

The Relationship Between Board Interlocking and Income Smoothing Practices*

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ABSTRACT

This study aims to investigate the influence of board interlocking in income smoothing practices in public companies with shares traded on the BM&FBOVESPA. To achieve this objective we adopted a sample comprised of 58 Brazilian companies included in the Bovespa index. The study is classified as empirical and analytical and uses as a proxy for income smoothing a metric called the “smoothing factor” (SF), obtained through the factor analysis technique using the metrics EM_1 and EM_3 from Leuz, Nanda and Wysocki (2003). As independent variables we employed indicators of social network analysis. From a theoretical point of view, the study is relevant and innovates in making the connection between the resource dependence theory, the agency theory and board interlocking. In practical terms, the study shows the effects of the constitutive elements of corporate social networks, arising from the board interlocking structure, on income smoothing accounting practices. Regression with panel data using fixed effects showed that the constituent elements of corporate social networks tend to influence the practice of smoothing in the sample used. The results of the study show that companies that share board members with other organizations which smooth their results tend to adopt this organizational practice more easily, which can be explained by: (i) companies causing variations in performance due to operational decisions or financial reporting choices; and (ii) managers making use of discretionary practices in the reporting of profits.

Keywords: board interlocking, income smoothing, social network analysis.

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1 INTRODUCTION

The agency theory (Fama & Jensen, 1983) and the resource dependence theory (Pfeffer, 1972; Johnson, Daily & Ellstrand, 1996) are theories that form the basis for studies concerning boards of directors. The agency theory assigns to the board of directors the role of controlling and monitoring the decisions taken by managers, in an attempt to minimize conflicts of interest between different parts of an organization (Fama & Jensen, 1983). The resource dependence theory helps in understanding boards of directors as facilitating mechanisms for accessing financial resources from outside an organization.

Although the majority of studies concerning boards of directors involve the agency theory (Hillman & Dalziel, 2003), the complexity of corporate environments limits the practical application of this theory, since it is only able to explain some of the social phenomena related to boards of directors (Eisenhardt, 1989). Faced with this theoretical shortcoming, the resource dependence theory highlights the importance of boards of directors in reducing uncertainties in the corporate environment. Links with other companies allow board members to make use of their personal reputations in order to obtain the external resources that are necessary for company development (Pfeffer, 1972; Pfeffer & Salancik, 1978).

The participation of members of boards of directors in more than one corporation characterizes the phenomenon known as board interlocking (Knowles, 1973). Board interlocking encompasses, along with board members, directors responsible for links between companies (Mizruchi, 1996). Such ties are considered important in an organizational context (Fontes Filho, 2012), as it is thanks to these that companies are able to gain better access to commercial partners and can gain specific and strategic knowledge concerning particular companies (Gales & Kesner, 1994). International studies (Davis, 1991; Haunschild, 1993; Haunschild & Beckman, 1998) show that board interlocking is also considered an organizational information channel that influences in the adoption of certain corporative practices. The logic is that companies are more inclined to adopt such organizational practices when they repeatedly share board members with other strategically-aligned companies. Connelly and Slyke (2012) found that, in the same way that board interlocking influences in the adoption of constructive and positive practices, it can also lead to the spread of discretionary practices

that aim to cause the smoothing of financial results.

In the Brazilian stock market income smoothing has frequently been the subject of scientific studies. Many of these endeavor to explain the practice of smoothing via different constructs: ADRs (Lopes & Tukamoto, 2007); risk and return (Martinez & Castro, 2008); cost of third-party capital and capital structure (Castro & Martinez, 2009); levels of corporate governance (Lyra & Moreira, 2011); accounting conservatism (Almeida, Sarlo Neto, Bastianello, & Adoneque, 2012); and ratings agency classifications (Tonin, 2012).

With the aim of expanding the horizons of scientific knowledge regarding income smoothing practices, this study proposes to investigate the relationship between such practices and the constitutive elements of corporate social networks originating from the board interlocking structure. The objective is to address the following issue: **What is the influence of board interlocking on income smoothing practices in publicly traded companies listed on the BM&FBOVESPA?** The study covers the years from 2009 to 2014. The underlying hypothesis is that the constitutive elements of corporate social networks, represented by degree centrality, betweenness centrality, information centrality, size of board, and outsiders, tend to have a positive influence in the practice of income smoothing.

The study helps to address shortcomings related to understanding organizational aspects that tend to influence in the spreading of results management corporate practices. Specifically, it is considered that the existence of board interlocking favors the adoption of income smoothing practices related to (i) operational decisions and (ii) the adoption of discretionary practices in the reporting of profits. It should be mentioned that neither Brazilian nor international studies regarding the combination of these two issues (income smoothing and board interlocking) were found, thus allowing for the possibility of a fruitful discussion with a wide ranging theoretical and empirical impact in the field of accounting for external users. Considering that the studies are still at an early stage, this paper uses as a proxy a metric called “smoothing factor” (SF), obtained via factor analysis, which groups together the metrics EM_1 e EM_3 from Leuz et al. (2003) to represent a single factor for analysis. This mathematical route also represents one of the methodological contributions of this paper.

2 BOARD INTERLOCKING AND THE RESOURCE DEPENDENCE THEORY

The expressions “board interlocking” (Santos & Silveira, 2007; Mendes-da-Silva, 2010; Connelly & Slyke, 2012; Mindzak, 2013), “interlocking directorship” (Zajac, 1988; Hung, 1998; Au, Peng, & Wang, 2000), “board network” (Battiston, Weisbuch, & Bonabeau, 2003; Kim, 2005), “director interlocks” (Haunschild & Beckman,

1998), and “interlocking directorates” (Dooley, 1969; Ornstein, 1982) have all been used in financial literature to define links between companies via boards of directors.

Board interlocking refers to the social relationship created between two or more companies via the inclu-

sion of the same professional on their respective boards of directors (Fich & White, 2005). This professional can provide access to important resources that are essential to the company (Hung, 1998). In the United States, the participation of the same board member or executive in more than one company is quite common. Dooley (1969) found that, since the 1930s, 90% of the largest American organizations had at least one board member working at more than one company. Davis (1991) discovered corporate ties in 40 American organizations in the 1980s. On average, board members acted in seven large corporations.

In Canada, board interlocking is considered a common phenomenon in the largest corporations. Ornstein (1982) found that, from 1946 to 1977, the 100 largest companies exhibited, approximately, 1600 corporate ties in the form of social networks. Au et al. (2000) identified board interlocking in around 61% of the 200 largest companies in Hong Kong, in 1997. This percentage was a little lower than those found in England (69%) and in the United States (64%), in the same period. Cox and Rogerson (1985) investigated the 115 largest companies in South Africa and found that in 50% of them there were board members acting in more than one organization.

Santos and Silveira (2007) examined 320 companies with liquidity on the Brazilian capital market, between 2003 and 2005, and the results indicated that 74%, in 2003, and 68.8%, in 2005, had constitutive corporate social network ties. Moreover, in 2005, 50% of those professionals who acted as chairman of one board also simultaneously participated on the board of another company. Mendes-da-Silva (2010) studied 452 publicly traded companies, between 1997 and 2007, and showed that, on average, 60% of board members were connected to seven companies at the same time.

The main studies involving board interlocking are based on the resource dependence theory, which is used to explain the reasons for connections in established networks between companies (Hillman, Cannella, & Paetzold, 2000). Pfeffer and Salancik (1978) state that when an organization appoints a professional onto its board of directors, it is expected that this board member provides resources that help the company to structure itself financially and to develop over time. They explain that an adoption of board interlocking provides various benefits to entities, including: (i) obtaining specific resources; (ii) receiving strategic support from important external agents; (iii) providing legitimacy to their organizations; and (iv) creating important communication channels between organizations.

The resource dependence theory understands boards of directors as mechanisms for managing external resources (Pfeffer & Salancik, 1978), which act in reducing uncertainty (Pfeffer, 1972) and provide a reduction in transaction costs (Williamson, 1984). Therefore, from the point of view of the resource dependence theory, directors act as connections between firms and the corporate environment, minimizing the uncertainty of contin-

gency factors (Hillman et al., 2000).

The premise of the resource dependence theory is that organizations, however independent they may seem, cannot ignore the relevance of external resources to their development over time. In other words, no matter how autonomous an organization is, it will always require third-party resources. Access to external resources is facilitated when corporations establish links between themselves through board members, as they tend to work in favor of common objectives (Zald, 1969). Consequently, board interlocking is regarded as a source of facilitation of access to external financial resources. Hence, companies look for board members who already perform managerial roles in other organizations with the specific aim of increasing sources of third-party financial capital (Hillman et al., 2000).

Board interlocking also favors the insertion of companies into strategic social groups. The inclusion of board members belonging to social groups or movements helps to avoid conflicting actions with social organizations that might potentially interfere with the structural plans of companies. Another benefit of board member networks involves companies' reputations in the financial market (Pfeffer & Salancik, 1978), since corporate reputation is closely related to the resource dependence theory (Hillman et al., 2000).

Analyses of social networks also contribute to understanding the relationships between corporate practices (Kosnik, 1987; Haunschild, 1993; Davis, 1991). Kosnik (1987) investigated the relationship between the use of private share rewards (greenmail) and board interlocking. The results indicated that companies were more likely to use private rewards when professionals on their boards of directors also acted in other companies. Haunschild (1993) studied 327 American companies, covering the years from 1981 to 1990, and found that mergers and acquisitions were directly associated with the presence of links between the boards of these companies.

Kim (2005) examined the relationship between board interlocking and performance using social networks in Korean companies and found evidence that the density of corporate networks influenced company performance. The results suggest that moderately connected companies achieve better performance, whereas very close links destroy value. The study also highlighted that the level of education of board members is positively associated with companies' financial performance.

Normally, when board members act in various organizations, they observe the actions of other board members and this leads to an important organizational learning process, specifically concerning strategic practices. In the same way that these links can generate positive results, the opposite can also occur, such as in the mimicking of the adoption of discretionary practices that lead to financial results management or to the adoption of ethically questionable behavior.

When ethical standards are involved, problems can

arise that require the attention of outsiders, especially when board members are connected with companies with distorted or troubled shares on the stock market (Connelly & Slyke, 2012). From this perspective, the study by Chiu, Theo and Tian (2012), involving the relationship between board interlocking and the discretionary practices of managers in 1500 American companies ranked by Standard & Poor's (S&P 1500) found evidence that companies were inclined to adopt discretionary results management practices when board members were

linked to other companies with ratings agency classifications. On the other hand, Mindzak (2013) found that 120 Canadian companies minimized the adoption of discretionary accounting practices. Therefore, there is no consensus that board of director member networks really favor discretionary practices on the part of management. In this context, this study advances this discussion, in analyzing the relationship between board interlocking and results management in the Brazilian stock market, via the income smoothing method.

3 CHARACTERIZATION AND METRICS OF INCOME SMOOTHING

Income smoothing as an intentional way of cushioning or floating around some level of return is currently considered as normal in company management (Beidleman, 1973). In this way, it represents an attempt on the part of administration to reduce abnormal variations in profits. For Fudenberg and Tirole (1995), it consists of a process of manipulation of income or gains in order to make revenue streams less variable over the long run. For Michelson, Jordan-Wagner and Wootton (1988), income smoothing is a way in which managers select accounting practices in order to reduce fluctuations over financial accounting years, in accordance with generally accepted accounting principles.

Income smoothing is mainly characterized by a reduction in the variability of profits. For Scott (2012), this is the most interesting form of results management for risk adverse managers. Studies concerning this method show that accounting choices help managers to reduce variability in the compensation they receive, as well as identifying excessive fluctuations in company results over the long run. Understanding these aspects improves the accuracy of surveys carried out by market analysts.

In 1981, Norm Eckel published a paper titled "*The Income Smoothing Hypotheses Revisited*" in the journal *Abacus*, providing classifications for the different types of income smoothing (Belkaoui, 2003). For Eckel (1981), two types of smoothing exist: natural and intentional. Natural smoothing is presented as something inherent to a business and involves the result of actions taken by

management that are to the detriment of the profit generating process (Belkaoui, 2003). Intentional smoothing arises from the willingness of managers to engage in certain practices with the aim of obtaining results which are aligned with their interests (Castro & Martinez, 2009).

Ronen, Tzur and Yaari (2007) argue that intentional smoothing can be subdivided into real and artificial.

Real smoothing concerns economic choices that affect company cash flow. These stem from economic decisions taken by managers, such as reductions in training expenses, increases in advertising expenses, and sales of company assets (Martinez, 2001). Such practices are basically business conduct choices, which deliberately alter cash flows and smooth out fluctuations in results (Belkaoui, 2003). Artificial smoothing occurs with the adoption of accounting practices that transfer expenses and revenues from one accounting period to another. Such practices do not directly affect companies' current flows of profit, but do have an impact on future flows.

There are different metrics for capturing income smoothing practices. Among these, those proposed by Leuz et al. (2003) stand out. In order to meet the aims of this study, EM_1 and EM_3 were the only metrics used. The EM_1 metric assumes that managers can disguise changes in company performance via accounting information reporting choices (Leuz et al., 2003). Such choices can be measured by the ratio between the standard deviation in operating profit (OP_r) and the standard deviation in cash flow from operations (CFO), both divided by the total assets of the former period.

$$EM_1 = \frac{\sigma OP_r}{\sigma CFO}$$

1

In which,

EM_1 = income smoothing metric no. 1;

δOP_r = standard deviation in operating profit;

δCFO = standard deviation in cash flow from operations.

The result of the ratio between the two variables offers evidence of the influence of the discretionary power of

managers to manipulate profit, via alterations in the components of financial reports (Luiz, Nascimento & Pereira, 2008). The lower the scores obtained, the greater the smoothing practices, since the result reveals the level by which managers reduced profit variability.

Leuz et al. (2003) also argue that managers can use their discretionary powers to distort company economic per-

formance. The EM_3 metric detects the use of discretionary practices in the reporting of financial results. The scores are

$$EM_3 = \frac{|TA|}{|CFO|} \quad 2$$

In which,

EM_3 = income smoothing metric no. 3;

$|AT|$ = absolute value of total accruals in period t ;

$|CFO|$ = absolute value of cash flow from operations in

period t .

The scores obtained in the EM_3 metric identified discretionary practices that aimed to influence company operational performance.

4 METHODOLOGICAL ROUTE

The population of this study encompassed publicly traded Brazilian companies, which constitute the Bovespa Index (IBOV). The set of firms employed in the intentional sample is restricted to non-financial Brazilian companies that were components of the IBOV in May 2015 and feature the necessary information in order to estimate metrics no. 1 and no. 3 from Leuz et al. (2003),

over the six years from 2009 to 2014. The final sample was composed of 58 companies, representing 88% of those that form the IBOV.

In Figure 1, the study's predictive validation structure is presented, covering the conceptual and operational definitions for the variables analyzed, in accordance with the Libby, Bloomfield and Nelson (2002) model.

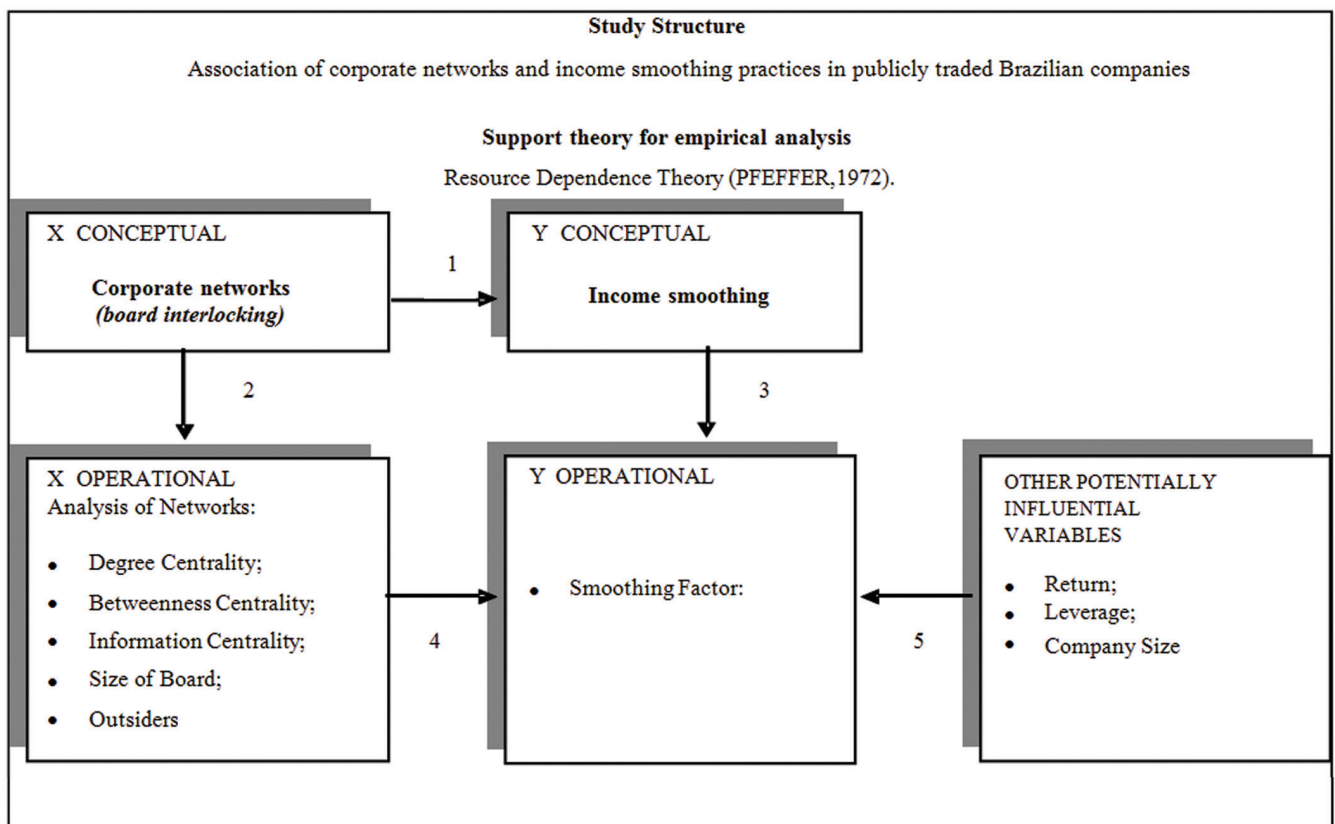


Figure 1 Predictive validity structure

Source: adapted from Libby et al. (2002)

Based on the resource dependence theory (Pfeffer, 1972), the study proposes to explain, via network constitutive elements, the practice of income smoothing. This is measured by the smoothing factor variable, obtained by grouping the EM_1 and EM_3 metrics from Leuz et al. (2003), which capture types of income smoothing: EM_1

detects whether managers disguise changes in company performance via financial reporting choices; and EM_3 detects whether managers use their discretionary powers to distort company economic performance. The variables for the study and their operational definitions are described in Figure 2.

Name of Variable	Abbreviation	Operational Definition	Form of Measurement	Expected Relationship	References
Smoothing Factor	SF	Metric employed to identify income smoothing practices.	Obtained by grouping smoothing metrics EM_1 and EM_3 (Leuz et al., 2003) into one single factor, via the factor analysis technique.		Leuz et al. (2003)
Degree Centrality	<i>Degree</i>	Metric used to express the number of ties adjoining one actor with other participants in the same network, in other words allowing for the evaluation of direct links between organizations.	Expressed as a percentage of the number of actors (companies) present in a network, minus one.	+	Wasserman & Faust (1994); Hanneman & Riddle (2005)
Betweenness Centrality	<i>Betweenness</i>	Captures the interactions between two non-adjoining actors. In other words, measures the indirect link between companies.	Represented by the sum of the number of geodesics (smallest distance that unites two points) between pairs of actors (companies), divided by the number of geodesics between organizations that share a board member.	+	Freeman (1979); Pitts (1979); Mendes-da-Silva (2010).
Information Centrality	<i>Information centrality</i>	Metric that identifies the ability of board members to receive information, resources and knowledge via his/her contacts.	Calculated via the ratio between non-redundant ties and the number of links in a network.	+	Stepherson & Zelen (1989); Burt (1983).
Size of the Board	SIZE_B	Important variable for outlining the corporate governance structure.	Natural logarithm of the number of board members in a company.	+	Forbes & Milliken (1999); Silveira, Barros & Famá (2003)
Outsiders	OUTS	Essential element for good corporate governance practices.	Percentage of the number of board members that do not perform executive roles out of the total number of board members in the company.	+	Forbes & Milliken (1999); Silveira et al. (2003)
Return	ROA	Verifies company performance.	Expressed as the ratio between company net profit and total assets.	+	Michelson et al. (1995)
Leverage	LEV	Verifies the level of company debt.	Represented as the sum of collectables divided by the total assets of an organization.	+	Iudicibus & Lopes (2004); Castro & Martinez (2009)
Company Size	SIZE	Proxy for the size of the company	Natural logarithm of the total assets of the company	-	Gu, Lee & Rosset (2005)

Figure 2 Variables for the study

Source: developed by the author.

In this study, the dependent variable is represented by the smoothing factor, obtained via factor analysis constructed by grouping the EM_1 and EM_3 metrics from Leuz et al. (2003). The independent variables are: degree centrality, betweenness centrality, information centrality, size of the board, and outsiders. Return, leverage and company size are employed as control variables.

The data was collected via two different means. In order to identify the data concerning boards of directors, the information contained in the reference forms available on the São Paulo Stock Exchange (BM&FBOVESPA) website was used. This information allowed for the obtainment of the variables and metrics employed in the social network analysis. Firstly, information about board members, such as full names and the companies in which they participated, was collected for each of the six years. Subsequently, with the help of the MS Excel software, square matrices that helped to identify the connections between companies were created. Following the creation

of these matrices, the Ucinet 6 and Net Miner 3.0 software programs were used to obtain the social network metrics.

In order to obtain the variables that were necessary for calculating the income smoothing metrics and the control variables, the *Economática* database was used. To handle the data, two types of analysis were employed: (i) factor analysis, and (ii) panel data regression analysis. Factor analysis was employed due to it being considered an important statistical technique that aims to evaluate sets of variables, with the intention of unveiling existing structures that are not directly observable. Regressions were used to test the effects of the constitution of corporate social networks on income smoothing, arising from changes in company performance via financial information reporting choices (EM_1); and the use of discretionary powers to distort company economic performance (EM_3). Panel data regressions, in accordance with Adkins (2010), comprise a combination of a cross sectional group of units that are observed over time.

5 DESCRIPTION AND ANALYSIS OF THE DATA

First, the results of the descriptive analysis of the analyzed variables are presented, as shown in Table 1.

Table 1 Descriptive analysis of variables

Variables	Average	Standard Deviation	VIF
Degree	0.428	0.518	1.574
Betweenness	0.007	0.022	1.309
Information centrality	0.403	0.226	1.783
SIZE_B	9.196	2.236	6.075
OUTS	8.429	2.375	5.582
ROA	5.688	13.843	1.526
LEV	0.374	0.583	1.072
SIZE*	34.82	88.33	1.307
EM_1	0.638	3.901	1.317
EM_3	0.943	4.460	1.695

*In million reais (R\$).
Source: data from the study.

The centrality variables (degree, betweenness and information centrality) show that the companies analyzed exhibit, on average, a low level of direct (0.428) and indirect (0.007) links, as well as 40% non-redundant ties. In the companies analyzed, the boards of directors are composed, on average, of nine professionals. This number is much higher than the minimum of three members established in Art. 140 of Law 6,404/76. This result is also higher than the number of board members found in studies by Mendes-da-Silva in 2010 (seven), Dooley in 1969 (one) and Davis in 1991 (seven). It can be inferred that the number of board members that participate in more than one company has grown over the years due to

a perception that they really do have potential to facilitate access to external resources, just as is claimed by the resource dependence theory, which views boards of directors as mechanisms for managing external resources (Pfeffer & Salancik, 1978), and acting to reduce uncertainty (Pfeffer, 1972). Considering that companies depend more and more on third-party resources, it seems suitable that directors act as connections between firms and the corporate environment, minimizing the uncertainty of contingency factors, as is argued by Hillman et al. (2000).

The control variables used in the study show that the companies exhibit, on average, a 5.69% return on total assets. Their capital structure is composed, predominantly, of own capital; third-party capital represents, on average, 37.4% of the sources of resources. It was also found that the companies had, on average, Total Assets of R\$34 million. With regards to the VIF (variance inflation factor), it was observed that all variables exhibited scores between 1 and 10, providing evidence of the inexistence of a colinearity problem.

Due to similar characteristics identified in the income smoothing variables captured by metrics EM_1 and EM_3 , the use of factor analysis was chosen in order to compose a single smoothing factor. The aim behind this choice is to compose a representative income smoothing factor so that, subsequently, this variable can be inputted into the panel data regression. One of the requirements for factor analysis is a high correlation between the variables to be grouped into factors. A strong correlation was observed between the variables EM_1 and EM_3 , of 66%, with a 1% degree of significance. This suggests a sharing of common factors between the variables, which justifies the use of factor analysis. The KMO (Kaiser-Mayer-Olkin)

and Bartlett sphericity tests were employed with the aim of confirming the results of the correlation matrix.

The KMO test, which compares the magnitude of the relationship coefficients between the variables with the magnitude of the partial correlation coefficients, exhibited a coefficient of 0.500, making it possible to apply factor analysis. The Bartlett test exhibited a 0.00 degree of

significance. Thus the null hypothesis that the correlation matrix is the identity matrix was rejected. It is therefore possible to show that a correlation between the variables exists, justifying the employment of factor analysis. Table 2 shows a description of the factors from the model and verification of the variance explained by the number of factors to be used in the model.

Table 2 Description of factors from model

Component	Auto-Value Total			Extraction of Sum of Squares		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	1.439	71.972	71.972	1.439	71.972	71.972
2	0.561	28.028	100.000			

Source: data from the study.

The use of the two factors corresponds to a total explained variance of 100%. However, it should be noted that using only one factor, the cumulative explained variance, it is approximately 72%. Therefore, factor analysis allowed for the grouping of variables EM_1 and EM_3 into one single factor that will be called the “smoothing factor” in the panel data regression.

In order to apply the panel data, firstly a pooled model (ordinary least squares – OLS) was used for the constitutive social network indicators, considered explanatory variables, and the smoothing factor as the companies’ income smoothing proxy. From the results, the panel diagnostic tests were carried out, with the aim of identifying the most appropriate model for the regression.

Initially, the Chow test was carried out, which verifies whether the pooled model is more appropriate, since the rejection of H_0 means that the fixed effects model is more convenient. The second test, Breusch-Pagan, refuted H_0 , confirming that the random effects model is more suitable for the pooled model. Finally, the Hausman test was used for the option between fixed and random effects. In line with Gujurati (2006), the underlying null hypothesis to the Hausman test is that the estimators of the fixed effects model and of the error correction model are not substantially different. Thus, if the null hypothesis (H_0) is rejected, it shows that the random effects model is not appropriate given the inconsistency in the estimators, and that the employment of the fixed effects model is preferable.

Table 3 Panel data tests

Tests	p-value
Chow	0.032
Breusch-Pagan	0.040
Hausman	0.012

Source: data from the study.

From the results in Table 3, it was assumed that the use of the fixed effects model would be more consistent for

the sample studied. Table 4 shows the results of the panel data regression model with fixed effects for the variable.

Table 4 Smoothing factor: panel data with fixed effects

Significant Variables	Coefficient	Statistic t	Expected sign	Obtained sign
Degree	0.3592	2.455**	+	+
Betweenness	1.6506	0.3841	+	+
Information centrality	-0.1303	-0.5333	+	-
SIZE_B	0.3703	0.6197	+	+
OUTS	-0.4149	-0.615	+	-
ROA	0.0343	3.136***	+	+

Table 4 *Continued*

LEV	-0.0011	-4.286***	+	-
SIZE	-0.2167	-2.087**	-	-
Constant	0.0597	0.0513		
R-squared Adjusted	21.83%			

Significant to a degree of 5%; * Significant to a degree of 1%
Source: data from the study.

It was found that the presence of direct ties, identified via the degree centrality metric, exhibits a positive and significant relationship ($\beta = 0.3592$; $p < 0.05$) with the practice of income smoothing. This suggests that the creation of direct ties positively influences the probability of an organization managing it results. A positive and significant relationship with return ($\beta = 0.0343$; $p < 0.01$), and a negative relationship with the debt/equity ratio ($\beta = -0.0011$; $p < 0.01$) and company size ($\beta = -0.2167$; $p < 0.05$), were also noted, indicating that return, indebtedness and size of organization can have an influence in adopting the practice of income smoothing. The values found provide evidence that the discretiona-

ry powers of managers over operational decisions and reporting choices can be, on average, 22% explained by the presence of direct ties between the companies.

A positive relationship of the indirect ties (betweenness) and size of board (SIZE_B) coefficients, and a negative relationship of the presence of non-redundant links and outsiders, with the practice of income smoothing, was also observed. However, the absence of significance does not allow for it to be affirmed that such constitutive elements have an influence in the adoption of income smoothing practices. Table 5 shows the estimators for income smoothing, measured by the smoothing factor.

Table 5 *Smoothing factor: estimator parameters for income smoothing*

Variables	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Degree		0.3175			0.3592
Betweenness		2.524**			2.455**
Information Centrality		0.6440	0.2132		-0.1303
		0.1640	0.9783		-0.5333
SIZE_B				1.0728	0.3703
OUTS				1.616	0.6197
				-1.1982	-0.4149
				-1.961*	-0.615
ROA	0.0128	0.0352	0.0335	0.0129	0.0343
	1.786*	3.289***	3.041***	1.839*	3.136***
LEV	-0.0010	-0.0011	0.0007	-0.0009	-0.0011
	-3.733***	-5.555***	-4.012***	-3.261***	-4.286***
SIZE	-0.2182	-0.2244	-0.2007	-0.2005	-0.2167
	-2.545**	-2.264**	-2.043**	-2.269**	-2.087**
Constant	-0.0960	-0.0311	-0.6433	0.1104	0.0597
	-0.1117	-0.0305	-0.6430	-0.1128	0.0513
R-squared	33.20%	48.81%	47.20%	34.43%	49.04%
R-squared Adjusted	11.17%	23.43%	21.67%	11.84%	21.83%

Significant to a degree of 5%; * Significant to a degree of 1%
Source: data from the study.

The estimated coefficients in regression 1 show that the control variables leverage and company size exhibited a negative and significant relationship with the practice of smoothing, indicating that larger companies and those

with a higher level of indebtedness are more inclined to adopt discretionary practices.

In regression 2, by including the variables regarding firm centrality, together with the control variables, it was

found that the degree variable ($\beta = 0.3175$; $p < 0.05$) exhibits statistical significance, supporting the idea that a direct link between companies influences in the adoption of income smoothing practices. Another factor that warrants mentioning are the values of the coefficients of determination, R^2 , varying between 11.17% and 23.43%, indicating a considerable explanatory power in the independent variables. It is worth highlighting that companies belonging to the Bovespa Index are more inclined to smooth their results when their board members participate in other companies

via social networks, as well as obtaining greater performance and low levels of debt.

The characteristics of the Brazilian capital market lead to think that practices such as income smoothing may be influenced by the presence of professionals acting simultaneously in two or more companies. Therefore, these conclusions point to the importance of boards of Directors, not only in controlling the decisions taken by executives, but also as important channels of resources for organizations, which is a characteristic supported by the resource dependence theory.

6 CONCLUSIONS

One of the methodological contributions of this study concerns the creation of an income smoothing variable (smoothing factor) based on the grouping of metrics for detecting smoothing arising from changes in company performance. This was obtained via financial reporting choices (EM_1) and the use of discretionary powers to distort company economic performance (EM_3), consistent with Leuz et al. (2003).

It was found that the companies analyzed have, on average, nine board members who participate in other boards of directors. This result for Brazilian companies shows that they have already understood the strategic importance in the configuration of corporate social networks in obtaining third-party resources. This perception is consistent with the assumption of the resource dependence theory, which underscores the potential of board member social networks in the viability of external resources. Corporate networks, in this case, act as mechanisms for managing external resources, contributing towards diminishing the uncertainties concerning the obtainment of financial resources, and in the outlining of actions that are strategically relevant for the future of companies.

The results suggest that the direct links between organizations via their board members have a positive influence in the probability of companies managing their financial results via financial information reporting choices and of the use of discretionary powers to distort economic performance. In accordance with Davis (1991), a company's position in the network influences in the adoption of similar practices. It is therefore believed that companies that have connections with other firms have privileged access to a range of information, and this increases the possibility of learning new practices and applying them in the companies belonging to their networks. The results found are consistent with those from

Kosnik (1987), Davis (1991), Mizruchi (1996), Haunschild (1993), Stearns and Mizruchi (1996), and Chiu et al. (2013), and would contradict the findings of Mindzak (2013). Regarding the links between organizations via professionals on boards of directors, it is concluded that they influence in the adoption of corporate and accounting practices in the sample analyzed.

Evidence of non-redundant ties (information centrality) was also found, and the presence of outsiders on boards tends to have a negative influence on income smoothing practices. However, the absence of statistical significance does not allow for these facts to be confirmed. It was believed that the presence of professionals acting solely on boards of directors motivated the practice of income smoothing, however this was not proven. One possible explanation could be the existence of a high number of professionals who act solely on boards, and that this is a common characteristic in the Brazilian stock market, thus making this variable of little influence.

The results provide evidence that the presence of board interlocking influences the quality of financial reporting. Companies that share board members with other organizations, where income smoothing occurs, tend to manipulate their financial results more easily. Yet, the results obtained are limited to Brazilian companies belonging to the Bovespa Index (IBOV) from 2009 to 2014. The limitations also relate to the variables selected, as well as the data analysis techniques and information available on the BM&FBOVESPA website and the Bloomberg database. In future studies, the relationship between board interlocking and other practices used in the Brazilian capital market, such as accounting conservatism and other forms of results management, could be investigated. Possible theoretical and empirical associations between the presence of board interlocking and the cost of capital for Brazilian companies could also be examined.

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