

Impacts of the Adoption of IFRS 16 for Companies with Intensive Use of Mobile Assets

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Abstract

This study analyzed through an event study if the IFRS 16 disclosure on January 2016 and its implementation on January 2019 affected the value of the companies. The IFRS 16 addresses the accounting for lease and its operation. Before its effectiveness, operating lease and rental were recorded in the financial statements as operating expenses, known as off-balance sheet. This change consisted in classifying the current operating lease and rental, changing the entry in the financial statement of “operating expenses” for “depreciation and interest”, without changing the total amount, that is, without impact on the profit for the year. According to the cash flow analysis, a change on the value of the company is not expected. The mining segment was chosen because it has an intensive use of mobile assets. This segment uses operating lease and rental in order to have available operational mobile assets. A total of 1002 companies on the Toronto, London, and Sydney stock exchanges were analyzed on the two reference dates. Variations in abnormal returns suggested that the value of companies was affected by the IFRS 16 disclosure and implementation.

Keywords: IFRS 16; Accounting Off balance and In balance; Company value; Changes in Financial Statements; Mobile Assets; Mining segment.

1. Introduction

The general objective of this research is to investigate whether the operational impact and financial statements generated by the IFRS 16 Statement changed the value of companies with intense mobile assets, with empirical evidence from Australia, Brazil, Canada, and England.

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Considering the accounting evolution after the 50s, each country developed its own accounting principles, called the Generally Accepted Accounting Principles - GAAP. The work of [23] on the evolution of the IASC International Standard Accounting Committee to the IASB - International Accounting Standard Board - pointed out that in the 50s there was an expansion of global trade, led mainly by the expansion of American multinationals. The accounting rules for recognition of assets and lease on or off the balance sheet had diverse accounting regimes, making it difficult for investors to make comparisons with other countries for investment portfolio allocation, resulting in places with higher investment return due only to differences in the accounting record. Trying to find a way to standardize accounting standards, the IASC was created on July 29, 1973 and restructured in 2001 to become the IASB, an independent organization with the role of preparing and disclosing basic accounting standards, called IAS standards, in order to align accounting standards around the world. On April 11, 1996, the Security and Exchange Commission (SEC) issued a statement pointing out that the IAS should be accepted in cross-border offerings. In addition, the standards should reflect three key elements: (i) the standards should be on a comprehensive and generally accepted basis; (ii) quality standards should allow for comparability, transparency, and full information; and (iii) they should be interpreted and applied rigorously. The first IFRS standard (IFRS1) disclosed by the IASB was issued on July 31, 2002, dealing with accounting convergence, and came into force on March 2004. Among these regulations, the IFRS16 establishes the standards for recognition, measurement, presentation, and disclosure of rental and operating leasing, in which the recognition of assets and liabilities recorded in the balance sheet related to these operations, represent one of the most realistic financial position of the company regarding the use of operational assets. Therefore, it presented with more transparency the leverage and capital required for the development of its activities. Figure 1 shows how IFRS 16 changes the registration of lease. The standard registers the assets and liabilities in the balance sheet, whereas before its application, the companies considered operating lease as off balance sheet.

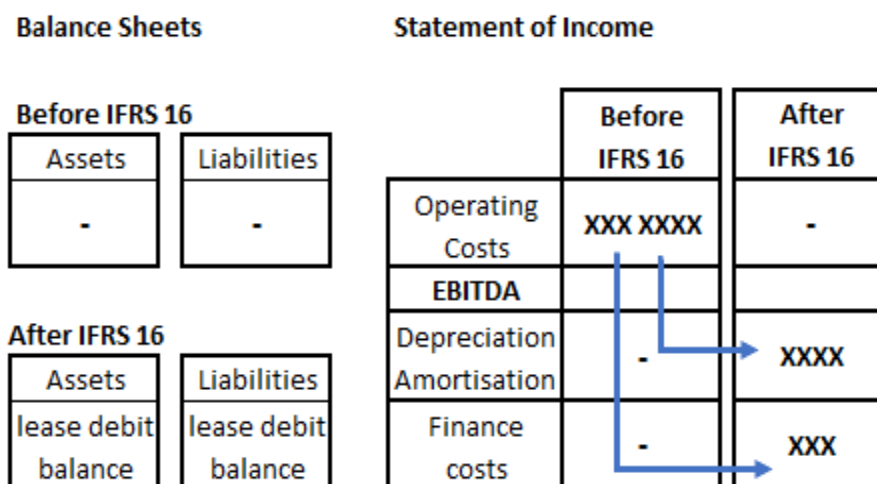


Figure 1: Balance Sheets and Statement of Income before and after the framing.

Source: [11].

Regarding mobile assets, the issue of this investigation, the segment most impacted is Mining, followed by Oil and Gas, and by the General Construction Engineering, the other segments being related to leased properties. The mining segment uses operating leasing and rental in order to obtain the equipment to perform its mining and beneficiation activities, being characterized as a high-wearing activity with constant equipment maintenance and renewal, registering before the implementation of the standard as operational expenses. The changes proposed by the IFRS 16 implemented on January 1, 2019 for the operating leasing did not alter the cash generation of the company. According to the concept of discounted cash flow of [5], which takes into account the discounted cash flow to price the company, the standard does not change the monetary value of the cash flow. Considering this evaluation concept, when the companies adopt the IFRS 16 standard they should not present oscillation in their values.

2. Conceptual Background

The present work is based on the IFRS accounting standards. This topic will address the motivation for the creation and updating process of the IAS standards pointing out the advantages and disadvantages of the adoption of the IFRS standard in Brazil, addressing aspects of the IFRS 16 and its impact on the rental and operating lease according to the sources studied.

2.1 IFRS accounting standard - best accounting practices

Modern accounting has its origins in the 14th century with the double-entry system introduced by the work of Friar Luca Pacioli "Tractatus de Computi et Scripturis". With the economic development of the United States and the internationalization of American companies mainly after the 1980s, the American accounting standards, US GAAP – United State Generally Accepted Accounting Principles – became the reference to the other standards.

This idea of uniformity of accounting statements was created during a world accounting congress in 1972 with the suggestion of creating an accounting pronouncements committee.

Companies that adopt the IFRS standards should follow the principles of quality, transparency, and full information in financial statements. [24] concluded that companies that disclose their balance sheets with more comprehensive risk disclosure of their results are in a better competitive position.

In April 2001, the IASB replaced the IASC and proposed studies for the formation of a set of accounting standards for accounting convergence called International Financial Reporting Standard - IFRS.

The standards gained credibility and were consolidated, setting the benchmarks to less organized countries, creating a world bloc supported mainly by Europe at the beginning. Currently, it has more than 150 countries, adopting the same accounting principles.

In 2005, in order to adopt the IFRS standards, Brazil created the Committee of Accounting Pronouncements, through the Resolution n° 1.055/05, establishing the convergence of accounting standards with international regulations; centralization in the issuance of standards of this nature and; representation and democratic

processes in yielding this information. Thus, the CPC declared that the objective of the financial statements is to provide information on the equity and financial position, performance, and changes in the financial position of the entity. These are useful to a large number of users in their evaluations and economic decision-making [4], with effects on the (i) reduction of the risks of international investments derived from a better understanding of the financial statements, prepared by the various countries, investors, financiers and credit providers; (ii) greater ease of international communication in the business world, with the use of a much more homogeneous accounting language and; (iii) reduction of the cost of capital [4].

2.2 IFRS 16 accounting standard - lease

In order to improve the understanding about the importance of operating leasing in the acquisition of mobile goods, Figure 2 shows credit and cash sales analyzing the two options that a manufacturer has to sell, without leasing:

- Instalment sales → manufacturer sells 100% of the good and receives the value in instalments, this condition requires working capital to grant the term to customers with contribution or debt;
- Cash sales → manufacturer sells the good in cash and the customer pays 100% of the good, needs cash available or financing of the purchased good.

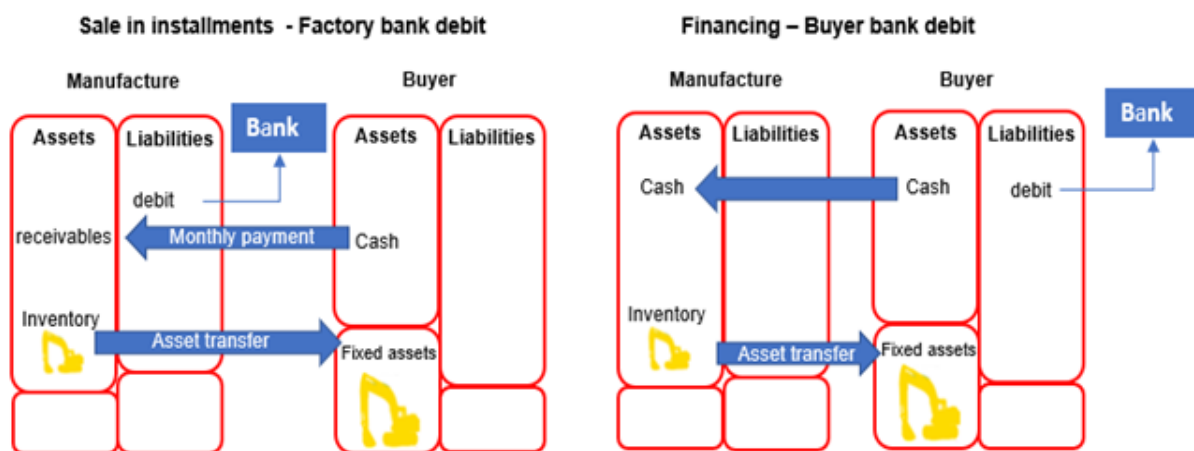


Figure 2: Sales cycle without leasing.

Source: elaborated by the authors.

Figure 2 shows that in both options the bank needs to provide credit either to the manufacturer or to the buyer and a 100% of the value of the good is acquired by the buyer. Another characteristic is that debit stays in the balance sheet of the buyer in any situation while in the cash sale it is also recorded in the balance sheet of the manufacturer. The introduction of the leasing alters these records by placing the leasing company as the cash buyer of the good from the manufacturer, the asset is registered in the leasing company and the figure of the final buyer becomes the user of the good

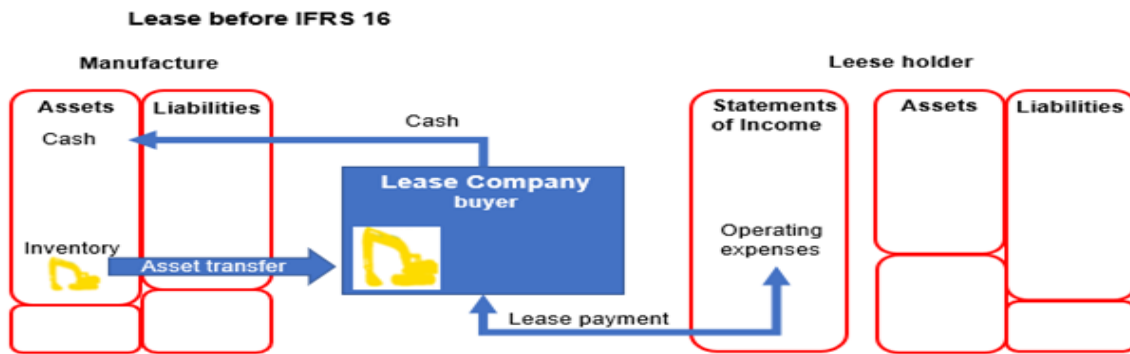


Figure 3: Leasing cycle of goods.

Source: elaborated by the authors.

Figure 3 shows that lease no longer has a record in the balance sheet, this structure being an off-balance sheet one, the counterparts being calculated with a final residual value and considering the benefit of accelerated depreciation, representing a reduction in relation to the value of a financing that has neither a final residual nor an accelerated depreciation.

According to [25], in India the companies finance about 25% of their long-term investments with operating expenses. The implementation of the accounting standard in 2019 eliminates the possibility of using investment goods identified as operating expenses in operating leasing and rental.

The introduction of IFRS 16, changing the way of accounting of rental and operating leasing, does not change the amount of the lease payment, i.e. all the advantages of the lower monthly cost due to the final residual and accelerated depreciation continue, and we will see in the sequence what the changes are.

The set of rules that regulate the rental and operating leasing were included in the IFRS 16 standard, released on January 13, 2016, and coming into force in the countries and companies that adopted this standard on January 1, 2019.

In its report on the evaluation of the impacts before and after the IFRS standard, [9] analyzed 302 companies and 912 associated securities, among these 739 forms issued by non-financial companies, all of them located in the European Community, highlighting the main topics of the standard, as shown in Figure 4:

Goals	IFRS 16 elements	Affected Stakeholder	Cost	Benefit
Increase transparency of information about lease obligations	Reporting assets and liabilities associated with operating leasing in balance sheet	Lessees	Compliance cost may cover one-off setting up of systems and processes, communication and education of staff, and developing and implementing on an ongoing basis procedures for identifying, and classifying lease agreements according to IFRS 16	Enabling investors and analysts to access the financial position of the company more accurately, spending less time and resources Improving information access for all investors, including less sophisticated ones.
	Report interest and depreciation associated with operating leases in income statement			
Allow investor and analysts to compare companies with more accuracy	Excluded short-term and low value operating lease	Lessor/Lenders	As a result of changes on EBIT and EBITDA: * Market participants would have to revisit their analytical approaches; * For lessors and lenders that could experience a short-term inefficiencies and increased costs; * Lessees might need to renegotiate debt covenants and review the remuneration policies and incentives schemes which are linked with performance measures	Tax implications on rules concerning depreciation, deductibility of interest, transfer price agreements, sales tax and leasing tax structures
		Investors and analysts		

Figure 4: Summary of the effects of the implementation of the IFRS 16 standard.

Source: [9].

There is clear evidence of the positive impacts of the adoption of the IFRS standard for company comparison and for transparency. In contrast, the associated costs and control ability by companies and inspection agencies might negatively affect the company evaluation. Taking into account both positive and negative aspects, the studies conducted revealed a positive impact on the value of the companies that adopted this standard.

In the case of IFRS 16, there is a change in the financial statements from the off-balance sheet to the on-balance sheet record, which should be considered as one of the factors that makes the positive evaluation uncertain regarding the value of the company.

International studies support expectation on important changes due to IFRS16. [23] performed a detailed literature review as well as gathered information at a public debate held jointly by the International Accounting Standards Board (IASB) and concludes the affected parties were identified as lenders, preparers and analysts with the banking and retail sectors requiring the most consideration. Besides, care will need to be taken when new lease transactions are entered into so that the entity still adheres to potential liquidity and solvency targets as well as loan covenant obligations.

Finding similar results [26] research indicates that IFRS 16 changes will have substantial effects on the presentation of the financial position and results of firms involved. It is also expected that this will affect decision-making by stakeholders such as boards, managers, bankers and financial analysts. Their results suggest that the accounting treatment under IFRS 16 contributes to the quality but not necessarily to the ease of making investment financing decisions.

Reference [1] study examined the justification for the assessment and accounting of leasing transactions in line with international accounting standards and identified issues of assessment and reporting in Latvia, possible solutions to improve the quality of leasing transactions have been worked out.

Therefore, IFRS 16 is expected to cause strong impact for companies with intensive use of mobile assets, object of analysis for the present research.

3. Research Methodology

The research method adopted was the event study which, as stated by [3] consists in defining the event, calculating the standard return of the actions in the period before the event, estimating the standard in the post-event period, and comparing it with the actual return of the current period. These events are separated by dates within the event, estimate (of the standard), and post-event windows.

3.1 Event study

In order to carry out the investigations, we have followed the script indicated by [3] for the event study.

The basic procedures for conducting an event study are divided into seven stages:

1. Definition of event
2. Selection criteria
3. Measurement of normal and abnormal returns
4. Estimation procedure
5. Test procedure
6. Empirical results
7. Interpretation/conclusion

3.1.1 Event definition

Among the events of the chronology of the IFRS 16 standard presented in this work, the definitive publication of the standard on January 13, 2016 is the one with the highest impact upon the value of the shares. It is on this date that the IFRS made public the standard and its date of implementation, being also the date in which all the parameters that evaluate the effects in the companies were disclosed.

Another date considered for the study is January 1, 2019. The effects were already known, although on this date the companies started to record the new operating leasing according to the determinations of IFRS 16. In addition, the companies that opted for the retrospective approach in the classification of operating leasing carried out until December 31, 2018, needed to disclose the financial statements of the beginning of the period by accounting reclassification, according to the requirements of the IAS 1.

3.1.2 Windows of the event study

There is a wide variety of dates used [2] used the Sales Window of d+20 and d-20 with estimation and comparison windows of 111 and 91 days, respectively, for analysis of the effects of the acquisition and merging processes on the value of the companies [22] considered d-1 and d+1 for the event window in the study of stock variation in the Indian market, with estimation and post-event windows of d-5 and d+5.

The work of [3] indicated that for events of known date and actions, the event window can only be the date of the event. In the case of news disclosure events, the authors advised that the event window should use a deadline that minimizes the possibility of privileged information and the delay in the reaction of participants.

In this research, the event window was d-1 and d+1 with a 5-day estimate and the comparison window was d-5 and d+5, considering that the disclosure and implementation of the standard has a defined and anticipated date, that any market participant may access.

3.1.3 Selection criteria of the sample

After identifying the event of interest, it is necessary to determine the selection criteria for the inclusion of a particular company in the study. The criteria may involve restrictions imposed by data availability, such as NYSE listings, or restrictions such as participation in a specific industry. At this stage, it is useful to summarize some characteristics of the data sample (e.g., capitalization, industry representation, distribution of events over time) and to observe any possible bias that may be introduced through sample selection.

The chosen population was selected in shares of companies from the mining segment on three stock exchanges where this segment is highly represented, according to the [17] survey, presented on Table 1. These stock exchanges have a very strong link with the mining segment, excluding companies that have activities related to oil and gas extraction (Oil & Gas, as called by the market).

Table 1: Stock exchanges with the highest movement in the mining segment.

	LSE	ASX	TSX	HSKE
Total Issuances	2.403	2.056	3.827	1.367
Stock market value USD billion	6.187	1.387	2.196	2.944
International issuances	529	97	339	88
	Mining Industry			
Mining issuances	185	685	1.673	68
Rel. mining/Total issuances	7,7%	33,3%	43,7%	5,0%
IPO issuances	30	117	114	14
Market Value USD Billion	431	391	401	199
Rel. Mining/Total Market Value	7,0%	28,2%	18,3%	6,8%

Source: [17]

London is the reference for the prices of metallic commodities for international transactions, with the metal

prices established in the transactions on the future market exchange being used as a reference. The LSE exchange trades shares of the main mining companies in the world.

The Toronto stock exchange concentrates the shares of the largest gold mining companies of the world and has become the place where most of the mining companies do their capital raising operations.

Sydney is located in a country where mining activity represents about 7% of the annual GDP, being a very representative segment for a developed country.

The shares of each stock exchange that make up the survey population were limited as follows:

- TSX Toronto trades 164 shares of companies listed as mining;
- ASX Sydney trades 681 shares of companies listed as material.
- FTSE London trades 157 shares of companies listed as basic resources.

A total of 21,177 quotes from 1,002 shares were collected in two reference dates and their respective windows.

3.1.4 Real, normal, and abnormal return of the sample

To evaluate the impact of the event it is necessary to calculate the abnormal return, defined as the difference between the actual observed return of the asset and the normal return (expected by the calculation).

$$RA_{it} = Rit - E(Rit),$$

Where: Rit = Return of the assets

$$E(Rit) = \text{Normal return calculated}$$

The method of choice used to calculate the real variation of the assets uses a logarithmic formula. According to [20] this method makes the calculation symmetrical, being expressed in the following formula:

Where: $P_{i,ni}$ = Asset value in the previous period

$$P_{i,n(t-nt)} = \text{Asset value in the current period}$$

$$\ln = \text{Neperian logarithm}$$

In order to obtain the abnormal return, it is necessary to calculate the expected return. [21] used this methodology to apply event study to the evaluation of the capital market reaction on the disclosure of accounting information.

In accordance with [21], the statistical model based on [3] was chosen to better represent the market oscillations,

adopting the model adjusted to the market and to the risk, which according to [20], was the most used method in the event studies between 1997 and 2001 in Brazil. It was calculated according to the following formula:

$$E(R_{it}) = R_{ft} + \beta_i (R_{mt} - R_{ft})$$

Where: R_{ft} = Return of the asset market free risk on date t

β_i = slope of the linear regression line of the returns of the action i on the market returns

R_{mt} = Return of the market portfolio

3.1.5 Estimating procedure

The estimation procedure follows the model developed by [3] using the formulas that accumulate the values according to the vectors of time and amount of securities. Therefore, for the abnormal return and accumulated abnormal variance the amount of securities we have is:

$$\overline{RA}_t = \frac{1}{n} \sum_{i=1}^n RA_{it}$$

$$\text{Var}(\overline{RA}_t) = \frac{1}{n} \sum_{i=1}^n \sigma_{\epsilon_i}^2$$

For the accumulated abnormal return and variance in a given time, we have:

$$\overline{CAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} \overline{RA}_t$$

$$\text{Var}(\overline{CAR}(t_1, t_2)) = \sum_{t=t_1}^{t_2} \text{Var}(\overline{RA}_t)$$

Abnormal return observations should be aggregated to draw general inferences for the event of interest. The aggregation is along two dimensions - through time and through the security titles [3]. The accumulation of abnormal returns in time for individual securities affected by a specific event is expressed by the formula:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} RA_{it}$$

In which:

CAR_i = accumulated abnormal return from t_1 to t_2 expressed by the sum of the abnormal returns from t_1 to t_2

The variance is expressed by:

$$\delta^2(t_1, t_2) = (t_1 - t_2) \delta_{\epsilon_1}^2$$

3.1.6 Test procedure

With the parameter estimates set for the normal performance model, abnormal returns can be calculated. Then we need to design the test structure for the abnormal returns.

In order to state that the analyzed event had influence on the value of the companies, we used a test of variance of the sample in relation to the index with a significance of 95%, analyzing if these abnormal returns are statistically outside the normal interval.

3.2 Strategy of data collection

It is important to define the baseline of the shares for the reference dates of 01/13/2016 and 01/12/2019 according to the events defined in the dissertation, with event windows of three working days, for estimate window with six working days, allowing the calculation of five variations, and for the comparison window five working days. For the event study two criteria were adopted: a liquidity and a dispersion approaches, for sample adequacy. In the case of the "Liquidity Cut" of the shares traded, it was established at least on 60% of the days in order to eliminate low liquidity shares. This selection eliminated 475 shares from the 2016 event study and 472 from the 2019 event. For the "Dispersion and Outliers" databases for scientific studies require verification of outliers among the methods addressed, such as the most widely used Grubbs (or Ztest), quartile, and Dixon tests. For the present research, this paper applied the "Z test" method and a dispersion analysis, considering the difference in module between the lowest and the highest values of the variation of each action. Starting with the baseline of 1,002 shares for each date, with the application of the criteria of data selection, at the event on 01/13/2016, 3,770 data were collected, of which 69 were classified as outliers (1.83%) and at the event on 01/02/2019, 5,096 data were collected with 62 outliers (1.22%).

3.2.1 Data of the reference indices

To build the correlations for each stock exchange, the most comprehensive indices were selected so that the reference would reflect the diversity of the sample. All the indices are those with the largest number of companies available without classification by size or segment.

- Toronto TSX – S&P/TSX, index formed by 232 companies (base 250);
- London LSE – FTSE 350 index formed by 351 companies (base 350);
- Sydney ASX – S&P/ASX 300, index formed by 296 companies (base 300).

The observation "base" refers to the number of companies that the index targets.

4. Analysis of the Obtained Results

Once the base of analysis was defined, 3,198 data from 246 companies were analyzed at the baseline of 01/13/2016 and 4,316 data from 332 companies at the baseline of 01/02/2019. Table 2 presents the summary of the companies analyzed on each date.

Table 2: Baseline used for the analysis.

Stock Market	Mining stocks	13/01/2016			02/01/2019		
		analyzed stocks	% total	% neg	analyzed stocks	% total	% neg
TSX	164	75	46%	52%	104	63%	68%
FTSE	157	50	32%	48%	56	36%	44%
ASX	681	121	18%	23%	172	25%	29%
Total	1.002	246	25%	32%	332	33%	38%

Source: elaborated by the authors based on data of the TSX, LSE, and ASX stock exchanges.

According to Table 2, the study obtained a greater number of companies analyzed in the second event, that is, after applying the selection criteria of minimum negotiation of 60% of the analyzed days and the withdrawal of outliers, 332 companies were analyzed from the 2019 baseline. This represented an increase of 35% in relation to the 246 companies of the first event in 2016.

Regarding the events disclosure and implantation of the regulation, the first event is considered a new market information. The standard passed through the analysis and suggestion process and only in 01/13/2016 it was made public as an effective norm. Since the effective date of 01/01/2019, was a holiday, the 2019 baseline used the reference date of 01/02/2019. In this second analyzed event, the companies and the market analysts already knew the standard.

4.1 Main characteristics of the sample

The indicators of the analyzed stock exchanges – S&P/TXT, FTSE 350, and S&P/ASX – presented negative return in the analyzed period of 2016 and high return in 2019.

The standard deviation of the indicators S&P/TXT and FTSE 350 presented distinct trends, with the former maintaining practically the same dispersion, detailed in Table 3.

Table 3: Return and standard deviation of the analyzed indicators.

	Return		standard deviation	
	2016	2019	2016	2019
S&P TSX	-4,25%	4,39%	1,50%	1,15%
FTSE 350	-5,82%	2,91%	1,41%	1,04%
S&P ASX300	-7,99%	3,70%	0,99%	0,99%

Source: TSX, FTSE, and ASX stock exchanges.

Used as reference indicator for the respective stock exchanges, a comparative analysis is obtained with each selected portfolio and the classification by size. In the case of the Toronto TSX, it is one of the four most important stock exchanges in the world for the mining segment and this segment represents 5% of the GDP of Canada, not including the Oil & Gas segment. The studied Mining sector had a fall higher than the reference index in 2016. In 2019, the return also presented a very distinct variation of the index.

Table 4: Comparison of S&P/TSX index between the 2016 and 2019 sample.

	2016					2019				
	Stocks	% Trade days	Return	Variance	Standard deviation	Stocks	% Trade days	Return	Variance	Standard deviation
portfolio	75	88%	-14,4%	0,03%	1,81%	104	88%	8,8%	0,01%	1,07%
10%	8	96%	-9,0%	0,15%	3,83%	10	100%	4,0%	0,03%	1,78%
20%	15	97%	-20,1%	0,03%	1,84%	21	98%	8,8%	0,01%	1,12%
70%	52	85%	-13,7%	0,02%	1,57%	73	84%	9,5%	0,02%	1,25%
S&P/TSX	230	100%	-4,2%	0,02%	1,50%	230	100%	4,4%	0,01%	1,15%

Source: the authors based on TSX and S&P/TSX.

The LSE is the most diversified and had the highest net assets liquid among the three studied stock exchanges for the mining segment, concentrating the companies with the highest value. According to Table 8 [17], even with TSX issued 40% more papers from mining companies than LSE, with 3,827 and 2,403 papers, respectively, LSE issued in the same year a financial volume of 6,187 billion against 2,196 billion of TSX. For the economy of England, the Mineral segment represents 4% of the economy, and within this classification are included Agriculture, Oil & Gas, and Basic Resources segments, which represent less than 2%. Table 5 shows the comparison of the sample data regarding the FTSE 350 index:

Table 5: Comparison of the FTSE 350 index between the 2016 and 2019 samples.

	2016					2019				
	Stocks	% Trade days	Return	Variance	Standard deviation	Stocks	% Trade days	Return	Variance	Standard deviation
portfolio	50	88%	-7,9%	0,02%	1,35%	56	87%	4,7%	0,00%	0,67%
10%	5	98%	-12,6%	0,24%	4,88%	6	100%	1,5%	0,05%	2,16%
20%	10	98%	-8,7%	0,03%	1,76%	11	99%	5,4%	0,01%	0,91%
70%	35	84%	-7,3%	0,02%	1,24%	39	82%	4,9%	0,00%	0,61%
FTSE 350	350	100%	-5,8%	0,02%	1,11%	350	100%	2,9%	0,01%	1,04%

Source: elaborated by the authors based on LSE and FTSE 350.

In the case of the ASX index, of the three stock exchanges analyzed, the country that is most economically dependent on the mining sector is Australia. According to Table 6, the variations of the portfolio formed by the sample presented returns very similar to the reference index in both dates, with the dispersion being low in 2016

and again in 2019.

Table 6: Comparison of the S&P ASX 300 index between the 2016 and 2019 samples.

	2016					2019				
	Stocks	% Trade days	Return	Variance	Standard deviation	Stocks	% Trade days	Return	Variance	Standard deviation
portfolio	121	80%	-8,6%	0,00%	0,52%	172	88%	3,4%	0,01%	1,01%
10%	12	96%	-5,5%	0,02%	1,45%	17	95%	4,2%	0,01%	1,18%
20%	24	91%	-6,6%	0,01%	1,16%	35	88%	2,7%	0,02%	1,50%
70%	85	75%	-9,6%	0,00%	0,61%	120	73%	3,5%	0,01%	0,97%
S&P ASX 300	300	100%	-8,0%	0,10%	0,99%	300	100%	3,7%	0,01%	0,99%

Source: elaborated by the authors based on ASX and S&P/ASX 300.

All the analyzed stock exchanges observed that the size of the companies affected the analysis of the stock exchanges (Tables 4, 5, and 6). The measures of return and dispersion varied according to the size of the companies, which was also evidenced in the event study. In order to facilitate the visualization of this data variation, we have plotted Figures 5, 6, and 7, in which the value in points at the zero date of the reference index is used to create four indices of each portfolio generated in the study. First, a portfolio with 100% of the data from the baseline, and then portfolios with 10%, 20%, and 70% of the data compared with the reference index. The index is represented by the black thick line and the portfolio formed by the selected shares from each stock exchange represented by the red thick line, portfolio. The breaks by size with fine black, red, and yellow lines represent the portfolios formed by the 10%, 20%, and 70% sizes, respectively. The dates of 2016 and 2019 refer to the following events: disclosure of IFRS 16 standard on 01/13/2016 and implementation of the standard on 01/01/2019.

Figure 5 shows the daily variations of the analyzed portfolios compared to the reference index in the Toronto stock exchange. Both in 2016 and in 2019, the 20% and 70% portfolios were well represented by the portfolio line, while the 10% portfolio, formed by the companies with the highest market values, did not follow this line.

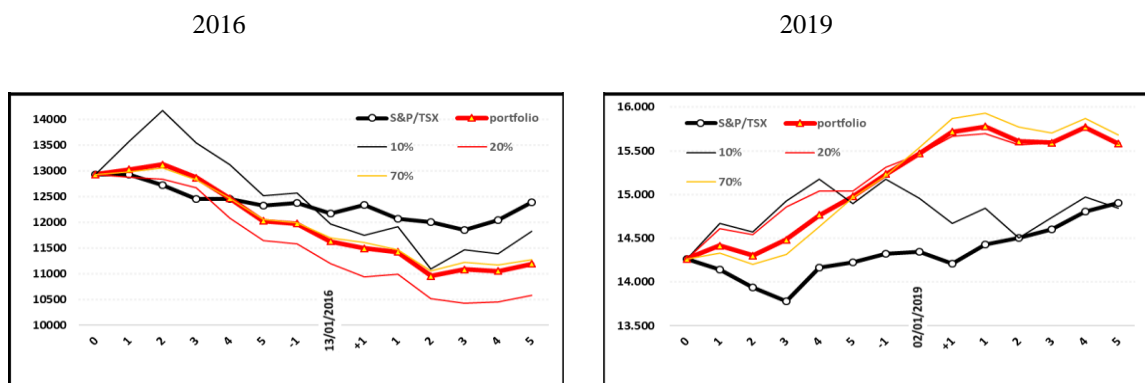


Figure 5: Daily return of S&P/TSX index and analysis portfolio from 2016 and 2019.

Source: the authors based on the TSX and S&P/TSX.

In the LSE, as shown in Figure 6, there is a detachment of the 10% portfolio and the other portfolios were closer to the reference index.

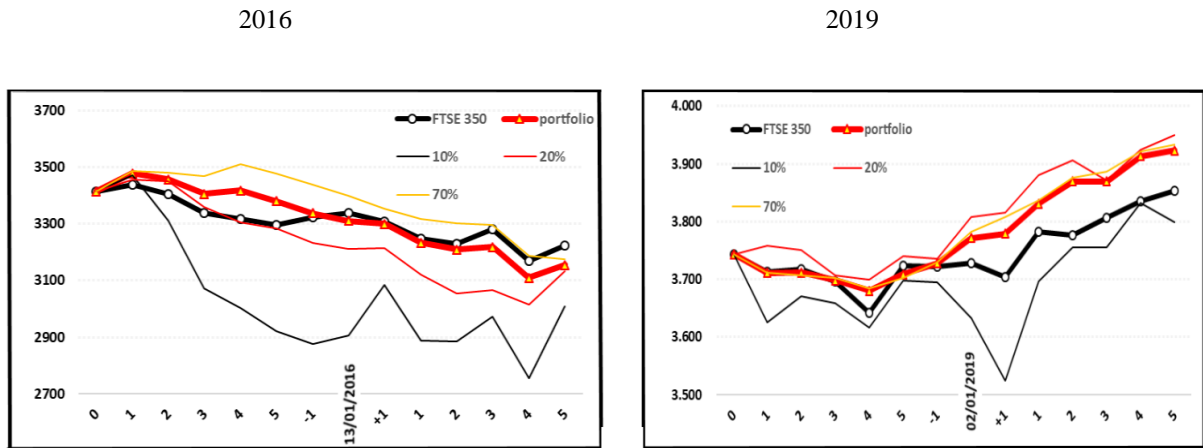


Figure 6: Daily return of FTSE 350 and analysis portfolio from 2016 and 2019.

Source: the authors based on FTSE and FTSE 350.

The different behavior in the Sydney stock exchange, shown in Figure 7, presents the 10% portfolio with a variation very close to the variation of the reference index. One of the factors is the importance of the mining segment in the Australian market.

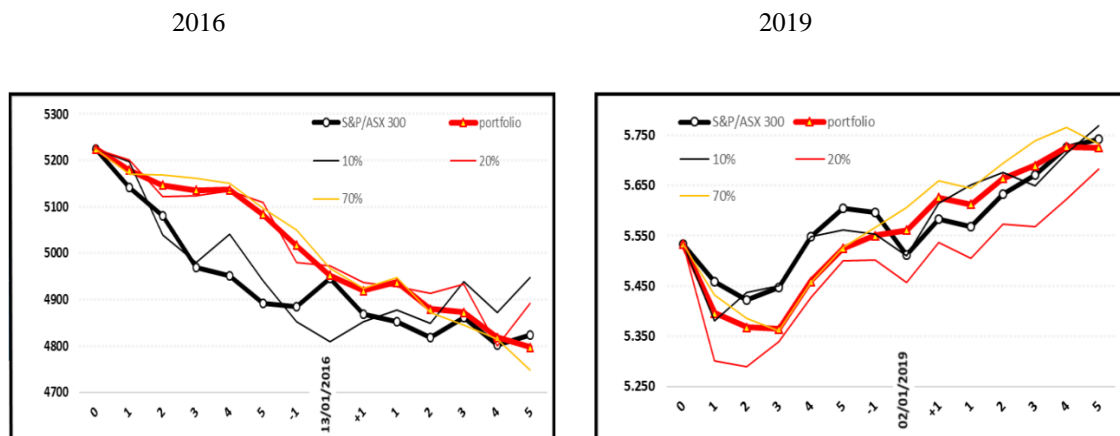


Figure 7: Daily return of S&P/ASX 300 index and analysis portfolio from 2016 and 2019.

Source: the authors based on the ASX and S&P/ASX 300.

4.2 Event study

For an analysis considering the size of the companies, three classifications were set up for each stock exchange

in each period, allowing an evaluation of three portfolios called 10%, 20%, and 70% portfolios, as well as one portfolio that was simply denominated portfolio, with all the selected shares totaling 12 views per analysis date, four from each stock exchange.

The calculation of the abnormal return in the study windows used the Napierian logarithmic formula for the actual return, while for the normal return the model was adjusted to the market and risk, based on the reference assets and on the beta of each asset in the sample. This considered the return of the short-term risk-free asset U.S. FED Funds interest rate.

The abnormal return is calculated as the result of the real return subtracted from the normal return.

4.2.1 Results in 01.13.16 – date of standard disclosure

When the standard was disclosed, companies and analysts acknowledged the IFRS 16 standard that would be implemented.

In the case of TSX, the representation of abnormal returns in Table 7 shows the daily variation of the mean abnormal returns. The portfolio data demonstrate the negative abnormal returns at the event window, in contrast with the theory of market efficiency. In this case, the perception of the analysts is that the introduction of IFRS 16 standard affected the value of the companies.

Table 7: Abnormal return and average variation of TSX in 2016.

	Variance	Estimation window					Event window			Post-event window				
S&P TSX	0,023%	1	2	3	4	5	-1	Jan 13, 2016	+1	5	4	3	2	1
Return														
portfolio	0,033%	0,76%	1,27%	-1,24%	-3,17%	-3,14%	-0,58%	-2,35%	-1,62%	0,10%	-3,88%	1,61%	-0,83%	0,30%
10%	0,147%	4,42%	5,02%	-2,94%	-3,63%	-3,85%	0,72%	-3,92%	-2,06%	2,34%	-6,47%	3,91%	-0,93%	1,55%
20%	0,034%	-0,01%	-0,01%	-1,01%	-3,98%	-2,91%	-0,86%	-1,54%	-2,72%	1,44%	-3,14%	-0,44%	-0,02%	0,77%
70%	0,025%	0,36%	1,05%	-1,01%	-2,78%	-3,09%	-0,72%	-2,36%	-1,13%	-0,82%	-3,68%	1,95%	-1,12%	-0,10%

Source: elaborated by the authors.

In another analysis, according to Table 8, the average variation of abnormal returns in each window was used, and regardless of the size, the fall of the abnormal return remained at the event window.

In the evaluation window, the portfolio presented a negative variation and companies with higher market value, after the fall, aligned with the variation of the reference index. Figure 30 - 2016 shows the difference in the portfolio movement compared to the 10% portfolio.

Table 8: Means of abnormal returns in each event window for TSX in 2016.

	Estimation window	Event window	Post-event window
portfolio	-1,10%	-1,52%	-0,54%
10%	-0,19%	-1,75%	0,08%
20%	-1,58%	-1,71%	-0,28%
70%	-1,10%	-1,40%	-0,75%

Source: elaborated by the authors.

In the case of LSE, the London stock exchange presented a higher diversification and net assets. According to [17], the companies analyzed presented a drop in value at the event and post-event windows compared to the reference index, as shown in Table 9. Complementing the analysis, Table 10 presents the average data by event windows, showing that the average variation of each period and the observed values are relatively close to those observed in TSX (- 1.52% and -0.54%) and LSE (- 0.88% and - 0.51%) on average, in the respective windows.

Table 9: Abnormal return and average variation for LSE in 2016.

		Estimation window					Event window			Post-event window				
	Variance	1	2	3	4	5	-1	Jan 13, 2016	+1	5	4	3	2	1
FTSE 350	0,020%													
Return														
portfolio	0,018%	1,38%	0,09%	-0,16%	0,77%	-0,63%	-1,84%	-1,11%	0,31%	-0,71%	-0,35%	-0,79%	-1,03%	0,33%
10%	0,238%	-0,04%	-2,08%	-2,47%	-0,77%	-1,04%	-3,61%	-0,10%	8,33%	-1,67%	1,27%	-0,72%	1,06%	5,21%
20%	0,031%	0,70%	0,60%	-1,18%	-1,11%	-0,12%	-2,18%	-1,06%	0,82%	-1,50%	-1,63%	-0,82%	0,96%	2,61%
70%	0,015%	1,78%	0,26%	0,46%	1,53%	-0,72%	-1,50%	-1,27%	-0,98%	-0,35%	-0,21%	-0,79%	-1,90%	-1,02%

Source: elaborated by the authors.

In portfolios by size, London presented 20% portfolios varying practically the same as the reference index.

Table 10: Average of abnormal returns in each event window for LSE in 2016.

	Estimation window	Event window	Post-event window
portfolio	0,29%	-0,88%	-0,51%
10%	-1,28%	1,54%	1,03%
20%	-0,22%	-0,81%	-0,07%
70%	0,66%	1,25%	-0,85%

Source: elaborated by the authors.

The Sydney ASX presented the lowest net asset and value among the three stock exchanges. Even with a variation in the size of the companies, the same effect of decrease in share value compared to the reference index was observed at the event and post-event windows. Table 11 shows the average abnormal returns of each analyzed portfolio.

Table 11: Abnormal return and average variation for ASX in 2016.

		Variance	Estimation window					Event window			Post-event window				
S&P ASX 300	0,010%		1	2	3	4	5	-1	Jan 13, 2016	+1	5	4	3	2	1
		Return													
portfolio	0,003%	-0,87%	-0,63%	-0,21%	0,02%	-1,02%	-1,32%	-1,28%	-0,67%	0,36%	-1,18%	-0,14%	-1,11%	-0,46%	
10%	0,021%	0,37%	-2,35%	0,04%	1,45%	-1,33%	-1,71%	-1,58%	1,78%	0,73%	-0,21%	1,34%	-0,62%	1,27%	
20%	0,014%	0,15%	-1,08%	0,86%	0,34%	-0,03%	-2,51%	-0,58%	-0,13%	-0,08%	-0,02%	0,05%	-2,21%	1,71%	
70%	0,004%	-1,33%	-0,26%	-0,54%	-0,28%	-1,26%	-0,93%	-1,44%	-1,16%	0,43%	-1,64%	-0,40%	-0,86%	-1,32%	

Source: elaborated by the authors.

Table 12 shows the average of the abnormal return of each portfolio in each window, showing that the event window was negative for all sizes, that is, all portfolios lost value compared to the reference index and in the post-event window the variation changed according to size.

Table 12: Average of abnormal returns in each event window for ASX in 2016.

	Estimation window	Event window	Post-event window
portfolio	-0,54%	-1,09%	-0,50%
10%	-0,36%	-0,50%	0,50%
20%	0,05%	-1,07%	-0,11%
70%	-0,73%	-1,18%	-0,76%

Source: elaborated by the authors.

4.2.2 Results in 02.01.2019 – date of implementation of the IFRS 16 Standard

The implementation date according to the regulation is 01/20/2019 but since this is not a working day, the reference date of the adopted event window is 01/02/2019. On this date, companies and analysts already knew the IFRS 16 standard and the companies that adopted it presented in their financial statement explanatory notes about the type of approach for the application of the standard.

The TSX portfolio formed by the shares analyzed in the Toronto stock exchange presented abnormal returns diverging from the reference index at the event window. Table 13 shows the average of the daily abnormal returns according to the study portfolios.

Table 13: Abnormal return and average variation for TSX in 2019.

Variance		Estimation window					Event window			Post-event window				
S&P TSX	0,013%	1	2	3	4	5	-1	Jan 2, 2019	+1	5	4	3	2	1
Return														
portfolio	0,011%	1,18%	-0,60%	1,40%	1,59%	1,38%	1,62%	1,49%	1,73%	0,19%	-1,14%	-0,21%	0,97%	-1,28%
10%	0,032%	3,05%	-0,33%	2,70%	1,03%	-1,98%	1,73%	-1,49%	-1,71%	0,80%	-2,41%	1,48%	1,22%	-1,01%
20%	0,012%	2,29%	-0,67%	2,02%	1,59%	0,06%	1,91%	0,97%	1,20%	0,38%	-0,74%	0,20%	1,44%	-1,22%
70%	0,016%	0,60%	-0,62%	1,04%	1,66%	2,22%	1,52%	2,05%	2,35%	0,05%	-1,08%	-0,56%	0,80%	-1,34%

Source: elaborated by the authors.

In the analysis of the average returns per size, the portfolios with the highest liquidity and size were the 10% and 20% portfolios, which represented more than 95% of the market value of the shares analyzed on the TSX stock exchange, with the abnormal variation being practically zero, as detailed in Table 14:

Table 14: Average abnormal returns in each event window for TSX in 2019.

	Estimation window	Event window	Post-event window
portfolio	0,99%	1,61%	-0,30%
10%	0,89%	-0,49%	0,01%
20%	1,06%	1,36%	0,01%
70%	0,98%	1,97%	-0,43%

Source: elaborated by the authors.

Regarding LSE, the abnormal returns of the portfolios represented well the sample for 70% portfolio while the 20% portfolio was aligned with the portfolio at the event and post-event windows and the 10% portfolio did so only in the post-event window. The variance of the 10% portfolio was higher than the other analyzed portfolios, ratifying that it presents a different behavior from the other portfolios. Table 15 presents the daily abnormal returns and the average variance of the period of the portfolios analyzed on this stock exchange.

Table 15: Abnormal return and average variation for LSE in 2019.

Variance		Estimation window					Event window			Post-event window				
FTSE 350	0,011%	1	2	3	4	5	-1	Jan 2, 2019	+1	5	4	3	2	1
Return														
portfolio	0,005%	-0,52%	-0,04%	-0,14%	0,11%	-0,12%	0,51%	1,12%	0,45%	0,52%	1,06%	-0,32%	0,80%	0,06%
10%	0,046%	1,94%	1,09%	0,48%	1,02%	-1,00%	0,01%	-1,93%	-1,99%	1,75%	1,87%	-1,18%	0,91%	-1,51%
20%	0,008%	0,74%	-0,25%	-0,97%	0,41%	0,18%	-0,08%	1,86%	0,44%	0,84%	0,75%	-1,24%	1,07%	0,46%
70%	0,004%	-0,66%	-0,16%	0,00%	-0,11%	-0,07%	0,75%	1,38%	0,83%	0,25%	1,03%	0,07%	0,71%	0,19%

Source: elaborated by the authors.

With the data grouped by abnormal returns, presented in Table 16, the three portfolios aligned in the post-event window.

Table 16: Average of abnormal returns in each event window for LSE in 2019.

	Estimation window	Event window	Post-event window
portfolio	-0,14%	0,69%	0,43%
10%	-0,07%	-1,31%	0,37%
20%	0,02%	0,74%	0,38%
70%	-0,20%	0,99%	0,45%

Source: elaborated by the authors based on the collected data.

Regarding ASX, according to Table 17 the portfolio in the post-event window showed that the daily abnormal returns presented a variation around the reference index practically equal to zero.

Table 17: Abnormal return and average variation for ASX in 2019.

Variance		Estimation window					Event window			Post-event window				
S&P ASX 300	0,010%	1	2	3	4	5	-1	Jan 2, 2019	+1	5	4	3	2	1
Return														
portfolio	0,010%	-1,47%	-0,01%	-0,42%	0,39%	0,45%	0,56%	1,35%	0,19%	-0,04%	0,06%	-0,05%	-0,06%	-0,24%
10%	0,014%	-1,71%	1,56%	-0,14%	0,41%	-0,53%	-0,06%	0,39%	0,90%	0,88%	-0,43%	-1,01%	0,44%	0,73%
20%	0,022%	-2,71%	0,57%	0,49%	-0,85%	0,52%	0,37%	0,79%	0,08%	-0,39%	0,17%	-1,44%	-0,01%	0,62%
70%	0,009%	-1,08%	-0,40%	-0,72%	0,75%	0,57%	0,70%	1,65%	0,12%	-0,07%	0,10%	0,49%	-0,15%	-0,62%

Source: elaborated by the authors based on the collected data.

In the average data of the analyzed windows, shown in Table 18, the alignment became more evident between the index and the 70% portfolio, which has a higher statistical weight since it contains a greater amount of data, although with less significant weight, concentrating less than 5% of the market value. This observation, complemented by Graph 5, shows that the oscillations of the index and those of the analyzed portfolios present similar movements. It is worth noting that Australia has a significant share of the mining segment in its economy, which might be reflected in the results observed in this study.

Table 18: Average of abnormal returns in each event window for ASX in 2019.

	Estimation window	Event window	Post-event window
portfolio	-0,21%	0,70%	-0,07%
10%	-0,08%	0,41%	0,12%
20%	-0,40%	0,41%	-0,21%
70%	-0,18%	0,82%	-0,05%

Source: elaborated by the authors based on the collected data.

The data collected present significant abnormal returns, although in a scientific work conclusion should be based on consistent statistical evidence and not only in absolute numbers. Therefore, a statistical test will be applied with a 95% confidence interval and Section 5 will present the conclusion considering this parameter.

5. Final Remarks

For the conclusion, it must be recalled the objective of the paper, which consists in investigating the impact of the IFRS 16 standard on the value of companies that operate intensely with mobile assets.

5.1 Main results found in this research

Due to the amount of data collected and considering that the analyzed events may have different impacts on the value of the companies, the conclusion is based on the event dates.

5.1.1 Disclosure of IFRS 16 Standard on 01/13/2016

Using the event study to analyze the abnormal returns, the event of 01/13/2016 has clearly presented a negative abnormal return in all the stock exchanges analyzed at the event and post-event windows, shown in Table 19.

Table 19: Average of abnormal returns in portfolios in 2016

	Estimation window	Event window	Post-event window
TSX	-1,10%	-1,52%	-0,54%
LSE	0,29%	-0,88%	-0,51%
ASX	-0,54%	-1,09%	-0,50%

Source: elaborated by the authors based on the collected data.

A test of variance was carried out in the samples with a significance of 95%, in order to analyze if these abnormal returns were statistically outside the normal range. The t test was applied for the samples for an analysis of two-tailed distribution and paired data, since they have the date in common. Four portfolios were analyzed: portfolio, with all the companies analyzed and market value portfolios of 10%, 20%, and 70%.

Table 20 shows the probability (p) of the "t test" for each of these portfolios, in which values above 0.05 indicate that the index explains the abnormal variation.

Table 20: Probability p in the test of the samples on 01/13/2016.

T test - probability					
S&P/TSX		FTSE 350		S&P ASX 300	
portfolio	0,01	portfolio	0,65	portfolio	0,00
10%	0,77	10%	0,00	10%	0,24
20%	0,00	20%	0,01	20%	0,00
70%	0,01	70%	0,00	70%	0,01

Source: elaborated by the authors based on the collected data.

Therefore, the results should be statistically accepted with at least 95% of significance, allowing the conclusion that there was an abnormal negative return in nine of the twelve analyses performed. So to speak, the disclosure of the IFRS 16 standard affected the value of the companies analyzed on this date.

The p result obtained reflects exactly the expected behavior of the portfolio variation compared to the index shown in Figure 8.

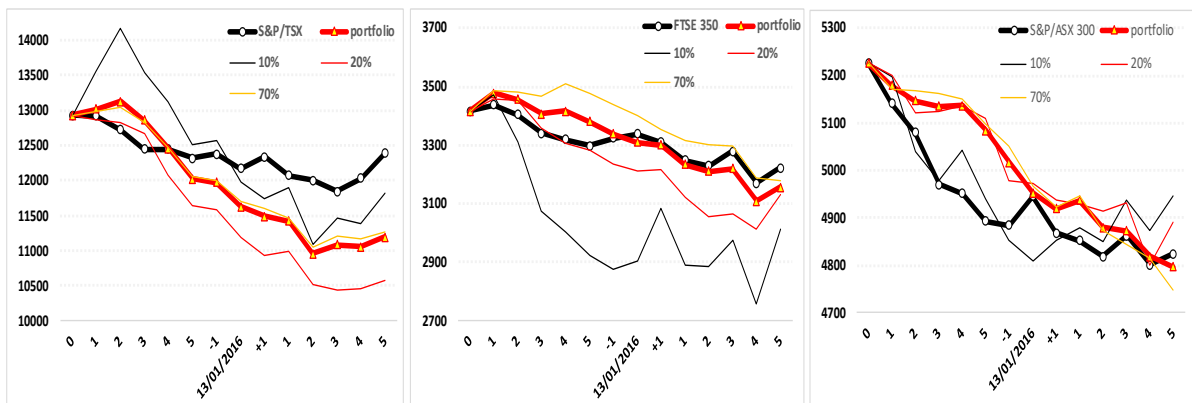


Figure 8: Portfolio variation at the baseline date of 13/01/2016.

Source: elaborated by the authors based on the collected data.

5.1.2 Implementation of IFRS 16 Standard on 01/01/2019

Table 21 shows the average of the abnormal returns in 01/01/2019. In the same way we found abnormal returns but observed that the variation was smaller than that on the date of the disclosure, using the t-test to present a statistically significant conclusion.

Table 21: Average of abnormal returns of portfolios in 2019.

	Estimation window	Event window	Post-event window
TSX	0,99%	1,61%	-0,30%
LSE	-0,14%	0,69%	0,43%
ASX	-0,21%	0,70%	-0,07%

Source: elaborated by the authors based on the collected data.

Following the same criteria already mentioned in item 6.1.1 for the statistical test the S&P/ASX 300 index of the Sydney stock exchange explained the abnormal return. Regarding the London and Toronto stock exchanges, the implementation of IFRS 16 affected the value of the companies. Table 22 shows the p for of each portfolio analyzed at using the reference date in 2019.

Table 22: Probability p in the sample test on 01/01/2019.

T test - probability					
S&P/TSX		FTSE 350		S&P ASX 300	
portfolio	0,00000	portfolio	0,0028	portfolio	0,185
10%	0,00039	10%	0,0008	10%	0,193
20%	0,00000	20%	0,0001	20%	0,153
70%	0,00001	70%	0,0033	70%	0,196

Source: elaborated by the authors based on the collected data.

Figure 9 shows the portfolio variation compared to the reference index for each stock exchange:

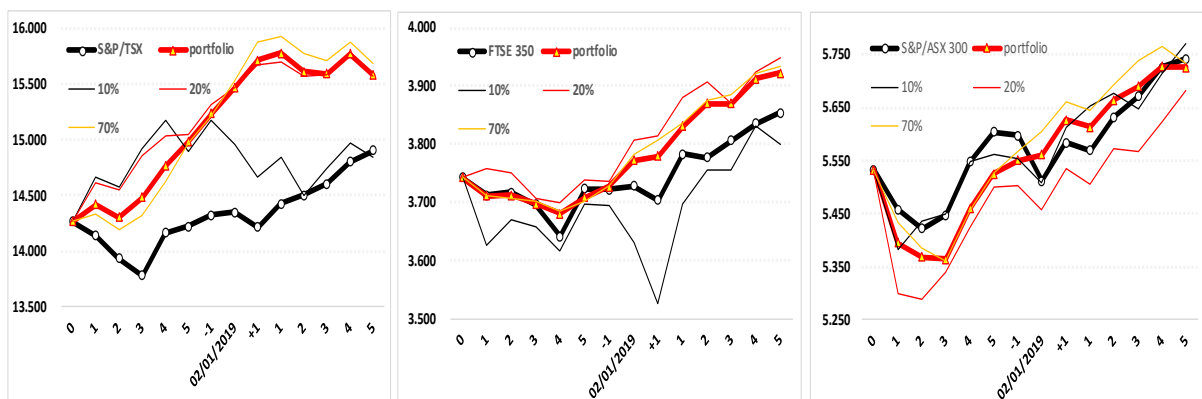


Figure 9: Portfolio variation at the baseline date of 01/01/2019.

Source: elaborated by the authors based on the collected data.

5.1.3 Conclusion of the Study Event

According to the hypotheses raised in this research, the following statements can be made: For h0: The market is efficient in the sense that accounting changes related to the registration of rental and operating leasing generated by IFRS 16, without altering the cash flow, do not alter the value of the company. For h1: it is not correct to state that the market is efficient in the sense of h0 hypothesis. According to the data collected, the hypothesis h0 is not valid. In the analysis of 24 portfolios, 17 presented significant changes in the value of the companies after the statistical test, considering the events of disclosure and implementation of the IFRS 16 standard for companies that intensively used mobile assets.

5.2 Relevant impacts

The change in the accounting standard generated by the disclosure and application of IFRS 16 standard affected the value of the analyzed companies. Mining companies, that usually lease machines, need to add on investment decisions the cost of balance sheet to choose the best option. Rental industry created the machine availability service without a dedicated machine, this kind of service is not included on IFRS 16 standards and can be operating and finance lease alternatives, with no balance sheet impacts.

5.2.1 Impacts for the Mining sector

The mining segment uses operating leasing and rental for mobile assets with a mix of own assets and assets of third parties, ensuring a constant performance in the exchange of equipment, in the negotiations of these contracts, and in the safe performance of the mining operation. In the Brazilian case, there are tax incentives such as RECAP, which enables large mining companies to buy equipment instead of renting them. In general, the rentals are more frequent for the parts of the operation that are not directly related to the mining - core activities - which target third companies as service providers or in machine renting. With a slightly different local context, both cases are recognizing the assets identified in the balance sheet and since this is an accounting change, purchasing departments still mention that they have a budget for operating lease or rental and not for the purchase of assets. Thus, following the market practice, operating lease are still being demanded off balance sheet by the market, as a matter of budget line and not because of registration. The change that is already taking place involves a higher knowledge of all areas of the company, realignment of budget lines, translating what accounting is already doing, and especially the demand for service providers who assume the operational risk of the assets. We will better detail this impact on the segment of leasing companies.

5.2.2 Impacts for the rental and leasing companies

The changes imposed by this standard regulation do not affect the leasing companies in the way they operate or in the registration of operating lease. The only relevant change is the demonstration of the interest rate implicit in these contracts so that the lessee can correctly make the entries of depreciation and interest.

Following the change in the companies that contract operating leasing, the demands for the lessees must undergo a migration to products that offer the lowest interest rate, enabling the direct comparison of operating

leasing with the credit and capital markets, with a price comparison, eliminating the variable with the lowest capital cost (off-balance sheet record). A new trend already observed in some offers, the rental companies are offering an availability service, assuming all the responsibilities of the assets that are no longer identified, since the availability imposes the input of other assets at the time of maintenance, break, or replacement of the assets that were in operation. This change is aligning with the new need for lessees to seek solutions through services and no more with leasing or renting. Returning to the Brazilian scenario, leasing has complex legislation and legal issues around the Guaranteed Residual Value (GRV) and the application of the ISS (municipal service tax) in addition to obstacles in operating leasing. Among them is the maximum term of operation of 75% of the useful accounting life of the good. Therefore, operating leasing are low in supply by lessors and this equalization with financing further reduces even more the attractiveness of the product. This, added to the service trend, should result in the emergence of asset management companies, which can either provide service to current lessors or go directly to the users of the assets, offering the availability service.

In this context, we should also add the release of infrastructure funds by CVM in 2019, enabling a solution with an effective asset manager and service provider, similar to real estate funds, providing as a service recorded in financial statements operating expenses for the user who only has access to the availability of the asset while it is operational/operating.

5.2.3 Impacts for other segments

It is not in the scope of this work to discuss this, but any segment that presents the need to change assets of high obsolescence has a potential to follow this same trend. This fact already occurs for computer equipment, excluded from the scope of the standard for less than USD 5,000, there are companies in the market that have specialized in providing computers through an operational lease, being responsible for maintenance and collection of equipment after the term of use. This model does not work for the assets of higher value, but may be regarded as an intermediate solution between the lease and the service provision. Transportation segments should be the first to experience the pressure on their balance sheets and should search for more efficient ways to use the good, without the ownership or property. In general, the change takes place first in part of large company and then gradually spreads to medium and small ones. The aviation segment already presents the merger between companies to allow the balance sheets to support the cost of the aircrafts that were mostly "acquired" through operating leasing. Logistic operators that use trains usually looked for off-balance sheet structures. These two segments present a common characteristic that is the concentration in a few companies. The transportation with trucks and rental companies are much pulverized markets, in which there is a movement of consolidation in the rental companies and the large carriers should present a similar behavior to the mining segment. In a scenario where everything between the factory and the user is waste and cost, the trend of the automobile industries that offer a service of exchange of goods without acquisition already presents a clear solution. It uses resale as an asset manager in the first use of the car and fosters the second-hand car market under known conditions of use. Toyota, Mercedes Benz, BMW, and some rental companies already offer this type of service.

5.2.4 Impacts for society

The imposed change brings to the balance sheet the assets that the companies use, a first impact for the society is to have financial statements more compatible with the activities of the companies, allowing a better assessment of risk and allocation of resources. A second change is the possibility of a new service model in line with the world trend of use and not ownership of the good. This model has several impacts, from new channels, new companies or consolidation of the existing ones for providing asset management integration, to models of direct investment of individuals in the financing of companies through investment funds that will be the new asset managers and service providers. Another benefit not so explicit and that large asset managers will have greater control over maintenance on assets optimizing their use and taking better care of maintenance with relevant environmental impacts with the reduction of idleness and increased energy efficiency if we look at the system as a whole.

6. Research Limitations

Scope: Mining Industry – although mining industry was one of the most impacted by IFRS 16, there are more industries impacted by this accounting standard, especially with a low depreciation asset as Real Estate and Oil and Gas [8]. Stock markets: study was based on Sydney, London and Toronto stock exchange, current markets with more Mining Industry influence [17]. Data stratification: With criticisms of IFRS [12,13,16], they point out that the low quality of professionals, education and inefficient control bodies can influence the quality of accounting information, [15] points out that local laws change the effects of the standard. Market dynamics: development of leasing and rental operations after the implementation of IFRS16, the change in the registration of operations has impacts on the segment chain, analyze the impact of the standard on mining equipment leasing companies, observing consolidations and market positioning after consolidation of the amendments generated by IFRS 16.

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