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Reputation, return and risk: A new approach

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ABSTRACT

Corporate reputation has deserved attention in recent years from firms and researchers given its impact on creating a competitive advantage and on keeping a sustained superior performance. However, the impact of corporate reputation on risk, in addition to being less studied, still presents controversial results. Thus, the purpose of this study is to, simultaneously, analyze the effect of corporate reputation on stock return and risk. A model based on firms' financial market data was assessed through a panel data analysis which included 84,745 firm-year observations, which occurred between January 6th, 2009, and December 31th, 2019, from a full sample of 156 United States firms listed in the New York Stock Exchange (NYSE) and National Association of Securities Dealers Automated Quotations (NASDAQ), 82 of which were listed in Reputation Quotient (RQ).

The results show that there are no significant differences between listed and not listed firms in Reputation Quotient concerning firms' abnormal returns and firms' systematic risk. This can be justified because stock prices adjusted instantly to the corporate reputation, which supports the market efficiency hypothesis.

This study may provide important insights into the literature: firstly, although the impact of reputation on performance has gained attention in recent years, the firsts studies essentially analyze the reverse impact; secondly, this work aims to, simultaneously, study the effect of corporate reputation on return and risk, being the impact on the risk an area still little explored and with controversial results; thirdly, this study distinguishes itself by using a set of firms listed in a reputation ranking and a set of firms not listed, but with similar characteristics in terms of market capitalization, highlighting the impact of reputation communication through media rankings.

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1. Introduction

Corporate reputation has been studied over many years by, for example, Fombrun & Shanley (1990), Roberts & Dowling (2002), and Walker (2010) who have demonstrated that reputation plays an important role in firms' strategic responses to environmental threats. In particular, corporate reputation when communicated by the media is a sign of firm quality for investors in times of crisis (Bank et al., 2019; OuYang et al., 2017).

Reputation is described as an asset derived from firms' past actions (Weigelt & Camerer, 1988), namely, it is derived from their past financial performance indexes (Vergin & Qoronfleh, 1998). This relation is not unidirectional because reputation may influence firms' future financial performance. Firms with better reputation standards outperformed their rivals (Weigelt & Camerer, 1988; Roberts & Dowling, 2002).

Moreover, reputation is rare and difficult to imitate. It is considered by some authors, for example, Helm (2007), as the most valuable intangible asset. Reputation might be also responsible for increasing firms' profitability and creating competitive barriers (Roberts & Dowling, 2002).

In a literature review performed by Chun (2005), reputation has been characterized as an effective tool in managing the stakeholders' behavior towards an organization. Chun (2005) described such behavior as employee retention, customer satisfaction and loyalty, and attraction of good/efficient staff. Furthermore, Vergin & Qoronfleh (1998) refer that reputation might encourage shareholders to invest in a firm since reputation is positively correlated with superior overall returns.

Concerning the firms' financial performance overview, good reputation standards may also lead to a decrease in firms' costs, enabling those firms to charge premium prices within their current and future markets (Roberts & Dowling, 2002).

Researchers have traditionally studied the relationship between corporate reputation and the firm's performance (Pfister et al., 2020). However, few studies have considered the relationship between reputation and risk (Delgado-García et al., 2013). There have been, however,

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notorious exceptions, such as the following: Gregory (1998) that intends to verify if the brand power impact on the stock price is the same in markets with greater volatility; Jones et al. (2000) whose aim is to demonstrate if firms with higher reputation dropped less before critical market situations; Srivastava et al. (1997) that intend to analyze if investors accept higher levels of risk for firms with higher reputation for the same level of return; Krueger et al. (2010) who study the effect of changing reputation in total risk and systematic risk; Delgado-García et al. (2013) that analyze the influence of reputation on firm's systematic risk, unsystematic risk and total risk; Krueger & Wrolstad (2016) who study the relationship between reputation and return and risk using the top 10 firms with the highest reputation score compared to an equal number of firms with a lower reputation score; Brahmana et al. (2020) that examine the effect of corporate reputation on extreme risk, total risk and financial risk in a developing country. Finally, Pfister et al. (2020) with a regression of the raw reputation scores against factors known to affect the general public perception analyze the impact of reputation on the cost of equity.

Gatzert (2015) provides a literature survey of empirical evidence on the impact of corporate reputation and reputation damaging events on financial performance. The author emphasizes that it is necessary to carry out more research on relations between corporate reputation and its financial consequences.

Based on this evidence and taking into account the general consensus that reputation is a reflection of the firm's stakeholder's perceptions, as inferred by Gatzert (2015), this study may provide important insights into the literature: 1) Firstly, although the impact of reputation on performance has gained attention in recent years (as reported by Gatzert, 2015), the first studies essentially analyzes the reverse impact, in other words, the impact of the performance on reputation. Recent literature (for example Roberts & Dowling, 2002; Rose & Thomsen, 2004; Eberl & Schwaiger, 2005; Tischer & Hildebrandt, 2014; Raithel & Schwaiger, 2015) starts to recognize the importance of perceiving the impact of reputation on performance, although, the majority use accounting data to measure the firm performance. There are still few studies (for instance Tischer & Hildebrandt, 2014; Raithel & Schwaiger, 2015, Sanchez & de Vega, 2018; Brahmana et al., 2020; Pfister et al., 2020) that use market data to measure performance, but they use a different methodology from the one used in this study. Regarding the methodology, the model used in this study is characterized by the determination of risk-adjusted returns and the estimation period coincides with the test period. So, it is believed that the use of market data and the methodology used is a contribution to the literature. It is considered that the use of market data is more coherent. Besides this, according to the literature, the measures based on market data are less subject to managerial manipulation (see McGuire et al., 1990); 2) The second contribution, and as previously mentioned, most of the studies in this area focus on the relationship between reputation and performance, disregarding the influence of reputation on risk. This work aims to simultaneously study the effect of reputation on performance and risk and to present differences between the studies mentioned above that studied this relationship. Some of them use different reputation measures (Gregory, 1998; Delgado-García et al., 2013), others use different risk measures (Gregory, 1998; Krueger et al., 2010) and all of them use different study methodologies (Srivastava et al., 1997; Gregory, 1998; Krueger et al., 2010; Jones et al., 2000; Delgado-García et al., 2013; Krueger & Wrolstad, 2016); 3) The way reputation is measured can be considered the third contribution because most of the studies use the score as a reputation measure (only containing the firms listed in the ranking) and this study aims to distinguish itself by using a set of firms listed in a reputation ranking and set of firms not listed, but with similar characteristics in terms of market capitalization. With this subdivision, it is believed that the differences between the reputation on return and risk are more evident, and it is possible to assess the importance of corporate reputation communication through a media ranking. The methodology was defined based on results obtained by Delgado-García et al. (2013), which analyze the impact of reputation on risk. Despite the limited number of firms belonging to the two analysis groups (listed and not listed), the results indicate that what is important is not the level of reputation but rather whether it is or not reputable. This study intends to overcome this limitation shown by Delgado-García et al. (2013) using a higher number of firms. In addition, an attendance criterion was applied in the reputation measure (minimum of 3 years) that allows us to consider reputable firms in a more robust way.

In order to reach the main aims, this study will determine whether firms listed in the Reputation Quotient (as a proxy of higher reputation) present, on average, positive abnormal returns compared to firms not listed in the Reputation Quotient. Additionally, as previously mentioned, it is intended to compare the sensibility of the systematic risk between these two groups of firms. To accomplish that, a sample of 156 U.S. firms listed on the NYSE and NASDAQ will be used. 52.56% of this sample refers to firms listed in Reputation Quotient, whereas the other 47.44% refers to firms outside this ranking (selection based on the higher market capitalization). For a firm to be considered as having a high reputation it must: i) have been present in the Reputation Quotient ranking for at least 3 years (from 2009 to 2019); ii) have been listed on the stock exchange for at least 3 years (corresponding to the years in which it is listed in the Reputation Quotient ranking) and be shares traded on the NYSE or NASDAQ markets. In order to analyze the reputation effect on the abnormal return and systematic risk, it will use an adaptation to CAPM (Capital Asset Pricing Model) along with a panel data study between January 6th, 2009, and December 31st, 2019. The use of panel data allows the study of the abnormal return of a set of firms over time. Once it increases the number of observations, it will increase the degrees of freedom and it will reduce the collinearity among explanatory variables. It also allows the elimination of unobservable heterogeneity.

The remainder of the paper is divided into four parts. A corporate reputation overview is made in the next section. After that, the focus is set on the research hypotheses and main objectives, sample and data descriptive analysis, and model description. This study concludes with the main results and some guidelines for future research.

2. Corporate reputation overview

2.1. Corporate reputation definitions and measures

The definition of Corporate reputation is not consensual in the literature review. Weigelt & Camerer (1988) defined corporate reputation as a set of attributes assigned to firms, inferred from firms' past actions. According to Fombrun & van Riel (1997), there are six different constructs for the corporate reputation definition: (1) economic; (2) strategic; (3) marketing; (4) organizational; (5) sociological and (6) accounting. Fombrun et al. (2000) suggested that corporate reputation denotes a collective construct that describes the aggregate perceptions of multiple stakeholders over the firm's operation. Since corporate performance is a multi-dimensional construct, so is reputation, wherein it should reflect the unique dimensions on which stakeholders base their judgments about the firm's performance.

One of the main barriers to the creation of a universal definition was related to the confusion concerning the concepts of identity, image, and reputation (Barnett et al., 2006). Barnett et al. (2006) attempted to define this concept as: "observers' collective judgments of a corporation based on assessments of the financial, social, and environmental impacts attributed to the corporation over time".

2.2. Reputation measures

Media rankings are the most standard measures of reputation, and within this literature Fortune's World Most Admired Companies

(WMAC) is highlighted as one of the most cited (Chun, 2005; Fombrun et al., 2000). Concerning Brown & Perry's (1994) research, Fortune's annual list of the WMAC, published early each year since 1983, ranks large corporations on the following eight qualitative attributes: (1) financial soundness; (2) long-term investment value; (3) use of corporate assets; (4) innovativeness; (5) quality of a firm's management; (6) quality of its products and services; (7) ability to attract, develop, and keep talented people; and (8) acknowledgment of social responsibility. According to Brown & Perry (1994), Fortune collects data on the largest firms in over 30 industries, where 8,000 executives, directors, and market analysts are included in the survey sample, wherein each of them reports on the industry they follow.

Fortune's WMAC ranking has had a response rate of over 50 percent, an indicator that describes Fortune's survey samples as probably the largest within their scope (Brown & Perry, 1994). Brown & Perry (1994) also underlined that Fortune's results are widely circulated and cited in popular press outlets. Furthermore, it offers data from a large sample of industry experts assessing qualitative dimensions of organizational performance that are difficult to measure quantitatively. According to Fombrun & van Riel (1997), reputation measured through surveys presents some weaknesses, for instance, most are biased in evaluating firms and choosing evaluation and ranking criteria. Therefore, according to Fombrun & van Riel (1997) and Walker (2010), it is necessary a measure of corporate reputation that presupposes the aggregation of the opinions of different stakeholders, valuing both the analysis dimensions and the evaluation criteria. It is important to group the opinions of different stakeholder groups, as each group values different dimensions in a different way (Walker, 2010) since the current ones only reflect the vision of a group of stakeholders (Deephouse, 1997; Walker, 2010). According to Brown & Perry (1994) and Fryxell & Wang (1994), financial performance influences the firms ranking in the "Most Admired Companies" Fortune's ranking, there is a financial halo underlying the database that appears to be predominantly financial in its construction. This limitation is because respondents are "experts", whose analysis focuses only on a group of stakeholders, executives, and financial analysts, who tend to give more importance to financial aspects (Fryxell & Wang, 1994). Numerous authors trusted media rankings. The fact that reputation ranking is communicated through the media has an impact on the reputation itself because the media act as an intermediary in quality signaling (OuYang et al. 2017). This is because communication influences the perception of firm activities (Floreddu et al., 2014), and thus communication may improve reputation (Aula, 2011). Žabkar & Arslanagić-Kalajdžić (2013) reinforce this idea by mentioning that corporate communication builds, protects, and maintains corporate reputation.

The Reputation Institute launched in 1998 a global project to fill the gap of a valid instrument to measure reputation, which resulted in the development of the Reputation Quotient (RQ) in partnership with Harris Interactive (Fombrun et al., 2000; Gardberg & Fombrun, 2002; Ponzi et al., 2011). It is one of the most popular measures of corporate reputation used by academics (Shamma, 2012). Reputation Quotient is a list of 32 items that take into account the different reputation perceptions of different stakeholder groups concerning the firm: (1) emotional appeal; (2) products and services; (3) vision and leadership; (4) social and environmental responsibility; (5) workplace environment; and (6) financial performance. Wartick (2002) states that the Reputation Quotient (RQ) is a good measure of reputation because it is broad and generic enough, which makes it more applicable to most stakeholder groups and most cultural contexts. According to Kanto et al. (2016) Reputation Quotient (RQ) is the best tool to assess corporate reputation. It has emerged as a valid, reliable, and robust tool to measure corporate reputation (Fombrun et al., 2000; Gardberg & Fombrun, 2002). Furthermore, it was also validated cross-culturally, that is, in several countries (Ponzi et al., 2011).

Literature also emphasizes other annual worldwide reputation rankings such as the Financial Times World's Most Respected Companies, Britain's Most Admired Companies from Management Today, and Asia's Most Admired Companies by Asian Business, Spanish Monitor of Corporate Reputation (Chun, 2005; Fombrun et al., 2000; and Sánchez & Sotorrío, 2007).

However, the use of rankings may present some limitations, such as the incorporation of public traded companies and a limited respondent pool on which those rankings are built (Fombrun et al., 2000). Nevertheless, the advantages gained by the use of media rankings go beyond the limitations pointed out.

2.3. Corporate reputation and firms' financial performance

In the literature, there is much research concerning the relationship between reputation and firms' financial performance. According to Brammer et al. (2004) and Brammer et al. (2009), we could have three possible market reactions to firms' reputations: i) based on the market efficiency, it is not expected that when investing in reputable firms that allow obtaining positive abnormal returns once share price automatically adjusts to reputation information. Reputation is not an event per se, but a set of events (such as the decision to increase employee salaries, the decision to offer benefits to community members, and product recalls), and thus each of the these 'events' would have induced changes in the stock price (Abraham et al., 2008); ii) conversely, financial analysts and most academic studies suggest that the corporate reputation will have a positive impact on future stock prices; iii) and finally it may be possible to reach a negative relationship as a result of market overreaction.

Most studies have confirmed the existence of a relevant and positive relationship between corporate reputation and firms' financial performance, using Fortune's rankings as a measure for reputation such as McGuire et al. (1990), Roberts & Dowling (2002) and Lee & Roh (2012).

Findings from Hammond & Slocum (1996), using a sample of 149 firms from a 1993 Fortune's Most Admired list, suggested that, in order to keep their firm's reputation, management must be able to control costs and deliver dividends to investors as close to their expectations as possible. Thus, and according to the same authors, the short-term profit should not be the single goal of management, since most investors are risk-averse.

Through correlations and regression analysis, and with a sample of 131 U.S. firms, McGuire et al. (1990) found that firm and its management quality influence a firm's future financial performance.

Likewise, Pfarrer et al. (2010) explored the effects of two intangible assets, (1) the firm's reputation and (2) the firm's celebrity, on organizational outcomes. To perform that, the same authors analyzed 291 firms between 1991 and 2005 that appeared in Fortune's Most Admired Companies. Findings led Pfarrer et al. (2010) to suggest that reputable firms, when compared to low-reputable ones, might experience greater market rewards for positive surprises, and smaller market penalties for negative announcements.

Additionally, Roberts & Dowling (2002) also studied corporate reputation and its possible correlation with a sustained superior firm's performance over time. To achieve such a goal, Roberts & Dowling (2002) used reputation data from 540 firms, between 1984 and 1998, embedded in Fortune's 1000 annual ranking. Results supported the evidence that superior-performing firms with good reputation standards, found themselves with an advantage that was durable in the short run.

Using non-media measure tools, other authors also explored and found positive associations between corporate reputation and firms' financial performance (Sánchez & Sotorrío, 2007; Tischer & Hildebrandt, 2014; Raithel & Schwaiger, 2015).

Sánchez & Sotorrío (2007), for instance, proposed a theoretical model which could explain the process of value creation from reputation generated by firms. Therefore, the same authors built a sample containing the 88 most reputable firms in Spain during 2004. In this situation, Sánchez & Sotorrío (2007) based their reputation data on MERCO, a Spanish indicator of firms' reputation. Results obtained suggested that the process of value creation, through reputation, was influenced by a series of contingent factors such as differentiation strategy, competitive intensity, and power of stakeholders.

Tischer & Hildebrandt (2014) conducted an event study with the intent to explore the impact of reputation changes on stock prices on the Frankfurt stock exchange. They used a reputation measure ranking range from a German Business Periodical. Results suggested that the announcement changes had an impact on the shareholders' value.

Raithel & Schwaiger (2015) demonstrated how shareholder's value, measured by future stock returns (using the augmented Fama & French model), behaved in terms of reputation perceptions issued by the general public. In this study, the authors created a reputation score using a sample obtained from 1,251 to 2,465 telephone interviews, where respondents were asked to answer questions about the 30 leading German security companies listed on DAX (Deutscher Aktienindex). Results attested that superior reputation perceptions issued by the general public increased the shareholder's value, creating more wealth for the shareholder in terms of positive abnormal stock returns in the long term. Furthermore, Raithel & Schwaiger (2015) indicated that reputation perceptions that are driven by non-financial aspects might create significantly more shareholder value in the future than reputation perceptions driven by previous financial performance.

According to the literature, some other authors took a different approach from those previously presented. Hannon & Milkovich (1996) use an event study on the effects of human resources signals (including "better for blacks, "most preferred", "100 best to work for", "better for working moms", better for women "and" better for black engineers") conclude that most reputation measures used do not impact abnormal profitability. Carmeli & Tishler (2005), for instance, explored the relationship between organizational reputation and a firm's performance by looking at the firm's performance as a multidimensional measure. They used a sample composed of 86 industrial firms based in Israel. Through descriptive statistics and a path analysis, the authors showed that reputation was not directly associated with financial performance but rather indirectly through the firm's growth. Additionally, Rose & Thomsen (2004) used image ratings from a Danish business periodical as a proxy of reputation. The authors performed descriptive statistics and factor analysis with support from 263 joint firm-year observations, between 1996 and 2001, of image and market-to-book value from a sample of 62 firms. Their research findings challenged the conventional wisdom since results showed that financial performance improves the corporate reputation, but corporate reputation does not impact the market to book value of equity. Abraham et al. (2008) using the Reputation Quotient index, and comparing the 30 firms with the highest reputation score and the 30 firms with the lowest reputation score, during the period between 2001 and 2005, they conclude that there are no significant differences.

2.4. Corporate reputation and firms' risk

Rational investors are risk-averse, in this sense that, when faced with two firms with similar levels of return, they prefer to invest in the one with the lowest risk (Brammer & Millington, 2005; Fombrun & Shanley, 1990). The impact of the corporate reputation level on risk has not been the object of much study and the results are still controversial.

Srivastava et al. (1997), with a sample composed of 205 firms listed in Fortune's WMAC 1990, analyze the impact of reputation on risk, only considering firms listed on a reputation ranking. The authors conclude that the reputation increases the risk accepted by the investor without the increase in the required return. Contrary to Srivastava et al. (1997), the present study simultaneously analyzes the reputation effect on return and risk.

Using the brand power as a reputation measure on a database composed of 80 public firms for a period of 3 days between October 24-28 of 1997, Gregory's (1998) study analyzes the investors' familiarity with the firm's brand and how much they have a good perception about the firm. The author concludes that firms with higher reputation support higher market volatility. The main difference between Gregory's (1998) study and the present work is the measure of reputation used. This study uses a reputation measure which is constructed by taking into account eight qualitative attributes: (1) financial soundness; (2) long-term investment value; (3) use of corporate assets; (4) innovativeness; (5) quality of a firm's management; (6) quality of its products and services; (7) ability to attract, develop, and keep talented people; and (8) acknowledgment of social responsibility.

In line with Gregory's (1998) study, Jones et al. (2000), based on data from the stock market crash in 1987 and 1989, aim to analyze the impact of reputation and risk on the subsequent stock price. They conclude that reputation protects investors in crisis times.

Using 323 firm-year observations between 1999-2007, Krueger et al. (2010) study the impact of reputation changes (measured by Reputation Quotient Score changes) on risk. According to the authors, the improvement of the reputation seems to reduce the risk. Differently, the present study aims to compare the more and less reputed firms.

Finally, Delgado-García et al. (2013), using a database composed of 157 Spanish quoted firms for the 2001 to 2007 period, analyze the direct effect of reputation on risk, using the risk as the dependent variable. They conclude that being a reputed firm decreases the specific and total risk however increases the systematic risk. The authors, analyzing only the reputed firms, conclude that it is not the level of reputation that influences the risk but the fact that it is reputed or not reputed. In opposition, in the present study, it is considered the impact to be reputed or not on return adjusted to the risk, which means it is analyzed the changes by being reputed on the abnormal return and simultaneously on the alteration of the sensitivity of the firms' return to the market return. In this sense, this study allows us to conclude whether a listed firm on a reputation ranking has a different systematic risk from a non-listed firm, highlighting the importance of corporate reputation communication through a media ranking.

Krueger & Wrolstad (2016) studied the relationship between reputation and return and risk using the top 10 firms with the highest reputation score on Reputation Quotient compared to an equal number of firms with a lower reputation score for 14 years (2000 to 2014). They concluded that firms with the highest reputation score tend to have lower risk, whether measured in terms of systematic risk or total risk.

Brahmana et al. (2020), who examines 256 non-financial firms in Indonesia for the period 2011 to 2015 using the Forbes Top 50 Best companies, conclude that reputation is an important factor for market-based risk.

Finally, Pfister et al. (2020) with a regression of the raw reputation scores against factors known to affect the general public perception, analyze the impact of reputation on the cost of equity of German blue-chip firms between 2005 and 2011. They conclude that reputation leads to a significant increase in the future cost of equity within 6 months, not having a significant impact in the short term.

3. Research methods

3.1. Objectives and hypotheses

As seen in the previous section, the relationship between corporate reputation and a firm's financial performance has received some attention in the scientific field. This research follows this association which is widely described in the literature. Roberts & Dowling (2002), for instance, realized that firms that possess relatively good reputation standards experience higher chances of sustaining superior performance over time. Sharpe (1964) described expected returns as an inverse function of systematic risk. According to Hong & Sakar (2007), higher volatility implies higher systematic risk and, based on Bravo (2016), a higher reputation implies lower volatility. Thus, according to Krueger & Wrolstad (2010), Krueger & Wrolstad (2016) and Brahmana et al. (2020) it is expected that firms with high reputation levels experience a lower systematic risk.

The present study will use the Reputation Quotient (RQ) as the reputation measure. The Reputation Quotient conceptualizes corporate reputation as "a collective construction that describes the aggregated perceptions of various stakeholders about the performance of a company" (Fombrun et al., 2000). This indicator includes items of emotional appeal, financial performance, products and services, social performance, vision and leadership, and finally workplace environment (Fombrun et al., 2000; Ponzi et al., 2011). According to Sarstedt et al. (2013), the Reputation Quotient index is one of the best indicators to measure corporate reputation, being considered by them the preferred measurement approach in terms of criteria validity. Although most studies involving corporate reputation use Fortune Ranking (Brammer & Pavelin, 2006; Fombrun, 1997; Fryxell & Wang, 1994; Veh et al., 2019; Walker, 2010), which is the oldest reputation ranking around the world, several studies indicate that this indicator is not appropriate to measure corporate reputation (Brown & Perry, 1994; Fryxell & Wang, 1994). According to Brown & Perry (1994) and Fryxell & Wang (1994), there is a financial halo underlying the database that appears to be predominantly financial in its construction. This limitation is due to the fact that respondents are "experts", which the analysis focuses only on a group of stakeholders, executives, and financial analysts, and they tend to give more importance to financial aspects (Fryxell & Wang, 1994). The Reputation Quotient (RQ) is the second most used measure in scientific studies (Veh et al., 2019) and suits the research purposes. Additionally, in the sample it is included firms listed in both NYSE and NASDAQ stock exchanges due to the methodology that it is intended to use (which has the inherent use of market data) that also supports the use of this ranking.

Based on the literature review, this work intends to test the following hypotheses:

Hypotheses 1. *Firms listed in Reputation Quotient experience higher abnormal returns when compared to those not listed in the same ranking.*

Hypotheses 2. *Firms listed in Reputation Quotient experience a lower systematic risk when compared to those not listed in the same ranking.*

3.2. Model

In order to perform this research, it will do an adaptation of the CAPM. Thus, the model that is used to test the hypotheses is given by equation *(1)*:

$$R_{i,t} - R_{f,t} = \propto^{nrep} + \beta^{nrep} * (R_{m,t} - R_{f,t}) + \propto^{rep} * D_i + \beta^{rep} * D_i * (R_{m,t} - R_{f,t}) + \varepsilon_{i,t} \quad (1)$$

Where:

$R_{i,t}$	Return of stock *i* in week *t*.
$R_{f,t}$	Risk-free return in week *t*.
$R_{i,t} - R_{f,t}$	Risk premium of stock *i* in week *t*.
$\propto^{nrep}$	Constant parameter estimated which denotes the abnormal returns of firms not listed in Reputation Quotient.
β^{nrep}	Coefficient which measures the sensibility of stock returns from firms not listed in Reputation Quotient due to changes in market returns.
$R_{m,t}$	Market return in week *t*.
$R_{m,t} - R_{f,t}$	Market risk premium in week *t*.
$\propto^{rep}$	Constant parameter which denotes the variation of abnormal returns from firms listed in Reputation Quotient, when compared to those not listed in the same ranking.
D_i	Dummy variable coded 1 if firm *i* is listed in Reputation Quotient, otherwise 0.
β^{rep}	Coefficient which measures the sensibility's change of stock returns from firms listed in Reputation Quotient due to variations in market returns, when compared to those not listed in Reputation Quotient.

Running a panel data analysis, the *Pooled OLS*, the *Fixed-effects*, and the *Random-effects* models were explored . Each estimation went over some tests, such as the *F Test*, the *Breusch-Pagan Test*, or the *Hausman Test*, to determine the models' quality and their consequent validation.

3.3. Sample and data

Financial market data, including price and market value from NYSE and NASDAQ constituents, was obtained from Thomson Reuters DataStream each Friday between January 6th, 2009, and December 31st, 2019. Similar financial information was collected gathered from the S&P 500 Composite and the NASDAQ 100 from the same database, regarding the same period.

Finally, the *Risk-free return* was obtained considering the "4-week Treasury Bill Secondary Market Rate", available in the Board of Governors of the Federal Reserve System[1] between January 6th, 2009, and December 31st, 2019.

The research sample was supported by 574 U.S. firms listed on NYSE and NASDAQ observed each Tuesday from January 6th, 2009, to December 31st, 2019, obtaining a total of 84,745 observations. Of those 156 U.S. firms, 113 were listed on the NYSE stock exchange, whereas 43 were listed on the NASDAQ stock exchange. Since more than 80% of all firms listed in the Reputation Quotient ranking were based on the U.S. stock markets, it was focused then on U.S. firms.

The period under analysis runs from 2009 to 2019. To identify firms that make up the group of firms listed in the Reputation Quotient, the following criteria were used: i) the firm should be present in the Reputation Quotient ranking for at least 3 years (in the period 2009-2019); ii) the firm should be listed on the stock exchange for at least 3 years, corresponding to the years in which it is listed in the Reputation Quotient ranking; and iii) stocks should be traded in the NYSE or the NASDAQ stock exchange. Then, it was built a matched sample of U.S. firms that were not listed in Reputation Quotient as a control group.

For each year, the firms are selected by the dimension factor, that is, those with the highest market value are part of the sample. To accomplish that, a list of 74 firms from NYSE and NASDAQ stock exchanges was selected according to the higher market value, that were not listed in the Reputation Quotient.

It is considered that firms with higher size usually have a higher reputation, as inferred by Fombrun and Shanley (1990), hence the market value was used as a proxy of size to select the control group. Table 1 summarizes the number of firms in the two subsamples (listed and not listed in the Reputation Quotient) by market (NYSE and NASDAQ). The group of listed firms in Reputation Quotient comprises 59 NYSE firms and 23 NASDAQ firms and the not listed group

[1] http://www.federalreserve.gov/releases/h15/data.htm.

Table 1
Number of firms of sample and the sample split according to the Reputation Quotient.

	NYSE	*NASDAQ*	*TOTAL*
Number of firms listed in Reputation Quotient	59	23	82
Number of firms not listed in Reputation Quotient	54	20	74
Total	**113**	**43**	**156**
Percentage	72.4%	27.6%	

comprises 54 NYSE firms and 20 NASDAQ firms. Making a total of 156 firms in the sample.

Table 2 shows the descriptive statistics (mean, median, minimum, maximum, and standard deviation) of the stock's risk premium for the total sample and the two subsamples, listed and not listed in the Reputation Quotient. For each subsample, NYSE and NASDAQ descriptive statistics are also presented. The mean and median of the stock's risk premium is positive for the total sample and the subsamples, listed and not listed in Reputation Quotient. In the highest reputation firms' group, splitting the analysis by market, the mean and median of the stock's risk premium is lower in firms listed on the NYSE than on the NASDAQ. Comparing the stock' risk premium median of listed and not listed firms in Reputation Quotient, it can be concluded that the stock' risk premium median of not listed firms in Reputation Quotient, for the total sample and the NYSE subsample, is significantly higher, for a 5% level, than stock' risk premium median of listed firms in Reputation Quotient (as can be seen in Table 3). In relation to the NASDAQ subsample, there are no significant differences. This may be due to the lower number of observations from NASDAQ-listed firms. The result indicates that firms not listed in the Reputation Quotient have a higher risk (higher stock risk premium) and may support the markets efficiency hypothesis, since in efficient markets firms with higher risk (not listed in the Reputation Quotient) have a higher stock' risk premium.

The stock risk premium volatility, measured by the standard deviation, is higher in the sample of listed firms in Reputation Quotient, and within each of the markets, the NASDAQ is the one with the highest volatility.

Table 4 presents the Spearman correlation matrix between the variables included in the model. As would be expected, based on the CAPM model, there is a high and significant correlation between the stock's risk premium and the market risk premium. The correlation between the stock risk premium and the market risk premium when moderated by the dummy variable remains high and significant.

4. Empirical results and discussion

4.1. Results

In the previous section, the hypotheses were identified, as well as the methodology required to accomplish the aim of the present research. In this section, the results are presented and discussed. Table 5 reports the estimation results of the random-effects model, after performing the F Test, the Breusch-Pagan Test, or the Hausman Test.

Table 3
Mann-Whitney *U* Test.

	P-value
TOTAL	0.011**
NYSE	0.007***
NASDAQ	0.653

* 10% significance level.
** 5% significance level.
*** 1% significance level.

Table 4
Spearman correlation between the variables under study.

	$R_{i,t} - R_{f,t}$	$R_{m,t} - R_{f,t}$	D_i	$D_i * (R_{m,t} - R_{f,t})$
$R_{i,t} - R_{f,t}$	1,000			
$R_{m,t} - R_{f,t}$	0.558**	1,000		
D_i	−0,003	0,000	1,000	
$D_i * (R_{m,t} - R_{f,t})$	0,343**	0,652**	0,233**	1,000

$R_{i,t} - R_{f,t}$ is the risk premium of stock i on week t; $R_{m,t} - R_{f,t}$ is the market risk premium on week *t*; D_i is the dummy variable coded 1 if firm *i* is listed in Reputation Quotient, otherwise 0.

The results obtained (presented in Table 5) do not support the first research hypothesis that firms listed in Reputation Quotient undergo higher abnormal returns when compared to those firms not listed in the same ranking. The variation of abnormal returns from firms listed in Reputation Quotient, when compared to those not listed in the same ranking ($\propto^{rep}$) is not statistically significant, to a 5% level. Our results are in line with the traditional financial theory, that is, they support the market efficiency hypothesis. As referred by Brammer et al. (2004); Abraham et al. (2008) and Brammer et al. (2009) stock prices adjusted instantly to the information about the firm's reputation once the reputation is not an event per se, but a set of events and thus each of the these 'events' would have induced changes in the stock price. As referred by Fombrum et al. (2000) corporate reputation denotes a collective construct that describes the aggregated perception of multiple stakeholders. Following this idea and since the reputation is defined as an asset derived from a past actions set (Weigelt & Camerer, 1988), the effect of this set of actions will have already been incorporated in the stock price if the efficiency hypothesis is verified. Reinforcing this conclusion, Abraham et al. (2008) state that reputation communication does not provide new information to investors, and consequently, it does not have an impact on stock prices.

Concerning the systematic risk, the results show that there is no significant difference in the systematic risk between firms listed in Reputation Quotient and firms not listed in the same ranking (β^{rep}). Such evidence does not support the perceived risk and reputation relationship proposed by Krueger & Wrolstad (2010), Delgado-García et al. (2013), Krueger & Wrolstad (2016), and Brahmana et al. (2020). However, Delgado-García et al. (2013) concluded that the firm's size influences this relationship. According to the same authors, the effect of corporate reputation on systematic risk is smaller in large firms.

Table 2
Risk premium of stock' descriptive statistics.

	N	*Mean*	*Median*	*Min.*	*Max.*	*Stand. Deviation*
Listed in Reputation Quotient	**44,016**	**0.002**	**0.003**	**−0.757**	**0.827**	**0.042**
NYSE	32,588	0.002	0.003	−0.757	0.827	0.041
NASDAQ	11,428	0.004	0.004	−0.534	0.548	0.046
Not listed in Reputation Quotient	**40,729**	**0.003**	**0.004**	**−0.738**	**0.485**	**0.037**
NYSE	29,903	0.002	0.004	−0.738	0.485	0.036
NASDAQ	10,826	0.003	0.004	−0.330	0.284	0.040
Total	**84,745**	**0.002**	**0.003**	**−0.757**	**0.827**	**0.040**

Table 5
Estimation results obtained from the Random-effects model.

Parameters	Coefficients
$\propto^{nrep}$	−0,0011***
β^{nrep}	0,8749***
$\propto^{rep}$	−0,0002
β^{rep}	0,0318

$R_{i,t} - R_{f.t} = \propto^{nrep} + \beta^{nrep} * (R_{m.t} - R_{f.t}) + \propto^{rep} * D_i + \beta^{rep} * D_i * (R_{m.t} - R_{f.t}) + \varepsilon_{i.t}$; where: $R_{i,t}$ is the return of stock i on week t; $R_{f.t}$ is the Risk free return on week t; $R_{i,t} - R_{f.t}$ is the risk premium of stock i on week t; $\propto^{nrep}$ is the constant parameter for estimation which denote the abnormal returns of firms not listed in Reputation Quotient; β^{nrep} is the coefficient for estimation which measures the sensibility of stock returns from firms not listed in Reputation Quotient due to changes on market returns; $R_{m,t}$ market return on week t; $R_{m.t} - R_{f.t}$ is the market risk premium on week t; $\propto^{rep}$ is the constant parameter for estimation which denotes de variation of abnormal returns from firms listed in Reputation Quotient, when comparing to those not listed in the same ranking; D_i is the dummy variable coded 1 if firm i is listed in Reputation Quotient, otherwise 0; β^{rep} Coefficient for estimation which measures the sensibility's change of stock returns from firms listed in Reputation Quotient due to variations on market returns, when comparing to those not listed in Reputation Quotient.

*** 1% significance level.

Table 6
NYSE and NASDAQ Stock Exchange Robustness Analysis.

Parameters	NYSE Coefficients	NASDAQ Coefficients
$\propto^{nrep}$	0,0008***	−0,0004
β^{nrep}	1.0050***	1.0042***
$\propto^{rep}$	−0.0005*	0.0003
β^{rep}	−0.0105	−0.0422

$R_{i,t} - R_{f.t} = \propto^{nrep} + \beta^{nrep} * (R_{m.t} - R_{f.t}) + \propto^{rep} * D_i + \beta^{rep} * D_i * (R_{m.t} - R_{f.t}) + \varepsilon_{i.t}$; where: $R_{i,t}$ is the return of stock i on week t; $R_{f.t}$ is the Risk free return on week t; $R_{i,t} - R_{f.t}$ is the risk premium of stock i on week t; $\propto^{nrep}$ is the constant parameter for estimation which denote the abnormal returns of firms not listed in Reputation Quotient; β^{nrep} is the coefficient for estimation which measures the sensibility of stock returns from firms not listed in Reputation Quotient, due to changes on market returns; $R_{m,t}$ market return on week t; $R_{m.t} - R_{f.t}$ is the market risk premium on week t; $\propto^{rep}$ is the constant parameter for estimation which denotes de variation of abnormal returns from firms listed in Reputation Quotient, when comparing to those not listed in the same ranking.; D_i is the dummy variable coded 1 if firm i is listed in Reputation Quotient, otherwise 0; β^{rep} Coefficient for estimation which measures the sensibility's change of stock returns from firms listed on Fortune due to variations on market returns, when comparing to those not listed in Reputation Quotient.

* 10% significance level.
** 5% significance level.
*** 1% significance level.

This may explain the results obtained in the present study since the sample is composed of large firms including the control group.

Other reasons for differences in the results obtained (for the abnormal return and the systematic risk variation) may be due to the use of an estimation period that coincides with the test period (the use of different periods of estimation and testing may capture other changes than those that are intended to be tested) and since we compare listed and not listed firms in the Reputation Quotient ranking instead of using a reputation score.

Considering these conclusions, it was further analyzed the robustness of the results using two subsamples, NYSE and NASDAQ.

4.2. Results' robustness

To perform this analysis, the overall sample was split by stock exchange: (1) NYSE, and (2) NASDAQ. Thereafter, a panel data analysis was carried out in order to identify if previously obtained results differ depending on the stock exchange (see table 6).

Regarding the NYSE and NASDAQ results, the same findings obtained using the total sample were observed, i.e., the abnormal returns and systematic risk variation between firms listed and not listed in Reputation Quotient are not significant to a 5% significance level. In this sense, the analysis by stock market (NYSE and NASDAQ) supports the results using the total sample.

5. Conclusions

The relation between corporate reputation and firms' performance has deserved some attention from researchers over many years. However, most of the literature does not analyze the impact of corporate reputation on financial performance, but rather the reverse. In this sense, this study intends to contribute to the literature by simultaneously analyzing the effect of reputation on abnormal return and risk measured by market values.

According to the literature review, it would be expected that firms listed in Reputation Quotient experience higher abnormal returns and lower systematic risk when compared to those not listed in the same ranking.

The results did not provide significant variations, either for the abnormal returns or for the systematic risk, between firms listed in Reputation Quotient and those not listed. They may be an outcome arising from the instantaneous adjustment of stock prices to the information about firm's reputation, which in this study is measured by a widely available media ranking, i.e they support the market efficiency theory. Other reasons may be due to the use of an estimation period that coincides with the test period (the use of different periods of estimation and testing may capture other changes than those that are intended to be tested) and we compare listed and not listed firms in the Reputation Quotient ranking instead of using a reputation score. Our results are robust when analyzed by market which means there is no difference in the impact depending on whether the firm is listed on the NYSE or NASDAQ market.

Our results also evidence that firms listed in Reputation Quotient have a lower stock risk premium when compared with those that are not listed. This is in line with the traditional finance theory and with the literature in the area, in the sense that firms with higher reputation level have lower risk.

Considering that markets are efficient, these results seem to indicate that it is more important to communicate firm individual events that improve its reputation than to communicate the level of reputation itself (through a ranking). Investors are already aware of the firm's reputation level when the ranking is published, such as Reputation Quotient, thus stock prices do not change with its visibility. In this sense, firms should be concerned about the communication of the set of individual events that promote a higher reputation and not be aware of they are listed in a specific ranking.

This conclusion contributes to the literature in the area of communication, emphasizing its importance in the financial markets and in defining corporate strategy.

Despite the contributions of this study to the literature, we acknowledge some limitations that could be addressed in future research. The results obtained for both research hypotheses may be a consequence of the sample being composed by NYSE and NASDAQ firms. In these stock markets, the criteria admission procedures are very demanding and strict, and these firms are subject to a lot of demands and scrutiny, which already denotes a high reputation. At the same time, most of the firms that composed the sample are among the firms with higher market value, another proxy of high reputation.

For future work developments, it would be interesting to extend the study in many different directions, such as: other reputation measures, a wider sample including, for example, firms from emerging markets, and sectorial analysis. Based on the study results, it would be interesting to apply the same methodology replacing the Reputation Quotient indicator by specific events. The objective is to analyze whether stock prices effectively react to new reputation information.

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