponents to that theory but much of the existing evidence indicates that the stock market is highly efficient, and consequently, investors have little to gain from active management strategies. Such attempts to beat the market are not only fruitless, but they can reduce returns due to the costs incurred (management, transaction, tax, etc.).

Although no theory is perfect, the overwhelming majority of empirical evidence supports the efficient market hypothesis. The vast majority of studies of the market agree that the markets are highly efficient. The opponents of the efficient markets hypothesis point to some recent evidence suggesting that there is under- and over-reaction in security markets. However, it's important to note that these studies are controversial and generally have not survived the test of time. Ultimately, the efficient markets hypothesis continues to be the best description of price movements in securities markets.

2.2 Corruption and company performance

Now that a definition for corruption, a framework for measuring performance and an explanation on how financial markets can help measure performance have been presented, we will now examine the existing literature on the impact of corruption on performance, a research area that has received far less attention from academia.

2.2.1 Does corruption grease or sand the wheels of company performance?

In the various studies on the effects of corruption on company performance, positions diverge and two antagonistic approaches to the effects of corruption prevail. One approach, being inclined towards a positive effect (greases the wheels) and the other one towards a negative effect (sand in the wheels).

In the "greases the wheels" view, corruption facilitates trade that may not have happened otherwise and helps to overcome cumbersome bureaucratic constraints, inefficient provision of public services, and rigid laws (Huntington, 1968), especially when countries' institutions are weak and function poorly (Hanousek & Kochanova, 2015). Advocates of the sand the Wheel hypothesis argue that corruption can help economic actors in the conduct of their business. In order to circumvent the existing hindrances, the actors of they will resort to bribes and grease money and thus manage to carry out transactions which otherwise would not have taken place. A number of scholars have studied the grease the wheels phenomenon (Meon and Sekkat, 2003, Gazdar, 2011). They acknowledge that corruption may have a positive effect on firms whose transactions can be delayed by bureaucratic red tape. By paying bribes to officials, these firms attempt to avoid the hindrances they are faced to. Going further, Meon and Weill (2008) demonstrate that corruption can be positively correlated with economic activity in countries with weak and inefficient institutions while it is consistently detrimental in countries where institutions are effective.

There appears, therefore, to be a strong link between governance and the ability of corruption to grease the Wheel.

The "sand the wheels" supporters argue that corruption reduces economic performance. Evidence of this are rent seeking behavior, an increase of transaction costs and uncertainty, inefficient investments, and misallocation of production factors. In the same line of thinking, Murphy et al. argue that, as more resources are allocated to rent-seeking behavior, returns to production may fall faster than returns to rent-seeking. It becomes thus more interesting for public employees to indulge in corrupt actions than to pursue investments or innovative activity (Hanousek & Kochanova, 2015).

Although, the grease the wheel arguments can to a certain degree be relevant in contexts where enterprises may have to answer positively to corrupt solicitations from civil servants in order to carry out their necessary activities, the sand the wheel arguments appear to carry more weight. The economic international institutions such as World Bank, the IMF appear to adhere to that view and have published numerous articles on how to curb corruption. Those articles appear to validate the view presented by Aidt: corruption seems to be only interesting as a second best option and occurs in bad institutional settings (Aidt, 2009). Furthermore, there is a moral aspect to corruption, so countries where corruption is widespread should work towards improving aspects of their governance in order to eradicate or at least reduce corruption to the lowest levels.

Despite those findings and conventional wisdom, there appears to be no consensus on the matter and the empirical evidence on the economic consequences of corruption still appears to be inconclusive (Svensson, 2005). For example, some of the literature still provides support to phenomena such as the so-called Asian paradox which appear to indicate a positive correlation between corruption and growth in a number of fairly successful Asian economies, including China) even after accounting for the crucial intermediate effect of institutions that shape the more recent versions of the greasing the wheels hypothesis (Campos & Dimova, 2010).

2.2.2 Impact of corruption on internal company practices

As can be inferred from the above, there are several studies dealing with the causes and effects of corruption. Yet most of these studies focus on the questions at the country level such as why some countries have higher rates of corruption than others and what this means for aggregate growth (Svensson, 2005). In comparison, the effects of corruption at the microeconomic level mechanisms have received far less attention and few studies focus on the effect of corruption on firms' performances.

Some theoretical explanations help explain how productivity is influenced by bribe money. Corruption appears to raise opportunity costs, since money that could have been spent more usefully is diverted towards other purposes. Hence corruption lowers productivity. However, it is

also possible that grease money – as the name suggests – accelerates the tedious procedures of bureaucracy (De Rosa, Gooroochurn, & Gorg, 2010)

Of the few studies concerned with the micro level many focused on corruption within firms in China (Yuanyuan & You, 2012) (Huang & Snell, 2003). The findings of these studies are that corruption leads to mediocracy in management practices and operational inefficiencies. Corruption is also said to be engendering higher agency costs as the interests of the managers are not aligned with those of the shareholders.

Considering the effects of corruption on labor productivity growth, their results also suggest that bribery affects the employment structure of firms. In accordance with Hanousek and Kochanova (2015), they argue that in highly corrupt environments, firms are likely to employ a non-optimal (higher) number of workers and that talents are generally not properly allocated. Moreover, some employees may be engaged in unproductive activities such as searching for ways to circumvent bureaucratic constraints. It may also be the case that the corrupt local government does not allow firms to dismiss workers in order to keep high employment figures in the region and loyal voters. However, firms that have a competitive edge may be able to adjust the employment structure to an optimal level and increase efficiency despite corruption.

Though competition within firms can be seen to alleviate the effects of corruption, it must be acknowledged that Brazil has tended to favor monopolies and national champions. We will examine the consequences of such policies in the following sections.

2.3 Incentives for corruption: the political, economic and legal framework of Brazilian SOEs

On top of the risks faced by private corporations, SOEs are particularly at risk with respect to corruption as they are also exposed to specific governance related risks due to their proximity to market regulators and policy makers.

The management and governance of SOEs require additional attention to and preemption of misuse of public funds and market distortion, as the state's role as a regulator may be conflicted with its role as an owner of the company. In the following chapters we will examine existing literature on the influence of State monopolies on the risks of corruption and the structure of the Brazilian legal framework and how it aims to and/ or fails to preempt corruption.

2.3.1. The influence of monopolistic competition on corruption

Monopolies

Ades and di Tella put forward the idea that corruption is higher in economies dominated by a small number of firms or where domestic firms are sheltered from foreign competition naturally or by high tariffs. Using corruption indexes from Business International and World Competitiveness Report, they examine the role of product market competition in determining corruption. Their findings are centered on the idea that protectionist or other policies directed at restricting the competitive pressure faced by domestic firms have the effect of fostering corruption. The results of their findings show that competition from foreign firms tends to reduce the rents enjoyed by local firms and the possibility for bureaucrats to indulge in corrupt behavior (Ades and di Tella, 1997).

Other scholars (Ackerman, Shleifer and Vishny, 1994) also correlate the existence of monopolies, with the occurrence of corruption. The incidence of monopolies is not, however limited to the realm of market structures but is extended to bureaucracy. Confronted to a bureaucratic structure that provides a scarce benefit, applicants are likely to be subjected to corrupt practices from the part of officials and even more so if they want a swift treatment of their case. Ades and di Tella adhere to the idea of monopolistic bureaucracy. On par with Ackerman, they suggest that competition from other administrative departments can be introduced in order to allow applicants to reapply in other departments if they are asked for bribes to remedy to bureaucratic corruption (Ades and di Tella, 1997).

As far as market structures are concerned, because of their size, monopolies tend to be inefficient. Their development creates, exaggerated costs and slows down growth, which

constitute huge costs for the national economy. Furthermore, according to Pinheiro (2015) they tend to rely heavily on a specially privileged relationship with the government. This in turn, gives rise to a close interaction between regulators and the enterprises. They also tend to create an environment in which the state takes an interventionist and protective stance in order to impede the entry of new players into the market and thwart competition, which from a liberalistic point of view is considered rather unhealthy for the economy. As stated by Ades and di Tella (Ades and di Tella 1999) in general, “the lack of market competition can, not only benefit the firms in the industry, but can potentially also benefit tax inspectors, regulators, suppliers and other agents with some control rights over other these firms. The reason is that as competition decreases, the value of their control rights increases so it becomes more profitable to exchange them for bribes.”

Ades and di Tella, deem the lack of competition in the bureaucracy and in the market responsible for the level of corruption in a country. For what concerns market structures, they argue that competition from foreign firms reduces the rents enjoyed by domestic firms and this in turn, reduces the rewards from corruption. They therefore, suggest that policies aimed at making markets more competitive could play a decisive role in controlling corruption (Ades and di Tella, 1999).

As seen in earlier chapters, a great deal of the literature about corruption is concerned with policies aiming at curbing corruption. Ades and Tella (1997) have also examined the question. They posit that adequate policies in the form of tighter law enforcement as, an equally crucial instrument in the fight against corruption.

Selecting “national champions”, the Brazilian case

As far as market structures are concerned, despite the obvious drawbacks of monopolies, governments often channel funds to such firms singled out as “national champions”. Generally, these firms are selected because they are expected to execute projects aligned with the development objectives of the government. Throughout Brazil’s economic history, there have been many instances of firms both private and state controlled which have been big recipients of state subsidized credit or received debt or equity to acquire competitors and expand abroad. This

trend has been all the more marked in the mid 2000's where Petrobras, Vale (iron ore miner) and BNDES, Brazil's development bank have been picked as the winners that would help the economy expand.

However, some scholars argue that the criteria used to select those firms are not clear and may lead to corruption. Ades and di Tella present an empirical analysis on the correlation between active industrial policy and corruption. Using two instruments of industrial policy: procurement preferences to national champions and fiscal treatment to enterprises, they find evidence suggesting that corruption is higher in countries pursuing active industrial policy. As active industrial policies transfer rents to firms in favored sectors, bureaucrats with control rights over these sectors can create mechanisms to extract some of these rents through bribes (Ades & Di Tella, 1997). Thus, intervention from the state appears to reinforce corruption because it increases the size and range of prizes for the victors. The ruling cliques have not only the government apparatus but also huge corporate resources at their disposal in order to indulge in corruption related activities.

Another aspect of active industrial policies through champions is that it is very likely that firms will compete for the subsidies and politically connect with governments to obtain preferential lending.

In the Brazilian case, as demonstrated by Samuel (Samuels, 2002), there is mounting evidence that industries that have been favored as champions are expected to make donations for politicians in elections. Campaigns in Brazil are costly due to the presence of numerous parties and large election territories. Firms are allowed to donate large sums of money to candidates—up to two percent of their gross revenues—, in addition to “under the table” donations, which are also pervasive (Araújo, 2004). Studies have unveiled a positive association between campaign donations in Brazil and several firm-level outcomes such as profitability (Bandeira-de-Mello & Marcon, 2005), access to government contracts (Boas, Hidalgo, & Richardson, 2011), stock market valuation and preferential finance (Claessens, Feijen, & Laeven, 2008). Specifically examining the Brazilian Development Bank's (BNDES) loans, Lazzarini et al. (2012) and Sztutman and Aldrighi (2013) find that firms that donate to winning candidates are more likely to receive such loans (all quoted in in Musacchio and Lazzarini, 2014).

In a different approach using industry-level data, Carvalho (2010) studies the criteria for the allocation of loans and finds that firms in regions governed by politicians allied with the federal government receive more funding from BNDES (in Musacchio and Lazzarini, 2014).

To sum up the prevalence of monopolies in the bureaucracy and in the economy are likely to create an environment favorable to corruption likewise state intervention aiming at selecting “national champions” in order to support the national economic strategy.

2.3.2 The Legal framework of Brazilian SOEs

In Aidt’s view, corruption is a phenomenon which occurs in bad institutional settings and he supports the view that in order to evaluate the effects of corruption one has to examine the institutional setting in which it takes place (Aidt, 2009). Following this view, this paper will examine the legal framework, including the procurement provisions, in order to better understand the circumstances in which the Petrobras scandal took place. Thus, the objective is to determine whether the Petrobras events’ occurrence is correlated with an inadequate legal framework and to demonstrate whether an unadapted legal framework has encouraged corruption within Petrobras.

The Brazilian procurement framework is embedded in the constitution. Indeed, in the Brazilian Constitution of 1988, under the heading of Public Administration, the 37th article gives a broad scope of the principles according to which the Brazilian administration should function. The heading of the article reads:

"37 - The public administration...of any of the Powers of the Union, of the States, of the Federal District and of the Municipal districts will obey the principles of legality, impartiality, morality, publicity and, also, to the following:" (Brazil's Constitution of 1988 with Amendments through 2014)

Article 37, also gives the Union the power to regulate the general rules for all types of public tenders and contracts, in all of their forms, for the direct public administration,

public companies, states, Federal District, and municipalities, provided that the requirements of Article 37(XXI).

Article 37, also gives the Union the power to regulate the general rules for all types of public tenders and contracts, in all of their forms, for the direct public administration, public companies, states, Federal District, and municipalities.

Yet another measure designed to fight corruption is the Brazil's Clean Company Act of 2014 (Law No. 12,846) in 2014. The Clean Companies Act is one of the toughest anti-corruption laws in the world Under the Act, bid rigging and fraud in public procurement, direct and indirect acts of bribery, and attempted bribery of Brazilian public officials and of foreign public officials are illegal. The Act holds companies responsible for the corrupt acts of their employees and introduces strict liability for those offences, meaning a company can be liable without finding of fault. Brazilian law makes no distinction for facilitation payments, meaning companies could be at risk for engaging in such practices. Giving gifts is illegal and not necessary when doing business and establishing relationships. Businesses are advised to consider the Portal's compliance guide for Brazilian laws. However, according to the review ControlRisks: Integrity Matters – (Issue 12 – March 2014), there is still a tremendous amount of uncertainty around the enforcement of the new law.

Workforce legislation

As far as hiring of staff is concerned public administration and SOEs to strict rules (Law 8112/92) as opposed to private enterprises who are free to hire as they wish. Vacancies must be advertised and selection must be public. The public administration is subject to a specific regulation called the statutory regime following which dismissal must be subject to due process of law. This is however not the case for SOEs for whom the same dismissal regulations apply as for private enterprises (Vianna, 2014).

Budgetary process

In Brazil, in accordance with article 165 of the Federal Constitution, the companies in which the Federal Government has, directly or indirectly, the majority of its assets need to have their

investment budget subject to the approval of the National Congress. Moreover, these investments need to be subject to the provisions and priorities established in the Budget Guidelines Law-.

Normally, in the national budget, all expenditures must be detailed. Should the Executive Branch want to change any expenditure, it must submit its intention to the approval by the Congress.

Although the budget of SOEs must be approved by Congress, it is not submitted to the same detail requirement as for the budget of other public bodies. As SOEs, like Petrobras, are self-sustainable since they do not rely on funds provided by tax revenue for their ordinary expenditures (at least under normal conditions), Congress must only approve the total amount of money that is going to be spent on investments by them for a given year. In this way, once the budget has been approved, such SOEs have much more discretion on how to spend the funds they have been granted than the other public entities that have to submit a much more detailed proposal to the approval of the Congress. It appears, thus, there is no legal framework to create a system of check and balances as far as the use of money allocated to self-sustainable state owned enterprises is concerned. This can, however, be an incitement to corruption if SOE's managers are not accountable before the legislative and executive branches of government for how the funds provided to them are used.

Transparency

Brazil's Federal Constitution establishes transparency as one of the basic principles of public administration. This was further mandated by the Fiscal Responsibility Law in 2000 and its regulatory framework Decree N° 1.731, which sets criteria and guidelines to improve the transparency of public management as well as the quality of the fiscal information to be disclosed.

Later, regulations such as Decree N°5482, enacted in June 2005, and Ministerial Decree N° 140, enacted in March 2006, made it mandatory for all government ministries and other agencies to publish relevant and timely information on their web pages. These regulations were improved in 2011 and 2012 as Brazil began to implement its commitments to the Open Government Partnership (Natural Resource Governance Institute).

From what can be read from the above, the Brazilian government has been making considerable efforts to promote competitive public tender practices by implementing more efficient contracting as well as enhancing transparency and its external and internal controls exercised by the authorities responsible for bidding procedures. Furthermore, the competition authorities are now devoting especial attention to preventing and prosecuting collusive practices among competitors in public tenders.

To sum up, it may be fair to say that the Petrobras scandal has not unfolded due to the absence of appropriate legislation. Indeed, the Brazilian procurement framework is heavily regulated and is embedded in the constitution. Furthermore, the Brazilian legal framework relative to procurement appears to be in line with international efforts to establish good governance and to fight corruption. Its failure appears, rather, to stem from its lack of success in enforcing the existing legislation. Thus, it may be inferred that procurement is not an isolated process inside the public administration. It depends on other governmental actions, such as enforcing criminal law for the dishonest agent and an administrative reform to provide an incentive for the public worker to act efficiently and effectively in his public post.

Moreover, it is also worth noting that the intended flexibility of the procurement regulations relative to Petrobras may have been detrimental to good governance at the end since it may have provided some loopholes conducive to corruption.

2.4 Measures to fight corruption

2.4.1 Punishment and reform

Having examined the legal framework in which the Petrobras scandal took place, this paper will, now, present a few measures that are prescribed as deterrents to corruption in the economy at large; however, they can also be applied to SOEs. The aim of this review of tools against corruption is to examine whether the events at Petrobras occurred because such measures were lacking.

With regard to measures designed to combat corruption Ani Emmanuel Ifeanyi identifies two approaches: punishment and reform (Ani, 2015).

Punishment is thus applied as a deterrent, which means that the effects of punishment are extended beyond the punished to others that may have contemplated a corrupt act. However, to be efficient punishment must be carried out by authorities who are not, themselves, incline to corruption.

However, punishment alone cannot curb corruption and must be accompanied by reforms. Ani identifies four categories of reforms:

1. Top-down and external monitoring/auditing
2. Transparency and bottom up accountability
3. Internal controls and bureaucratic incentives
4. Administrative and electoral reforms.

These reforms are not just applicable to governments, but generally to institutions or organizations. According to Ani (Ani, 2015), *top-down and external monitoring* has been shown to reduce corruption as well as increase transparency. They comprise corrective action by the government to forestall corruption in future or minimize the opportunities for corruption. It appears that the probability of being audited by anticorruption agencies tend to make officials refrain from corrupt acts. Furthermore, the higher the penalty the less likely they are to engage in bribery.

Transparency and bottom up accountability concerns the capacity of public service to provide free access to information on how things are run to citizens. Transparency can also rest on the ability of the press to carry out investigative reporting on the actions of officials when there is a suspicion of corruption. As demonstrated by Brunetti and Weder (2003) a free press may be a powerful control on corruption. There is evidence of a significant relationship between more press freedom and less corruption in a large cross-section of countries. This entails that civil servants who indulge in corrupt actions run a high risk of being exposed.

The accountability of those in charge is also an important factor in the sense that when officials are engaged in corrupt actions which divert public funds from their initial objectives it must be possible to punish these officials.

Internal controls cover incentives such as higher wages and meritocratic practices. According to Ani the most common recommendation is to increase the salary of role-occupants. The idea being that a higher wage means a higher cost of attempting corruption, since one may risk losing a higher-paying job and that conversely, a low wage should create an incentive for greater disposition to corruption. However, higher wages alone are not a guaranty against corruption.

Last *administrative and electoral reforms*, are mentioned as they can decrease the propensity to resort to corruption in order to fund campaigns. Such a suggestion appears to be very relevant for our analysis since Brazil like many democratic countries suffers from a corrupt political process. This propensity of even democratic countries to suffer from a corrupt political process is highlighted by Rose-Ackerman, (Rose-Ackerman, 1997) who explains this by the fact that most electoral campaigns are still so expensive that they can only be financed from private sources, and wealthy interests concerned with legislative outcomes and government policy may be willing to foot the bill. Financial pressures give politicians an incentive to accept pay-offs, thus working against the other corruption-reducing effects of competitive elections (Rose-Ackerman, 1997). In democracies, those effects being the fear of being exposed as corrupt by political opponents, the possibility of losing office if one is not able to accommodate the needs of a broad based constituency and the propensity of voters to require public benefits from politicians rather than personal favors. However, Rose-Ackerman also notes that the legal approach may not work: making contributions strictly illegal will not necessarily eliminate them. In fact, corrupt politicians may find new ways so that they go underground and remain untracked. For reforms, Rose-Ackerman suggests restrictions in length of campaign time and campaign method to bring down the costs, more knowledge about politicians to voters, imposing stronger disclosure rules (ibid.) transparency, internal and external audit provisions, promoting investigative journalism, promoting the growth of civil society organizations, reforming electoral laws to prohibit the buying of voters by politicians and regulating campaign finances. All of these efforts by social scientists can be called the institutional approach to combatting corruption, which focuses mainly on reforming institutional and administrative processes (Ani, 2015).

Pena Lopez and Sanchez Santos (Lopez & Santos, 2013) are, however, critical of the approach according to which the origin of the problem lies in institutional and organizational aspects. According to this approach, the agents will succumb to corrupt practices if they have discretion, weak accountability and a substantial monopoly of power at their disposal. Consequently reforms could reduce corruption by curtailing this discretion, increasing control over officials and reducing the power of the state. Pena Lopez and Sanchez Santos demonstrate that sociocultural factors also play a role in the occurrence of corruption. In some countries networks of reciprocity are prevalent and trust is linked more to individual networks than to society as a whole. These countries are more likely to have high levels of corruption or conditions conducive to corruption. They go on arguing that since the occurrence of corruption depends on cultural variables public intervention capabilities are substantially reduced, at least in the short term. However, generating a culture of trust as well as a proper institutional framework design, among other things, constitute some of the most effective ways to achieve this goal.

2.4.2 Alternative remedies to corruption: Acting upon institutional logic

In earlier chapters we have examined solutions to eradicate corruption. Apart from the ideas presented by Pena Lopez and Sanchez Santos (Lopez & Santos, 2013), the solutions offered were either based on market liberalization –i.e. the opening of markets and the reduction of government intervention- and /or regulatory frameworks that can make corruption illegal.

Privatization vs. state owned enterprises

Transferring the ownership of state owned enterprises, to the private sector, has often been seen as the best option towards more efficiency. As far as the efficiency of market liberalization as a remedy against corruption is concerned, the liberalization of the former Soviet bloc has provided ample empirical evidence for the effects of privatization vs. state enterprise. Kaufmann and Siegelbaum have studied the process of the liberalization of these economies in the transition period and found that an increase in corruption coincided with the process of privatization. They claim, however, that privatization in itself was not responsible for increased corruption levels but rather that “it constituted a convenient vehicle for corruption that was ongoing and unchecked at

the time (Kaufmann and Siegelbaum, 1997). The level of corruption which was witnessed in the earlier stage of privatization in the ex-Soviet bloc countries was dependent upon the method of privatization chosen. Kaufmann and Siegelbaum point that voucher based mass privatization and liquidation tended to be the least corruption prone.

Yet other examples, illustrating that privatization is not the panacea that libertarian policy like to consider it to be, are available. In both the United States and Spain studies have been carried out that show that in some cases privatization can lead to corruption. In the United States prisons are increasingly being privatized. Because they are profit run, the higher the number of inmates, the higher their profit margins. Privatization, in some cases, has been conducive to corruption as there has been occurrences of judges being paid bribes to secure higher numbers of condemnations (Prisons Privatization). Likewise, in Spain, private businesses in the water industry have paid bribes to civil servants and contributions to political parties in order to obtain contracts (Bel, Gonzalez Gomez and Picazo-Tadeo, 2015).

Reform of the regulatory framework

The World Bank, the IMF and the OECD have issued numerous road sheets on how to diagnose and fight against corruption. The World Bank has also worked towards helping countries develop capable and accountable states and institutions that can be successful in reducing corruption. They have however been focused on reform of the legal framework but less so on the effectiveness in enforcing the law (Fjelstad and Isaksen, 2008). As the Brazilian case illustrates, reform of the regulatory framework and its corollary instruments: transparency and accountability, though they may impact society positively, do not altogether suppress corruption and therefore, a different approach is needed to curb corruption.

Institutional logics

As a response to the limited success of these approaches Vilmos F.Misangyi and Gary R.Weaver (2008), offer an alternative approach to the fight against corruption. They suggest an approach that builds on organizational and economic treatments of corruption. However, their approach looks beyond organizational processes, regulations and coercive measures and rather focusses on the interplay between institutional logics/social identity, resources and social actors.

As mentioned above, in order to explain the foundations of their approach Misangyi and Weaver rely both on the literature on corruption and organizational behavior and the literature on market oriented measures against corruption. The first focusses on how corrupt behavior in organizations can become institutionalized. Leaders play a crucial part in that process by sanctioning or authorizing corrupt behaviors implicitly or explicitly. They can do so either by imposing reward structures that encourage corrupt practices or by condoning or ignoring such practices when they occur. As a result, these practices become routinized and normative in the organization. Through socialization processes, reward systems, rationalizing ideologies and expectation to obey leaders, corrupt behavior is made acceptable. The organizational behavior approach suggests that identity strongly influences and motivates behavior including ethical behavior. Thus, because they end up identifying with what is expected from them in the organization, well-meaning people can end up engaging in corrupt behavior. Understanding these mechanisms can help design tools against corruption which must then be centered on roles and identity.

On the other hand, the economically oriented approach posits that people indulge in corrupt behavior because it presents an opportunity for gain. Remedies against corruption must then involve losses due to market reactions or coercive threats.

Misangyi and Weaver state that though the organizational approach offers a richer array of alternatives as far as cures for corruption are concerned this approach is limited in so far that individuals and organizations are part of a wider institutional environment. One example is the case where state run enterprises are privatized and stealing from the state is replaced by stealing from the company as has been often seen in post-transition economies.

Granting the limitations of the economic and organization approach, Misangyi and Weaver endeavor to provide a new model which takes into account three essential elements of institutional change: institutional logics, resources and social actors in order to curb institutional corruption.

Institutional logics are a set of socially constructed, historical pattern of material practices, assumptions, values, beliefs and rules by which individuals act and organize their social reality. Furthermore, Misangyi and Weaver consider institutions as the “regulative, normative and cognitive structures and activities that provide stability and meaning to social behavior”. Social

actors follow a set of scripts, habits and rituals that become embedded in identities and thus, perpetuate a particular institutional logic. Institutional logics are not static and can evolve with time. However, change is often the result of an exogenous shock or crisis.

To reduce or eradicate corruption, one must act upon the cognition and behavior of social actors within the institutions and create new collective identities for the social actors within the institution. However, to see these new identities emerge Misangyi and Weaver posit that three processes must be implemented. Firstly, a diagnosis which identifies the problem of corruption and identifies the persons participating in it as villains or culprits needs to be elaborated. Second, a prognostic must lay out what needs to be done to resolve the problem. Last, motivational measures must provide compelling reasons to fight against corruption. These processes must be used to establish legitimacy for the new logic that organization in need of change will have to promote.

However, the change of identity is only possible if access to certain key social resources is available. Such resources can be:

- Media access and support,
- Anti- corruption entrepreneurs (individuals, organizations or alliances of social actors),
- Incentives or legal consequences (punishment).

Though necessary, access to these resources is not sufficient as such for successfully changing institutional logics. In order to become established the new collective identity must be perceived as legitimate. Nevertheless, the existing institutional logic must not be discarded and the new logics must draw from it. Hence, the desired future identity must be linked to the collective past which must be revised and reinterpreted.

To sum up, corruption in organizations can be changed by affecting both their substance and symbolism through the creation of alternative identities that cognitively and morally clean and through the corresponding development of habits and practices consistent with an anti-corrupt logic.

3. Understanding the Petrobras Scandal

Chapter 3 aims at explaining the context surrounding the Petrobras Scandal, in order for the reader to understand (i) how the bribery scheme came to light and was revealed to the public, (ii) the way by which the bribery scheme was implemented and (iii) the political consequences of the events.

Operation “Lava-Jato” (Operation Car Wash) was launched in March 2014 and has since then been omnipresent in Brazilian Media. It has exposed one of the biggest bribery schemes in Brazil’s history. The scandal has shocked and outraged Brazilians because of the sums of money involved, the number of political officials and high business executives implicated, and the close links to the ruling *Partido dos Trabalhadores* (PT) which President Dilma Rousseff is affiliated to.

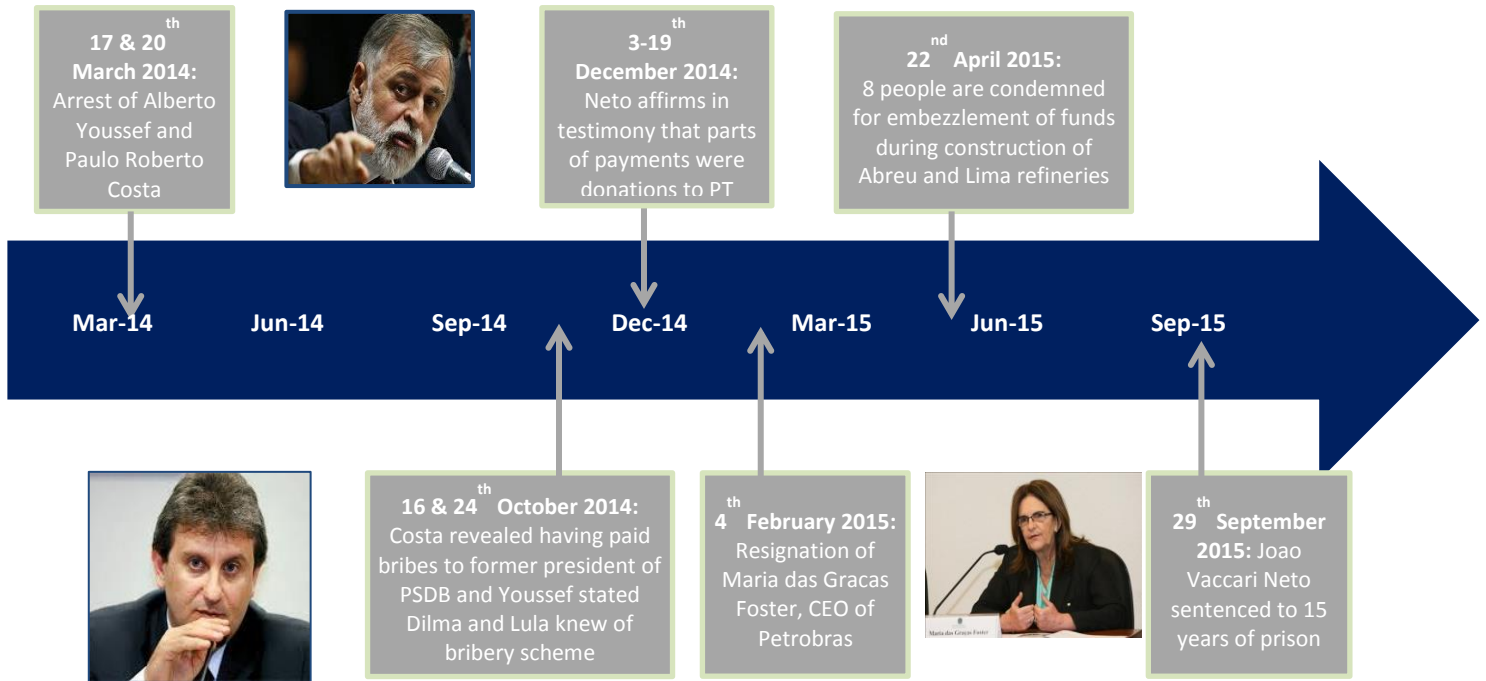
From March 2014 until June 2015, a team of 9 prosecutors called the “Nine Horsemen” discovered and revealed a series of bribery schemes, money-laundering activities, illegal party donations.

After the scandal broke out, Brazil was plunged into political turmoil, as Brazilian citizens massively took to the streets to call for Dilma Rousseff’s impeachment, on grounds that her party was heavily implicated in the scandal. Deputies, Senators and Ministers from governing coalitions were arrested, prosecuted and convicted for their involvement in corrupt activities, diminishing Brazilian citizens’ trust in politicians and the political system as a whole.

Lastly, the scandal also challenged the Brazilian interventionist model inherited from previous dictatorial regimes, epitomized by Finance Minister Joaquim Levy’s statement: “State Capitalism does not work well in a democracy” (Sotero, 2015).

Below are presented some of the key events and discoveries of the Petrobras Scandal.

Figure 2: Key Events of the Petrobras Scandal



Source: Prepared by author based on newspaper articles from Folha de Sao Paulo and Veja magazine

3.1 The discovery of the bribery scheme

The Lava-Jato operation originally started in the state of Parana on the basis of an investigation of money laundering activities. Prosecutors were tracking a known money launderer by the name of Alberto Youssef, who after his imprisonment became an essential informer for the investigation’s prosecutors. It was discovered that he had given a Land Rover Evoque worth USD\$78,000 (Connors & Magalhaes, 2015) to Paulo Roberto Costa a senior executive for supply and refinery (“abastecimento e refino”) at Petrobras, responsible for overseeing and contracting major construction works such as refineries and petrochemical complexes. Through successful search warrants, the prosecutors were able to arrest and charge Mr. Costa, three days

after the arrest of Alberto Youssef. Mr. Costa was already under investigation by the Federal Police for irregularities in the acquisition of the Pasadena Refinery in Texas in 2006. As prosecutors became aware of links between Mr. Youssef and other Petrobras executives, they started to understand the magnitude of their discoveries.

A team of nine prosecutors (the “Nine Horsemen”) gathered in the city of Curitiba in the state of Parana, in order to work on the investigation with the help of the local branch of the federal police in Curitiba. They were all relatively unknown within the judicial sphere, with average age of 36 (Connors & Magalhaes, 2015). Many of them had studied abroad such as Deltan Dallagnol, a Harvard Law graduate, or Carlos dos Santos Lima, a former Cornell University law graduate. With these foreign academic backgrounds, the prosecutors applied innovative legal procedures, using for instance plea bargaining to obtain crucial testimonies, a very rare practice in Brazil’s legal system. A year after the beginning of the Lava-Jato operation, they had already negotiated 17 plea-bargaining, with various politicians and executives (Folha de Sao Paulo, 2015). An example of plea-bargain can be given with Paulo Roberto Costa who negotiated to be held in house-arrest instead of ordinary imprisonment at the Federal Police.

3.2 The bribery scheme

Operation Lava-Jato aimed to investigate a multitude of corruption practices discovered through the testimonies of money launderers, executives and politicians. Nevertheless, the biggest discovery came from the testimony of Paulo Roberto Costa who revealed the existence of the cartel of construction firms. Mr. Costa testified that he and other executives at Petrobras had given the green light for the construction of various refineries and petrochemical complexes which had been overcharged by an unofficial and illegal cartel of construction firms. Within this cartel, these firms agreed on how much to bid for Petrobras contracts, in order to set all bid at overcharged prices. The firms would choose the winner of the bid among themselves, and Petrobras executives would chose the contractor based on the cartel’s decision (Connors & Magalhaes, 2015).

According to the Mr. Costa's testimony, the overcharged value of the contracts would amount to approximately 3% of the contract's value. This amount would be channeled by the construction firms through shell companies for purposes of money-laundering, masking these transfers as "consultancy fees" in their accounts. For instance, it was revealed that the Federal Police had found proof, that construction firms such as Sanko Sider and OAS, had made deposits in Swiss bank accounts controlled by Alberto Youssef. The latter owned several money-laundering firms. One such firm was Labogen, a cash shell used to pay kickbacks to civil servants, however officially mandated by the Ministry of Health to produce medical drugs (Carvalho, 2014).

The kickbacks funneled through the shell companies were shared among Politicians, Petrobras and construction companies' executives. For instance, it was discovered during the investigation that Mr. Costa had been hiding around US\$ 23 million in Swiss bank accounts allegedly stemming from kickbacks (Folha de Sao Paulo, 2015).

Petrobras being a State-owned company, politicians had an active role in the corruption scheme. The construction companies were only able to form a cartel because they received the green light from politicians who required bribes which were transferred to their foreign bank accounts. Among the many names mentioned in testimonies, the former President of the Congress and Minister of Tourism appointed in April 2015 Henrique E. Alves (PMDB), the President of Congress Eduardo Cunha (PMDB) and the President of the Senate Renan Calheiros (PMDB) were accused of receiving bribes in relation to Petrobras (Folha de Sao Paulo, 2015). Other politicians under investigation include the former cabinet members of Dilma Rousseff's first administration, former president and current Senator Fernando Collor himself impeached during his time as president in 1992, and many more.

Bribing politicians had become a pre-requisite for doing business with Petrobras. As illustrated by the deposition of Ricardo Pessoa the CEO of UTC, one of the biggest construction firms in Brazil. He was accused of making illegal donations to Dilma Rousseff's campaign in 2014 and to Lula da Silva's campaign in 2006 with money obtained through overpriced construction contracts with Petrobras. In his testimony (Azevedo, 2015), he describes how he met three times in 2014 with Edinho Silva, then treasurer of Dilma Rousseff's campaign and later named

Minister of Communication, and how the latter would pressure him to contribute to Rousseff's campaign: "you have construction works with Petrobras and you have benefits, you can't only contribute with this. You have to contribute more. I need more." Mr. Pessoa was required to contribute R\$ 10m to Dilma's campaign. Mr. Pessoa also described in his testimony how he had used the money from the Petrobras scheme to pay bribes to 18 well-known politicians (Bonin, 2015).

The many testimonies have been unraveled through the Brazilian press, making headlines for more than a year. The exact sequence of event related to the scandal is described in **Appendix 1**.

3.3 Political consequences

The Petrobras scandal had huge consequences on the Brazilian political sphere, as it revealed how countless high-ranked politicians had substantially benefitted from bribes and money embezzlement. In Brazil reigns a general lack of trust in Politicians and in their intention to promote the welfare of the Brazilian People. This sentiment considerably worsened after the revelations. The numerous street protests that occurred throughout March and April, such as the gigantic 15 March 2015 demonstration mobilizing over 2 million Brazilians in numerous Brazilian cities (Whitaker, 2015), are proof of the popular anger resulting from the sudden awareness and proof of politicians cupidity.

Although protesters were criticizing the Brazilian political system as a whole, slogans such as "Fora Dilma" ("Dilma out") were commonplace during these protests. Only six months after being elected, Mrs. Dilma Rousseff had become a very isolated and unpopular leader. In March 2015, polls revealed that 64% of Brazilians saw Dilma's Government as bad or terrible compared to 27% in December 2014 (Leahy, Brazil: Oily mess, 2015). Mrs. Rousseff was also facing resistance from some of her key coalition parties such as PMDB (also heavily involved in the Petrobras scandal) whose members Eduardo Cunha and Renan Calheiros hold the strategic seats, respectively president of Congress and President of the Senate (Leahy, Brazil: Oily mess, 2015). The later has been seeking to enhance its political power after Mrs. Rousseff's attempt to reduce their influence in Congress.

The chapters above intended to help the reader understand (i) the sequence of events which revealed corruption at Petrobras to the wider public, (ii) the functioning of the bribery scheme and (iii) the media and socio-political impact which followed. The following chapter will now describe the research methodology that we will use to answer the research question.

4 Methodology

The paper's research question is the following: *how did the corruption scandal at Petrobras, a State-Owned company, undermine company performance and impact the company's various shareholders?*

4.1 Addressing the research question

In order to define a relevant methodology for this study, it is essential to understand the possible ways by which the research question can be addressed and answered. Thus, to understand whether corruption at Petrobras impacts company performance, it is essential to answer the following questions:

- 1) Which corrupt activities and practices were enacted at Petrobras?
- 2) How can corruption impact company performance?
- 3) What performance metrics can measure such an impact?

These three questions will help choose an appropriate research methodology, as answering them will 1) confine the subject of study, 2) define the concepts to be used to answer the research question and 3) identify the appropriate way by which the information can be processed and analyzed.

4.1.1 Which corrupt activities and practices were being enacted at Petrobras?

In chapter 3, a detailed overview of the corrupt activities and practices sets the scene for the analysis of the corruption scheme. The chapter explains how at Petrobras a bribery scheme was set in motion by various actors (Petrobras executives, executives at construction firms, Politicians) who colluded in order to overcharge prices for construction contracts.

With the revelation of the scandal, the press started scrutinizing how Petrobras had been managed over the course of the years and identified various management activities and practices which, whether directly linked to the bribery scheme or not, could be identified as corrupt.

The scope of the analysis will include the impact of the bribery scheme itself and examples of other corrupt practices at Petrobras that were revealed by the press during the course of the Lava-Jato investigation.

4.1.2 How can corruption impact company performance?

For the purpose of the study, performance effects caused by corruption will be called “**impact factors**”. In order to analyze whether corruption has impacted Petrobras’ performance, this study will identify various “impact factors” based on available information and intends to measure their effect on performance.

4.1.3 What performance metrics can measure such an impact?

For the purpose of the analysis, this study will use part of the framework presented by Dobbs & Koller’s to analyze company performance. They organize performance measurement according to three different criteria:

- 1) **Company Performance**: the economic value created historically which can be explored through its financial statements. Metrics that Dobbs & Koller’s propose to use are ROIC, Growth in Income Statement items and Cost of Capital. As these metrics can be

computed using public data such as company filings, they will be used to analyze performance.

- 2) **Company Health:** the ability to create future economic value and the risks which could intercept value creation. Sales, operating-costs, capital productivity, commercial-health, cost structure and asset health metrics. According to Dobbs & Koller these metrics are specific to each company and sector. In the case of Petrobras, one important factor which will determine its ability to deliver economic value in the future is its financial stability and thereby its capital structure. As figures regarding Petrobras' capital structure can be computed thanks to the company's filings, they will be used to measure performance.
- 3) **Capital Market Performance:** it defines the markets' expectations and their evolution through time. Capital market performance incorporates analysis of the first two as an accurately assessed company share price embodies a company's historical performance and health. Metrics used are share price performance and Total Return to Shareholders (TRS). Share price and dividend yield being publicly disclosed for listed companies such as Petrobras we will use these 2 metrics and will compare them to those of other listed peers.

As we have now confined the subject of study and chosen a framework through which to analyze it, we will now determine the most relevant research methodology to use for that purpose.

4.1.4 Choice of Methodology

In order to conduct this study, a mixed methods research design was deemed most appropriate.

Why is a mixed methods research design most relevant for this paper?

Using a mixed methodology research design is deemed most relevant for this study for the following reasons:

- 1) **The focus is on the problem rather than the method:** what is most intriguing about this research question is the uniqueness of the corruption scheme initiated at Petrobras, the magnitude and extent of its reach (numerous politicians and CEOs implicated) and the considerable sums involved. Therefore using a method design where the emphasis is on

explaining through various methods the uniqueness of the problem and how it came to be, rather than approaching the research question by testing an already existing theory, seemed most appropriate.

- 2) **Flexibility of mixed methods research and limitations of quantitative and qualitative on a standalone basis:** a mixed methods research gives more flexibility in the way to answer the research question which is needed for this case study as quantitative and qualitative carry serious limitations on a standalone basis.
- 3) **Pragmatic solutions:** using a mixed methods research implies that the study will dedicate a chapter on finding pragmatic solutions. As the Petrobras scandal illustrates what is known to be endemic in many State-Owned companies in emerging countries, proposing pragmatic solutions to intercept and put a stop to corruption at Petrobras can serve as an example for solving similar problems at other State-Owned companies in Brazil and abroad.

4.2 A Qualitative Approach – Context analysis and Identifying “Impact factors”

Using a qualitative method makes it possible to identify intangible factors which role and impact on a phenomenon are not easily quantifiable. When used together with quantitative methods, “qualitative research can help us to interpret and better understand the complex reality of a given situation and the implications of quantitative data” (Mack, Woodsong, MacQueen, Guest, & Namey, 2005, p. 2). For instance, computed leverage metrics will be analyzed in parallel with journalists’ analysis of investor appetite for the bond market.

The information which will be used will be drawn from newspaper articles and journals in which journalists and experts describe and analyze the discoveries made by the Federal Police during the Lava-Jato investigation.

4.2.1 Context analysis:

The analysis of Petrobras' performance will be looked at in the light of the general Macroeconomic context in which the scandal took place:

- **Oil Prices:** we will look at the evolution of oil prices during the period of the revelation of the scandal, in order to discuss how oil price fluctuations will impact our analysis of Petrobras' capital market performance. We will be looking at a Brent Crude Oil price chart from the 1st of January 2014 to the 31st of December 2015, as that time span starts slightly before the discovery of the corruption scheme up until the writing of this study.

- **Brazilian Macroeconomic situation:** We will discuss various experts' opinions and analysis in newspaper articles of the Brazilian macroeconomic situation in 2014-2015, and determine how this will impact our analysis of company performance, company health and capital market performance. Moreover, we will be looking at a chart of the evolution of the exchange rate of the Brazilian Real versus the American Dollar from the 1st of January 2014 to the 31st of December 2015.

4.2.2 Identifying impact factors

“Sand the wheel” effect:

As presented in the literary review some studies find evidence of reduced performance as a result of corruption (**“sand the wheels”**). In that case, the effects engendered by corruption as mentioned in the literature review are:

- Opportunity costs
- Transaction costs and uncertainty
- Inefficient investments
- Misallocation of production factors
- Rent seeking behavior
- Mediocracy in management practices
- Agency costs

- Lower labor productivity: misallocation of talent, non-optimal number of workers
- Operational inefficiencies
- Bad company reputation

We will discuss how Petrobras managers may, because of skewed incentives inherent to the Bribery Scheme, have been conducting activities which resulted in some of the negative “impact factors” listed above. The impact of bad company reputation in particular will be discussed through a qualitative approach, in order to complete the analysis of the company’s capital market performance.

“Grease the wheels” effects:

Some studies have supported the “grease the wheels” theory, identifying beneficial effects of corruption such as:

- Trade facilitation
- Reduction of bureaucratic constraints (e.g. inefficient provision of public services, rigid laws, etc.)

We will discuss how corruption could have helped smoothened the bidding process for contracts and facilitated trade.

4.3 A Quantitative Approach - Dobbs & Koller’s company performance framework

In order to analyze Petrobras’ performance in light of the corruption scandal, we will analyze (i) company performance, (ii) company health and (iii) capital market performance.

4.3.1 Analyzing Company Performance

A company’s performance is studied in light of its historical financials (Dobbs & Koller, 2005). For Petrobras, we will analyze the evolution of the company’s net income and ROE (Return on Equity). We prefer using reported net income rather than reported EBITDA, as write-offs for

corruption will not be included in company EBITDA (Earnings Before Interests Tax Depreciation and Amortization) as they are considered to be a non-operational item.

The evolution of the following two metrics will be commented on in order to analyze whether the revelation of the Petrobras scandal has had an impact on the value delivered by the company:

- Net Income: a table will be shown with reported company Net Income over the last 10 years. Growth rates on a year-on-year basis will be computed. Net Income figures are sourced from Capital IQ;
- ROE: a table will be shown with ROE figures over the last 10 years. Growth rates on a year-on-year basis will be computed. ROE figures are sourced from Capital IQ.

4.3.2 Analyzing Company Health

According to Dobbs & Koller, “health metrics” add to those for historical performance by providing a glimpse into a company’s sustainability and future. For Petrobras we will analyze whether corruption at Petrobras could potentially have impacted the following leverage metrics: Net Debt/EBITDA and Net Debt/EV.

What are Net Debt/EBITDA and Net Debt/EV used for?

Debt metrics such as Net Debt/EBITDA and Net Debt/Enterprise Value capture Petrobras’ ability to pay down its debt. If the debt isn’t paid down in time and financial covenants are breached, the generation of future cash flow for shareholders is put at risk. Many debt instruments are collateralized (e.g. secured by a specific asset), so that the bank can claim its rights on the company’s assets in case the company defaults on its debt. If that happens, the company may not be able to continue its operations, putting at risk future cash flow available to investors. Therefore debt metrics are indicators of the risks of reduced future company cash flow generation.

The Net Debt/EBITDA ratio shows how many years it would take for a company to pay back its debt if net debt and EBITDA are held constant (Investopedia). The higher the ratio, the less

likely a company is to be able to handle its debt burden. Ratios higher than 4 or 5 set off alarms for investors and reduce the likelihood of a company to be able to take on additional debt to grow its business.

The Net Debt/EV ratio is an indicator of how highly levered a company is with respect to its overall value. High leverage can be seen as positive for some equity investors, as leverage can provide higher geared returns. However, too much leverage is seen as a threat as equity holders get paid last (and potentially not at all) if a company goes bankrupt when defaulting on its loans.

Why analyze debt metrics in the context of corruption?

Although these ratios are difficult to link directly to the corruption scandal, debt ratios which are out of the ordinary in light of the corruption scandal can help generate a discussion around:

- (i) Managerial mediocracy which can be mirrored to corruption
- (ii) Overvaluation of assets (due to overpriced construction contracts) which would be directly linked to the bribery scheme
- (iii) Bond market's reaction to the corruption scandal and the ability of Petrobras to issue new debt, which can hamper future investments
- (iv) Detrimental effects of State Capitalism on company leverage ratios

In order to generate the discussions above, we will compare Net Debt/EBITDA and Net Debt/Enterprise Value metrics as at 31/12/2015 of Petrobras versus a peer group detailed below. The figures are sourced from Capital IQ.

For the purpose of comparison this study will use the following companies as peers: Exxon Mobil, Chevron, Royal Dutch Shell, Total SA, BP, ConocoPhillips, ENI, Statoil and PTT.

The selection of these peers is based on the following criteria:

- They are all listed companies with substantial market liquidity
- They operate on a global scale
- Their Enterprise Value are estimated between 19-360 USD bn. (Petrobras EV at \$125bn)

- They are all among the largest global oil and gas companies by revenue and EV
- They all have access to the global bond market,
- They all operate in the exploration and production of oil and gas.

4.3.3 Analyzing Capital Markets Performance

The final step of Dobbs & Koller's framework is the assessment of a company's capital market performance. Present market valuations of a company should reflect its expected future financial performance based on past and present disclosed information (Efficient Market Hypothesis presented in chapter 2.1.3).

Petrobras is a public company, which operates on the public equity and debt markets. According to the Efficient Market Hypothesis, when news is released regarding corruption at Petrobras, markets' reaction to the news should reflect their view on the impact of corruption on future financial performance, as all public information is factored into a company's share price. We will therefore discuss and analyze how markets' reaction to news on corruption is revealing of their expectation of corruption's impact on future performance.

The most common approach to measuring capital markets performance is by analyzing Total Returns to Shareholders, which is to say the share price appreciation plus the dividend yield. We will be looking at share price performance and dividend yield individually.

4.3.3.1 Share price performance:

We will proceed with two distinct analysis of the share price performance:

- 1) A **historical analysis** of the share price over the last 5 years from the 1st of January 2005 to the 31st of December 2015 will be shown. We will show a share price performance chart sourced from the Financial Times and analyze material changes in share price

movements. Petrobras' historic share price pre-revelation of the corruption scandal will be analyzed in order to verify whether the revelation of the corruption scheme occurred concurrently to a general downward trend of the share price for distinct reasons. If so, this study will discuss whether the general downward trend could have been caused by bad investment decisions impacted by corruption and bad management practices.

- 2) A comparison to the **stock price performance of main peers** in the O&G industry and Petrobras' share price performance will be computed. Indeed, world oil prices were sharply declining in 2014-2015, which had a major impact on the share prices and market valuation of all Oil & Gas companies and resulted in a drastic decrease in their revenues and profits. As a consequence, divestments of assets and delays on projects were implemented. Therefore, the analysis of the share price performance of Petrobras will be benchmarked to the share price performance of its peers, from the 1st of January 2014 to the 31st of December 2015.

For the purpose of comparison this study will use the same peer group as for the leverage metrics which are Exxon Mobil, Chevron, Royal Dutch Shell, Total SA, BP, ConocoPhillips, ENI, Statoil and PTT.

4.3.3.2 Dividend yield

The dividend yield is a measure that indicates how much shareholders are paying for the annual dividends they receive. It is the simple calculation of dividend per share divided by share price. We will compare Petrobras' dividend yield for 2014 and 2015 compared to that of its peers, by dividing dividend per share for FY 2014 and FY2015 with company's share prices as of 31st of December of each year.

4.4 Identifying pragmatic solutions for fighting corruption at Petrobras

As part of the mixed methods research design, using pragmatic knowledge claim as a base assumption for the research entails proposing pragmatic solutions for the research problem. For that purpose we will be using the literature review on the Brazilian legal framework (chapter 2.3), in order to identify incentives for corruption which could be counteracted.

Management at Petrobras was also able to conduct corrupt practices because of the lack of surveillance and inefficient corporate governance and management control systems. SOEs in Brazil are controlled and monitored by the Ministry of Mines and Energies, the Minister of which is automatically elected Chairman of Petrobras. Looking at the organization of the corruption scheme and particularly at the collusion between managers at Petrobras and politicians in power, we will propose solution as to how to improve Corporate Governance at Petrobras by amending the Legal framework of State-Owned companies in Brazil.

Now that the methodology has been presented and detailed, we will now proceed with the analysis of the research questions, as to **whether corruption at Petrobras undermines company performance and how it impacts the company's various shareholders.**

5 Analysis

5.1 Context analysis – What are the external factors which may impact our analysis of the Petrobras scandal?

The qualitative approach to the analysis will start off with a context analysis which aims to identify external factors which could impact the findings of both our qualitative and quantitative analysis. Such elements as the oil prices and the general situation of the Brazilian economy at the time will be examined.

We will, thereafter, identify “impact factors” which occurred within the bribery scheme itself (overpricing of construction contracts) but also auxiliary discoveries of corrupt practices at Petrobras.

Evolution in oil prices and the Oil and Gas industry:

Oil Prices: we will look at the evolution of oil prices during the period of the revelation of the scandal, in order to establish whether oil price fluctuations have impacted Petrobras’ capital market performance, which may be of significance for the analysis. To do so, we will look at a Brent Crude Oil price chart from the 1st of January 2014 to the 31st of December 2015.

As shown by the graph below, the crude oil price dramatically decreased 2014-2015 going from 112 \$/barrel on the 30 June 2014 to 38 \$/barrel on the 31 of December 2015 (a 66% decrease).

Figure 3: Brent Crude Oil Evolution from May 2014 to December 2015



Source: Money Week (2015)

The steep drop in oil prices has had tremendous consequences for the Oil and Gas sector, according to a Deloitte report (Deloitte, 2016), the impact of falling oil prices on Oil Companies finances are:

- Risk of impairment of assets: producers should expect lower profits from assets in the future which reduces the present value of assets and leads to write-offs
- Capital expenditure cuts resulting from reduced operating cash flow
- Difficulty of renegotiating debt: “lower asset values and increased default risks mean that borrowers will face increasing challenges, including the need to pay higher interest rates or enhance security packages” (Deloitte, 2016, p. 7)

These three impacts are also considered in our quantitative analysis as part of the possible consequences of corruption. The effects of falling oil prices and corruption on company financials being quite similar, it can be hard to distinguish the effect of one versus the other. As the period of drastic fall in oil prices corresponds exactly with the period of the discovery of the corruption scheme, we may conclude that our quantitative analysis may be flawed by the effects of falling oil prices.

The Brazilian macroeconomic situation:

As 78% of Petrobras FY2014 revenue stems from Brazil (Petrobras Brasil, 2014), it would be fair to assume that Petrobras' financial metrics would deteriorate as consequence of a slowing Brazilian economy. In order to discuss this assumption, we will present various experts' opinions and analyses of the Brazilian macroeconomic situation in 2014-2015. The final objective being to determine whether the general slump of the economy has had any repercussion on company performance, health and on capital market performance. We will also complete this discussion with the analysis of a chart of the evolution of the exchange rate of the Brazilian Real versus the American Dollar from the 1st of January 2014 to the 31st of December 2015.

The Brazilian macroeconomic situation is also an important external factor which could impact Petrobras. The combined effect of the falling commodity prices partly due to decreased Chinese growth rates, inconsistent monetary policy and the Petrobras corruption scandal, has caused the macroeconomic situation of Brazil to deteriorate rapidly in 2014 and 2015.

The Financial Times speaks of an "impressive" deterioration of the Brazilian economy, with a particularly grim outlook as Finance Minister Joaquim Levy received little support from the Legislative and Executive to toughen Brazil's monetary policy and reduce fiscal spending (Garcia, Maynard, & Fonseca, 2015).

The skydiving exchange rate ratio of the Brazilian Real vs. the American dollar serves as a testimony of the deterioration of the macroeconomic environment in Brazil, as can be seen in the graph below.

Figure 4: Depreciation of the Brazilian Real versus the Dollar from January 2014 to December 2015

BRL per 1 USD

31 Dec 2013 00:00 UTC - 31 Dec 2015 00:00 UTC
USD/BRL close:3.96161 low:2.18605 high:4.17450



Source: XE currency converter (2015)

The exchange rate went from 2.21 BRL/USD on 30 June 2015 to 4.17 on the 31 December 2015, a depreciation of 89%. Given that Petrobras buys part of its oil in dollars on the international oil market to distribute in Brazil, as the Brazilian Real depreciates imports become more expensive. According to the Financial Times, the company had already lost R\$60bn between 2011 and 2014 as a result of fuel subsidies, when the company was forced to import fuel and sell it at a loss in order to help the government contain inflation (Pearson, 2015).

On the other hand, the deteriorating exchange rate may be off-set by the falling oil prices. By making simplified assumptions by converting the price of oil with the spot price of the Brazilian Real, oil prices went from 247.52 BRL/barrel of crude oil on 30 June 2014 to 158.46 BRL/barrel on 31 December 2015, which amounts to a 36% decrease in oil imports. Although the calculation is considerably simplified and doesn't account for fluctuations within the stated period as well as hedging policies that might have been implemented by Petrobras, it seems however likely that the cost of oil imports has generally decreased for Petrobras within that period. The Financial Times also states that falling oil prices are a considerable relief for Petrobras in the midst of the corruption scandal (Pearson, 2015).

5. 2 Identifying impact factors - Analysis

In this section, we will discuss how Petrobras managers may because of skewed incentives inherent to the Bribery Scheme have been conducting activities which resulted in negative “impact factors”. The impact of bad company reputation in particular will be discussed, in order to complete the analysis of the company’s capital market performance as a company benefitting from a good reputation will be trusted by investors and will have increased access to financing at lower costs. We will also explain how corruption may have helped smoothen the bidding process for contracts and facilitated trade.

The corrupt practices Petrobras managers had been engaged in for many years were the subject of abundant revelations in the press once operation Lava-Jato started investigating Petrobras. Although Petrobras’ annual report has accounted for write-offs between 2004 and 2012, numerous testimonies seem to confirm that the corruption scheme started earlier than 2004 and continued until November 2014 when arrests warrants were issued. The revelations uncovered how management incentives seemed to have been oriented towards personal gain and benefits for a group of individuals rather than towards increasing shareholder returns.

Here are some examples of corrupt activities discovered during the course of operation Lava-Jato (Folha de Sao Paulo, 2015), which will be used for our analysis of “impact factors”:

- Pedro Barusco (former Petrobras executive) estimated in a testimony that the ruling party PT had received US\$ 150-200m in bribes between 2003 and 2013. These bribes consisted of money diverted from 90 construction contracts Petrobras had signed with construction companies.
- An executive at Camargo Corrêa said that the company paid R\$ 110m in bribes to obtain contracts from Petrobras between 2007 and 2012.
- Petrobras executives received US\$ 1.5m for letting the acquisition of the Pasadena refinery in Texas.
- Petrobras bought equipment for a petrochemical complex in Rio de Janeiro before defining the business model and the production structure of the refinery which supposedly led to a prejudice of R\$ 1bn.

These 4 examples, revealed by the testimonies of Petrobras executives, CEOs of construction firms, Politicians and money launderers, highlight how Petrobras managers' incentives were unaligned with shareholders': corruption tends to "sand the wheels" of business operations thereby reducing performance and reducing shareholder return.

In the following we will review how corruption has "sanded the wheel" in Petrobras:

(i) Opportunity costs / transaction costs

To start with, the huge sums which were reported to have been paid as bribes to CEOs of constructing firms, politicians and Petrobras executives, represent a huge opportunity cost for the company. As the company wrote down \$6.2bn Reais for overcharging contracts (company's accounting methodology is described in a chapter further below on write-offs). The bribes to politicians, managers and contractors were paid by overcharging construction contracts paid for by Petrobras. With costs inflated and not representative of market value, the cash amounts paid for property are higher and therefore there is less cash available for to pay dividends to shareholders. As was confirmed by Paulo Roberto Costa, on average **3%** of the contract's value went to bribe. Construction costs of refineries, petrochemical assets and oil platforms were then inflated and less cash was available in order to invest in cash generating developments. 3% of each contract represents a considerable opportunity cost. Also, the paid bribes represent unnecessary and illegal transaction costs that reduce available cash flow.

(ii) Misallocation of production factors

As managers are incentivized to receive and distribute bribes and divert company funds to political parties, they will be inclined to disregard sound investment rationale. In the case of the Pasadena refinery in Texas, executives received US\$ 1.5m for conducting the acquisition of a refinery at a price that was way too high (Spagnuolo, 2015). Petrobras paid \$360 million for 50% of the refinery in 2006, more than 8x what the Belgian-controlled Astra Transcor Energy paid for the whole refinery a year earlier. Petrobras had spent US\$ 1.18bn on the refinery including the cost of buying out Astra's remaining 50% share after a legal dispute between the two companies. This deal is estimated to have cost Petrobras \$792m as Petrobras is said to have overpaid the

facility which was in terrible conditions when acquired. According to federal prosecutor Carlos Fernando dos Santos Lima, there is evidence that Astra paid US\$ 15m in bribes to Petrobras managers in the sale of the initial 50% of the Pasadena refinery in 2006. This is an excellent illustration of how shareholders are not prioritized as the company's managers take dubious investment decisions which are not motivated by rationales of sound company growth and cash flow generation, but by personal gain and rent seeking behavior.

Another example of misallocation of production factors can be derived from the testimony of a Camargo Correa executive claiming the company paid R\$ 110m in bribes to obtain contracts from Petrobras between 2007 and 2012. Out of the numerous contracts that were signed with Camargo Correa, some may not have been profitable and financially sustainable for the company in the medium to long run, thereby misallocating production factors, and challenging Petrobras' financial sustainability.

(iii) Lack of market competition

Although some more isolated corruption cases were identified (Petrobras, 2014), the "Lava Jato" investigation mainly focused on the payment scheme organized by the "cartel" of construction companies. 27 companies colluded, with the help of Petrobras executives, in order to obtain contracts with Petrobras, systematically overcharging the company. Whenever a development project had to be built, Petrobras had to organize a public tender in order to respect regulations. The laws (described in the literature review section) were established to guarantee equal conditions for all bidders. However, with the creation of the cartel, construction firms were able to circumvent regulations and appointed within the cartel the company that would receive the construction contract, which was communicated to corrupt Petrobras executives. The consequence of this is that the companies weren't operating in a market environment of competition, and were therefore able to charge higher prices. In testimonies, 3% was mentioned as a percentage of overpayment, an amount added on top of what contractors estimated were market prices. However, what these 3% may not have been taking into account are the distorted market prices which resulted from a lack of competition among the 27 construction companies. Therefore the 3% may underestimate the overcharge that was paid, as companies should have

operated in a competitive environment and should have offered lower fees for construction services.

(iv) Operational inefficiency

As corruption executives' motivations are turned towards rent seeking through bribes rather than proactive management oriented towards improving a company's strategy and operations, they become less focused on operational and strategic efficiency. An example of this is the revelation that Petrobras bought equipment for a petrochemical complex in Rio de Janeiro before defining the business model and the production structure of the refinery which supposedly led to a prejudice of R\$ 1bn. Executives at Petrobras ceased to be preoccupied with operational feasibility and business model planning as their wage would not be determined by the successful execution of a project or the optimal cost management of a development project, and they receive huge amounts of bribes for looking the other way. The corruption scandal confirms what many academic studies have concluded which is that corruption leads to mediocrity in management practices.

All of these factors result in Petrobras' shareholders interest being disregarded as a result of rent seeking managers colluding with politicians and construction firms' CEOs. In an interview with Folha de Sao Paulo, Mr. Flávio Conde, investment analyst, stated the following: "the scandal showed that instead of working to increase results for investors, part of the management was working to favor one group of individuals. And, without the change in management, the investor remains insecure" (Lima, 2014).

Weak accountability and collusion with Government - a main cause of continuous corruption

One of the causes of these practices is the weak accountability of managers and the collusion between managers and politicians. For instance, Paulo Roberto Costa, who was the first Petrobras executive to be arrested in the Lava Jato operation had been nominated for the job of director of refining and supply by federal deputy Jose Janene, and was officially appointed by Lula da Silva. There is a strong incentive for politicians and managers at Petrobras to support

and cover for each other, as managers at Petrobras are often former civil servants with strong ties and relations to politicians in power.

The role of the Board of Directors is to define the main goals of the company and also to supervise the performance of and strategic decisions taken by the Executive Board. As for most Brazilian SOEs in which the government holds a majority stake, the Board is appointed by the Government (Vianna, 2014). This clearly affects the impartiality of the overseeing process as managers and board members are linked through the political parties of which they are members.

The scandal revealed that politicians as well as political parties were receiving bribes from money diverted through Petrobras contracts with construction firms. According to former Petrobras executive Pedro Barusco, PT had received US\$ 150-200m from the kickback scheme. Additionally the 21st of September 2015, João Vaccari, former Treasurer of Brazil's governing Workers party was charged guilty for his role in the kickback scheme, thanks to the effort of the Federal Police. It would therefore seem highly unlikely that board members would condemn and investigate a corruption scheme in which their own political parties are participating.

The disclosure of findings from the Lava-Jato investigation has enabled to identify four “impact” factors which have affected performance at Petrobras: opportunity costs/transaction costs, misallocation of production factors, lack of market competition among suppliers and operational inefficiency. In light of precedent work described in the literature review, we can infer that the corrupt activities at Petrobras had a “sand the wheel” effect on performance: *these activities had a negative impact on productivity and caused losses worth billions of R\$ in bribes and misallocated investments, resources that could have been reinvested in the company or distributed to shareholders.*

Grease the wheel

Corruption at Petrobras might also have had a “grease the wheel effect”. As the Brazilian legal system is known for its heavy bureaucracy, corruption could lead to increased speed in the implementation of administrative practices and bureaucracy. In the case of Petrobras, one could imagine that the incentives scheme that was put into place at Petrobras enabled the allocation of

contracts to be more efficient. There was probably a less costly and lengthy selection process of the construction services provider as the members of the cartel would already have agreed upon the winner of the selection process in advance. However although the contractor was selected informally, Petrobras often had to go through an official bidding process in order to comply with regulations.

Moreover, the increased costs of 3% on contracts due to the bribery process dilute the potential cost savings of not having to engage in costly selection and bidding processes.

Finally, corruption poses a moral issue. Petrobras being a state-owned company, its main shareholder is the Brazilian State, which invests state-funds and indirectly lends money (through the BNDES) to the O&G operator. Therefore state funds and thereby tax payers money are indirectly being misused when bribery takes place.

As a result, we believe that the grease the wheel effect is considerably negligible for Petrobras compared to the negative implications of corruption.

5.3 Evaluation company performance - Dobbs & Koller's framework

As planned in the Methodology section, we will now proceed with an evaluation of the impact of the revelation of the corruption scheme on the company's performance, health and capital markets performance.

We will try to assess the impact of the revelation of the scandal on company financials.

For the purpose of this study, we will consider that the fact that the bribery scheme was revealed and widely covered had an impact of its own. The period of time chosen for the measure is the moment of the disclosure of the scandal to public markets.

One may argue that the company (and its shareholders) would have been better off if the scandal hadn't been revealed, as a declining share price resulting from massive press coverage could have been avoided if the scandal hadn't been revealed. However, we will argue that the risks of the revelation of corrupt practices are inherent to corruption itself. Therefore, the revelation of

the scandal will be considered a consequence of the bribery scheme itself, and not an outcome that should have been avoided for the benefit of shareholders.

Another argument to justify this position is that the revelation of the scandal forces Petrobras to reconsider its compliance and corporate governance, thereby preventing such bribery schemes or other corrupt practices from taking place in the future. Therefore, even though the cost and losses linked to the revelation of corruption at Petrobras might be higher than the actual losses from the bribery scheme, revealing these practices could prevent the company from experiencing future losses.

In the next section, we will proceed with analysis of the company's performance according to the framework defined by Dobbs & Kollers (2005).

5.3.1 Company Performance

As Petrobras is a public company for which financial metrics are publicly disclosed on a regular basis in order to comply with regulatory debt requirements, it is possible to access and compute various public metrics over the course of time. In the following section we will analyze the impact of the revelation of the corruption scandal on the following two metrics: Net Income and Return on Equity and thereby on the value delivered by the company. For this purpose a table reporting the company Net Income over the last 10 years and growth rates on a year-on-year basis will be computed as well as a table showing ROE figures over the last 10 years as well as growth rates on a year-on-year. In this case, we prefer using reported net income rather than reported EBITDA, as write-offs for corruption will not be included in company EBITDA (Earnings Before Interests Tax Depreciation and Amortization) as they are considered to be a non-operational item.

However, we will first explain why corruption was the main factor impacting Net Income and Return on Equity in 2014.

Macroeconomic factors and their impact on financials

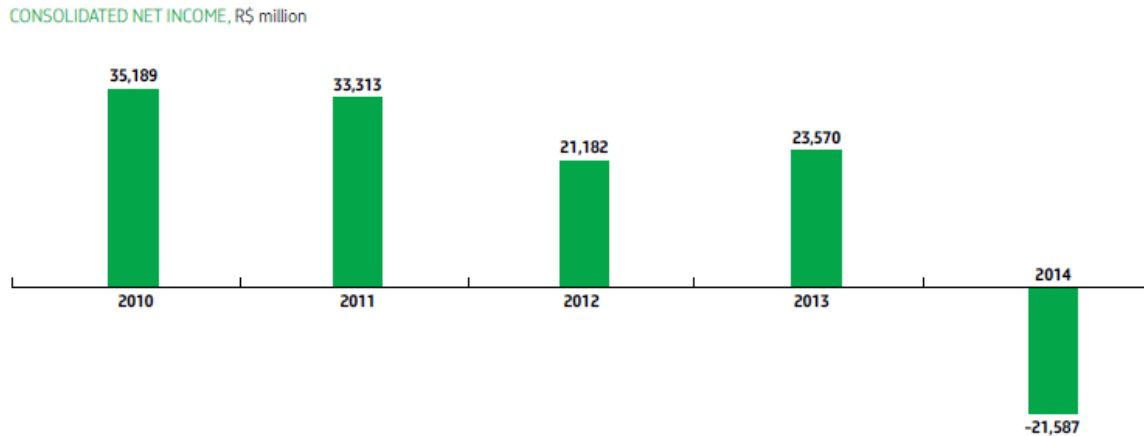
In the Annual Report 2014, various factors are mentioned to explain the business context in which Petrobras was operating at the time of the revelation of the scandal. These adverse factors such as the fall in oil prices and the devaluation of the Brazilian Real, may help to explain partly why Petrobras' financials were deteriorating at such a fast pace during the course of 2014-2015. However, here are some mitigating factors that would explain why the corruption scandal is a main component and factor to explain the sudden decrease in net income for Fiscal Year 2014:

- (i) The fall in oil prices did not have as bad an impact on Petrobras' financials as one might think. Between 2011 and 2014, Petrobras was compelled by the Brazilian Government to import fuel and sell it at a loss in order to contain local inflation. As 78% of Petrobras' revenues are derived from local sales (Petrobras, 2014), selling oil at a loss to the Brazilian market has cost Petrobras R\$60bn between 2011 and 2014 (Pearson, 2015). According to the Financial Times (Pearson, 2015), falling oil prices actually released pressure for subsidizing oil imports. As the Government allowed a rise of diesel and petrol prices by 5% and 3% respectively in November and oil prices dramatically fell between June-Dec 2014, domestic prices were finally on par with international levels in May 2015. We can deduct from the Financial Times' analysis that falling oil prices actually reduced Petrobras' financial burden of selling oil at a loss.
- (ii) The devaluation of the Brazilian Real could also be considered an important factor to explain decreased results as oil and gas imports become more expensive for Petrobras. Mr. Aldemir Bendine, appointed CEO of Petrobras on the 6th February 2015, explained during the presentation of the Q1 2015 Annual Report, that 1% decline in net profits vs. 2014 was to be explained by the devaluation of the Brazilian currency (Pearson, Oil price plunge boost Petrobras, 2015), as the external dollar denominated debt of the company increases and interests weigh much more on the net income. However, the simple calculation of oil prices in R\$ at spot prices in chapter

5.1, would suggest that the positive impact of lower oil prices outweighs the negative impact of depreciation of the Brazilian Real.

How was the company Net Income impacted by the scandal in 2014?

Figure 5: Evolution of Net Income from 2010-2014



Source: Petrobras Annual Report 2014 (p.5)

The bar chart above shows consolidated Net Income between 2010 and 2014. **Net income severely decreased going from R\$23.6bn to R\$(21.6)bn** (absolute value change of R\$45bn, and a decrease of) between 2013 and 2014 and from R\$35bn to R\$(21.6)bn (absolute value change of R\$57bn) between 2010 and 2014. How did net income decrease so drastically? Was the decrease linked to the revelation of corruption at Petrobras?

Write-offs

One of the items that made a considerable impact on Petrobras' Net Income in 2014 was write-offs for "incorrectly capitalized overpayments" (Petrobras Brasil, 2014, p. 3) that is to say the amounts related to the overpricing of construction contracts because of corruption. In Petrobras' Annual Report 2014, these were estimated at R\$6,194m (approx. US\$2.1bn) accounted for in the Q3 period.

How did the company compute the write-off linked related to overpayments?

As the company claims that it was not aware of the bribery scheme, they decided to follow an accounting methodology based on the testimonies of former Petrobras personnel and

intermediaries in the payment scheme (Petrobras, 2014). Company estimated the aggregate overpayment by applying a percentage indicated in the **depositions (3%)** to the total value of identified contracts.

Using this method, Petrobras management believes they are taking a conservative approach. Below is a review of the segmental distribution of the write-offs and how they were computed.

Table 1: Segmental breakdown of write-offs

"WRITE-OFF – OVERPAYMENTS INCORRECTLY CAPITALIZED"	CONSOLIDATED						TOTAL
	E&P	RTM	GAS & POWER	DISTRIB.	INTER.	CORP.	
Payment scheme:							
Total contract amounts ^(*)	62,679	110,867	21,233	757	752	3,322	199,610
Estimated aggregate overpayments (3%)	1,880	3,326	637	23	23	99	5,988
Unrelated payments (outside the cartel)	139	1	10	–	–	–	150
	2,019	3,327	647	23	23	99	6,138
Reversal of depreciation of the affected assets	(87)	(198)	(52)	–	–	(9)	(346)
Impact on property, plant and equipment	1,932	3,129	595	23	23	90	5,792
Write-down of tax credits related to affected assets ^(**)	37	298	57	–	–	10	402
Write-off – overpayments incorrectly capitalized	1,969	3,427	652	23	23	100	6,194

(*) Of this amount, R\$ 44,115 represents amounts scheduled to be paid after September 30, 2014.

(**) Write-down of tax credits that will not be applicable in the future.

Source: Petrobras Annual Report 2014 (p.38)

Further details of how the overpayments were computed are detailed in **Appendix 2**.

Accounting for Impairments Charges

Impairment charges also impacted Net Income in 2014. The company reported impairment of R\$44,636m in 2014 versus R\$1,238m in 2013. The impairments reflect the impact of the declining oil prices, the devaluation of the Brazilian Real and the impact of the Lava Jato investigation (Petrobras, 2014, pp. 55-56).

What are 2014 impairments comprised of and what amounts relate to corruption?

The company breaks down the impairment costs in 3 categories:

- (i) R\$30,976m attributable to the postponement of two construction projects (one in Rio and the other in Ipojuca) as a result of the “Lava Jato” investigation” (Petrobras,

- 2014, p. 55). We will consider the entire impairment as being the result of the corruption scandal.
- (ii) R\$10,002m as a result of lower international crude oil prices. This impairment following a general trend in the oil and gas sector will not be taken into account as consequence of the corruption scandal.
 - (iii) R\$2,978m for petrochemical assets as a consequence of “decreased demand and lower margins”. This impairment does not explicitly tie to the corruption scandal and can be seen as a general result of a combination macroeconomic factors and possibly company inefficiency. We will not include it into impairments resulting from corruption.

As a result, out of the R\$44,636m of impairment we will consider that **R\$30,976m** are directly resulting from the corruption scandal. For further detail, see **Appendix 3**.

What is the impact of write-offs and impairment on Net Income?

Table 2: Write-offs impact on Net Income

Impact of write-offs and impairment on Net Income	
<i>Total Impairment</i>	44,636
o/w corruption related	30,976
Write-offs (corruption related)	6,194
Total corruption related charges	37,170
Net Income 2013	23,570
Net Income 2014	(21,587)
Absolute Value of Decrease	45,157
% decrease in Net Income from 2013 to 2014	(191.6)%
corruption related charges as % 2013-2014 decrease	82.3 %
% corruption related decrease in Net Income from 2013 to 2014	(157.7)%

Source: Prepared by author based on data from Petrobras' Annual Report 2014 (p.5 and p.55-56)

According to the table above write-offs of **R\$6,194m** and impairment charges of **R\$30,976m** directly linked to the corruption scandal created an accumulated loss of **R\$37,170m**. This accumulated loss represents **82.3%** of the total value of the decrease in Net Income between 2013 and 2014. It could therefore be inferred that 82% of the decrease in Net Income between 2013 and 2014 are related to corruption. Moreover, since Net income decreased by **192%** during that time, it can be inferred that Net Income decreased **158%** because of corruption.

Taxes

In the company's calculation of taxes, impairments are recognized as part of the tax-deductible charges of the company. However, as for the purpose of the study we consider that R\$30,976m of the impairments are attributable to the corruption, we will adjust the companies taxes for all corruption related charges to arrive to an adjusted net income/(loss) after tax.

Table 3: Calculation of Taxes in Income Statement

	CONSOLIDATED	
	2014	2013
Income (loss) before income taxes	(25,816)	28,155
Nominal income taxes computed based on Brazilian statutory corporate tax rates (34%)	8,777	(9,573)
Adjustments to arrive at the effective tax rate:		
Interest on capital, net	169	2,974
Different jurisdictional tax rates for companies abroad	1,212	1,347
Tax incentives	60	127
Tax loss carryforwards (unrecognized tax losses)	(3,271)	22
Write-off – overpayments incorrectly capitalized (note 3)	(2,223)	-
Non taxable income (deductible expenses), net ^(*)	(834)	(395)
Tax credits of companies abroad in the exploration stage	(3)	(5)
Others	5	355
Income tax and social contribution expense	3,892	(5,148)
Deferred income tax and social contribution expense	8,025	(323)
Current income tax and social contribution	(4,133)	(4,825)
	3,892	(5,148)
Effective Tax Rate	15.1%	18.3%

(*) Includes share of earnings in equity-accounted investees.

Source: Petrobras Annual Report 2014 (p.65)

In the note on reconciliation between statutory tax rate and tax expenses in the 2014 Annual Report, a tax rate of 34% is used as statutory corporate tax and applied to the Income/(loss) before income taxes. As the company's shows a net loss, it benefits from deferred tax due to net loss carry-overs. Therefore, the net loss will be benefitting from a positive tax number as losses are recognized for next years' net income. Adjustments are made to arrive to the effective tax rate, of which tax benefits from write-offs are being subtracted from the carry-over income tax, since write-offs for corruption should not benefitting the company's tax position.

To calculate the change in tax, we will therefore be recalculating the taxes by adding back the tax gain due to impairment charges of R\$30,976m. As the calculations behind the other adjustments are not detailed in the Annual Report 2014, we will for the purpose of the study consider them as fixed. Calculations are detailed in the table below [add table].

Adjusted Income tax and social contribution expenses amount to (4,416) m versus 3,892 m before adjustments.

Net income/(loss) after Tax and EPS

Adjusted net income after tax in 2014 would therefore amount to R\$ (30,232)m in 2014 versus R\$ (21,924) m of non-adjusted amount.

With weighted average number of common and preferred shares outstanding of 13,044,496,930, adjusted basic and diluted earnings per share amount to R\$(2.32) versus R\$(1.65) for non-adjusted. This represents a decrease of % versus the R\$1.81 to R\$(1.64) a **decrease of 230%**, which is a very substantial decrease

Table 4: Petrobras Net Income and Return on Equity

Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	LTM2015
Net Income (R\$)	51,850	21,512	32,988	30,051	35,189	33,313	21,182	23,570	(21,587)	(24,498)
Growth		(59)%	53%	(9)%	17%	(5)%	(36)%	11%	(192)%	13%

Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	LTM2015
ROE	33.6%	23.0%	23.5%	21.5%	15.1%	10.3%	6.3%	6.8%	(6.6%)	(7.8)%
Growth		(32.8)%	16.1%	(23.9)%	(24.4)%	(29.5)%	(39.0)%	9.4%	(194.3)%	18.2%

Source: Prepared by author based on data from CapIQ (2015)

The tables above show the evolution of Net income and Return on Equity over the last 10 years. We can observe that there is a general downward trend, a gradual decrease in Net Income and Return On Equity particularly since 2008. However, the impact of the discovery of the corruption scheme is considerable as Net Income decreases by 192% (of which 152% should be due to corruption) compared to a median of (5)%. Return on Equity has equally fallen by (194)% compared to a median over 10 years of (24)%.

To conclude, Net Income and Return on Equity have considerably suffered from the write-offs resulting from the corruption scandal. We can thereby infer that corruption had a considerable impact on Petrobras' company performance in FY2014, to the detriment of its shareholders.

5.3.2 Company health

According to Dobbs & Koller, "health metrics" add to those for historical performance by providing a glimpse into a company's sustainability and future.

For Petrobras, we will analyze whether corruption at Petrobras could potentially have impacted the following leverage metrics: Net Debt/EBITDA and Net Debt/EV.

What are Net Debt/EBITDA and Net Debt/EV used for?

Debt metrics such as Net Debt/EBITDA and Net Debt/Enterprise Value capture Petrobras' ability to pay down its debt. If the debt isn't payed down in time and financial covenants are breached, the generation of future cash flow for shareholders is put at risk. Many debt instruments are collateralized (e.g. secured by a specific asset), so that the bank can claim its rights on the company's assets in case the company defaults on its debt. If that happens, the company may not be able to continue its operations, putting at risk future cash flow available to

investors. Therefore debt metrics are indicators of the risks of reduced future company cash flow generation.

The Net Debt/EBITDA ratio shows how many years it would take for a company to pay back its debt if net debt and EBITDA are held constant (Investopedia). The higher the ratio, the less likely a company is to be able to handle its debt burden. Ratios higher than 4 or 5 set off alarms for investors and reduce the likelihood of a company to be able to take on additional debt to grow its business.

The Net Debt/EV ratio is an indicator of how highly levered a company is with respect to its overall value. High leverage can be seen as positive for some equity investors, as leverage can provide higher geared returns. However, too much leverage is seen as a threat as equity holders get paid last (and potentially not at all) if a company goes bankrupt when defaulting on its loans.

Why analyze debt metrics in the context of corruption?

Although these ratios are difficult to link directly to the corruption scandal, debt ratios which are out of the ordinary in light of the corruption scandal can help generate a discussion around:

- (v) Managerial mediocracy which can be mirrored to corruption
- (vi) Overvaluation of assets (due to overpriced construction contracts) which would be directly linked to the bribery scheme
- (vii) Bond market's reaction to the corruption scandal and the ability of Petrobras to issue new debt, which can hamper future investments
- (viii) Detrimental effects of State Capitalism on company leverage ratios

In order to generate the discussions above, we will compare Net Debt/EBITDA and Net Debt/Enterprise Value metrics as at 31/12/2015 of Petrobras versus a peer group detailed below. The figures are sourced from the data base *CapIQ*.

Leverage at Petrobras

Petrobras is considered to be the world's most heavily indebted oil and gas company (Leahy, 2015), with Net debt amounting to US\$98.9bn in FY2015 (Petrobras, 2014). Selected peers Net

debt range from US\$7.6bn for PTT to US\$35.0bn for Exxon Mobil, the latter's net debt being 2.8x lower than Petrobras'. Net debt of US\$98.9bn for Petrobras makes for a Net Debt/EV of 79% - with Net Debt as of FY2015 and Market Capitalization as at 31 of December 2015 - versus a median among selected peers of 21%. Petrobras has Net Debt/EBITDA at 3.8x versus a median among selected peers of 0.8x (Computed by author using data provided by *CapIQ*, 2015).

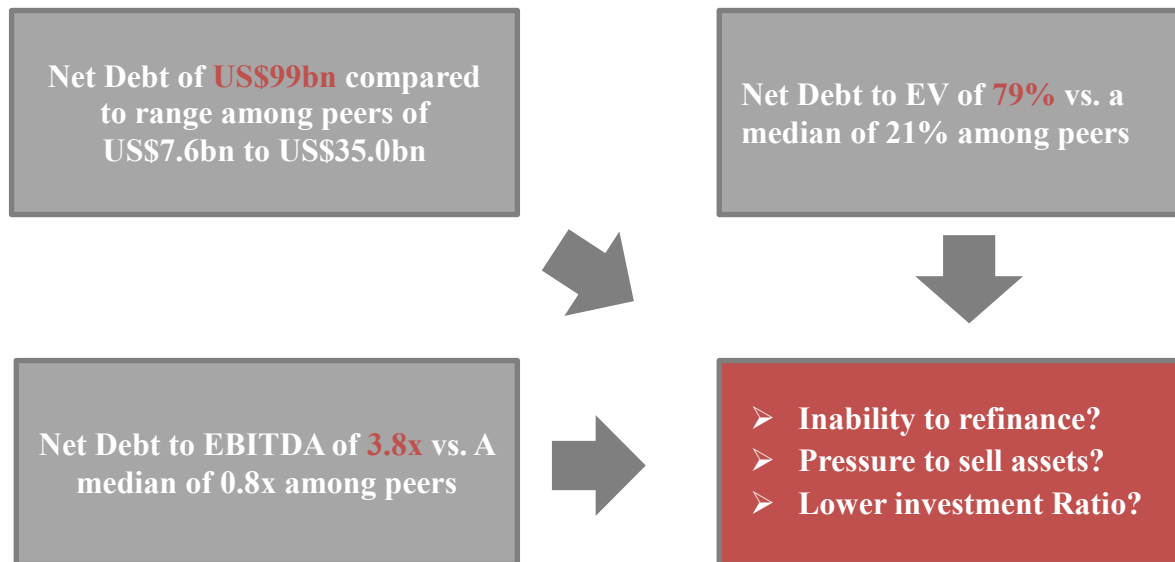
Table 5: Financial Debt Metrics for Petrobras and Peers

Company	Net Debt in \$bn (as of 31-Dec-2015)	Net Debt / EV in % (as of 31-Dec-2015)	Net Debt / EBITDA (as of 31-Dec-2015)
Petrobras	98.9	79%	3.8x
Exxon Mobil	35.0	10%	0.6x
Chevron	14.6	8%	0.4x
Royal Dutch Shell	23.9	14%	0.5x
Total	30.5	22%	1.0x
BP	22.9	19%	0.8x
ConocoPhillips	17.5	23%	0.9x
ENI	17.0	24%	0.8x
Statoil	11.9	21%	0.4x
PTT	7.6	28%	1.0x
Median (excl. Petrobras)	17.5	21%	0.8x
Average (excl. Petrobras)	20.1	19%	0.7x

Source: Prepared by author based on data from CapIQ (2015)

Debt markets reacted quite strongly to the corruption scandal. Petrobras was shunned from global debt markets “starving one of the world’s most indebted companies of capital” (Pearson, 2015), as it wasn’t able to issue any new debt from March 2014 up until June 2015.

Figure 6: Consequences of Extremely High Leverage at Petrobras on Company Health



Source: Prepared by author

The feared concerns resulting from the corruption scandal and the deteriorating economic environment were the following:

- (i) Inability of Petrobras to respect its debt covenants: one concern in particular was that Petrobras was straining its relationship with lenders as the company's accounting firm PwC refused to sign off on their accounts, and therefore was breaching their covenants on interim financial statements within 90 days of the end of each quarter and audited financial statements within 120 days of the end of each fiscal year. Therefore the latest date by which Petrobras could present its financials would have been the 30th of April 2015. The 2014 annual results were released on the 22nd of April 2015 - only 8 days before their covenant deadline. As Petrobras typically releases its audited accounts at the end of February (25th of February for the 2013 accounts), the delay was resulting in much pressure from corporate lenders (Petrobras, 2014, p. 57).
- (ii) Unfavorable market dynamics for debt issuance: investors feared that in an unfavorable market where investor confidence was low due to the corruption scandal (Schaltuper, 2015), Petrobras would have a hard time to refinance its debt. According

- to the Financial Times, the scandal has brought about an 80% collapse in Brazilian foreign debt issuance in 2015 (Leahy, Petrobras slashes investment to cut debt, 2015).
- (iii) The steep devaluation of the Brazilian currency in 2014-2015 – weakened 43% against the dollar between 21-Mar-2014 and 29-Sep-2015 (XE Currency Chart) – increases the value of the company’s dollar denominated debt. Net debt increased from US\$ 94.6bn at FYE 2013 to US\$ 104bn as at Q2 2015 - an increase of 10%. However with the steep devaluation of the real the net debt increased from R\$ 223.4bn at FYE 2013 to R\$ 415.6bn as at Q2 2015 (using period-end exchange rates) – an impressive 86% increase.
 - (iv) Falling oil prices creating difficulty in reducing debt: falling oil prices is threatening the viability of Petrobras’ deep-water oil exploration projects, and is reducing their value as assets. Investors therefore feared that it would be particularly difficult to sell assets (mainly oil fields) in order reduce debt.

The two first concerns are direct consequences of the corruption scandal, and are being aggravated by the unfavorable market conditions described in (iii) and (iv). The inability to respect debt covenants as well as the loss of investor due to the scandal has the following consequences on performance

- Inability of the company to refinance its debt at lower interests thereby reducing net income for investors because of high interests rates;
- Pressure to sell off assets in an unfavorable market environment. Assets acquired at a high price may be sold at a very low price;
- Lower investment ratios (and thereby lower potential for growth) as the company is forced to lower investment projections in order to reduce debt.

However, after the long awaited release of the annual report for 2014, markets surprisingly welcomed Petrobras back to the international debt market with the selling on the 1st of June 2015 of a rare “century” bond (due in 2115) of US\$ 2.5bn (Pearson, Petrobras returns to selling debt with rare century bond, 2015). The bond was issued at a yield of 8.45%, 40bp lower than what analysts had expected. The bond is expected to restore confidence in Petrobras, which does after-all hold a near monopoly of the Brazil’s oil and gas industry.

All these concerns were justified and resulted in Petrobras stating radical objectives with respect to debt reduction. In their Business Plan for 2015-2019 presented on the 29th of June 2015, the company stated that it would reduce its Net Debt to EBITDA to 3.0x in 2018 versus its ratio of 4.77 at FYE 2014 (Petrobras, 2014, p. 26).

5.3.3 Analyzing Capital Markets Performance

The final step of Dobbs & Koller's framework is the assessment of a company's capital market performance. Present market valuations of a company should reflect its expected future financial performance based on past and present disclosed information (Efficient Market Hypothesis presented in chapter 2.1.3).

Petrobras is a public company, which operates on the public equity and debt markets. According to the Efficient Market Hypothesis, when news is released regarding corruption at Petrobras, markets' reaction to the news should reflect their view on the impact of corruption on future financial performance, as all public information is factored into a company's share price. We will therefore discuss and analyze how markets' reaction to news on corruption is revealing of their expectation of corruption's impact on future performance.

The most common approach to measuring capital markets performance is by computing Total Returns to Shareholders, which is to say the share price appreciation plus the dividend yield. We will be looking at share price performance and dividend yield individually before measuring Total Returns to Shareholders.

5.3.3.1 Share price performance:

We will proceed with two distinct analysis of the share price performance:

- 3) A **historical analysis** of the share price over the last 4 years from the January 2011 to December 2015 will be carried out. We will show a **share price performance** chart

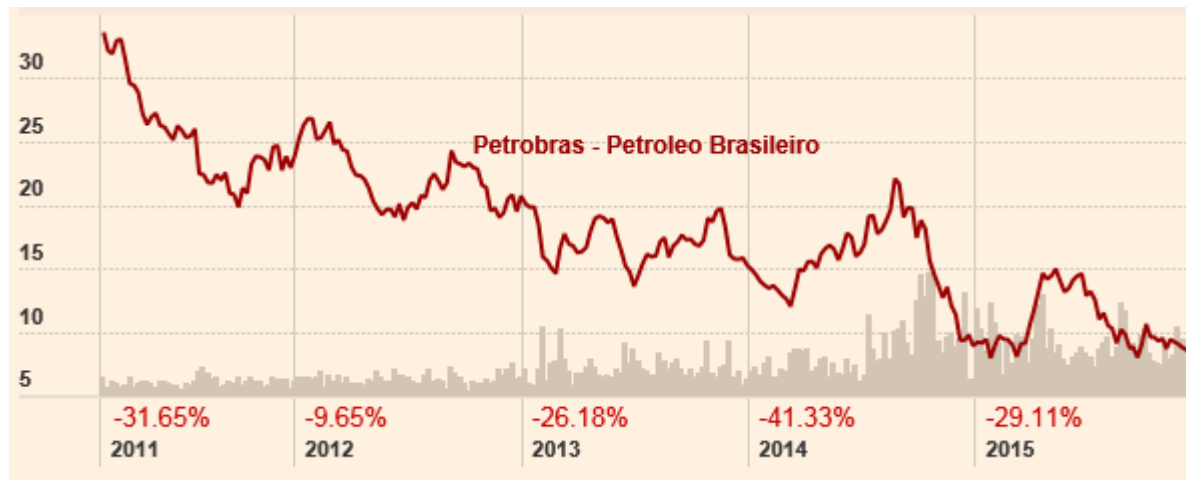
sourced from the Financial Times and analyze material changes in share price movements. Petrobras' historic share price before the revelation of the corruption scandal will be analyzed in order to verify whether the revelation of the corruption scheme occurred concurrently with a general downward trend of the share price for distinct reasons. If so, this study will discuss whether the general downward trend could have been caused by bad investment decisions impacted by corruption and bad management practices.

- 4) A comparison to the **stock price performance of main peers** in the O&G industry and Petrobras' share price performance will be computed. We will however, bear in mind that world oil prices were sharply declining in 2014-2015, which had a major impact on the share prices and market valuation of all Oil & Gas companies and resulted in a drastic decrease in their revenues and profits. As a consequence, measures such divestments of assets and delays on projects were implemented. The analysis of the share price performance of Petrobras will be benchmarked to the share price performance of its peers, from the 1st of January 2014 to the 31st of December 2015, to see how Petrobras was performing comparatively to the rest of the Oil and Gas majors.

For the purpose of comparison the analysis will use the same peer group as for the leverage metrics which are Exxon Mobil, Chevron, Royal Dutch Shell, Total SA, BP, ConocoPhillips, ENI, Statoil and PTT.

Share price and investor confidence

Figure 7: Petrobras' share price performance from 2011-2015



Source: *Financial Times Markets data (2016)*

From the 1st of January 2014 to the 31st of December 2015, the company's closing **stock price** went from R\$13.32 to R\$4.25 (Yahoo Finance) thereby decreasing 54.1% during the course of the massive press coverage of the scandal. Thereby shareholders who had been keeping their position on the stock during that period of time, will have seen a 54.1% decrease in the value of their stock. However, the stock price decrease has to be put into perspective with the overall trend in the Oil and Gas Sector. Brent crude oil prices went from 105.73 USD/barrel to 47.58 USD/barrel on the 29th of September 2015 (Ycharts - Brent Crude Oil Chart) representing a 55.0% decrease. It could be possible to deduct that Petrobras' share price decline was exclusively correlated to the fall in oil prices. However, stock prices of Oil and Gas companies and oil prices aren't 100% correlated, as in this situation stock prices also reflect the capacity of an oil and gas company to face the oil price decline but also the future and not just present potential of its assets (oil fields) which may become more profitable to exploit once oil price increase again. In order to be able to identify a correlation between the corruption schemes coverage in the press (and the consequent loss of investor confidence) and the share price performance, we will be looking at

similar peers in the Oil and Gas and see how they have performed during the period, and also look at the market's reaction on specific news events.

Supposing Petrobras operates in efficient stock markets, the latter reacts quickly to public information in order to reflect into the price the estimated cash flows a stock can bring to the shareholders. In the case of the Petrobras scandal, markets have reacted quite quickly to news and revelations regarding to the revealed bribery scheme. 4 news events illustrate how markets have reacted to news regarding the corruption scandal.

Figure 8: Petrobras' share price performance in 2014-2015 and key events



Source: Yahoo Finance (2015)

- **16th and 24th of October 2014:** Folha de Sao Paulo reveals that Paulo Roberto Costa said in testimony that he paid bribes to the former president of PSDB Sergio Guerra in order to help him drain out a Parliamentary Commission created to investigate Petrobras in

2009. Petrobras' closing price fell 7% on the 16th of October versus its closing price on the 15th. On the 24th the magazine Veja, revealed that Alberto Youssef had stated in a testimony that Dilma and Lula knew about the bribery scheme. The closing price of Petrobras fell 12% that day versus the day before. Overall between the 15th up until 14 days later on the 29th the share price had fallen 35% going from a price of R\$20.15 to R\$14.02.

- **3rd to the 19th of December 2014:** A sequence of news was revealed to the press during that time period. On the 3rd it was revealed that Augusto Mendonça Neto had affirmed in a testimony that parts of the payments to ex-director at Petrobras Renato Duque were donations for the PT. On the 11th, 36 people are accused by the Prosecutors' office of corruption, creation of criminal organizations and money laundering within the Petrobras scheme. Finally on the 19th, 28 names of politicians denounced in the deposition of Mr. Costa were revealed by Estado de Sao Paulo. Between the 2nd and 19th of December, Petrobras' share price fell 23% going from R\$12.13 to R\$9.83.
- **20th of July 2015:** Three executives of construction companies involved in the bribery scheme were convicted, making it the first criminal conviction taking place in the Petrobras investigation. Ricardo Auler, chairman of Camargo Correa Construcoes e Participacoes SA, Dalton dos Santos Avancini, CEO of the company and Eduardo Hermelino Leite, a senior executive were convicted for corruption, money laundering and membership in a criminal organization.
- **22nd of September 2015:** The former treasurer of the PT, Joao Vaccari Neto, was sentenced to 15 years and four months in jail for corruption and money laundering, being the list senior political figure to be convicted in the scandal (Leahy, The Financial Times, 2015). On that same day, the stock price fell 5% versus the day before, and a week later on the 28th, the share price had fallen 12%.

Experts' opinions:

During the course of the coverage of the bribery scheme, many financial experts have expressed their opinion on the bribery scheme. Former CEO Graça Foster stated that in an interview about Petrobras' FY2014 results that "there hadn't been a single company in the world who hadn't seen a decline in their market value" (Lima, 2014). She also affirmed that "we cannot look at [Petrobras'] market value to and only see the market value of [operation] Car Wash". However, most experts seem to agree that the corruption scheme has had a considerable effect on the company's market capitalization. According to Folha de Sao Paulo, Petrobras loss 43.6% of its market cap between the 22nd of December 2013 and 22nd of December 2014, going from US\$91bn to US\$51.6%, compared to a fall of 9.4% for 8 other oil companies, which easily represents the value of one entire oil company (Lima, 2014).

According to the article, investment analyst Flavio Conde believes that the difference between the value loss for Petrobras versus the decline in value for other O&G companies can be explained by the poor financial results of the resulting from corruption. This opinion confirms the relevance of the methodology of our own analysis based on share prices and peers that will be lead in "peer group comparison" below. Mr. Conde also states that "the scandal showed that instead of working to increase results for investors, part of the management was working to favor one group of individuals. And, without the change in management, the investor remains insecure, and this is reflected in the market value". Again this statement seems to confirm the conception that in efficient markets, news of corruption provokes a loss in investor confidence, implying thereby that corruption is seen as having a negative effect on the future cash flows that investors could have access to, as it appears that managers incentives were unaligned with investors' (as explained in chapter 5.1.1).

According to Marcio Varejao, analyst at the broker house Socopa, separating the price of corruption from other factors "is difficult", but it's obvious that the issue isn't limited to the price of the barrel" (Lima, 2014). From this opinion, as well as Graça Foster's, we can conclude that one has to be careful when "measuring" the effect of the scandal in the share price as other factors, mainly the fall in oil prices, have a considerable impact. However, Mr. Conde and Mr.

Varejao seem to be admitting that the corruption scandal is having a negative impact on investor confidence.

Peer group comparison:

For the purpose of comparison this study will use the following companies as peers: Exxon Mobil, Chevron, Royal Dutch Shell, Total SA, BP, ConocoPhillips, ENI, Statoil and PTT.

The selection of these peers is based on the following criteria:

- They are all listed companies with substantial market liquidity
- They operate on a global scale
- Their Enterprise Value are estimated between 27-360 USD bn (Petrobras EV at \$137bn)
- They are all among the largest global oil and gas companies by revenue and EV
- They all have access to the global bond market,
- They all operate in the exploration and production of oil and gas.

All peers have seen a decrease in share price from the 1st of January 2014 to the 31st of December 2015, resulting from the decrease in oil prices. However, Petrobras' share price decrease was by far the most important. Its peers' share price performance all decreased between 23% for PTT to 38% for ENI, with a median decrease of 34% and an average decrease of 32% (see table below). In comparison, Petrobras' share price decreased **77%** during that same time period. Supposing that Petrobras operates in efficient markets, share prices reflect the expected future cash flows that will be accessible to shareholders, and which are estimated thanks to public information. As we have seen that the market reacted very negatively to news related to the corruption scandal, we will deduct that Petrobras' share price has been declining far more than its peers due to the negative press.

Table 6: Share Price Performance of Petrobras and Peers between 01-Jan-2014 and 31-Dec-2015

Company	Market Capitalization as of 31-Dec-2015 (in \$bn)	Share Price on 01-Jan-2014 (in \$)	Share Price on 31-Dec-2015 (in \$)	Share Price Performance (in %)
Petrobras	25.6	7.2	1.7	(77)%
Exxon Mobil	324.5	101.2	78.0	(23)%
Chevron	169.3	124.9	90.0	(28)%
Royal Dutch Shell	145.8	35.7	22.9	(36)%
Total	105.3	61.3	44.8	(27)%
BP	95.9	8.1	5.2	(35)%
ConocoPhillips	57.6	70.7	46.7	(34)%
ENI	54.0	24.1	15.0	(38)%
Statoil	44.4	24.5	14.0	(43)%
PTT	19.3	8.7	6.8	(23)%
Median (excl. Petrobras)	95.9			(34)%
Average (excl. Petrobras)	112.9			(32)%

Source: Prepared by author based on data from CapIQ (2015)

As all Petrobras' Oil and Gas peers have all experienced a sharp decline in share price due to declining oil prices, we can infer that the (77)% decrease in Petrobras' share price cannot be attributed to the media coverage of the scandal alone. We will therefore compute an estimated effect of the decline in oil prices and subtract it from Petrobras' share price performance, in order to estimate the share of the decrease which can be attributed to the scandal itself. For that purpose we will use the decrease in share price performance of Petrobras' peers, which are

among the biggest international market players and therefore good benchmarks for trends in the Oil and Gas sector.

As the oil companies from the peer group differ considerably in size, we will compute a weighted average share price performance of the 9 peers based on market capitalization as of 31-Dec-2015.

The weighted average share price performance will be computed as follows:

$$\frac{\sum \text{Peer Share Price Performance} * \text{Peer Market Capitalization at 31-Jan-2015}}{\sum \text{All Peers Market Capitalization}}$$

The **weighted average decline in share price is 29%** between 01-Jan-2014 and 31-Dec-2015 for the 9 peers chosen for the study. Using the peers' share price decrease as a benchmark for the general impact of declining oil prices, we will infer that declining oil prices led to an average decrease of 29% in share price performance.

We will now estimate the impact of the corruption scandal (and potentially other factors) on Petrobras' share price performance, by subtracting the average effect of declining oil prices on peers from Petrobras' share price performance of Petrobras. Thereby the share price performance that cannot be attributed to the declining oil prices is computed as follows: **77% - 29% = 48%**

We will infer that Petrobras' share price decreased by 48% due to the corruption scandal (and potentially other factors).

5.3.3.2 Dividends yield

The dividend yield is a measure that indicates how much shareholders are paying for the annual dividends they receive. It is the simple calculation of dividend per share divided by share price.

We will compare Petrobras' dividend yield for 2014 and 2015 compared to that of its peers, by dividing dividend per share for FY 2014 and FY2015 with company's share prices as of 31st of December of each year.

The general dividend policy of Petrobras as stated in the annual report 2014 (Petrobras, 2014, p. 70), is that shareholders are entitled to receive minimum mandatory dividends (and/ or interest on capital) of 25% of the adjusted net income for the year proportional to the number of common and preferred shares, pursuant to Brazilian Corporation Law. However, as net income for 2014 is negative as result of the impairment, no dividends are due to shareholders.

Table 7: Dividend paid out to investors

	2014	2013
Net income (loss) for the year (Parent company)	(21,692)	23,408
Allocation:		
Legal reserve	-	(1,170)
Tax incentive reserve	-	(21)
Other reversals/additions:	10	10
Basic profit (loss) for determining dividend	(21,682)	22,227
Proposed dividends in 2013, equivalent to 41.85% of the basic profit – R\$ 0.5217 per common share and R\$ 0.9672 per preferred share as follows:		
Interest on capital	-	9,301
Dividends	-	-
Total proposed dividends	-	9,301

Source: Petrobras Annual Report, 2014 (p.70)

As a result, the company, which was known and trusted by retail investors for its regular dividends (Leahy & Pearson, 2015), has decided to **cut in dividends in order to preserve cash**. Nor in Q1, Q2 or Q3 did the company pay any dividends to its shareholders.

In order to understand the effect of the corruption scandal in the dividend yield results, Petrobras will be compared to its peers in the sector as of late September 2015.

Table 8: Dividend Yield of Petrobras and Peers as at 31-Dec-2015

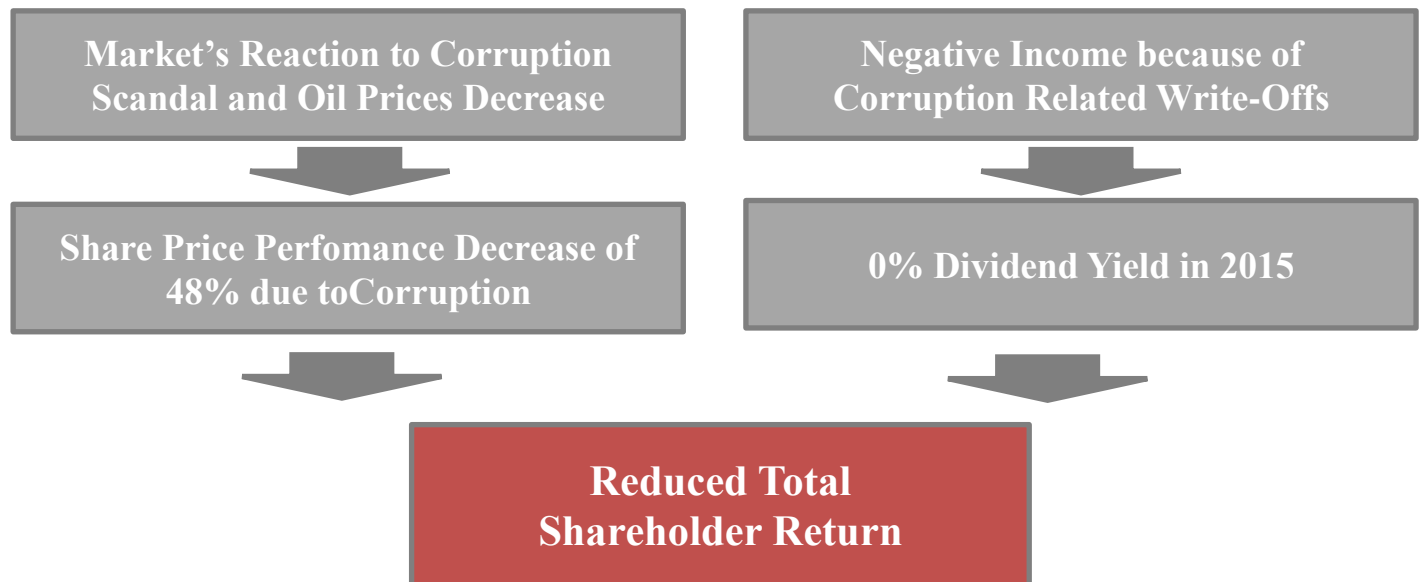
Company	Dividend yield (as of 31-Dec-2015)
Petrobras	0.0%
Exxon Mobil	3.5%
Chevron	4.8%
Royal Dutch Shell	8.2%
Total	6.6%
BP	7.6%
ConocoPhillips	6.1%
ENI	9.0%
Statoil	6.9%
PTT	4.9%
Median (excl. Petrobras)	6.6%
Average (excl. Petrobras)	6.4%

Source: Prepared by author based on data from CapIQ (2015)

Amidst the falling oil, Petrobras' peers have still kept dividend yields at relatively stable levels.

The impairment and write-offs resulting in a net loss on Petrobras' income statement do not legally oblige the company to pay down any dividends. Moreover, the company is being put on increasingly more pressure from debt holders as a consequence of the scandal, which also put into light the company's outrageously high debt burden. **The 0% dividend yield imposed on Petrobras' shareholders in 2015, can therefore be seen as a direct consequence of the corruption scandal.**

Figure 9: Consequences of the Corruption Scandal on Shareholder Return



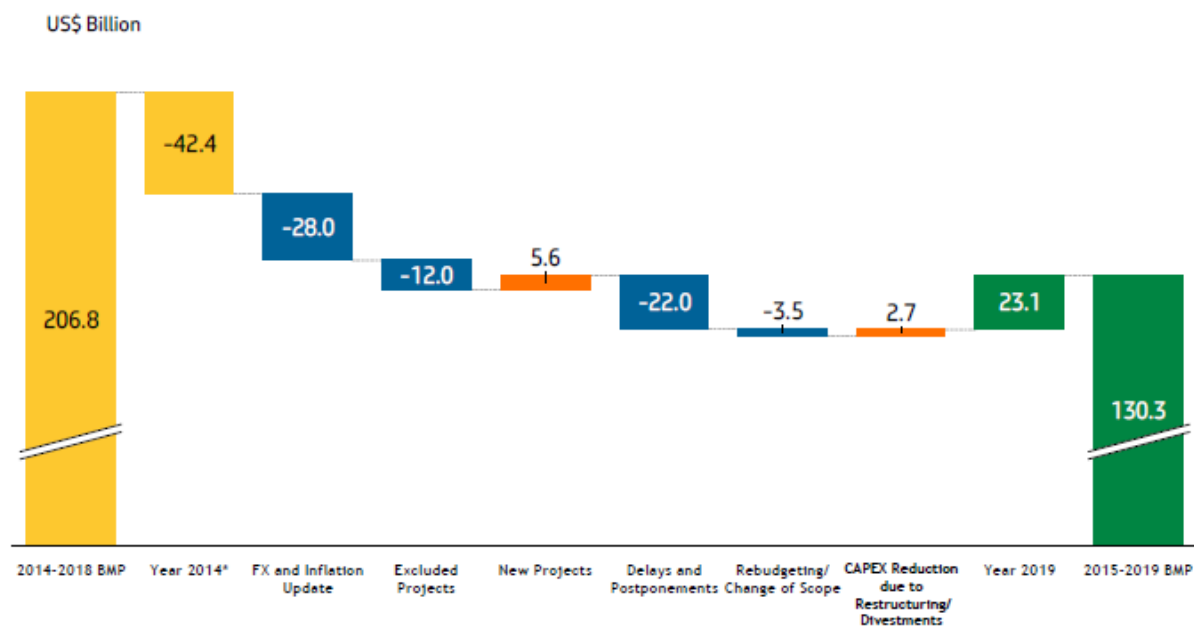
Source: Prepared by author

5.4 Impact on future business plan :

After publishing the delayed annual results in late April 2015, the company presented a business plan for 2015-2019, a considerably revised version of the 2014-2018 business plan. The company announced that it was cutting its projections for investment by 27%, going from US\$ 206.8bn in the 2014-2018 plan to US\$ 130.3bn in the revised plan. The fundamental objectives stated in the new business plan are to de-lever its capital structure in order to obtain capital discipline and generate value for shareholders in order to focus on profitability.

In order to succeed in reducing its debt and overall improving its financials, Petrobras has stated multiple objectives which all have important consequences for the company's future development (Business and Management Plan 2015-2019, 2015).

Figure 10: Bridge from 2014-2018 Business Plan to the 2015-2019 one



Source: Petrobras Business and Management Plan 2015-2019 (p.9)

- Reducing investments from planned US\$ 206.8bn for 2014-2018 to US\$ 130.3bn for 2015-2019. The company has announced that it will be prioritizing oil production projects in Brazil and focus on pre-salt fields. As you can see in the waterfall graph below, investments are taking an important cut because of exchange rate adjustments as the R\$ budget decreases in US\$ because of the real devaluation, excluded projects do to a more careful selection of projects and more limited means to finance them, and also delays and postponements mainly due to construction firms being paralyzed by the scandal as their CEOs are being prosecuted for corruption.

- Increased divestments to US\$ 15.1bn from US\$ 13.7bn originally
- Considering listing its distribution arm, Petrobras Distribudora, to help it pay down some of its debt (Leahy & Rocha, Petrobras corruption losses may be larger, 2015).
- Measuring more efficiently productivity gains. In order to break loose from the corruption scandal the company states that it will target “efficiency in the management of contracted services”, thereby stating that it will overpay its construction contracts. It also

mentions the “rationalization of structure and reorganisation of businesses, which could hint towards a restructuring of the company.

As a combined result of the press coverage from the corruption scandal and lower oil prices, the company has been drastically forced to review its business plan for the future in order to adopt a more financially sustainable strategy and regain shareholders trust.

5.5 Positive outlook on the crisis

Petrobras, the world’s most indebted Oil and Gas producer has had to dramatically reduce the ambitions and strategic vision for the future as result of the corruption scandal but also of the falling oil prices. As the scandal has revealed the huge opportunity costs, managerial inefficiencies and misallocation of production factors that the company and mostly its shareholders have suffered from, the company has been forced into a necessary restructuring phase in order to regain the trust of the equity and bond markets.

The scandal has enabled to call attention to Petrobras’ tremendous debt burden, the largest in its sector, and forces management to find solution to cut it down. It will improve the company’s financial sustainability and enable it to focus on avoiding bankruptcy.

The aftermaths of the scandal may also be a positive new start for the company, as it has pressured the company to revise its management and corporate governance practices:

- The management team has been replaced and is expressing its commitment to generating value for shareholders by focusing on profitable developments and reducing inefficiencies. In February 2015, Mr. Aldemir Bendine was appointed as the new CEO of Petrobras, and was previously CEO of the state-run Banco do Brasil. Although he is mandated to enact change, the choice of Mr. Bendine is being criticized as the company would “remain largely bound to the government’s needs” according to analysts at Bradesco (Duffy, 2015).

- New focus on compliance and corporate governance with the appointment of a governance, risk and compliance officer with the aim of supporting the Company’s compliance programs and mitigating risks in its activities, including fraud and corruption. “The new Officer participates in the decisions of the Executive Board, and any matter

submitted to the Executive Board for approval must previously be approved by this Officer as they relate to governance, risk and compliance.” (Petrobras, 2014, p. 36)

5.6 Identifying pragmatic solutions for fighting corruption at Petrobras

After having reviewed and analyzed the various factors which have brought about the Petrobras corruption scandal and how it has impacted the company’s performance we will propose a few pragmatic solutions for the research problem. For that purpose we will be using the literature review on the Brazilian legal framework (chapter 2.3), in order to identify incentives for corruption and how they can be counteracted.

As seen in the outline of the scandal, corruption was possible because conditions in the legal framework and in the enterprise itself were favorable.

As far as the legal framework is concerned, as mentioned earlier it is comparable to what is found in other democracies, however the flaws that made it vulnerable to exploitation by corrupt public officials must be addressed. Issues such as the flexibility directed towards the extractive sector must be reviewed. Furthermore, the possibility to divert funds to finance electoral campaigns must be criminalized and political parties must be penalized if their members are found guilty of corruption.

For what concerns state owned enterprises such as Petrobras a set of measures must be established both to insulate the SOEs from political interference and to enhance transparency and accountability. In terms of objectives such measures can be aimed towards:

- Strengthening the responsibility for a successful performance of tasks and for promoting the development of integrity and transparency,
- Conducting activities in a proper, ethical, economic, efficient and effective manner,
- Aligning activities with the laws and regulations, policies, plans and procedures,
- Protecting property and other resources against losses caused by poor management, unjustified spending and usage, and against irregularity and fraud,
- Timely financial reporting and monitoring of operating results.

At the operational level they should involve:

- The adoption of a disciplinary ordinance and ethical code
- The adoption of a catalogue of information and to appoint an information officer
- The appointment of an ethics commissioner
- The creation of an effective system to report irregularities and to appoint an irregularities officer
- The establishment of a system of financial management and control
- The establishment of a plan for regular internal audits
- The Establishment of audit committees
- The provision of training for employees in the fields of ethics, anticorruption, financial management, internal supervision and control, informing and public procurement

6. Conclusions and outlook

6.1 Research findings

The case study of the Petrobras scandal serves as an excellent illustration of the effects of corruption on a company's performance. The advantage with this case study is that its media coverage following its revelation in March 2014 has been unique in its scale as thousands of articles have been written in Brazilian as well as international newspapers. Petrobras being a public company, it has been possible to study the market's reaction to the corruption scandal, with the hypothesis of efficient markets enabling to analyze expected future performance.

The major findings of the research on the impact of corruption on company performance have been the following:

a) Legal framework

The Brazilian legal framework as regards corruption of the public sector is not lacking and is in line with international efforts to establish good governance. The Petrobras scandal did not occur because of its inadequacy but rather because of the government lack of success in enforcing the existing legislation and the flexibility given to SOEs in

order to enable them to perform better. Measures to curb corruption must go towards more transparency and accountability and better risk management systems..

b) Internal effect on firm performance

- (i) Corruption leads to transaction costs (3% of contract values) which in the case of Petrobras were inaccurately capitalized into its balance sheet, and therefore written-off once the bribery scheme was revealed
- (ii) Corruption leads to misallocation of production factors: in the case of Petrobras, corruption among executives lead to poor investment decisions: executives were paid bribes to acquire the Pasadena Refinery at an overvalued price
- (iii) Corruption can lead to overpayment of external services: the cartel of construction companies colluded with Petrobras management to make them accept non-competitive prices for construction services.

c) Markets' perception of corruption

- (i) Equity markets' reaction to news of corruption is negative, proving that equity markets perceive corruption as having a negative impact on the generation of future cash flow. In the case of Petrobras, equity markets reacted negatively to news of corruption as Petrobras' share price decreased considerably as a reaction to important news related to the Lava Jato investigation.
- (ii) Debt markets reacted negatively to the news of corruption, proving that debt markets perceive corruption as having negative impact on a company's capacity to meet its interest and debt repayment obligations. In the case of Petrobras, the company was shunned from the corporate bond market for 14-15months from the first revelations of the corruption up until the delayed release of the company's 2014 Annual Report.

d) Financial impact of corruption following its revelation

- (i) The revelation of corruption can lead to incorrectly capitalized costs being written-off, leading to decreased net income: the revelation of the scandal led Petrobras to recognize R\$ 6.2bn of incorrectly capitalized costs which revenues led to a 230% decrease in adjusted net income.

- (ii) The revelation of corruption can lead to pressure to revise the company's balance sheet: in the case of Petrobras, the company recognized impairment of R\$ 44.6bn of which we attribute R\$ 31.0bn to corruption. Moreover, the intensive news coverage related to the scandal has also brought increased investor attention to the company's capital structure e.g. the company's huge debt at an alarming 4.77 EBITDA (FY2014).
- (iii) The revelation of corruption can lead to reduced dividend yields: in the case of Petrobras, the company announced no dividend pay-out for all of 2015.

6.2 Limitations of research findings

The results of the study were difficult to judge and evaluate as macroeconomic factors such as the devaluating real and the falling oil prices simultaneously had an adverse impact on the company. When analyzing the market data, it was therefore difficult to distinguish between the effects of corruption and the effect of the macroeconomic environment. The data on the effects of corruption would have been much easier to decipher and interpret had the macroeconomic environment been favorable.

The results deducted in the qualitative part of the study were derived from examples that had been revealed in the press. However, it would have been interesting to have access to an internal study of the corruption case, such as the reports from the internal investigations led by the two independent law firms Gibson, Dunn & Crutcher LLP and Trench, Rossi e Watanabe Advogados. These internal reports alongside in-depth research on the psychology of decision making could have helped give a more in-depth analysis of the impact of bribing incentives on the managerial decisions taken by some Petrobras executives.

Finally much of the analysis was based on the hypothesis, backed by most academic studies, that corruption has a negative impact on performance. Some academics have argued that corruption makes companies benefit from a "grease the wheel effect", which is to say that companies can benefit from bribing authorities, as bribing can help access trades that would have been

inaccessible because of institutional inefficiencies. I decided not to develop this approach as Petrobras is highly linked to the government and is therefore more a beneficiary of government inefficiencies. Indeed the latter serve as barriers to entry for competitors hence reinforces Petrobras' monopoly.

6.3 Outlook and further research suggestions

The corruption scandal resonated across the world and cast a dark shadow over investments in Brazil. It also took place at a time where Brazil's economy was starting to suffer from the fall of the demand for commodities, as China's astonishing growth was starting to slow down.

Following the scandal and the fall in commodities prices, Brazil's economic situation started deteriorating considerably, with foreign investors fleeing Brazilian assets and the Brazilian real depreciating at a fast pace.

What this study doesn't explore is the correlation between the Brazilian economic downturn and the corruption scandal. How much of a shadow did the corruption scandal cast over foreign investments in Brazil? How many workers were fired because of cancellation or delays in Petrobras' but also of construction firms' development projects as a result of the scandal?

This is not only one of the possible further research suggestions, but also a limitation of the study as it is difficult to measure exactly how much the corruption scandal and the deterioration of the Brazilian economy mutually impacted each other.

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Appendix 0: The Brazilian Legal Framework

Article 37 of the Constitution is regulated by Law No. 8,666 of June 21, 1993 which is the most important regulation concerning procurement in Brazil.

The constitution stipulates that public tender was designed to ensure compliance with the constitutional principle of equality and to select the proposal that is the most advantageous to the public administration and must be processed and judged in strict conformity with the basic principles of legality, anonymity, morality, equality, publicity, administrative probity, adherence to the tender announcement, and to its objective judgment.

For what concerns the span of its applicability, like its European counterparts, the Brazilian procurement legal framework and most specifically Law No. 8,666, provides elements to deal with several situations such as the case of a tie between bidders, during the public tender process. It also provides detailed definitions of several situations, steps, and procedures encompassed by the public tender process, including what is considered to be public works, services, purchases, and transfers of ownership; prohibitions of direct or indirect participation in bidding processes; modes of execution of public works and services; technical and specialized professional services; acquisitions and transfer of ownership (Soares 2010).

Furthermore, as far as publicity is concerned, Law No. 8,666 mandates that all notices with a summary of the public tenders must be published in the Official Gazettes (*Diário Oficial da União, Diário Oficial do Estado ou do Distrito Federal*) and in newspapers with a large circulation. The bidding modes are also defined as well as the requirements to bidders.

The regulatory authorities are divided into:

- **Internal control entities.** These are special commissions nominated within each administrative body to supervise the legality of that body's activities, including the respective public procurement procedure and resulting contracts.
- **External control entities.** The main entities responsible for supervising public procurement are:

- *Public Prosecutor's Office* (at state and federal levels). This can investigate and adopt judicial measures in the case of unlawful acts related to public procurement procedures;
- *Courts of Accounts* (at federal, state and a few municipal levels). These are responsible for supervising public expenditure, including the legality of the respective contracts and public procurement procedures. They also judge representations filed by third parties regarding irregularities in public procurement procedures (Krüger and Oliveira, 2014).

Procurement framework for State Owned Enterprises (SOEs) and for Petrobras

Vianna (Vianna, 2014) proposes a comparative overview of the legal framework for public administration, private enterprises, and SOEs (Table 1).

Table 9: Comparative legal framework between public administration, private enterprise and SOE

Subject	Public administration	Private enterprise	SOE
Procurement regulation	Strict rules (law 8.666/93) when buying or selling good	Can buy and sell in whatever way they want	Buying: has to observe strict rules (law 8.666/93) Selling: private rules
Workforce legislation	Strict rules (law 8.112/92) Hiring: as a general rule, has to be through public selection but admits Dismissal: due process of law	Private rules (CLT) Free for hiring and dismissal (observing the compensatory nature when applied)	Hiring: as a general rule, has to be through public selection Wages, dismissal and other aspects: private rules (CLT)
Budgetary process	Congress has to approve all the Expenses	Not subject to public approval	Congress has to approve the total investment, but there is no detail of the expense
Transparency	Subject to full divulgation of the revenues and all the	Only subject to accounting	Subject to publish on the Internet all expenditures,

	<p>expenditures of the government.</p> <p>All the acts have to be published in an official journal.</p> <p>Public servants salaries are published on a regular basis.</p> <p>The community is allowed to request information from the government</p>	<p>disclosure for tax authorities,</p> <p>criminal investigation or when open stock rules demand the publication of balance sheets</p>	<p>procurement and contracts.</p> <p>Public employees' salaries are not published.</p> <p>The community is allowed to request information, but commercial secret can be alleged.</p>
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Source: Vianna (2014, p.25)

Procurement regulations

Regarding public bidding, section XXI of Article 37 of the Constitution states that, except for cases specified by law, public works, services, purchases, and transfers of ownership must be contracted through a process of public tender that assures equal conditions for all bidders, with clauses that establish payment obligations. As far as SOEs are concerned they are subjected to Law No. 8,666 of June 21, 1993. This law is the main regulation for government procurement in Brazil. It establishes the general rules for public tenders and administrative contracts regarding public works, services including publicity, transfers of ownership, and leasing within the ambit of the Union, states, Federal District, and municipalities.

As far as public agents are concerned they are not allowed to accept, anticipate, include, or tolerate in the tender announcements clauses or conditions that compromise, restrict, or frustrate its competitive character; set preferences or distinctions by reason of place of birth, place of headquarters, or domicile of the bidders or any other circumstance irrelevant to the specific object of the contract; or establish differential treatment of commercial, legal, labor, social security, or of any other nature, between Brazilian and foreign companies, including currency, mode, and place of payment, even when financing of international agencies is involved, except

as provided in Article 3(§2) of Law No. 8,666 and Article 3 of Law No. 8,248 of October 23, 1991 (Soares 2010).

Nevertheless, this general framework only partially applies for Petrobras since specific law addresses the petroleum industry which is regulated by Law No. 9,478 of August 6 1997. This law determines that the contracts for the acquisition of goods and services of the government-controlled petroleum company, PETROBRÁS, must be preceded by a simplified tender process, which is regulated by Decree No. 2,745 of August 24, 1998. As indicated in table one, Brazilian government owned or controlled companies appear to be subject to a hybrid legal framework since they, in some cases observe the Public Procurement Law, and in others, apply the rules related to private enterprises (Vianna, 2014). These regulations appear as a trade-off between flexibility and control, the objective being to promote competitiveness, while promoting good governance at the same time.

According to Krüger and Oliveira (Oliveira & Kruger Fizzo, 2014), the hybrid character of procurement laws is a construction of the jurisprudence and court precedents, which, as it appears, excludes agreements related to companies' core activities (commercial agreements) from the scope of the public procurement laws. The aim is to give those companies flexibility to act as a market player (Oliveira & Kruger Fizzo, 2014).

As far as the occurrence of corruption is, this very flexibility may be the core of the problem since as Pinheiro states in his analysis of Brazilian procurement: there are many criticisms of the procurement law, the main one being that it does not enable the public administrator to regulate procurements in an efficient way (Pinheiro, 1998).

Prior to the disclosure of the scandal, a number of measures were, however, taken to alleviate the pervasive corruption problem. Thus, on 8 May 2013, the new "Petrobras Procurement Manual" ("MPC"), which replaced the original "Petrobras' Procurement Procedures Manual", was published in the Federal Official Gazette (DOU). The MPC complements Petrobras' Simplified Bidding Procedure Regulations, which was enacted by the Decree No. 2745 of 1998, and was approved by the Executive Board as a new guideline for Petrobras' contracting procedure (Vierarezende, 2014).

Appendix 1

Sequence of events related to the discovery of the Petrobras corruption scandal in 2014-2015:

In this section, a chronology of the main judicial, political and financial events that occurred from March 2014 to June 2015 will be shown. The listing of the events will enable to understand the evolution of the scandal, in order to understand how it would adversely affect Petrobras itself (Folha de Sao Paulo, Entenda - Cronologia).

- 17th and 20th of March 2014: Operation “Lava-Jato” is initiated, arresting the operation’s first and main informants, money launderer Alberto Youssef on the 17th and former Petrobras executive Paulo Roberto Costa three days later. In March 2015, there were 17 informers to Operation “Lava-Jato”.
- 5th of April: *Folha* reveals that nine contractors of Petrobras deposited R\$ 34m in the accounts of money launderer Youssef. Some of the contractors have contracts with respect to the refinery of Abreu and Lima in Pernambuco.
- 6th of September 2014: *Veja* releases information obtained from a new testimony of Paulo Roberto Costa, made after his second arrest at the discovery of US\$ 23m he was hiding in Swiss bank accounts. According to *Veja*, Mr. Costa denounced 25 federal deputies, 6 senators, 3 governors and one minister from three political parties (PT, PMDB and PP) who benefitted from the embezzlement of funds at Petrobras.
- 2nd of October 2014: *Folha* reveals that a consortium of contractors led by Camargo Corrêa (a Brazilian construction company) transferred R\$ 37,7m to one of Alberto Youssef’s shell companies.
- 24th of October 2014: According to *Veja magazine*, Alberto Youssef claimed in a testimony that Dilma and Lula had knowledge of the corruption scheme. The news was released two days before the second round of the presidential elections in which Dilma Roussef faced Aécio Neves.
- 14th of November 2014: 27 arrest warrants are released by the Justice department, for executives of 10 companies among which Camargo Côrrea and OAS. Executive Augusto Mendonça Neto explains in a deposition that contractors had formed a “bribes club” with Petrobras, led by the CEO of UTC Engenharia Ricardo Ribeiro Pessoa.

- 11th of December 2014: 36 people are accused by the Prosecutors' office of corruption, creation of criminal organizations and money laundering within the Petrobras scheme, which kept on operating until the construction companies' executives were arrested on the 14th of November.
- 12th of December 2014: According to Valor Econômico, a former executive Venina Velosa da Fonseca had tried to warn both the successor of supply and refinery executive Mr. Costa and Petrobras' CEO Graça Foster through numerous e-mails between 2009 and 2014.
- 19th of December 2014: 28 names of politicians denounced in the deposition of Mr. Costa are revealed by *Estado de Sao Paulo* and describes that Mr. Costa states having been asked by an ex-minister under Rousseff's government to provide R\$ 2m for Rousseff's presidential campaign.
- 30th of December 2014: Petrobras suspends contracts with 23 of its suppliers involved in the Petrobras scandal, which are the following: Alusa (currently Alumni), Andrade Gutierrez, Camargo Corrêa, Carioca Engenharia, Construcap, Egesa, Engevix, Fidens, Galvão Engenharia, GDK, Iesa, Jaraguá Equipamentos, Mendes Junior, MPE, OAS, Odebrecht, Promon, Queiroz Galvão, Setal, Skanska, Techint, Tomé Engenharia e UTC.
- 5th of January 2015: *Folha de Sao Paulo* reveals that Petrobras bought equipment for a petrochemical complex in Rio de Janeiro before defining the business model and the production structure of the refinery which supposedly led to a prejudice of R\$ 1 billion
- 13th of January 2015: The position of Governance, Risk and Compliance which creation was announced in November, is filled by the engineer Joao Adalberto Elek Junior.
- 22nd of January: It is revealed through the testimony of Paulo Roberto Costa, that Petrobras executives received US\$ 1.5m to let the acquisition of the refinery of Pasadena in Texas go through, an acquisition which prejudice to the company is estimated at US\$ 792m.
- 28th of January 2015: The 3rd quarter results of Petrobras are disclosed after two consecutive delays. The results show that the company's profits fell by 38% without including losses from corruption. The company's president Graça Foster estimates the prejudice against the company to amount to R\$ 88.6bn.

- 3rd of February 2015: Dilma Rousseff decides to withdraw Graça Foster from the position of CEO as well as a replacement of the senior management.
- 5th of February 2015: In his testimony, Pedro Barusco a former Petrobras executive estimates that between US\$ 150 and US\$ 200m have been received by the PT in bribes retrieved from 90 of Petrobras' largest contracts.
- 6th of February 2015: The president of Banco do Brasil, Aldemir Bendine, is chosen by Dilma Rousseff to replace Graça Foster as CEO of Petrobras.
- 16th of March 2015: Folha de Sao Paulo, reveals that Eduardo Leite, vice-president of Camargo Corrêa (a construction firm) claims in his deposition that Joao Vaccari, the PT Treasurer, asked of the company bribes of R\$10 million in the shape of political donations to PT.
- 17th of April 2015: An executive at Camargo Corrêa said that the company paid R\$ 110m in bribes to obtain contracts from Petrobras between 2007 and 2012.
- 22nd of April 2015: Eight people are condemned by the Justice of the state of Pararná for embezzlement of funds through the construction works of the refineries Abreu and Lima, in the first ruling relative to operation "Lava Jato". Moreover, Petrobras' 2014 Annual Accounts are disclosed in which write-offs of R\$ 6.2 billion are registered as losses due to corruption in contracts with 27 contractors. Impairment charges in relation to delays on corruption-affected refinery projects of R\$ 44.6bn are also registered.
- 9th of May 2015: The CEO of UTC Ricardo Pessoa claims having been forced to donate R\$ 7.5 million to Dilma Rousseff's campaign, under threat that future constructions contracts would cease.
- 26th of May 2015: Nestor Cervero, former executive at Petrobras is condemned to 5 years of prison for money laundering.
- 2nd of July 2015: Former manager Jorge Zelada is arrested under suspicion of involvement in corruption, fraud, embezzlement of public funds and money laundering.

Appendix 2: Methodology for the computation of write-offs

As the company states not having been aware of the bribery scheme and therefore do not have any precise accounts and numbers for how much the contracts affected by the bribery scheme were overvalued at, they decided to follow an accounting methodology based on the testimonies of “the former Petrobras personnel (Costa and Barusco), the complete testimony of two individuals who acted as intermediaries in the payment scheme (Youssef and Julio Gerin de Almeida Camargo), partial testimony of another individual who acted as an intermediary in the payment scheme (Shinko Nakandakari), and the complete testimony of one representative of a construction company (Augusto Ribeiro de Mendonça Neto)” (Petrobras, 2014, p. 37). The company affirms that it is impracticable for it to determine the actual amount of overpayment as the testimonies do not identify directly the “affected contracts and the individual contractual payments that include overcharges or the reporting periods in which overpayments occurred”. They declare that the company itself did not receive improper payments as those payments were made by outside contractors and suppliers, thereby distancing themselves from the Petrobras executives which conducted the bribery scheme.

Based on the testimonies, the company applied the following methodology:

“(1) Identify contractual counterparties: the Company listed all the companies identified in public testimony, and using that information the Company identified all of the contractors and suppliers that were either so identified or were consortia including entities so identified.

(2) Identify the period: the Company concluded from the testimony that the payment scheme was operating from 2004 through April 2012.

(3) Identify contracts: the Company identified all contracts entered into with the counterparties identified in step 1 during the period identified in step 2, which included supplemental contracts when the original contract was entered into **between 2004 and April 2012**. It has identified all of the property, plant and equipment related to those contracts.

(4) Identify payments: the Company calculated the total contract values under the contracts identified in step 3.

(5) Apply a fixed percentage to the amount determined in Step 4: the Company estimated the aggregate overpayment by applying a percentage indicated in the **depositions (3%)** to the total amounts for identified contracts” (Petrobras Brasil, 2014, pp. 37-38)

Appendix 3: Methodology for the computation of impairment related to corruption

The company reported impairment of R\$44,636m in 2014 versus R\$1,238m in 2013, as a result of a changing business context. The impairments are supposed to reflect the impact of the declining oil prices, the devaluation of the Brazilian Real but also the impact of the Lava Jato investigation (Petrobras, 2014, p. 55).

The company chooses to break down the impairment costs in 3 categories:

- (i) R\$30,976m attributable to Complexo Petroquímico do Rio de Janeiro (COMPERJ) and the second refining unit of Refinaria Abreu e Lima (RNEST) “due to the postponement of these projects for an extended period of time as a result of the Company’s measures to preserve cash and of the implications to the Company’s suppliers of the “Lava Jato” investigation.” As the company explicitly justifies the impairment by the postponement of projects in relation to the corruption investigation, we will consider the entire impairment as being the result of the corruption scandal.
- (ii) R\$10,002m as a result of lower international crude oil prices. This impairment following a general trend in the oil and gas sector will not be taken into account as consequence of the corruption scandal.
- (iii) R\$2,978m for petrochemical assets as a consequence of “decreased demand and lower margins”. This impairment does not explicitly tie to the corruption scandal and can be seen as a general result of a combination of company inefficiency and macroeconomic factors. We will not include it into impairments resulting from corruption.

Postponement of Complexo Petroquímico do Rio de Janeiro and the second refining unit of Refinaria Abreu e Lima is linked to the prosecution of the 27 contractors who have been identified as participating in the corruption scheme and the arrest of many of their chief executives (Leahy, 2015).

The devaluation of the real wouldn't directly impact the value in R\$ of the company's assets, and would therefore not justify huge impairments on the Petrobras' developments.

The falling oil prices on the other hand do have a considerable impact on the exploration of production of crude oil as developments and investments in the Oil and Gas sector are very closely linked to the price of oil. Aldemir Bendine stated on the 29th of June 2015 that “the reduction in investments by Petrobras follows the trend in the global oil and gas industry and is directly related to the reduction in oil prices in the world market” (Leahy, Petrobras chief pledges revolutionary focus on the investor, 2015).

As a result, out of the R\$44,636m of impairment we will consider that **R\$30,976m** is directly resulting from the corruption scandal.