

ADOPTION OF IFRS AND THE PROPERTIES OF ANALYSTS' FORECASTS: THE BRAZILIAN CASE

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ABSTRACT

This study evaluates the possible benefits of the adoption of IFRS, by investigating the statistical properties of analysts' projections in the years around their adoption. We believed the question of whether analysts benefited from the adoption of IFRS, in terms more accurate and less biased forecasts, is of interest to market participants because of the importance of analysts' projections to investment decisions. Using data from Thomson Reuters I/B/E/S, we documented the statistical properties of analysts' quarterly earnings projections in the years around the adoption of IFRS in Brazil (2007 to 2011). Characteristics such as accuracy, bias and precision of analysts' forecasts are useful in different situations. The results indicate that the accuracy improved with increased coverage and for more profitable firms. Univariate and multivariate tests did not indicate significant changes in the accuracy and bias of the forecasts in the years around the adoption of IFRS. As a result of this study, IFRS adoption cannot be viewed as a panacea for the problems of accountancy and inefficiencies of the capital market. The complexities of the adjustments to the new accounting rules and the slow process of consolidating the conversion of financial statements can partially explain the results found here. Undoubtedly, the projections of analysts regarding Brazilian companies have value and notwithstanding the insignificance of the shift to IFRS documented in the study period, the forecasts need to be placed in context and examined to find those that have conditions to be more effective. Understanding how these professionals operate in average terms is relevant from both an academic and practical standpoint.

Keywords: Earnings projections; analysts; accuracy; bias; IFRS.

Área Temática: Mercados Financeiro, de Crédito e de Capitais

1. INTRODUCTION

An important part of analysts' work in the capital market is the projection of future earnings, because this is a key variable for stock valuation models. Good projections of future results are a prerequisite for adequate measurement of the fair value of a stock.

In this context, it is important to analyze the characteristics (or properties) of these projections by analysts in the capital market. Are they accurate? Is there some type of bias? Knowing the accuracy of analysts' projections provides important support to guide investors regarding the validity (or limitations) of these projections for their valuation models.

For the purpose of identifying the general characteristics of analysts' projections for Brazilian companies, in this article we seek to document the performance of these important information intermediaries in two specific aspects: bias and accuracy.

The study is focused on the quarterly earnings projections for Brazilian firms covering the period from the first quarter of 2007 through the fourth quarter of 2011, predominantly those with shares listed for trading in the Novo Mercado (New Market) segment of the São Paulo Stock, Commodity and Future Exchange (BM&FBovespa). The investigation is based on the premise that the best representation of the market's expectations can be obtained from a central tendency measure of the distribution of analysts' projections.

This study innovates by evaluating the possible benefits of the adoption of IFRS in Brazil, by investigating the statistical properties of analysts' projections in the years around their adoption. We believed the question of whether analysts benefited from the adoption of IFRS, in terms more accurate and less biased forecasts, is of interest to market participants because of the importance of analysts' projections to investment decisions.

Brazil adopted International Financial Reporting Standards (IFRS) starting in 2008 after the enactment of Lei 11,638 of December 28, 2007, which amended key provisions of the Law of Corporations (Law 6,404/76) regarding accounting standards. According to Antunes et al. (2012), the main innovation of the process of convergence to international standards is that Brazilian accounting practice is now more based on the interpretations issued by the Accounting Pronouncements Committee (*Comitê de Pronunciamentos Contábeis* - CPC) than on mere application of legal rules as previously. This presumably brings relevant implications for the quality of accounting information and for those that rely on this information, such as investors and financial market analysts.

In general lines, the analyses performed permit concluding that in the period studied the projections presented by Brazilian analysts demonstrated a significantly pessimistic bias. The accuracy of these projections was on average positively influenced by the number of analysts covering a firm and negatively by firm size. Regarding IFRS adoption, the results do not show significant benefits in the statistical properties of the forecasts, both with respect to accuracy and bias.

The article is divided into six sections besides this introduction. In the next section we discuss the concepts of accuracy, bias and precision and in the third we review the literature on adoption of IFRS and analysts' projections. We then explain the research method and the database in the fourth section and discuss and analyze the results of univariate and multivariate analyses covering the years around the adoption of IFRS in Brazil the fifth section. We close the article with a set of conclusions and implications for those that rely on analysts' forecasts for stock valuation models.

2. CLARIFICATION OF CONCEPTS: ACCURACY, BIAS AND PRECISION

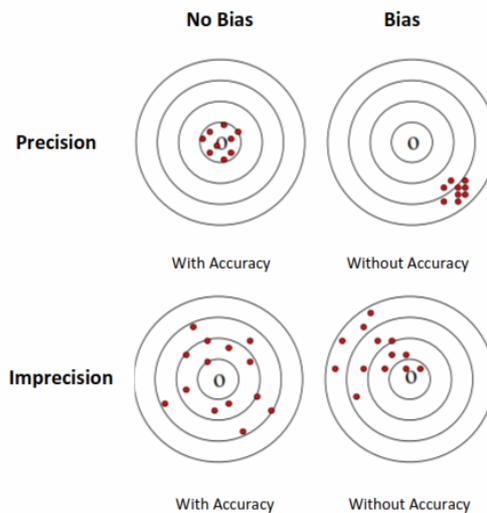
In examining the earnings projections of analysts, both from an individual and consensus perspective, various approaches can be employed. One alternative is to identify the statistical properties of their projections. The accuracy, bias and precision (or reliability) of the projections are examples of aspects evaluated and tested to observe whether analysts are doing a good job.

The precision or reliability of a set of estimations is related inversely to the variance (or standard deviation): the lower the variance is, the higher the precision will be. Bias is an error in the estimations that makes the average value estimated for a parameter to be systematically different from its true value. The level of accuracy is defined by the combination of or precision and bias. In simple terms, it can be said that a set of estimations will be more accurate the lower the bias and the greater the precision are. But perfect precision (zero variance) is not a sufficient condition for accuracy.

Target shooting is an analogy commonly used to clarify these concepts. The bullseye is the true value of a population, which an investigator tries to hit by analyzing the sample.

An unbiased and precise estimator is one that identifies values very near the bullseye, with significant accuracy. A precise, but biased, estimator is one that predicts values near each other but far from the correct value. An unbiased but imprecise estimator chooses values that are far from each other and that also miss the bullseye, despite being evenly dispersed around it. Finally, a biased and imprecise estimator selects values that are scattered far from each other and miss the bullseye, but are not evenly spaced around it, instead showing a tendency for error in a particular direction. **Figure 1** illustrates these concepts.

Figure 1 – Illustration of the concepts of bias, accuracy and precision



3. LITERATURE REVIEW

3.1. Analysts' projections and adoption of IFRS

One of the reasons given for many countries to adopt IFRS was that this would increase the quality and quantity of disclosures. This improvement should permit analysts to have a better understanding of firms' performance, leading to better forecasts. According to Brown (2011), proponents of IFRS claim they improve the comparability and transparency of financial statements.

In the post-2005 European setting, Hodgdon et al. (2008) concluded that the observance of IFRS improved the accuracy of analysts' forecasts, mainly regarding Swiss and German firms. Byard et al. (2011), Preiato et al. (2009) and Wang et al. (2008) all documented an improvement in the accuracy of projections for firms in the European Community after the adoption of IFRS. However, according to Hodgdon et al. (2008), the improvements in the information environment related to IFRS in Europe were greater for companies that voluntarily adopted IFRS. In the same sense, Horton et al. (2010) observed that the adoption of IFRS resulted in smaller prediction errors for firms that mandatorily adopted IFRS in comparison to those that did so voluntarily.

However, the existing studies are not always conclusive. Dake (2005) found less accuracy and greater dispersion in the predictions of analysts for German firms that adopted International Accounting Standards (IAS) between 1993 and 2002. Cuijpers & Buijink (2005) reported greater dispersion in the forecasts for firms in the European Community using IAS, but stated these results could reflect a selection bias for firms that voluntarily adopted the international standards.

Regarding mandatory adoption, Aubert & Dumontier (2010) argued that analysts are not

always able to efficiently anticipate the consequences of IFRS adoption. It might be that predictions become harder under IFRS, depending on the extent of the changes in national GAAP in relation to IFRS and the resulting impact on earnings calculations. Finally, Beuselink et al. (2010) concluded that IFRS adoption improves the processing of information by analysts in general, but this effect is not homogeneous for all analysts.

Despite the fair number of studies for other countries, to the best of our knowledge there are no studies of the effects of IFRS adoption on the statistical properties of analysts' forecasts for Brazilian companies.

3.2 Is there a bias in analysts' projections?

The international literature over the past two decades has generally concluded that analysts tend to be optimists. This optimistic bias is inferred from the finding that there is a consistently negative difference between observed and estimated earnings. In other words, earnings projections are predominantly higher than those actually obtained. This optimism has been verified by using data from Value Line, I/B/E/S and Zacks. The estimates of analysts' optimism vary from study to study, due to differences in the methods used, definition of the variables and the period analyzed, among other factors.

Lim (1998), using the average of quarterly profit estimates, found optimism of 0.94% of the price. The bias was considerably higher, at 2.5%, for small firms, in comparison with 0.53% for companies with large capitalization. The author found this bias to be present in the entire market for all years studied. Richardson et al. (1999), using individual analysts' projections and projection errors analyzed in yearly and monthly time frames, found that while bias existed for both horizons, there was a significant decline in this bias, from 0.91% to 0.09% of the price, when the projection horizon was reduced from a year to a month. However, Brown (1998) observed that the bias appeared to have shifted from optimistic to pessimistic, or at least almost nil.

A possible explanation given in the literature for bias is the existence of a large number of extreme observations, causing asymmetric distribution of the projection errors. Gu & Wu (2003) and Abarbanell & Lehavy (2003) observed that a small number of projection errors disproportionately contribute to the observed bias.

In the Brazilian case, the tendency for optimistic bias has also been documented by Martinez (2004), Saito et al. (2008) and Dalmácio et al. (2011). Both studies, although relying on different methods and databases and trying to resolve distinct problems, noted the existence of an optimistic bias in analysts' projections for Brazilian firms. However, these studies cover periods before 2004.

There are no studies in the Brazilian literature touching on the statistical behavior of the prediction errors in recent years, particularly after the adoption of IFRS in the country. Our aim here is to fill in this gap in the national literature.

3.3. What are the determinants of bias in analysts' projections?

According to Kothari (2001), the determining factors for bias in analysts' projections are of two types: a) economic incentives; and b) behavioral-cognitive postures.

a) Economic motivations

An important economic incentive for "sell-side" analysts to issue optimistic earnings projections is the compensation they receive for their services. Investment banks obtain much of their revenues from their services related to issuance of securities and assistance in mergers and acquisitions. Optimistic projections by analysts can help stimulate new deals. In this sense, Lin & McNichols (1998) stated that analysts who work for institutions affiliated with investment banks will tend to issue more upbeat projections.

Another reasonable explanation for bias is analysts' concerns over obtaining as much access as possible to information from managers, especially in cases of large information asymmetry between the firm and investment community. Although they realize that bias in their projections is not desirable, they opt to err on the optimistic side to create a more favorable relationship with managers and hence gain the inside track to obtain important information. In this respect, Lim (1998) and Das et al. (1998) demonstrated that the bias increases as the information asymmetry (or uncertainty) increases between the firm and the investment community.

b) Behavioral-cognitive postures

According to the behavioral explanations for bias, analysts consistently overreact to information (especially on past earnings), which causes them to take a biased stance. It is naturally assumed that positive overreactions will outweigh negative ones, i.e., exaggerated responses to good news will be greater than to bad news. DeBondt & Thaler (1985; 1987), in their classic works on the subject, proposed the existence of such a cognitive bias mechanism.

Another very coherent explanation was traced out by Trueman (1994). He concluded that analysts tend to imitate the behavior of their peers, seeking to follow the consensus. He applied elegant mathematical models to show that analysts tend to make projections near to previous expectations. This causes herding behavior among analysts, in which their projections are similar to those announced previously by other analysts, even when the information is different. This behavior undermines the fundamental hypothesis for calculating the consensus projects, namely that the projections are independent.

4. RESEARCH METHOD

4.1. Database

To analyze the statistical properties of the earnings projections for Brazilian companies, we used the data collected by the Thomson Reuters I/B/E/S system. Since 1971, I/B/E/S has been the most important source of earnings projections for investment professionals throughout the world. According to Nobel Laureate William Sharpe (1998), in a comment in his classic manual "Investments": *"While I/B/E/S is not the only company collecting earnings expectations data...it was the first and remains the leader in the field... The systematic collection of earnings estimates is an excellent example of the forces that have been increasing the efficiency of security markets. Before I/B/E/S collected such data, consensus earnings estimates were difficult to obtain and highly ambiguous."*

The Thomson Reuters I/B/E/S system contains projections and recommendations of analysts throughout the world, including on Brazilian firms. There are three main sections in the I/B/E/S database: a) Detail History, b) Summary History and c) Recommendations. The Detail History section contains individual estimates of analysts over time, while the Summary History section contains the consensus estimates of all analysts in a determined period.

Here we study the period from the first quarter of 2007 to the fourth quarter of 2011. In this part of the study we used all the Brazilian firms listed for trading in the Novo Mercado segment of the BM&FBovespa about which there was information in the database. We did not carry out any type of selection. In the above period we analyzed 92 listed Brazilian companies by examining the quarterly earnings per share (EPS) projections. This figure is a key variable for many valuation models. Among the various metrics available, we verified that in the EPS projections for the current year contained the greatest number of observations.

We collected the EPS projections for each quarter going back one year beforehand, The Thomson Reuters I/B/E/S system contains information on forecast earnings based on the average estimate of analysts and reports the number of analysts that participated in each average estimate. The other data used in this study were obtained from the Economática

system, including the observed earnings and the control variables used.

In computing the projection errors, we found a large number of disparate values, indicating possible errors in entering data in the base. To rectify this problem, we applied Grubb's test to detect outliers, as recommended by Martins (2002: 59). This led us to exclude 20 observations from the sample, leaving a total of 1,004 observations.

4.2. Metrics for bias, accuracy and precision of the projections

To identify the performance of analysts in their projections, we computed the bias, accuracy and precision. **Bias** was calculated as the difference between the actual (observed) earnings result and the average figure projected by analysts. When this difference is negative, it indicates a negative surprise, or that the true earnings fell short of the predicted level. Likewise, a positive difference means the actual earnings were higher than the consensus projection.

For purposes of comparability, we computed the projection errors in terms of earnings per share (EPS). Therefore, the forecast error (bias) measure for this study is the real (observed) EPS for the period minus the forecast EPS divided by the absolute value of the real EPS:

$$Bias = \frac{EPS_{real} - EPS_{pred}}{|EPS_{real}|}$$

Where

EPS_{real} = Real earnings per share in the period covered by the forecast

EPS_{pred} = Predicted earnings per share according to the consensus of analysts (average)

We used the absolute value (modulus) in the denominator so as not to lose the direction of the projection error for firms with negative earnings.

From a methodological standpoint, there are various other measures to scale projection errors. Besides actual earnings results (observed profit or loss), it is very common to find articles in the international literature that have measured forecast errors in percentage terms of the stock price. However, we believe that consideration of stock price can bring distortions by introducing into the calculation the price factor over which analysts have no control.

We also did not use total assets (or stockholders' equity) as a factor to deflate the forecast errors. First, we believe that total assets could be correlated with the forecast errors in an undesirable way. In working with figures deflated by total assets, one is in essence measuring an indicator of return on assets. Second, some economic sectors have a higher average ROA than others, so this factor could compromise the comparability of the projection errors measured.

We recognize, however, that the procedure of measuring the forecast error in terms of the actual result is not immune from problems. For example, the forecast errors for firms that obtain profits or losses very near zero are exaggerated. Additionally, this required elimination of observations where the actual earnings figure was zero.

We also measured the **accuracy** of the projections in terms of the real earnings per share, in this case taking the absolute value of the entire expression rather than just the numerator (observed earnings minus predicted earnings):

$$Accur = \left| \frac{EPS_{real} - EPS_{pred}}{EPS_{real}} \right|$$

This formulation allows considering the distribution of errors that in absolute terms are near zero, but regardless of whether they are positive or negative. Therefore, in measuring the accuracy, all the errors are considered, in contrast to the measurement of bias, where the positive errors cancel negative errors of the same magnitude. The lower the metric is, the greater is the accuracy of the estimate.

We applied t-statistic tests to check the null hypothesis that the average of the prediction errors (bias) was different from zero. To attest that the results determined were not compromised by the scale used to deflate the projection errors, we present the signs of these errors.

Finally, we estimated the **precision** as the inverse of the standard deviation of the distribution of the projection errors (bias). Therefore, the lower the standard deviation, the more precise the analysts' estimates are.

5. ANALYSIS OF THE RESULTS

5.1 Descriptive statistics

According to **Table 1**, the data from the analysts' projections indicate a statistical predominance of positive errors (86.62%) over negative errors (41.22%). **Panel A** shows the mean of the distribution of the analysts' projection errors, with a significantly positive value of 0.40749 (t-statistic = 16.110). Likewise, the median is strongly positive at 0.69621.

To understand the distribution of projection errors better, we analyzed them in percentile terms (**Panel B**). This analysis revealed a particularity of this distribution: the negative tail is longer than the positive one. Intuitively this means that the extreme projection errors (tails) are predominantly optimistic.

In **Panel C**, we segmented the observations into two groups: a first group containing firms that obtained profits in the period targeted by the projection and a second group containing firms that lost money in that period. The aim of this stratification was to check if there are any systematic differences in the accuracy and bias between the projections for profitable and unprofitable firms. The differences in accuracy and bias are significant between the two groups of firms (as shown by the t-statistics). The results are revealing, improving the understanding of the bias and accuracy of analysts of Brazilian firms.

Table 1 – Descriptive statistics for the analysts' EPS projections for the following year, measured between the 1st quarter of 2007 and 4th quarter of 2011

This table shows the descriptive statistics of the frequency distribution of the analysts' projection errors for earnings per share (EPS) for the next period, computed based on information from the Thomson Reuters I/B/E/S system in the period from the 1st quarter of 2007 to the 4th quarter of 2011. Panel A records the mean, median and other statistics for the positive and negative forecast errors. Panel B shows the percentiles of the error frequency distribution.

Panel A: Statistics of the distribution of the projection errors

	All Errors	Negative Errors	Positive Errors
N (observations)	1,004	138	865
Percentage (%)	100%	13.88%	86.62%
Mean	0.40749	-1.3158	0.6824
Median – P 50	0.69621	-1.1658	0.7173
Standard Deviation	0.80109	0.9825	0.2028
Skewness	-2.929	-1.406	2.359
Kurtosis	10.557	2.245	38.538
Minimum	-4.8937	-4.8937	0.0137
Maximum	3.3625	-0.0032	3.3625
Est. <i>t</i> for difference of bias from zero	t = 16.110		

Panel B: Statistics of asymmetry of the tails of the distribution of projecting errors

P 5	-1.3979
P 10	-0.7543
P 25	-0.4908
P 75	0.7665
P 90	0.8373
P 95	0.8802

Panel C: Temporal pattern of the quarterly EPS projection errors for firms that disclose profits and losses

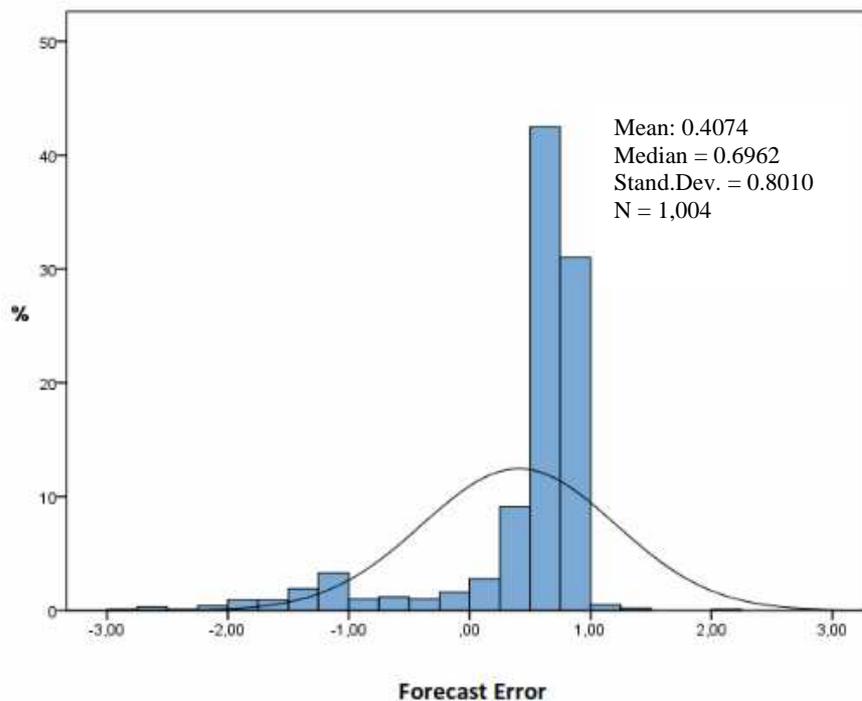
	N- Forecast	Accur Mean	Accur StD	Bias Mean	Bias StD
Profit	894	0.7522	0.4187	0.4599	0.7286
Losses	110	0.9036	0.7253	-0.0179	1.1617
Total	1.004	0.7688	0.4642	0.4075	0.8011
T Test Mean Differences		-3.241		6.005	
Sig (2 tailed)		0.001		0.000	

In general lines the results indicate that Brazilian analysts do a relatively better job when a firm reports profits, because they persistently underestimate negative results. This apparent optimism likely results from the reluctance of analysts to report loss projections.

The graph in Figure 2 allows visualizing the distribution of the projection errors, showing from left to right the variation of negative to positive errors.

Figure 2 – Histogram of the analysts’ projection errors for quarterly EPS between -3.0 and 3.0

Distribution of the errors of the consensus projections of analysts for EPS, for quarterly observations from the 1st quarter of 2007 to the 4th quarter of 2011, computed from information from Thomson Reuters I/B/E/S. The average projection errors in terms of real EPS are on the horizontal axis while the percentage of the observations found in a determined bar are on the vertical axis.

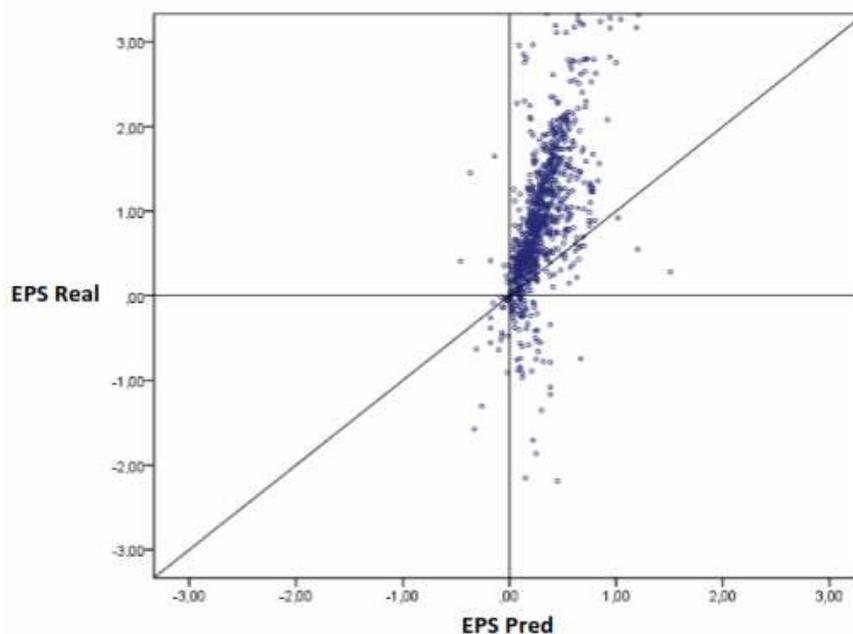


Simple observation of the distribution and its associated statistics can lead to the

opinion that Brazilian analysts were ex post pessimists in the years around IFRS adoption. In other words, their projections were predominantly lower than the earnings actually observed.

To complement this study, Figure 3 plots the dispersion diagram between real and estimated earnings. It can be seen that the observations with real positive earnings tend to be above the 45° line from the origin, meaning the real earnings tend to be greater than the estimated figures. The projections associated with real negative earnings, on the other hand, are visibly more optimistic.

Figure 3 – Real versus predicted earnings, 2007-2011, quarterly projections



5.2 Metrics in the years around IFRS adoption

To analyze the differences in accuracy and bias from 2007 to 2011, we computed the mean and standard deviation of each of these variables for each year. The results are shown in **Table 2**. It can be noted that the mean accuracy and bias hold relatively steady in all the years, while the observations are highly dispersed (large standard deviation), indicating low precision of the estimates.

To better illustrate the concepts, we constructed the boxplots of the bias and accuracy of the estimates. These show that in average terms the measures did not significantly change during the years studied, either before or after IFRS adoption.

To strengthen the evidence, we computed the difference of the means between 2007 (the year before IFRS adoption) and 2011 (the most recent post-adoption year). We found no significant differences between these years. We should note that although not documented in tables, the average differences of the means between 2009 and all the other years studied were significant. In this case, the accuracy in that year was lower than in the other years, perhaps explained by the process of adapting the international standards.

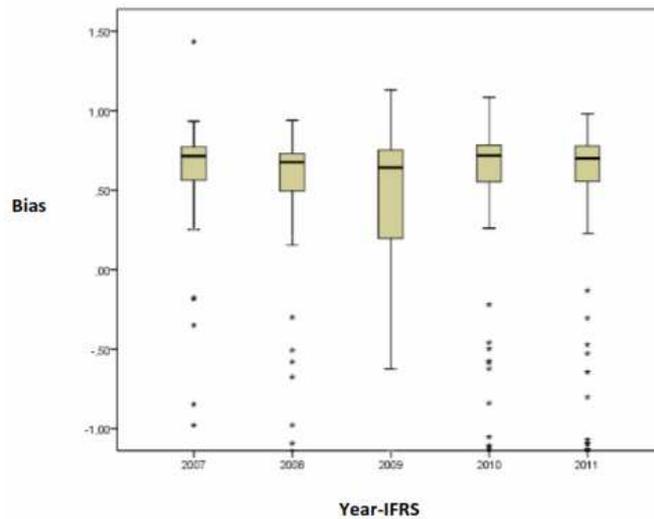
Additionally, we applied the Kruskal-Wallis test to check whether the years present the same dispersion of results. The null hypothesis was rejected, indicating differentiated behavior in terms of variance for the years studied.

Table 2 Metrics in the years around IFRS adoption (2007 – 2011)
Panel A: Temporal evolution of the bias, accuracy and dispersion

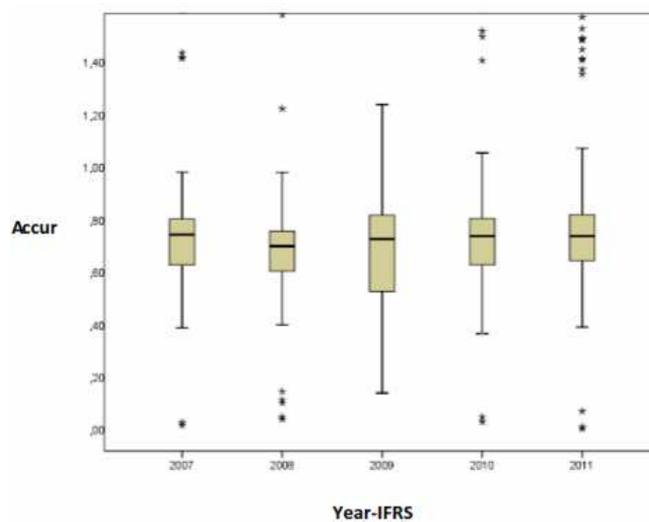
Years	Bias			Accur		
	Mean	Mean	StandDev	Mean	Median	StandDev
2007	0.4132	0.7143	0.8229	0.7723	0.7407	0.4971
2008	0.3881	0.6774	0.8246	0.7374	0.6963	0.5329
2009	0.2353	0.6419	0.9170	0.7758	0.7242	0.5398
2010	0.5400	0.7185	0.5814	0.7322	0.7356	0.3043
2011	0.4088	0.7013	0.8500	0.8095	0.7355	0.4794
T-Test Mean Diff. 2007-2011	0.0450			-0.6700		
Sig (2 tailed)	0.9640			0.5030		

Panel B: Boxplot of the bias and accuracy (2007 to 2011)

Bias Boxplot



Accuracy Boxplot



5.3. Multivariate analysis

To enrich the study and reduce the chance of cross effects, we also performed a multivariate analysis to test how the accuracy and bias can be explained by the adoption of IFRS as well as other explanatory variables of the forecasts' properties. We used the following variables to describe the behavior of accuracy and bias:

- **Years x IFRS:** We assigned a progressive variable to indicate the years. This choice was based on the assumption of a learning curve for working with the new standards (learning by doing). Therefore, we attributed a value of zero to 2007, the year before adoption, and then increase the value by one for each succeeding year, so that the value of 4 was attributed to 2011, after four years of experience working with IFRS. This scheme is depicted below:

Years	N	IFRS	= Years * IFRS
2007	0	0	= 0
2008	1	1	= 1
2009	2	1	= 2
2010	3	1	= 3
2011	4	1	= 4

- **Loss dummy:** In view of the specific behavior noted in the previous analysis for cases of loss-making firms, we created a dummy to control for this. Apparently analysts have markedly different performance when making forecasts for firms with negative earnings than for profitable ones. This variable is 0 for firms that made a profit in the forecast period and 1 for those that lost money.

- **Number of estimates:** Considering that the number of analysts following a firm can influence the propagation of information and the quality of the projection depends on the information environment, in the multivariate analysis we controlled for this factor.

- **Log_assets:** To control for firm size, we computed the logarithm of total assets in period t.

5.3.1. Correlation matrix

Table 3 presents the matrix of correlations between the accuracy and bias variables and the control variables. This matrix provides important insight into the correlation of the variables.

Mention should be made of the significant Pearson correlations, indicating the sign of how the variables oscillate. Although not shown in the table, we also computed the nonparametric Spearman correlations and the results were in the same sense.

The variable Years*IFRS is positively correlated with the number of analysts and firm size. We did not find significant correlations between this variable and either accuracy or bias. As expected, with a reduction of bias, the accuracy improved. Also, bias is negatively correlated with the dummy for loss, indicating that analysts in the period were more likely to make overly optimistic and less accurate forecasts for firms that wound up losing money in the period covered by the earnings prediction.

Table 3 Matrix of Correlations

		Bias	Accur	Num_An.	Years*IFRS	Log_Asset	Dummy-Loss
Bias	Corr. Pearson	1	-.664**	.121**	0.035	.070*	-.186**
	Sig. (2-tailed)		0.000	0.000	0.270	0.028	0.000
Accur	Corr. Pearson	-.664**	1	-0.05	0.031	0.047	.102**
	Sig. (2-tailed)	0.000		0.111	0.324	0.138	0.001
Num_An.	Corr. Pearson	.121**	-0.05	1	.247**	.468**	-.113**
	Sig. (2-tailed)	0.000	0.111		0.000	0.000	0.000
Years*IFRS	Corr. Pearson	0.035	0.031	.247**	1	.123**	-0.028
	Sig. (2-tailed)	0.270	0.324	0.000		0.000	0.380
Log_Assets	Corr. Pearson	.070*	0.047	.468**	.123**	1	-.089**
	Sig. (2-tailed)	0.028	0.138	0.000	0.000		0.005
Dummy-Loss	Corr. Pearson	-.186**	.102**	-.113**	-0.028	-.089**	1
	Sig. (2-tailed)	0.0000	0.0010	0.0000	0.3800	0.005	

** . Correlation is significant at 0.01 level (2-tailed).

5.3.2 Regression models

Table 4 depicts the regression models estimated and their significant statistics. With respect to bias (**Panel A**), the dummy variable for money-losing firms and the variable for number of analysts were significant, providing further support that analysts tend to be biased toward optimism regarding firms that wind in the red and that the forecasts become more pessimistic with an increasing number of analysts.

For accuracy (**Panel B**), it tended to be lower for loss-making firms and for larger firms, while it became greater with an increasing number of analysts following the firm.

The Years*IFRS variable was not significant regarding bias or accuracy, making it impossible to state with reasonable confidence that IFRS adoption in Brazil had an effect on these properties of analysts’ estimates.

Table 4 Regression Models

Panel A : Dependent Variables : Bias						
Bias = $\alpha_0 + \alpha_1$ Years*IFRS + α_2 Dummy-Loss + α_3 Num_Anal + α_4 Log_Assets + ϵ_0						
Model		Coefficients		Standard Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constante)	0.26	0.292		0.89	0.374
	Years*IFRS	0.003	0.019	0.005	0.163	0.871
	Dummy-Loss	-.448	.080	-.175	-5.607	0.000
	Num-Anal	.054	.020	.096	2.668	0.008
	Log_Asset	0.005	0.002	.008	0.241	0.809
a. Dependent variable: Bias		R	R Square	Adjusted R Square	F	Sig.
Statistics		0.212	0.045	0.041	11.746	0.000
Panel B: Dependent Variable : Accuracy						
Accur = $\alpha_0 + \alpha_1$ Years*IFRS + α_2 Dummy-Loss + α_3 Num_Anal + α_4 Log_Assets + ϵ_0						
Model		Coefficients		Standard Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constante)	.302	.171		1.764	.078
	Years*IFRS	.016	.011	.046	1.417	.157
	Dummy-Loss	.150	.047	.101	3.198	.001
	Num-Anal	-.031	.012	-.095	-2.597	.010
	Log_Assets	.032	.012	.094	2.663	.008
a. Dependent variable : Accuracy		R	R Square	Adjusted R Square	F	Sig.
Statistics		0.145	0.021	0.07	5.328	.000

Although not documented in the tables, to assure the robustness of the statistics we performed additional tests, among them: (i) Jarque-Bera (JB) normality test, which indicated the residuals had normal distribution; (ii) variance inflation factor (VIF) test, which presented high values, but lower than the limits that would have indicated a serious problem of multicollinearity; and (iii) Breusch-Godfrey (BG) test, which indicated no autocorrelation of the residuals.

6. CONCLUSIONS AND FINAL CONSIDERATIONS

The analyses reported in this article regarding the characteristics of the earnings projection errors of analysts in the Brazilian capital market between 2007 and 2011, the years around the adoption of International Financial Reporting Standards in Brazil, indicate:

A. The analysts were pessimistic in average terms. This was shown by a significantly positive mean projection error. Furthermore, the analysts on average performed weakly regarding accuracy and precision.

B. The analysts were particularly optimistic with respect to firms that wound up losing money in the periods covered by the forecasts. In this respect, analysts of Brazilian companies proportionally commit many more negative projection errors for losing companies than for profitable ones.

C. As the number of analysts covering firms increased, the accuracy of their projections rose during the study period. On the other hand, with growing firm size there was a tendency for less accurate forecasts, probably because larger companies have more complex accounting practices.

D. For the years from 2007 to 2011 we did not find any significant differences in terms of accuracy and bias, except for 2009, in which there was great dispersion in these metrics. A possible explanation is the difficulties faced in the process of conversion to international accounting standards that year.

E. For the companies analyzed, the adoption of IFRS during the study period did not yet cause significant changes in the statistical properties of the analysts' forecasts. The adoption of IFRS maintained a positive correlation with the increase in the coverages of analysts, indicating these standards created a more favorable environment to these information intermediaries.

IFRS adoption cannot be viewed as a panacea for the problems of accountancy and inefficiencies of the capital market. The complexities of the adjustments to the new accounting rules and the slow process of consolidating the conversion of financial statements can partially explain the results found here.

The projections of analysts regarding Brazilian companies have substantial value and notwithstanding the insignificance of the shift to IFRS documented in the study period, the forecasts need to be placed in context and examined to find those that have conditions to be more effective. Understanding how these professionals operate in average terms is relevant from both an academic and practical standpoint.

The observations made here can open the way to future research to help academics understand the expectations of the market and therefore to improve valuation models and optimize the calculation of variables, such as the cost of capital.

Among the limitations of this study, the main one is the relatively small sample size. Nevertheless, the sample significantly reflected the composition of the firms listed on the BM&FBovespa and we included all those for which it was possible to obtain data from Thomson Reuter I/B/E/S. We should add that the study period covered years of both strong and weak overall economic performance. Additionally, we gathered data from the financial statements in the Economática database to cross-reference them with the figures from Thomson Reuters I/B/E/S. Nevertheless, we cannot rule out the possible existence of

measurement errors due to the classification criteria used by these two sources of information.

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