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The effect of creative corporate culture and intangibility on the performance of foreign firms traded on the NYSE

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Abstract

Purpose – Following the tenets of resource-based view, the present study aims to investigate the effect of creative corporate culture according to the competing values framework model at the level of corporate intangibility and its respective repercussions on performance.

Design/methodology/approach – The sample included 117 non-USA foreign firms traded on the New York Stock Exchange (NYSE), which issued annual financial reports between 2009 and 2014 using the 20-F form. To meet the study objectives, in addition to the descriptive and comparative analyses, the authors performed regression analyses with panel data, estimating generalized least-squares, two-stage least-squares and ordinary least-squares.

Findings – Creative culture had a negative effect on the level of intangibility and corporate performance, while the level of intangibility did not appear to influence corporate performance. When combined, creative culture and intangibility had a potentially negative effect on corporate results. In conclusion, creative corporate culture had a negative effect on performance, even in firms with higher levels of intangibility, characterized by elements like experimentation and innovation.

Originality/value – Although the study hypotheses were eventually rejected, the analyses are relevant to both the academic setting and the market because of the organizational and institutional aspects evaluated, especially in relation to intangibility and creative culture and in view of the unique cross-cultural approach adopted. Within the corporate setting, the study provides a spectrum of stakeholders with tools to identify the profile of foreign firms traded on the NYSE.

Keywords Resource-based view, Intangible assets, Competing values framework, Creative corporate culture

Paper type Research paper

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1. Introduction

Compaines have invested much effort in an attempt to survive on today's competitive markets (Fekete and Böcskei, 2011), thereby undergoing changes in several organizational aspects, including their culture, responsible for influencing the creation of competitive advantage, in view of the fact that culture can determine the degree of success of a firm (Han, 2012).

Scholars are giving increasing attention to the topic because of the great importance of corporate culture and its implications for firms (Barney, 1986; Han, 2012; Zheng *et al.*, 2010). Based on the competing values framework (CVF), initially proposed by Quinn and Rohrbaugh (1983) and more recently by Cameron *et al.* (2006), corporate culture may be segregated into four types: collaborative ("clan"), creative ("adhocracy"), competitive ("market") and controlling ("hierarchy") (Cameron and Quinn, 1999). The CVF model is centered on corporate values perceived as predominant in the firm's conduct and as translating a given cultural trait which guides the firm's actions.

Cameron *et al.* (2006) also defend the existence of two dimensions to explain the corporate culture profiles: focus (internal and external) and structure (organic and mechanistic). Internal focus is the combination of collaborative and control culture, while external focus is the combination of creative and competitive culture (Cameron *et al.*, 2006). Organic or flexible structure is the combination of collaborative and creative culture, whereas mechanistic or stable structure is the combination of competitive and control culture (Cameron *et al.*, 2006). Corporate culture is not defined by a single aspect but is a combination of cultural traits in which, in general, one culture prevails over the others (Wu *et al.*, 2011), with the need to preserve a balance between the different cultures (Cameron and Quinn, 2006).

For the purposes of this study, the discussion centers on the creative (innovative) culture type, or adhocracy; thus, external focus and organic structure, according to the dimensions proposed by Cameron *et al.* (2006). Firms with creative cultural potential present traits of entrepreneurship, flexibility and creativity (Acar and Acar, 2014; Cameron and Quinn, 2006; Tseng, 2010). Such characteristics are expected to promote innovation (Denison and Spreitzer, 1991). In this context, it is assumed that the set of elements which make up creative culture raises the firm's level intangibility. Indeed, empirical evidence shows a positive association between innovation and intangible assets in Brazilian firms (Miranda *et al.*, 2013; Santos *et al.*, 2012).

A strategic resource controlled by the firm, corporate culture, is a potential source of sustainable competitive advantage (Barney, 1986; Flamholtz and Randle, 2012). In light of the tenets of resource-based view (RBV), the success of a firm depends on the resources it has at its disposal and its ability to control such resources, including intangible assets (Galbreath, 2005).

Thus, based on RBV, corporate culture may be considered a sustainable strategic resource controlled by the firm, with specific characteristics which can determine the success or failure of a business, which, in turn, increases organizational efficacy in a culture-specific manner, leading to better performance (Barney, 1986; Cameron *et al.*, 2006; Fekete and Böcskei, 2011; Flamholtz and Randle, 2012; Han, 2012; Helfat and Peteraf, 2003).

Likewise, a study by Carvalho *et al.* (2010) presented empirical data on the association between intangibility and increased (superior and persistent) corporate performance. According to RBV, this evidence supports the notion that intangible assets, because of their nature, potentialize the effects on corporate performance.

The present study was therefore aimed at investigating the effect of creative culture on the level of intangibility and its effects, individual and combined, on the performance of foreign firms traded on the New York Stock Exchange (NYSE). Based on the studies of Fekete and Böcskei (2011), Han (2012) and Kim *et al.* (2004), we hypothesized that creative culture has a positive influence on the level of intangibility of firms and that both constructs, individually or combined, have a positive impact on corporate performance, with the combined effect expected to be greater than the individual effect.

Studies on corporate culture are gaining followers in the academic world because of the expansion of the view of organizational objectives to include behavioral, social and environmental aspects. Recently, some authors have evidenced a positive association between creative corporate culture and corporate performance (Acar and Acar, 2014; Fekete and Böcskei, 2011; Han, 2012; Tseng, 2010), but little has been published on creative corporate culture, intangibility and the effect of these two on performance.

The theoretical justification of the study lies in the possibility of clarifying the interaction between creative culture, intangibility and performance. Our analysis has broadened the scope by including firms from around the world which invest in intangible assets as a means to remain competitive on the market.

2. Review of the literature and hypotheses

2.1 Creative corporate culture, intangibility and performance

Corporate culture may be defined as a set of central organizational values which inform corporate decisions and behaviors and which may influence the beliefs and actions of stakeholders (Flamholtz and Randle, 2012). According to Cameron and Quinn (1999), corporate culture is a set of elements – basic values, approaches, assumptions, interpretations, etc. – which characterizes a given firm; thus, each culture profile may have a different impact on corporate success, also taking into account the firm's strategic orientation and the needs of the external environment.

Several authors have proposed to classify corporate culture into dimensions or types. One such classification, the CVF, first proposed by Quinn and Rohrbaugh (1983), defines the differences between the values characterizing different models of corporate efficacy and was later used by Cameron and Quinn (2006) to explain culture profiles in different organizational models.

The proposed model centers on competitive values and includes the following culture types: collaborative (clan), creative (adhocracy), competitive (market) and control (hierarchy) (Cameron and Quinn, 1999).

To Cameron *et al.* (2006), each culture profile has distinct elements represented by beliefs, values and artifacts which direct the firm toward specific results in terms of organizational efficacy. Many scholars believe that corporate culture oriented towards success increases organizational efficacy (Cameron *et al.*, 2006; Hartnell *et al.*, 2011; Quinn and Rohrbaugh, 1983) represented by certain elements relative to the specific profiles of each culture, such as satisfaction and commitment among staff (collaborative culture), innovation of products and services (creative culture), participation in the market, earnings, product quality, productivity (competitive culture) and efficiency and good internal performance (control culture) (Cameron and Quinn, 1999).

As highlighted by RBV, corporate culture is considered a strategic resource controlled by the firm in the sense that it provides a potential source of sustainable competitive advantage (Barney, 1986; Flamholtz and Randle, 2012).

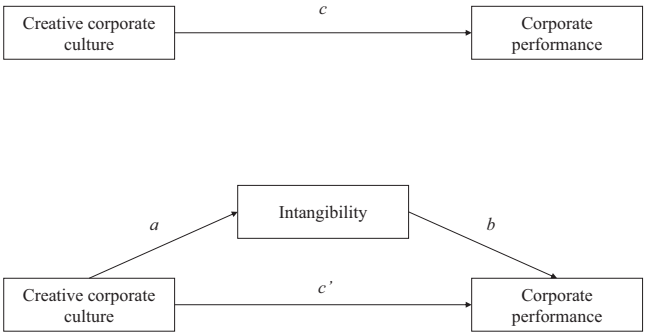
As for sustainable competitive advantage, the literature shows that what makes corporate culture a sustainable strategic resource is the fact that, if well managed, it is transmitted to generations of staff through the firm, thereby perpetuating the source of competitive advantage (Flamholtz and Randle, 2012, p. 83). Thus, among the assets associated with organizational efficacy, corporate culture is one of the most extensively investigated (Zheng *et al.*, 2010).

RBV proposes that a firm's unique traits, based on its assets, have an impact on performance and the creation of sustainable competitive advantage, defined mainly as "rare, valuable, inimitable and non-substitutable" resources and capacities and by the degree of heterogeneity of the resources created and controlled by the firm (Barney, 1991; Helfat and Peteraf, 2003). One such resource is corporate culture.

The characteristics of creative culture give firms an external orientation, with better developed knowledge conversion and corporate performance (Tseng, 2010). Thus, creative corporate culture, based on the criterion of adaptation to the environment, has the potential to positively affect corporate performance (Fekete and Böcskei, 2011; Han, 2012; Kim *et al.*, 2004).

In view of the above, Figure 1 shows the model proposed in this study, which describes the relationship between creative corporate culture, intangibility and corporate performance.

In short, creative corporate culture is in light of RBV regarded as a sustainable strategic resource (Barney, 1986; Flamholtz and Randle, 2012) characterized by the firm's commitment to investments in innovation and experimentation (Cameron and Quinn, 2006). This profile has direct implications on the firm's level of intangibility. In addition, many researchers have pointed out that creative corporate culture and the level of intangibility can have different effects on corporate performance depending on the sampling context (Carvalho *et al.*, 2010; Fekete and Böcskei, 2011; Flamholtz and Randle, 2012; Han, 2012).



Note: *a*, *b*, *c* and *c*′ represent analyses to verify the direct relationship between creative corporate culture and corporate performance (*c*) and the relationship mediated by intangibility (a, b, e, c′), as suggested by Baron and Kenny (1986)
Source: The authors

Figure 1.
Study model

2.2 Hypotheses

Creative corporate culture (adhocracy) is characterized by strong dynamism and focus on the external environment (Cameron *et al.*, 2006) and is closely associated with risk taking, innovation and change (Quinn and Spreitzer, 1991). The literature shows that firms with potential creative culture have a profile of entrepreneurship, flexibility and creativity (Acar and Acar, 2014; Cameron and Quinn, 2006; Tseng, 2010). These traits are expected to promote innovation (Denison and Spreitzer, 1991) and therefore lead to higher levels of intangibility Santos *et al.* (2012).

According to the CVF model, innovative firms seek to gain an edge over the competition by introducing new products, services and/or processes (Cameron and Quinn, 2006). The basic premise in creative culture is that change favors the creation and/or mobilization of resources.

The firm's focus on innovation and consequent adoption, implementation and development of routines aimed at the informatization of the environment for new technological developments makes it possible to increase the firm's ability to create products faster and cheaper Naor *et al.* (2014). The set of elements which make up creative corporate culture cause the level of intangibility to rise. Based on the above, we formulated the following study hypothesis:

H1. Creative corporate culture has a positive influence on the level of intangibility of foreign firms traded on the NYSE.

The characteristics of creative corporate culture (commitment to experimentation and innovation, introduction of new products and services, entrepreneurial and risk-taking management, among others) (Cameron and Quinn, 2006; Naor *et al.*, 2014) have an impact on a firm's performance and outcome.

Tseng (2010) states that the characteristics of creative corporate culture are oriented towards the external environment and imply a potential for developed knowledge conversion and improved corporate performance. In this respect, considering the aspect of adaptation to the environment, creative corporate culture can affect corporate performance (Kim *et al.*, 2004).

The literature shows that, in fact, creative corporate culture has a positive influence on corporate performance (Acar and Acar, 2014; Fekete and Böcskei, 2011; Han, 2012). Moreover, Tseng (2010) found empirical evidence that allowed to affirm that creative corporate culture enables firms to convert knowledge more easily than their competitors and that performance benefits more from this culture type than from other types. Based on these arguments, the second study hypothesis was formulated thus:

H2. Creative corporate culture has a positive influence on the performance of foreign firms traded on the NYSE.

Internal corporate resources may be classified as tangible (machines, equipment, real estate) or intangible (competences, efficient processes, brands, etc.) (Barney, 1991). From the accounting perspective, directive CPC 04 (R1), issued by the Brazilian Committee of Accounting Directives (CPC), defines intangible assets as "identifiable non-monetary assets without physical substance" (CPC, 2010, p. 6) and establishes criteria for recognizing and quantifying such assets. To be recognized as intangible, an asset must be identifiable, controlled by the firm and capable of generating future economic benefits. Intangible assets that do not meet these legal criteria are not included in mandatory financial reports.

According to Carvalho *et al.* (2010), the potential of intangible assets to create value depends on certain attributes, most of which are not marketable and require internal development, thereby becoming important factors of differentiation. In this perspective, and by virtue of their attributes, intangible assets are among the resources that support superior performance and the creation of competitive advantage (Basso *et al.*, 2015; Decker *et al.*, 2013; Jordão and Almeida, 2017; Perez and Famá, 2006). Thus, a third study hypothesis was formulated:

H3. Intangibility has a positive influence on the corporate performance of foreign firms traded on the NYSE.

In view of the precepts of RBV, corporate culture and intangible assets are sustainable strategic resources capable of determining corporate success or failure, with implications for the improvement of performance (Barney, 1986).

In view of the above, it may be assumed that firms with strong creative culture have high levels of efficacy with regard to the characteristics that promote innovation, improve productive processes and expand R&D. Such attributes, in turn, lead to growth of the firm's intangible structure, hence, of its level of intangibility. The higher level of intangibility may in turn have significant effects on performance, depending on the nature of the intangible resources (Basso *et al.*, 2015; Decker *et al.*, 2013; Perez and Famá, 2006).

Thus, conceivably, the combination of a strong creative corporate culture and a substantial intangible asset structure would potentiate the individual effects of these factors on corporate performance. To test this possibility, a fourth hypothesis was formulated:

H4. Creative corporate culture combined with high levels of intangibility has a potential positive influence on the corporate performance of foreign firms traded on the NYSE.

Unlike previous studies, we used secondary data to identify creative corporate culture (Fiordelisi and Ricci, 2014). In addition, we performed a cross-cultural descriptive and comparative analysis of creative corporate culture and intangibility in firms headquartered in different regions and analyzed, in separate and in combination, the relationship between creative corporate culture, the level of intangibility and corporate performance.

3. Methodology

The study sample included firms traded on the NYSE but headquartered outside the USA. The choice was justified by the representative number of the US firms traded on the NYSE, the inclusion of which would substantially raise the tradeoff of the study. Initially we considered all 520 foreign firms traded on the NYSE on 31 July 2015. Subsequently, firms were excluded which did not use the 20-F form (n = 201), which belonged to the financial sector (n = 45), whose fiscal year was different from the calendar year (n = 31), which had not issued annual reports throughout the period covered by the study (n = 103), whose information was incomplete (n = 17), which were headquartered in Africa (n = 2) (because of the insufficient number of firms to represent the continent), or which were identified as outliers (n = 4). Thus, the final sample consisted of 117 firms (702 observations).

The study was based entirely on secondary data: annual reports (20-F) issued by the firms and available on the website of the US Securities and Exchange Commission (SEC). The purpose of the 20-F form, which is mandatory for all foreign firms with stock

traded on the NYSE, is to make information disclosed by such firms comparable to information disclosed by USA firms. Among other things, 20-F reports contain information on key operational activities, market risks, internal controls, codes of ethics and conduct, corporate governance, financial results and audits.

The financial information used to calculate the indicators of intangibility and performance, regardless of the currency used in the reports, was expressed in millions of USA dollars.

To quantify corporate culture, many researchers have used instruments for the collection of primary data, scoring organizational culture on a scale (Acar and Acar, 2014; Tseng, 2010). In contrast, we used secondary data through text analysis which consists of objectively and systematically scanning texts for key words or ideas (Stone *et al.*, 1966).

The approach is based on the assumption that the words and expressions chosen by members of a firm reflect the predominant culture developed by the firm over time (Levinson, 2003). In other words, the distinctive traits of a firm are believed to be reflected in its documents. Text analysis is essential to measure the semantic content of official documents made available by firms, as explained by Fiordelisi and Ricci (2014). With this technique, the indicators used to proxy corporate culture are less prone to the subjectivity of the researchers interpreting the data (Fiordelisi and Ricci, 2014).

The level of creative culture was determined with the technique proposed by Fiordelisi and Ricci (2014). The authors identified a representative number of synonyms for each culture type defined by the CVF based on the argument of Carretta *et al.* (2011) that the use of synonyms minimizes the problem of subjectivity in the selection of the words. Thus, the authors identified a number of word roots related to each culture type and organized them in "bags or words". The bags for collaborative, creative, competitive and control culture contain, respectively, 34, 30, 41 and 35 word roots (Fiordelisi and Ricci, 2014). In this study, we focused on the 30 word roots associated with creative culture (Table I).

Creative corporate culture (*CC*) was estimated for each foreign firm traded on the NYSE between 2009 and 2014 as the percentage corresponding to the ratio between the number of times creative culture-specific word roots occurred in the company's reports and the number of times word roots from all four culture types occurred. For example, if a report contained 500 word roots from all four cultures, 160 of which were creative culture-specific, the creative culture percentage of that document would be 32 per cent (160/500).

The level of intangibility (*INT*) of each firm was measured based on the amount of investments in intangible assets and expressed as the ratio between intangible assets and all assets (Santos *et al.*, 2012).

Table I.
Word roots associated with creative culture

Culture type	Bag of words ($n = 30$)
Creative culture (CC)	Adapt, begin, chang, creat, discontin, dream, elabor, entrepre, envis, experim, fantas, freedom, futur, idea, init, innovat, intellec, learn, new, origin, pioneer, predict, radic, risk, start, thought, trend, unafra, ventur, vision

Source: Fiordelisi and Ricci (2014)

To measure corporate performance (*PER*) we used return on equity, defined as the ratio between net earnings and equity as used by Azeez (2015) and Miranda *et al.* (2013) to measure performance. The parameter allows to evaluate the return on shareholders' investments.

The findings were submitted to multiple linear regression with panel data and robust errors. *INT* was used as dependent and independent variable, while CC was used as independent variable only, as shown in the equations below:

$$INT_{it} = \beta_0 + \beta_1 CC_{it} + \Sigma\beta_{2-9}[CON]_{it} + \varepsilon_{it} \quad (1)$$

$$PER_{it} = \beta_0 + \beta_1 CC_{it} + \Sigma\beta_{2-9}[CON]_{it} + \varepsilon_{it} \quad (2)$$

$$PER_{it} = \beta_0 + \beta_1 INT_{it} + \Sigma\beta_{2-9}[CON]_{it} + \varepsilon_{it} \quad (3)$$

$$PER_{it} = \beta_0 + \beta_1 INT_{it} + \beta_2 CC_{it} + \Sigma\beta_{3-11}[CON]_{it} + \varepsilon_{it} \quad (4)$$

where *CC* is creative corporate culture, *INT* represents investments in intangible assets, *PER* is performance expressed as return on equity, *it* represents the subscripted firm and year, respectively, and β represents the coefficients of the model. Among the control variables (*CON*), *SIZ* is company size expressed as the *ln* of its assets; *LEV* is leverage expressed as the ratio between liabilities and assets, *REG* is regional location, *EFCR* is the firm-crisis effect, *GDP* represents the country's economic situation, *LEG* is the country's legal system, *ECO* is the country's level of economic development, and *INP* is a dummy variable representing innovative potential, with "1" assigned to potentially innovative firms (IT, telecommunications, automobiles, pharmaceutics, aerospace and defense, biotechnology and food), according to the Global Innovation Management Institute (www.giminstitute.org), and "0" otherwise.

To analyze the role of intangibility as mediator between creative corporate culture and corporate performance, we adopted the procedures proposed by Baron and Kenny (1986) according to which four conditions are required for mediation. Considering the model presented in Figure 1, initially the relations *c*, *a* and *b* must be significant, and $c' < c$ (partial mediation) or $c = 0$ (complete mediation).

The organizational variables *SIZ* and *LEV* are factors which can affect performance. The inclusion of these variables was based on studies like Azeez, (2015), Fiordelisi and Ricci (2014), and Naranjo-Valencia *et al.* (2015). As for the institutional variables, *REG* (West or East) is used to control for the influence of region on culture (Gray, 1988) because, as shown by Naor *et al.* (2014), cultural differences between West and East may have an impact on corporate efficacy. The classification of countries into West and East was based on the prime meridian (Greenwich).

It is important to consider the effect of financial crises on corporate performance. To do so, we used a metric similar to that proposed by Fiordelisi and Ricci (2014): firms with decreasing profitability (expressed as return on assets) over three consecutive years were assigned the value "1", and "0" otherwise. We also considered the effect of country crises by introducing the variable per capita *GDP*, as informed by the World Bank Group (https://data.worldbank.org/).

REG was determined based on world map analysis, *LEG* was assigned according to Juriglobe (www.juriglobe.ca/eng/), and *ECO* was retrieved from the website of the

International Monetary Fund (www.imf.org/external/index.htm). All three are dummy variables.

Regression analysis with panel data were performed for firms headquartered in Latin America, Asia and Europe, and the sensitivity of the results was verified. To make the results more robust, the models were estimated with generalized least-squares (GLS), two-stage least-squares (2SLS) and ordinary least-squares (OLS). These techniques allow to correct correlation effects between the residues and between the residues and the independent variables and to control for problems of endogeneity.

4. Results

4.1 Analysis and discussion

Table II shows mean percentages of creative corporate culture, levels of intangibility and corporate performance in the sample according to continent (Latin America, Asia and Europe).

The three continents accounted for 32.5 per cent (Latin America), 33.3 per cent (Asia) and 34.2 per cent (Europe) of the sampled firms. Asia and Europe displayed the greatest heterogeneity in relation to the number of countries and firms. The mean percentage of

Table II. Creative corporate culture, intangibility and corporate performance by continent

Continent	Countries	Firms	Obs.	(%)	CC	INT	PER
Latin America	8	38	228	32.5	0.141	0.398	0.119
Asia	10	39	234	33.3	0.138	0.292	0.044
Europa	13	40	240	34.2	0.144	0.846	0.172
Total	31	117	702	100	0.141	0.516	0.113

Notes: *CC* = creative corporate culture; *INT* = level of intangibility; *PER* = corporate performance. Results expressed as mean values
Source: The authors

Table III. Comparison of variables related to institutional aspects

Variables	Categories	Firms	CC	(t/F)	INT	(t/F)	CCxINT	(t/F)	PER	(t/F)
REG[a]	West	77	0.143	0.01**	0.630	0.00***	0.089	0.00***	0.147	0.00***
	East	42	0.1380		0.289		0.038		0.041	
LEG[b]	Common	15	0.138	0.05**	0.243	0.00***	0.119	0.00***	0.277	0.00***
	Civil	66	0.144		0.228		0.082		0.113	
	Mixed	38	0.140		0.089		0.032		0.040	
ECO[a]	Emerging	67	0.141	0.07*	0.315	0.00***	0.044	0.00***	0.083	0.02**
	Advanced	52	0.143		0.767		0.106		0.145	
EFCR[a]	Yes	34	0.140	0.41	0.547	0.53	0.075	0.59	0.018	0.00***
	No	85	0.142		0.503		0.070		0.147	
INP[a]	Yes	45	0.138	0.00***	0.703	0.00***	0.097	0.00***	0.119	0.65
	No	72	0.143		0.398		0.056		0.107	

Notes: *REG* = regional location; *LEG* = legal system; *ECO* = economic development; *EFCR* = effect of firm crisis; *INP* = innovative potential; (a) variables submitted to Student's *t* test for comparison of means; (b) variable submitted to analysis of variance. *, ** and *** correspond to the 10%, 5% and 1% level of significance, respectively
Source: The authors

creative corporate culture was highest in Europe (14.4 per cent) and lowest in Asia (13.8 per cent).

The lowest mean level of investment in intangible assets was observed for Asian firms (29.2 per cent of total assets). Mean levels were considerably higher for firms in Latin America (39.8 per cent) and Europe (84.6 per cent).

Mean corporate performance was highest in Europe (17.2 per cent). In fact, Europe surpassed the other two continents with regard to all three study variables.

Table III displays the results of the descriptive and comparative analyses of mean creative corporate culture, intangibility, corporate performance and $CC \times INT$, according to regionality, legal system, economic development and effect of crisis.

As shown by the results, the percentage participation of creative culture was similar for firms in Western and Eastern countries. The other variables were higher for Western countries (Latin America and Europe). This seems to indicate that firms in Western countries invest more in intangible assets and are more profitable.

Firms headquartered in common law countries such as the USA and the UK (where norms are based on jurisprudence) might be expected to have higher levels of intangibility and performance because of the more flexible environment, but our findings show the opposite to be true: firms in civil law countries displayed higher levels of creative culture, characterized by innovation, creativity and flexibility (Acar and Acar, 2014; Cameron and Quinn, 2006; Tseng, 2010).

Our results also show that corporate intangibility and performance were 2.5 times and 1.8 times greater, respectively, in countries with advanced economies than in countries with emerging economies. However, the difference in creative culture was not significant.

The existence of a financial crisis within the firm affected performance only, as expected. The fact that no other variable differed suggests that cultural differences are associated with institutional rather than organizational aspects. Interestingly, firms in the innovative sector displayed higher levels of intangibility despite lower levels of creative culture. Performance did not vary between innovative and non-innovative firms.

After characterizing the sample, we conducted descriptive analyses and data correlation analyses to verify the data distribution. Table IV shows the descriptive statistics.

On average, 14.2 per cent of the word roots identified in the reports issued by the sampled firms were in the creative culture word bag. The firms displayed little heterogeneity with regard to creative culture, as shown by the small standard deviation (2.3 per cent). In contrast, the mean percentage of intangible assets in relation to equity was 50.9 per cent,

Variable	Mean	SD	1	2	4	5	6	7
1 *CC*	0.141	0.024	1.00					
2 *INT*	0.516	0.869	−0.05		1.00			
3 *PER*	0.112	0.354	−0.07*	0.09**	1.00			
4 *SIZ*	9.530	1.659	0.21***	0.11***	0.03	1.00		
5 *LEV*	0.561	0.185	0.10***	0.24***	0.06	0.11***	1.00	
6 *INP*	0.385	0.487	−0.11***	0.17***	0.02	0.27***	−0.10***	1.00

Notes: *CC* = creative corporate culture; *INT* = intangibility; *PER* = corporate performance; *SIZ* = company size; *LEV* = leverage; *INP* = innovative potential. *, ** and ***correspond to the 10%, 5% and 1% level of significance, respectively

Source: The authors

Table IV.
Descriptive statistics and correlation matrix

with considerable variability. The most variable parameter (354.0), however, was corporate performance, with an average return of 11 per cent for shareholders.

The correlation analysis showed that *CC* was correlated with *INT*, *PER*, *SIZ* and *LEV*, though only weakly. On the other hand, *INT* was correlated with all the continuous study variables. The correlation coefficients were in the range from −0.07 to 0.24.

The existence of correlations between the study variables is suggestive of multicollinearity. To minimize these effects, we performed regression analyses with panel data and robust errors. Table V shows the results of the econometric models.

As shown in Table V, all the statistical models were significant at the 1 per cent level. The models differed with regard to explanatory power (R^2), with the best result being observed for model 4 (19.6 per cent). In model 1, *CC* was negative and significant, suggesting it is a determinant for the level of intangibility.

In Model 2, in which *PER* is a dependent variable, a significant and negative association was observed between *CC* and *PER*. According to RBV, culture is a resource capable of creating a competitive advantage reflected in corporate performance. In the present sample, *PER* was indeed affected, but in the opposite direction. This disagrees with earlier empirical studies in which the association between creative culture and performance was positive (Fekete and Böcskei, 2011; Han, 2012).

Model 3 shows no significant association in any estimation, indicating that the efficiency of the management of shareholders' investments (i.e. returns) was not affected by positive or negative changes in the level of intangibility. This finding contradicts Decker *et al.* (2013) and Miranda *et al.* (2013).

	Models (OLS)			
Variables	(1)	(2)	(3)	(4)
CC	−0.240** (0.048)	−1.208*** (0.006)		−1.278*** (0.003)
INT			0.015 (0.870)	0.013** (0.882)
SIZ	−0.017 (0.350)	0.005 (0.513)	0.002 (0.805)	0.006 (0.430)
LEV	0.939*** (0.001)	0.075 (0.619)	0.051 (0.751)	0.068 (0.688)
REG	0.047 (0.856)	0.075 (0.716)	0.071 (0.735)	0.077 (0.715)
EFCR	0.041 (0.516)	−0.123*** (0.000)	−0.121*** (0.000)	−0.120*** (0.000)
GDP	$-5.07e^{-06}$*** (0.000)	$-1.74e^{-08}$ (0.908)	$-2.56e^{08}$ (0.956)	$-8.36e^{-08}$ (0.860)
LEG_{com}	0.451* (0.089)	0.135 (0.515)	0.138 (0.477)	0.124 (0.519)
LEG_{civ}	0.307 (0.204)	−0.002 (0.991)	−0.006 (0.975)	−0.010 (0.961)
ECO	0.525*** (0.000)	0.018 (0.513)	0.011 (0.779)	0.009 (0.806)
INP	0.313*** (0.000)	0.031** (0.043)	0.035 (0.299)	0.026 (0.445)
Intercept	0.007 (0.970)	0.141* (0.085)	0.013 (0.832)	0.113* (0.174)
Year	Sim	Sim	Sim	Sim
N	702	702	702	702
F	12.23***	5.43***	5.02***	5.15***
p-value	0.000	0.000	0.000	0.000
R^2	0.189	0.077	0.072	0.078

Table V.
Regression (OLS) of creative culture, intangibility and corporate performance

Notes: *CC*=creative corporate culture; *INT* = investments in intangible assets; *PER* = corporate performance expressed as return on equity; *SIZ*=company size estimated by the *ln* of assets; *LEV* = leverage expressed as the ratio between liabilities and assets; *REG* = regional location; *EFCR* = effect of crisis; *GDP* = effect of country crisis; LEG_{com} = common law country; LEG_{civ} = civil law country; *ECO* = country's level of economic development; *INP* = dummy variable for innovative potential. Estimated coefficients and standard errors robust to heteroscedasticity (in parentheses). *, ** e *** *, ** and *** correspond to the 10%, 5% and 1% level of significance, respectively
Source: The authors

Decker *et al.* (2013) evaluated the influence of intangible assets on profitability and found that return on equity was higher for tangible asset-intensive than intangible asset-intensive firms. Miranda *et al.* (2013) also observed a negative association between intangible assets and return on equity in medium-high technology-intensive firms. This, in turn, disagrees with Perez and Famá (2006) who reported better performance for intangible asset-intensive firms and a positive association between intangibility and persistent performance.

Testing the relationship between creative corporate culture, intangibility and performance, Model 4 indicates that *PER* was influenced negatively by *CC* and positively by *INT*. The results negate a mediating role for *INT* between *CC* and *PER* as the mediator variable had no effect on performance (Model 3) and therefore does not meet the criteria reproduced in Figure 1.

It should be pointed out that in our sample, *EFCR* had no effect on creative corporate culture (Model 1), a finding supported by the literature, according to which crises and financial restrictions at the organizational level have a positive impact on creativity as firms resort to innovation in the hope of turning business around (Yang and Hung, 2015).

Thus, the results of our study, considering the sample and time frame adopted, did not confirm the tenets of RBV which defines creative corporate culture and intangible assets as sustainable strategic resources capable of directly impacting corporate performance (Carvalho *et al.*, 2010; Fekete and Böcskei, 2011; Flamholtz and Randle, 2012; Han, 2012). In other words, the empirical evidence gathered here is insufficient to confirm the study hypotheses.

4.2 Sensitivity analysis

We performed regression analyses estimated with GLS and 2SLS to correct correlation effects between the residues and between the residues and the independent variables (GLS) and to control for problems of endogeneity (2SLS). The results of the regression in the different estimations, with and without control variables, are shown in Table VI.

In general, the regression analyses of all the proposed study models with control variables, estimated with GLS and 2SLS, yielded results similar to the models estimated with OLS (Table V). The differences are mainly with regard to the level of significance of the tests

	Without control variables				With control variables			
Models	Coef.	*z*	*p*-value	Chi^2	Coef.	*z*	*p*-value	Chi^2
PANEL A (generalized least squares – GLS)								
CC → INT	−2.07	−1.47	0.141	2.16	−2.40	−1.74*	0.000***	163.85
CC → PER	−1.08	−1.78*	0.075*	3.15	−1.31	−2.18**	0.000***	58.33
INT → PER	0.04	2.36**	0.018**	5.59	0.02	0.93	0.000***	54.17
CC+INT → PER	−0.95	−1.65*	0.015**	8.35	−1.28	−2.12**	0.000***	59.01
PANEL B (two-stage least squares – 2SLS)								
CC → INT	−2.10	0.038**	4.33**	0.33	−2.40	0.048**	12.23***	18.92
CC → PER	−1.06	0.034**	4.51**	0.50	−1.31	0.006***	5.43***	7.67
INT → PER	0.03	0.645	0.21	0.80	0.02	0.861	5.43***	7.16
CC+INT → PER	−0.98	0.013**	3.42**	1.23	−1.28	0.003***	5.15***	7.75

Notes: *CC* = creative corporate culture; *INT* = investments in intangible assets; *CC → INT* = dynamic variable between *CC* and *INT*; *PER* = performance expressed as return on equity. The control variables included *SIZ*, *LEV*, *REG*, *EFCR*, *GDP*, LEG_{com}, LEG_{civ}, *ECO* and *INP*. Estimated coefficients and standard errors robust to heteroscedasticity. *, ** e *** *, ** and *** correspond to the 10%, 5% and 1% level of significance, respectively

Source: The authors

Table VI. Regression of creative culture, intangibility and corporate performance, estimated with GLS and 2SLS

related to the coefficients and to the models. Creative culture could only explain 0.4 per cent of the level of intangibility and 0.6 per cent of corporate performance, but the explanatory power (R^2) rose to 7.75 per cent when *CC* and *INT* were analyzed in combination. This is evidence that creative corporate culture and intangibility account for only a small part of corporate performance, as reported by Fekete and Böcskei (2011) and Han (2012).

To verify the robustness of our results, we performed a regression analysis of the study variables according to continent (Latin America, Europe, Asia). Table VII shows the results of the analysis.

The results show a significant and negative effect of creative corporate culture on performance in firms from Asia and Europe (especially the latter). The effect of intangibility on performance was only significant for European firms. The dynamic variable *CC*x*INT* yielded similar results for Asia and Europe.

Our evidence suggests that creative culture has a negative impact on the level of intangibility and corporate performance, the level of intangibility is not significantly reflected in corporate performance and the effect of the combination of creative culture and intangibility on corporate performance is significantly greater than the effect of each factor.

It should be pointed out that, in European firms, intangibility met the criteria of Baron and Kenny (1986) and may therefore be considered a mediator between creative corporate culture and corporate performance. In other words, the relationships between *c*, *a* and *b* (Figure 1) were significant at the level of "complete mediation" ($c = 0$), as demonstrated by the fact that *CC* was non-significant in Model 4. Thus, the total effect of creative culture on corporate performance was −1.92 ($c = c' + ab$), whereas the direct effect of creative culture on corporate performance was −1.01 ($c' = c - ab$). This is an indication that higher levels of intangibility tend to reduce performance in European firms.

	Without control variables				With control variables			
Models	Coef.	*p*-value	*F*-test	R^2 (%)	Coef.	*p*-value	*F*-test	R^2 (%)
PANEL A – Latin America (*228 observations*)								
CC → INT	−0.332	0.858	0.03	0.00	−2.444	0.452	6.25***	6.52
CC → PER	0.352	0.629	0.23	0.00	−2.315	0.677	1.98**	4.80
INT → PER	−0.229	0.115	2.50	27.25	−2.395	0.098*	1.79*	32.64
CC+INT → PER	0.276	0.638	1.68	27.29	−0.821	0.265	1.75*	32.91
PANEL B – Asia (*234 observations*)								
CC → INT	−3.317	0.031**	4.72**	1.38	−2.535	0.146	2.67***	26.47
CC → PER	−2.012	0.008***	7.09***	1.74	−2.517	0.006***	2.80***	11.97
INT → PER	−0.202	0.162	1.97	13.96	−0.220	0.169	2.26***	22.09
CC+INT → PER	−2.720	0.003***	4.39**	17.09	−3.099	0.004 ***	2.31***	25.23
PANEL C – Europe (*240 observations*)								
CC → INT	−5.878	0.002***	9.64***	1.61	−4.326	0.031**	9.82***	36.10
CC → PER	−2.302	0.063*	3.48*	1.88	−1.907	0.027**	4.36***	20.06
INT → PER	0.202	0.017**	5.76**	31.09	0.207	0.036**	11.60***	40.03
CC+INT → PER	−1.133	0.117	3.15**	31.54	−1.024	0.284	10.86***	40.33

Table VII.
Regression of creative culture, intangibility and corporate performance by continent

Notes: *CC* = creative corporate culture; *INT* = investments in intangible assets; *CC → INT* = dynamic variable between *CC* and *INT*; *PER* = performance expressed as return on equity. The control variables included *SIZ*, *LEV*, *REG*, *EFCR*, *GDP*, LEG_{com}, LEG_{civ}, *ECO* and *INP*. Estimated coefficients and standard errors robust to heteroscedasticity. *, ** e *** *, **and ***correspond to the 10%, 5% and 1% level of significance, respectively
Source: The authors

5. Conclusions

In this study, we investigated the relationship between creative corporate culture, intangibility and corporate performance in 117 foreign firms traded on the NYSE between 2009 and 2014. All the firms in the sample issued annual financial reports using the 20-F form.

Initially, we conducted an analysis of the levels of creative culture, intangibility and corporate performance in the sampled firms in light of institutional aspects. On the average, all three variables were higher in European firms than in Latin American or Asian firms. The descriptive analysis revealed great variability among the firms, especially with regard to creative culture. On the average, in over half of the firms (51.6 per cent), the equity disclosed in company reports was intangible.

Our results show that creative culture was negatively associated with intangibility (i.e. investments in intangible assets). Based on this finding, *H1* was rejected. However, it is worth highlighting that firms in countries with advanced economies made greater investments in intangible assets. *H2* was significant, but in the opposite direction to our expectations, and so was rejected as well. In addition, we found no evidence of a relationship between the levels of intangibility and corporate performance, making it necessary to reject *H3*. Finally, when creative culture and intangibility were combined into a dynamic variable, corporate performance was found to be negatively affected. *H4* was therefore rejected.

The sensitivity analysis confirmed the robustness of the findings. When analyzed according to continent, the negative effect of creative culture on intangibility and performance was particularly strong in European firms, although intangibility as a mediator attenuated the negative effect of creative culture on performance.

In the perspective of RBV, corporate culture is a strategic intangible resource which may be converted into a potential competitive advantage. Thus, firms with a strong creative culture would tend to invest in innovation, improvement of productive processes and expansion in R&D, which, in turn, would lead to a greater intangible asset structure and, consequently, higher levels of intangibility and performance.

However, the findings of the present study did not confirm our expectations for a positive association between creative culture, intangibility and corporate performance. Simply put, in the sampled firms (foreign firms traded on NYSE), and in the period covered by our data (2009-2014), creative culture did not promote intangibility or improve corporate performance.

The negative effect of creative culture on performance may be explained by the constant culture adaptations required by the dynamism of the market; indeed, the NYSE is one of the most competitive markets in the world.

The fact that our hypotheses were rejected does not detract the relevance of the study. As shown by many authors, "negative" findings represent as important contribution to the discussion of the theory as "positive" findings (Bettis, 2012; Meyer *et al.*, 2017). Our results suggest, among other things, that the relationship between creative culture, intangibility and corporate performance may be mediated by variables not evaluated in this study (R^2) and, considering the significant influence of national culture on corporate culture, that future studies may need to focus on specific markets (Cameron *et al.*, 2006).

Although the study hypotheses were eventually rejected, our analyses are relevant to both the academic setting and the market because of the organizational and institutional aspects evaluated, especially in relation to intangibility and creative culture, and in view of the unique cross-cultural approach adopted. Within the corporate setting, the study provides a spectrum of stakeholders with tools to identify the profile of foreign firms traded on the NYSE.

Despite the methodological rigor and the importance of the findings of this study, our results cannot be extrapolated to other groups of firms. Rather, further studies with different sampling strategies and/or focus on specific markets/firms are necessary. Likewise, different metrics for intangibility and performance (operational, market, non-financial, etc.) might be tested, as suggested by the finding of different results for different subsets of firms. Moreover, it might be interesting to clarify why intangibility was only a mediator between creative culture and corporate performance among European firms. Finally, the existence of practices of isomorphism in financial reporting may be worth investigating, considering the small variation in creative culture word roots observed in the sampled company reports.

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