GESTÃO, FINANÇAS E CONTABILIDADE

BIASED COMPANIES VALUATIONS: AN ANALYSIS BASED ON REPORTS OF PUBLIC OFFER OF SHARES

AVALIAÇÕES DE EMPRESAS VIESADAS: UMA ANÁLISE DOS LAUDOS DE OFERTA PÚBLICA DE AÇÕES

CALIFICACIONES DE EMPRESAS SESGADAS: UN ANÁLISIS DE LOS INFORMES DE ACCIONES DE OFERTA PÚBLICA

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ABSTRACT
This study aimed at analyzing the valuation reports for IFO (Initial Public Offering) of Brazilian publicly-traded companies to investigate the existence of some possible bias by the appraisers. Therefore, values of several ongoing valuations were analyzed based on the reports provided by CVM. It was chosen Wilcoxon non-parametric test, since the sample does not present normality. Statistical tests have confirmed the hypothesis of an optimistic bias in

reports demanded by the evaluated companies themselves, which, according to the literature, come from some influences that may affect their relationship. The results have indicated that there is a bias in share value; so, when IFO reports are demanded by the evaluated company itself, on average, the valuation by the discounted cash flows method, subjective by itself, presents higher values than the valuation by the weighted average market method. However, in reports hired by external organizations, there were no significant differences among values obtained in valuations that were carried out between the objective and subjective methods by the tests. Appraisers, evaluated companies and investors can use the results from this study to prepare and, mostly, analyze future reports.

Keywords: Valuation; Biases; Valuation Report; Initial Public Offering.

RESUMO

O presente estudo objetivou analisar os laudos de avaliação para oferta pública para aquisição de ações das companhias abertas brasileiras, de forma a verificar a existência de possível viesamento por parte dos avaliadores. Para tal, foram analisados os valores das diversas avaliações constantes nos laudos disponibilizados pela CVM. Optou-se pelo teste não-paramétrico de *Wilcoxon*, em virtude de a amostra não apresentar normalidade. Os testes estatísticos confirmaram a hipótese da presença de viés otimista nos laudos que são demandados pelas próprias empresas avaliadas, que, segundo a literatura, origina-se das influências que podem afetar a relação das partes. Os resultados indicam que existe viés no valor das ações ou seja, quando os laudos de OPA são demandados pela própria empresa avaliada, em média a avaliação pelo método dos fluxos de caixa descontados, subjetiva por natureza, apresenta maiores valores do que a avaliação pelo método da média ponderada de mercado. No entanto, nos laudos contratados por organizações externas não foram detectados pelos testes diferenças significativas entre os valores encontrados nas avaliações realizadas entre os métodos objetivos e subjetivos. Avaliadores, avaliados e investidores podem se utilizar dos resultados do estudo na elaboração e, sobretudo, na análise dos laudos futuros.

Palavras-chave: Valuation; Vieses; Laudo de Avaliação; Oferta Pública de Ações.

RESUMEN

Este estudio tuvo como objetivo analizar los informes de valoración de la oferta pública de empresas de capital abierto en Brasil con el fin de comprobar la posible viesamento por los evaluadores. Para ello, los valores analizados de las diversas evaluaciones en curso en los informes puestos a disposición por la CVM. Optamos por la prueba no paramétrica de Wilcoxon, debido a que la muestra no presenta normal. Las pruebas estadísticas confirmaron la hipótesis del sesgo optimista en los informes que son demandadas por las mismas empresas evaluadas, las cuales, de acuerdo con la literatura, se origina a partir de las influencias que puedan afectar a la relación entre las partes. Por otra parte, los informes contratados por organizaciones externas no fueron detectados por las pruebas de diferencias significativas entre los valores encontrados en las evaluaciones llevadas a cabo entre el objetivo y los métodos subjetivos. Evaluadores, evaluados y inversores pueden utilizar los resultados del estudio en la preparación y, sobre todo, el análisis de los informes futuros.

Palabras clave: Valoración; Sesgos; Informe de Evaluación; Oferta pública de acciones.

1   INTRODUCTION

There are some prerequisites to sound-decisions making such as understanding what determines a company's value and how to estimate it. So, estimating how much a company is worth and determining its fair price or the return of an equity investment require mastery of valuation techniques, since valuation process involves subjectivity when defining assumptions and selecting data sources (DAMODARAN, 2007). An outcome reliability depends on the adopted practices, as well as market apprehension and a built-in logic regarding entrepreneur's decisions, so, the Securities and Exchange Commission (CVM) can use this subjectivity to defer or not public offerings of shares submitted to them.

It is worth examining if the process of determining the accounting profit gets hold of factors that affect stock price, considering the hypothesis that markets are efficient (KOTHARI, 2001). Damodaran (2007) pointed out that valuation bias comes to light in three ways: inputs used during the valuation, post-valuation adjustments and reflex of the difference between estimated value and "fair value".

This theme has been discussed for a long time in the national literature; however, the first companies' valuations occurred only in the 1980s. It grew very fast in the mid-1990s and has grown substantially since then, due to the opportunity for abnormal gains in emerging economies (MARQUES; SOUZA, 2012). However, some researches aim at approaching the company valuation techniques, and few dedicate themselves to bias-related evidences in public offering reports. Cunha, Martins and Neto (2012) are the precursors in this research area and infer that voluntary valuation presents bias in economic-financial performance, and the reverse to cancel registration. The logic applied during valuation processes can result in "values" that are susceptible to information asymmetry, as well as raise doubts or, moreover, present the appraiser's bias for the applicant's benefit.

Damodaran (2007), reports that there are two extreme points of view on valuation. The first one defends that there are those who believe to be an exact science which, when properly fulfilled, presents little possibility for the analysts' opinions or human error; While the second one defends those who consider valuation a way of art in which insightful analysts can manipulate the numbers in order to obtain the desired result. According to Rodrigues and Sallaberry (2013), valuation reports are important tools to send information from companies

to the market in general. However, there are some questions regarding those reports quality. In 2007, corporate valuation reports were in the limelight of the Securities and Exchange Commission (CVM), due to some complaints from a minority group of shareholders that were dissatisfied concerning the exchange ratio proposed by the company, such as incorporation. At that time, the CVM perceived that there was a failure on reports production and pointed out the lack of clarity in its purpose (CAPITAL ABERTO, 2015).

Thus, this study aimed at identifying a bias existence concerning the valuation of public offering of shares and valuation for public offer of shares during its processes in companies from the appraiser's viewpoint, when he analyzed the reports of public offering of shares made, available on real estate securities commission (CVM) website from 2006 to 2015. So, this study is structured in a brief review of literature, followed by these presentations: the studied sample and the adopted methodology, as well as the statistical tests, results valuation and final considerations.

2   LITERATURE REVIEW

2.1   *Valuation*

Povoa (2012) pointed out that valuation is the technique of reducing the subjectivity process of something that is subjective by itself. It is estimating what something really is worth, such as financial assets or liabilities, corporations, corporate debts, patents, among others. Palepu, Healy and Bernard, (2004, *apud* Lopes et al, 2008) have already defended that valuation is the process of converting a projection into an estimate of value in a company or some part of it.

According to Damodaran (2007), there are several valuation models, ranging from the simplest to the most sophisticated ones. These models often make different assumptions about foundations that determine value, but share some common features and can be broadly classified. It is worth mentioning that they play a central role in transactions of acquisitions and mergers among companies. Fernandez (2013) also defends that anyone involved in corporate financial area is indispensable to understanding the valuation mechanisms. This is not only due to the importance of valuation in acquisitions and mergers, but also because both processes of valuing the company and its business units help on identifying the creation sources of economic value and also destruction inside the company.

The evaluating methods of companies can be classified in six groups:

Table 1. Main business valuation methods

Balance Sheet	Result demonstration	*Goodwill*
- Book value - Adjusted book value - Liquidation value - Substantial value	- Multiples - Per - Sales - P / EBITDA - Other multiples	- Classic - Union of European - Accounting Experts - Abbreviated income - Others
Cash flow Discounted	**Value creation**	**Options**
- Equity cash flow - Free cash flow - Capital cash flow - APV	- EVA - Economic profit - Cash Value added - CFROI	- Black and Scholes - Investment Option - Expand the Project - Delay the Investment - Alternative uses

Source: Fernandez (2013).

Damodaran (2007) highlights the three methodologies most commonly used in company valuation processes. The first one is the discounted cash flow valuation that associates the present value of a given asset to the present value of expected future cash flows related to that asset. The second approach is the relative valuation, which aims at estimating an asset value in the present, comparing it with the pricing of certain assets that are equivalent to the asset under analysis. Finally, the valuation of contingent rights, which focuses on the pricing of assets with options characteristics.

Still, according to that author, based on the cash flow methodology, when a value of a company is discounted, corresponds to the estimated cash flow, discounted by the business risk rate. So, asset acquisitions (companies) endorse the expectation of generating future benefits, in other words, nowadays the company value does not correspond to the perceived value, but rather the investors' expectation concerning the company's cash flow generation. This method applies the following techniques: dividend discount model, discounted cash flow (shareholder) model and discounted cash flow model (of the company).

The relative valuation, which shares the same prerogatives of the equity valuation method, has the assets' value obtained by comparison with other similar assets (companies), in the market. Assets must be comparable and have a standardized price. The techniques employed by this method are the relative valuation, equity valuation, price/profit of similar shares and the multiples model for billing. Finally, the valuation by contingent rights. This is a contingent option or right and an asset whose return is associated to the occurrence of some

events and enables its holder to buy or sell a specified amount of a certain asset at a fixed price at or before the option expiration date (DAMODARAN, 2007).

Table 2. Main reasons for valuation achievement

Reason	Role
Buying and selling operations	To set a ceiling for the buyer and a minimum price for the seller.
Valuation of listed companies	For example, assign target price and decide whether to buy, hold or sell shares.
Public Offerings	It serves to justify the price that shares are offered to the public.
Inheritances and Wills	Compare the value of shares with assets.
Compensation systems (based on value creation)	Quantify the bonus received by the executives from a company.
Identify the value drivers	Identify and order the factors that most contribute to the value of a company.
Strategic decisions about the company life	Decide whether to close, sell, merge or restructure the company.
Strategic planning	Decide in which business units you will bet on and which ones to end up.

Source: Adapted from Fernandez (2007).

As Fernández (2007) have already observed, several reasons lead to the application of valuation techniques, such as techniques of purchasing and selling assets or companies, valuation of listed companies, shares valuation, public offering of shares and strategic decisions about company's life. And the others do not appear frequently in the literature.

2.2   Public Offering of Shares

The appraisal reports are provided for in Federal Law 6,404/76 and are regulated by CVM Instruction Nº 361/2002. Besides complying with legal requirements, appraisal reports have been an important tool for transmitting information from companies to the market in general and, mainly, to shareholders, in order to allow the valuation of current position and creation of perspectives for future performance of companies (SALLABERRY, 2013). Article 8 from this instruction establishes that, whenever it is a IFO (Initial Public Offering), formulated by the company itself, by the controlling shareholder or by a person related to it, or by an administrator or someone close to him, a report appraisal will be prepared from the chosen company, except in case of control alienation.

An appraisal report must contain economic value of the shares issued by companies, as well as other valuation methodologies of the company, based on article 24 of NI (Normative Instruction) of CVM Nº 361/2002 and article 4th -A of Law Nº 6,404/1976. The IFO reports mean a potential public tender offer for the outstanding common shares issued by a company to be launched by its shareholder and the company (Offerer) or aiming at canceling the company registration (CVM, 2002).

2.3   Biases

According to Damodaran (2007), bias in valuation starts from some points as the company chooses to be evaluated, the information collection is required for valuation, financial statements are used to contain managerial decisions, as well as market estimate regarding the company value. While Martinez (2007) points out that valuation's bias incorporates the appraisers' optimism or pessimism. For the author, for selection biases, each analyst is assumed to reveal his or her true expectations regarding the firm's performance. However, those analysts who believe the company will show a poor performance choose not to release their estimates. Thus, since these analysts omit to point out their actual forecasts, the market consensus reflects higher expectations than they could have in relation to the whole population (DAMODARAN, 2007).

Bias has internal and external influences in the process of evaluating companies. The internal influences comprise the techniques to be used in the process, as well as the information that will make up the analysis, since information about the statements is filled with management information in order to overvalue the company's assets. In addition, biases do not always correspond the expectations and analyses of the market. On the other hand, the external influences reflect the analysts' expectations that can influence valuations and omit pessimistic expectations or even with excess of optimism (MARTINEZ, 2007; DAMODARAN, 2007).

3   METHODOLOGY

This study is descriptive, as asserted by Cervo and Bervian (1996), in order to identify characteristics of corporate valuation reports. It is procedurally classified as a documentary, due to its importance to collect valuation reports in databases. These, on the other hand, are classified as secondary source items, since they have already been analyzed by the valuing entity (RAUPP and BEUREN, 2006). The information extracted from these reports was approached quantitatively, since statistical techniques were used in its treatment (RICHARDSON, 1999).

3.1   Sample

In order to achieve the aims of this study, a survey was carried out concerning the valuation reports of companies for IFO, available on the CVM site. There are 116 reports from 2006 to 2015 since no reports were found before 2006.

Biased Companies Valuations: An Analysis Based on Reports of Public Offer of Shares

All the reports were analyzed in order to collect information essential for the development of this study. The evaluated company's name, the claimant, the kind and reason for the record are among the data extracted from the documents, as well as the companies evaluations are carried out by different methodologies. Due to this research goal, only the valuation values of both main methodologies were collected: discounted cash flow (economic value) and weighted average of the market (share value).

After reading the 116 reports provided by CVM, the obtained data were assembled in a spreadsheet for analysis. Part of the reports did not show the valuation in the target methods of this study (discounted cash flow and weighted average market) due to the specific characteristics of some companies. Thus, 40 reports were excluded from the sample consequently, 76 pieces remained to be carried out at the research.

3.2   Hypotheses
The following hypotheses were formulated to reach the aim of this research and answer its question, based on Damodaran postulate (2007):

• Hypothesis 1: According to IFO (Initial Public Offering) reports, the economic value of shares tends to be greater than the share value when the appellant of such valuation is the evaluated company.

• Hypothesis 2: According to the IFO (Initial Public Offering) reports, the economic value of shares tends to be equal to the share value when the appellant of the valuation is the parent.

• Hypothesis 3: According to IFO (Initial Public Offering) reports, the economic value of shares tends to be equal to the share value when the appellant of valuation is the other company (neither the company itself nor the parent company).

Thus, the economic value is considered as the value stipulated by the appraiser from the discounted cash flow method, taking into account the analysis carried out in this study. And, as share value, it is the one observed as a weighted average market, so, the average value in which the company's shares have been traded during the last twelve months.

3.3   Tests
Firstly, it was chosen to divide the IFO reports into three groups to test the hypotheses already raised according to the applicant of each evaluation. The reports demanded by the evaluated company are allocated in the first group. Then, the ones demanded by the parent company are in the second one and; In the third group, reports are demanded by entities

external to the company. The grouping of reports, according to the applicants, is explained by bias possibility in the evaluations, as defended by Damodaran (2007), Khotari (2001) and Martinez (1999). Thus, the reports divided by groups and year of issue are shown in Table 1.

Table 1: Clustering of reports

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Group 1 **Own company**	2	1	2	-	-	1	2	2	-	1	11 (15%)
Group 2 **Parent Company**	3	6	9	2	2	4	5	3	5	6	45 (59%)
Group 3 **External company**	2	1	3	-	8	1	3	1	1	-	20 (26%)
Total	7	8	14	2	10	6	10	6	6	7	76

Source: survey data

The test of means among paired and dependent variables was established as a statistical procedure to test raised hypotheses: a) economic value (EV) and b) share value (SV). The test was carried out among the variables within each group, in order to identify possible biases.

The normality test of observations was carried out to define the adequate test of means that, according to Field (2009), is applied to compare values of a sample with a normal distribution model, of the same mean and variance from obtained values in the sample. Shapiro-Wilk test was chosen with a 1% significance level.

As the sample data did not present normality, so, the possibility of using parametric tests, such as Student T-test, was ruled out. And this one, according to Field (2009), has as fundamental premise the importance of a sample distributed in a normal way.

Accordingly, the non-parametric for paired Wilcoxon test, which is as effective as the t-tests for pooled variance and for separate variances, under ideal conditions for such tests. And, it is probably even more effective when the restrictive assumptions of T test are not met (LEVINE; BERENSON; STWPHAN, 2005).

Wilcoxon's rank-sum test is almost as effective as t-tests for pooled variance and for separate variances under the right conditions for such tests, and probably, it is even more effective when the restrictive assumptions of t-test are not met. Besides, the Wilcoxon's rank-sum test can be used when it has only ordinal data, as it often happens in studies of consumer's behavior and market research (FIELD, 2009). The tests carried out using XLSTAT tool showed the following null hypothesis: H0: μEV = μSV.

4   DATA ANALYSIS

Classification and tabulation of valuation values of companies in the methodologies of discounted cash flow and weighted average market were carried out just after IFO (Initial Public Offering) reports collection on CVM site. Brief descriptive statistics of sample are shown in Table 2:

Table 2: Descriptive Statistics

Groups	N	Variables	μ	σ
Group 1 Own company	11	Economic value	34.7391	29.0675
		Share Value	25.7940	17.5233
Group 2 Parent company	45	Economic value	12.0504	75.1941
		Share Value	17.1202	16.6881
Group 3 External company	20	Economic value	39.7881	85.0736
		Share Value	29.1745	47.3117

Source: survey data

According to data in Table 2, it can be observed that, in Groups 1 and 3, the economic value is, on average, higher than share value, also the standard deviation shows greater oscillation of EV values in relation to SV values. An opposite answer can be observed for group 2, that is, the average value of share is higher than the average of economic value. In the group, it is also shown that SV standard deviation is higher than EV.

It should be emphasized that high values of standard deviation are a result of high variability among share values of each evaluated company. While some of them are represented by cents and others are represented by hundreds reais. This factor does not represent any failure or impropriety of the collection, since it is a specific policy of each company and it is in accordance with the normative forecasts.

Sequentially, Shapiro-Wilk test was carried out to analyze the normality observations, in order to subsidize the right statistical tests choice to the case on-screen. The test showed the following results:

Table 3: Shapiro-Wilk normality test

Groups	N	Economic Value (EV)		Share Value (SV)	
		p-value	Hypothesis of normality (H$_0$)	*p-value*	Hypothesis of normality (H$_0$)
Group 1 Own company	11	<0.0001	Rejected	0.0053	Rejected
Group 2 Parent company	45	<0.0001	Rejected	<0.0001	Rejected
Group 3 External	20	<0.0001	Rejected	<0.0001	Rejected

Source: survey data

Biased Companies Valuations: An Analysis Based on Reports of Public Offer of Shares

According to the analysis of the test results, *p-value* in all groups and variables was below α value, even at 1% significant level. Thus, the null hypothesis was rejected in favor of the alternative in all cases. Thus, it is evidenced that the variables do not present normal distribution and, therefore, they need non-parametric procedures to test mean differences of variables.

The means of each variable (SV and EV) were tested within each group (1, 2 and 3), in order to detect if there were differences in subjective evaluations (EV), depending on the applicant's IFO report. The results of the tests are shown in Table 4:

Table 4: Wilcoxon hypothesis test

Groups	N	μ_{EV}	μ_{SV}	$D\mu_{EV;SV}$	*p-value*	α (5%)	Interpretation
Group 1 **Own company**	11	34.7391	25.7940	8.9451	0.0454	0.05	H_0 Rejected
Group 2 **Parent company**	45	12.0504	17.1202	-5.0698	0.0579	0.05	Do not reject H_0
Group 3 **External company**	20	39.7881	29.1745	10.6136	0.1313	0.05	Do not reject H_0

Source: survey data

The Wilcoxon mean test was carried out taking into account the null hypothesis when there is no difference among valuations in the EV and SV methods in each of the groups. It can be seen from Table 4 that H_0 was rejected in favor of H_1, in the observations of group 1, at a 5% significance level. Consequently, when IFO reports are demanded by the evaluated company itself, on average, the valuation by discounted cash flows method, subjective by itself, presents higher values than valuation by the weighted average market method. In this context, hypothesis 1, raised in this study, is confirmed. This result is similar to the one found out by Santos and Cunha (2015), who analyzed the averages of the fair value, share price and observed a positive difference between them. Statistically, on average, the fair value per share is higher than the share price in situations where the contracting company of valuation is itself evaluated.

On the other hand, in groups 2 and 3, formed by reports demanded by the parent company or external companies, *p-value* was above α value. Thus, it is not allowed to reject the null hypothesis at 5% significance. However, H_0 would be rejected in group 2 at a 10% significance, as well as in group 1. Therefore, it cannot be confirmed that IFO reports, requested by the parent company or by other companies, have, on average, higher values in the valuation according to the discounted cash flows method, when compared to the values presented in the valuation by the weighted average market method. So, hypotheses 2 and 3

from this study are also confirmed. Thus, the results are in accordance with that one established by Khotari (2001) and Martinez (1999).

Santos and Cunha (2015) have observed that the fair value per share is lower than the share price in some situations when the contracting company of valuation is neither the evaluated one nor its parent company. Thereafter, the obtained results of hypothesis 2 have corroborated with the ones obtained by the authors. However, they differ from group 3, in which the authors infer that fair value per share and share price are the same in situations when the contracting company of valuation is the parent of the evaluated company.

The optimistic bias of appraisers, observed in reports from group 1, confirms the findings of Damodaran (2007) and Martinez (2007), regarding the contracting one's influence on the valuation results. The bias has been evidenced in the methodology of discounted cash flows and other methods that allow the appraiser to take different roles during the evaluation process. Damodaran (2007) also points out that valuations' bias is not considered by analysts at the moment of decision making, and this can cause problems to the process.

5   CONCLUSIONS

This study aimed at analyzing valuation reports for public offering to acquire shares from Brazilian publicly traded companies, in order to check the existence of possible bias based on appraisers, when assigning values to the organizations. So, values of several reports' valuations were analyzed when provided by CVM.

Bias can come from institutional factors, such as information available to the appraiser, which may contain managerial features as well as manipulation of results. The company may also influence the appraiser by payment linked to underestimation or overestimation. Factors inherent to the appraiser himself may also biases reports as intrinsic optimism, limitations of the staff or even involuntary errors of estimation.

The results have suggested that there is a bias concerning the shares value, when IFO reports are demanded by its own evaluated company. This is because, on average, valuation by the discounted cash flows method, subjective by itself, presents higher values than the valuation by the weighted average market method. However, in reports hired by external organizations, significant differences among values were not detected by the tests in evaluations that were carried out between the objective and subjective methods.

The hypothesis concerning the presence of optimistic bias in reports demanded by their own evaluated companies was obtained by the statistical tests application. And, according to the literature, it comes from the influences that can affect the parties relationship. Ergo, it is evident that this study achieved its goal.

The results recorded by this study suggest some ways to be explored in future researches, since they empirically identify and corroborate fragile points during the companies' evaluation, which directly impacts operations that are carried out by appraisers, evaluated ones and investors as well as require attention from all parties.

It is noteworthy that the results obtained in the tests have shown small ranges when compared to the adopted level of significance and, therefore, slight variations in the sample could have changed these studied conclusions. In addition, the absence of normality in the collected data made other robust statistical tests impossible to be carried out. Thus, it can be considered that the sample was characterized as a limiter of this study.

This research aimed at instigating delving into research regarding this theme and it was limited in analyzing the existence or not of biases, so, it was not possible to identify the exact points that originate them. Thereby, it is suggested that future studies should be carried out in specific reports, in order to identify and classify these points that biased the evaluations. Other valuation reports can also be analyzed, such as the ones from closed-end companies or business conglomerates.

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