THE IMPACT OF IFRS 16 ON THE LESSEES? VALUATION

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Resumo

Purpose: This study investigates the impacts of IFRS 16 adoption on the assessment analysts make of lessees? financial performance and position.

Design/Methodology: Based on a survey with 175 Colombian accountants and on a between-subjects experiment with 79 Brazilian investors and financial analysts we investigate how analysts react to the recent change in accounting policy for lease agreements.

Findings: Despite information disclosed in the notes to financial statements and the economic substance of transaction being constant, analysts tend to assess differently companies under different lease accounting rules. Analysts that received information prepared in accordance with IFRS 16 assessed both EBITDA and Net Debt higher than those who received financial reports prepared in accordance with IAS 17.

Research limitations: Data was collected while firms were implementing IFRS 16; hence analysts were not fully aware of its innovations to financial reports.

Practical/Social implications: Analysts do not behave as corporate finance literature predicts; i.e., analysts may not adjust target firms? financial reports before calculating the ratios and reaching conclusions about their financial performance and position. Hence, the mandatory accounting policy change required by the IFRS 16 is a valuable decision aid to financial analysts.

Originality: Previous studies have predicted how financial ratios should change after IFRS 16 adoption, but none predicted how market participants would interpret such changes. This study explores the effect of the recent mandatory lease accounting policy change on analysts? reaction.

Palavras-chave: Lease, IFRS 16, IAS 17, Valuation, EBITDA, Net Debt, Humans, Econs

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1. INTRODUCTION

Until the reporting period ended on 31 December 1983, i.e., before the International Accounting Standard (IAS) 17 – Accounting for Leases had become effective, companies that "acquired" assets under a lease agreement (the lessees) used to account for leases payments as operating expenses; hence no leased asset or lease liability was recognized.

In the early 1980s the International Accounting Standards Committee (IASC) was convinced that such generally accepted accounting practice was not appropriate because lessees' balance sheet was not representing their financial position faithfully. Relevant lease liabilities were off balance sheet. Hence, in September 1982 the IASC issued the IAS 17.

From the reporting period beginning on 01 January 1984 until the reporting period ended on 31 December 2018, i.e., while the IAS 17 was effective, lessees were required to classify their lease arrangements as operating lease or finance lease. For operating leases there was no accounting change compared to the generally accepted accounting practices at date. Hence, lessees continued to account for operating leases arrangement as operating expenses, and the cash outflows associated with lease payments were classified in the statement of cash flows as a consumption by operating activity. However, for finance leases, at inception, lessees were required to recognize the leased assets at fair value and the respective liability at the present value of minimum lease payments. Subsequently, lessees should depreciate the leased asset and capitalize interest on the lease liability to keep it measured at the present value of minimum lease payments; and the cash outflows to settle lease liability were classified in the statement of cash flows as a consumption by financing activity.

Again, in the early 2000s the International Accounting Standards Board (IASB), the organization that superseded the IASC in 2001, was convinced that companies were gaming with the classification of lease arrangements between operating lease and finance lease. By the way, they were pushing the classification of genuine finance lease towards an apparent operating lease, in order to avoid the recognition of lease liabilities. Therefore, in January 2016 the IASB issued the International Financial Reporting Standard (IFRS) 16 – Leases.

Since the reporting period beginning on 01 January 2019, the IFRS 16 became effective and superseded the IAS 17. IFRS 16 introduces a single lease accounting model for lessees; accordingly, the lessee is required to recognize an asset, representing its right to use the

16, IN10). Subsequently, lessees shall depreciate the right-of-use asset and capitalize interest on the lease liability to keep it measured at the present value, more or less any lease liability revaluation. IFRS 16 accepts only two exemptions; a lessee may elect not to apply such single lease accounting model to: short-term leases (i.e., lease arrangements which lease term is of 12 months or less) and leases for which the underlying asset is of low value (e.g., tablets, personal computers, small items of office furniture and telephones) (IFRS 16, 5 and B6). We believe that lease arrangements to which a lessee may elect to apply the exemption rule are not relevant for valuation; therefore, we do not consider these exemptions in this study.

This accounting policy change is so relevant that IASB estimate that there were 2.18 trillion dollars of unrecognized liabilities (IASB, 2016).

After all the adjustments proposed by the IFRS 16, we should expect a change in firms' value drivers, such as the measured operational income, EBITDA and financial leverage (Net Debt). Consequently, IFRS 16 may also impact how analysts perceive how quickly a firm might grow in the future and how efficiently it is generating cash from the operating activity.

The accounting policies introduced by the IFRS 16 converge to what Graham and Dodd (1934), Hendriksen and Van Breda (1982), Damodaran (2009), Koller, Goedhart, and Wessels (2010), Palepu and Healy (2013), Holthausen and Zmijewksi (2014), Wahlen, Baginski, and Bradshaw (2015), Easton, McAnally, Sommers, and Zhang (2018) defend as a necessary managerial adjustment to calculate the value of firms with lease contracts, since lease is more similar to debt than to equity.

Considering that financial analysis literature suggests a managerial adjustment to analyze the financial position and performance of lessees, what is the benefit of IFRS 16? Would IFRS 16 actually provide a change in lessees' valuation or would it simply promote the recognition of an item that analysts have been doing in their spreadsheets 'since ever'? In other words, this study investigates the value relevance of the new accounting policy determined by IFRS 16.

Horton and Serafeim (2008) analyzed market reactions after companies under UK GAAP disclosed reconciliation statements to full IFRS. They find that firms whose earnings decreased following IFRS adoption experienced negative abnormal returns at the date of disclosure and an abnormal increase in trading activity; i.e., analysts were valuing differently the same companies under different accounting policies. Also, Barth et al. (2010) examines European stock market

positive reaction for firms with lower quality pre-adoption information and positive reaction to IFRS adoption events for firms with high quality pre-adoption information.

However, when the accounting policies are only related to lease accounting, other effects could be expected. Fulbier, Silva and Pferdehirt (2008) simulated the impact of lease capitalization in a sample of German companies. They found that there is a significant impact in financial ratios for balance sheet relations, but minor effects for profitability ratios and valuation multiples.

These conflicting evidences suggest the investigation of how analysts calculate value drive ratios (EBITDA and Net Debt) under different accounting policies for leases: the old IAS 17 and the new IFRS 16. Hence, this is the motivation of this study. To do so, we applied two different methodologies. Firstly, a survey in which respondents were required to calculate the EBITDA and Net Debt (valuation proxies) of a hypothetical airline company with a relevant lease contract. The survey was within-subjects and comprised by two tasks, first the airline's financial reports were prepared in accordance with IAS 17, them in accordance with IFRS 16. Secondly, an experiment, with another sample of financial analysts, in which the same tasks were applied but structured as a between-subjects experiment; where we manipulated the accounting standard in accordance to which the airline's financial reports were prepared (IFRS 16 or IAS 17). Both questionnaires had a brief explanation about the relevant accounting standard used to account for the lease arrangements in the financial statements and strongly recommended that respondent should make any necessary adjustment.

The exclusive focus about the impact on lessee companies, not considering lessors, is because IFRS 16 promoted virtually no change for lessors' accountings policies.

The next section presents the theoretical background and hypotheses. The third section describes the methodological approach. Section four depicts the results. The final section presents the concluding remarks and suggestions for future research.

Valuation and value measurement ratios

A firm's value is the present value of the expected free cash flows to the firm (FCFF), discounted at a rate that reflects both the risk in the firm and the mix of debt and equity it uses (Damodaran, 2002). The result of this calculation is called Enterprise Value (EV) and it is subtracted by the net debt (total debt less cash) to determine the Equity Value, which is the amount of money that would be applied in a M&A transaction.

Beyond this general theory, other metrics are extensively used by financial analyst to relatively value an asset. In relative valuation, the value of an asset is compared to the values assessed by the market for similar or comparable assets under standardized ratios (Damodaran, 2009). Almost 90% of equity research valuations and 50% of acquisition valuations use some sort of multiples (Damodaran, 2002), and EV/EBITDA multiples are the most frequently employed (Fernandez, 2001). Since most part of valuations is based on multiples and EBITDA is the most common metric, this study set this metric, and the net debt, as a proxy for a comparison about how analysts value a company under different lease accounting rules.

Accounting information impact on valuation

Accounting standards are frequently changing in order to improve financial statement quality and to provide investor a better patrimonial view of the company. Previous researches have shown strong evidence that market value of companies can be affected by accounting policies and practices.

In terms of value measurement, it's important to highlight the dual role of leverage on valuations. First composing the discount rate, normally a weighted average of the cost of debt and the cost of equity. And second, by deducting the EV plus cash. Olsson et al. (2004) examined the relation between the cost of equity capital and seven attributes of earnings and concluded that firms with the most favorable values of each attribute, viewed individually, enjoy significantly lower costs of capital than firms with the least favorable values and also that the largest cost of capital effects are found for the accounting-based attributes (Olsson et al., 2004). Similarly, Barth et al. (2013) provide evidence that firms with more transparent earnings enjoy a lower cost of capital. Although this paper does not intend to predict analyst behavior related to

IFRS 16 will reduce the cost of capital since it will enhance financial statement transparency and accounting-based earnings attributes such as quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism, avoiding investor to estimate lessees' fair value if they proceed with the adjustments suggested by financial analysis textbooks.

Beyond cost of capital, other attributes of value can be affected by factors such as transparency and reliability. Guiso et al. (2008) show that an individual's lack of trust is a significant obstacle to participate in the stock market. 'Lack of trust' means a subjective fear of being cheated. Since IFRS 16 will introduce information that before were kept off-book and out of analysts eyes it might improve trust between companies and investors.

Lease accounting policy changes: IFRS 16 versus IAS 17

Under the IAS 17 a company had to classify a lease arrangement between finance and operating lease. In the first case, assets were recognized in the balance sheet and so the equivalent debt. In the second case, only a lease rent payment was recognized in the income statement. The new model, IFRS 16, requires the recognition of all leases in the balance sheet, except by short-term leases and leases of low-value assets (IASB, 2016).

The new standard became effective in 1st January 2019 and is expected to generate profound changes in companies' financial position, financial performance and ratios (PwC, 2016).

The first major change is regarding the recognition of the right-to-use the leased asset in the balance sheet, increasing the fixed asset, which is an input for liquidity ratios. The counterpart of the right-to-use asset is the recognition of the lease payments obligations in the liability, as a debt, which is an input for leverage ratios and liquidity ratios.

Impacts will also be observed in the income statement. Instead of recognizing the lease payments as operating expenses, lessees will recognize interest expenses (to keep lease liability measured at present value) and the right-to-use depreciation expense. In other words, the EBITDA, Net Profit and other income subtotals tends to be impacted by the implementation of IFRS 16.

Since IASB issued the IFRS 16 in January 2016, many researchers and professionals started to study the potential effects of this changes in the financial statements and its ratios by

conclusions are depicted in Table 1.

Table 1: Expected effects of IFRS 16 on financial information

Financial Statement	Financial Ratio	Effect
Income Statement	EBITDA	Up
	Operating Profit	Up
	Finance Cost	Up
	Profit Before Tax	No effect
Balance Sheet	Total Assets	Up
	Total Liabilities	Up
	Owners' Equity	No effect
Statement of Cash Flows	Cash from operating activities	Up
	Cash from financing activities	Down
	Total Cash Flow	No effect

Note: Adapted from EY (2016) – A summary of IFRS 16 and its effects.

If the effects in financial statements and ratios can be predicted by capitalizing all operating leases, how to predict the effects of those changes on companies' valuations? Previews research have shown evidences that fair value measurement (on earnings) can be used by analysts to assess firm value. According to Barth & Landsman (2018) value earnings can be disaggregated into components that can be used to assess firm value, this disaggregation is possible because fair value embodies expected return on the firm's assets, as well current expectations of future cash flows and risk (Barth & Landsman). Therefore, IFRS 16 can help analysts in assess firm value, since lease contracts will be capitalized based on its fair value.

Lease capitalization is as a necessary managerial adjustment to calculate the value of firms with lease contracts, since lease is more similar to debt than to equity (Damodaran, 2009:3). In this case, Damodaran suggests analysts adjust financial reports in the same way as IFRS 16 officially requires (to recognize the lease liability and the right-to-use asset in the balance sheet, and substitute rent expenses by interest expense and depreciation charge in the income statement).

In order to do such adjustments, analysts were supported by the disclosure requirements from IAS 17 (paragraph 35), where lessees should describe the nature and characteristic of their lease arrangements (Hendrikesen & van Breda, 1992:579), in order to disclose any relevant off-balance sheet liability due in the following periods: no later than one year, later than one year

prefer not to recognize relevant liabilities to avoid being perceived as highly leveraged (Hendrikesen & van Breda, 1992:575).

Financial information distortion caused by unrecognized lease obligations was first documented by Graham & Dodd (1934), according to whom, lease liabilities were generally overlooked by analysts. They describe the bankruptcy case of United Cigar Stores Preferred, that in 1928 had reported 'no funded debt' and earnings equal to about seven times the preferred dividend, but its (off-balance sheet) liabilities under its long-term leases were so relevant that in 1932 bankruptcy was resorted to and the preferred stock was menaced with extinction. Hence, since 1934 Graham and Dodd teach that security analysts should include for leasehold obligations, guarantees and rentals in the calculation of fixed charges. A myriad of author has suggested such adjustment since then: Hendriksen and Van Breda (1982), Damodaran (2009), Koller, Goedhart, and Wessels (2010), Palepu and Healy (2013), Holthausen and Zmijewski (2014), Wahlen, Baginski, and Bradshaw (2015), Easton, McAnally, Sommers, and Zhang (2018).

Econs* and *Humans

Most of the economics and financial theories are based on assumptions such as efficient markets, symmetric information, rational decisions, no-transactional cost etc. Modilgliani & Miller (1958) theory of investment propositions and other asset valuation methods such as Black & Scholes (1973) pricing of options and Corporate Liabilities are developed under those assumptions or any similar variant.

The problem is that most of those assumptions does not fit with the reality, which is replete of examples of inefficient markets, asymmetric information and people taking emotional and irrational decisions. Therefore, corporate finance theories are replete of assumptions that doesn't fit in the real world in which imperfections and no-rational decisions are more frequent than its opposite.

In fact, there are two kinds of thinking, one that is intuitive and automatic, and other that is reflective and rational. The first is the "automatic thinking" – *humans* – and the second "reflective thinking" – *econs* – (Thaler & Sustain, 2008:19) and both should be considered when predicting human acts and decisions.

that would not be anticipated in a standard economic framework (Thaler & Sustain 2008, 37). In this case, analyst, in general should not work as *econs* like Damodaram or Hendrikesen & van Breda must suggest: Rationally analyzing lease accounting implications in order to truly and completely describe its nature and characteristic or making the proper managerial adjustments to calculate the intrinsic and fair value of a firm. It's expected that most of them would behave like *human*, relying on financial reports to direct extract data to support their decision making.

Market reactions under different accounting standards: Intrinsic Value and Value Measured

Few studies have investigated market reactions under different accounting standards. Horton and Serafeim (2008) and Barth et al. (2010) are scarce examples. Horton and Serafeim analyzed market reactions after companies under UK GAAP disclosure reconciliation statements to IFRS. The findings of such study indicate that firms whose earnings decreased following IFRS adoption experienced negative abnormal returns at the date of disclosure and an abnormal increase in trading activity. Such results indicate that analysts were valuing differently the same companies under different accounting policies, which can lead to the conclusion that the value of a firm can be manipulated or, at least, influenced by the adopted accounting practices.

Barth et al. (2010) examines European stock market reactions to 16 events associated with the adoption of IFRS in Europe, the findings suggest that investors expected net benefits to IFRS adoption in Europe associated with increases in information quality, decreases in information asymmetry, more rigorous enforcement of the standards, and convergence. The net benefits expected were identified through incrementally positive reaction for firms with lower quality pre-adoption information and positive reaction to IFRS adoption events for firms with high quality pre-adoption information.

Both researches conducted by Horton & Sarafeim and Barth and colleagues provide arguments to suggest that the adoption of IFRS 16 can reflect changes in companies value.

Based on a sample comprised of first quarter data from firms listed on the NYSE, NASDAQ and AMEX exchanges, Milan & Lee (2019) identified that lease intensive firms experienced significant negative abnormal returns on the first quarter 2019 compared to average data from 1993 until 2018. Such results suggest that higher information processing costs inherent

obligations, a well-known accounting distortion.

Checon (2018) investigated how different formats of financial information disclosure should impact analysts. Results show that narrative formats do not impact either the investment propensity or the amount of retrieved information from memory in comparison to traditional formats, unless the analyst has less than five years of financial experience, in this case, their investment propension adjusted to the same level of more experienced investors. It's possible to assume, that analyst, at Checon experiment, with more than five years of financial experience, are more *econs* than *humans*, since their analytical thinking apparently are not manipulated by narrative information. But *econs'* propensity was attested by narrative versus traditional financial information disclosure formats. In this case, analysts tend to rationalize more and rely less on the provided information, being more propense to make any necessary managerial adjustment. In this case, IFRS 16 would not have any impact on company's valuation or analyst's perception.

But, would Checon's results be different when tested, not on formats, but on accounting policies? This can explain the different conclusions raised by Checon (2018) versus Horton and Serafeim (2008) and Barth et al. (2010).

Based on those results, alternatively, it's possible to assume that analysts are more *humans* than *econs*, since they analyzed differently the same company under different accounting policies. However, to verify whether IFRS 16 is a decision-aid, i.e., if it comes to solve a problem providing investors with better information about lessees' financial position and enabling investors to more accurately calculate the firm's value, we would need to investigate whether analysts correctly interpret the lessees' financial information, regardless financial reports being prepared in accordance with IAS 17 or IFRS 16.

Therefore, the first hypothesis arises:

H1: Analysts value companies differently depending on the adopted accounting policies, despite information disclosed in the notes (i.e., EBITDA and Net Debt means assessed based on IFRS 16 information are statistically different from those assessed on the basis of IAS 17).

Based on revised literature we have conflicting expectations in regard to H1 rejection or not. On the one hand, modifications on accounting standards that promote relevant changes in value driven financial ratios would be followed by changes in the prices on capital markets; so

imply in analysts being *humans* (Thaler & Sustain, 2008). On the other hand, if IFRS 16 promotes only *pure* accounting changes, with no impact on the economic substance of lessees' transactions, strategy, operations and cash flow, and analysts adjust financial statements as extensively recommended by literature, we should not expect any change on the lessees' valuation; hence H1 should be rejected as expected by finance literature. However, it would demand analysts being *econs*.

In case analysts are *humans* (i.e., H1 is not rejected), we will further investigate whether IFRS 16 is an effective decision-aid and test H2:

H2: The assessments of EBITDA and Net Debt are closer to the theoretical (correct) values when the lessees' financial statements are prepared in accordance with IFRS 16 than with IAS 17.

Mr. Hans Hoogervorst, the IASB Chairman, suggests that the financial market is not comprised by a homogenous group of *humans* or *econs* analysts. According to him, "more sophisticated analysts have been correctly capitalizing leases to measure companies' values; less sophisticated analysts have been capitalizing it using some sort of multiples; and unsophisticated analysts haven't been capitalizing it at all"[1].

Due some issues related to data collection, which are explained in the next section, this study does not test Mr. Hoogervorst assumptions.

III. METHOD

In order to test whether analysts value differently companies that comply with IFRS16 than those that adopt IAS17, we collected data from two samples, under different strategies.

First, we conducted a survey in which respondents were required to calculate the EBITDA and Net Debt (valuation proxies) of a hypothetical airline company with a relevant lease contract. The survey was comprised by two tasks, first the airline's financial reports were prepared in accordance with IAS 17, them in accordance with IFRS 16.

[1] https://www.youtube.com/watch?v=gBQ6Z5j9Lko

structured as a between-subjects experiment; where we manipulated the accounting standard in accordance to which the airline's financial reports were prepared (IFRS 16 or IAS 17).

Both questionnaires had a brief explanation about the relevant accounting standard used to account for the lease arrangements in the financial statements and strongly recommended that respondent should make any necessary adjustment.

Following, responds were provided with Financial Statements (based on the respective accounting rules) and detailed information in the notes to financial statements regarding such lease contract with enough information to make any adjustment (e.g., full contract value, expiration date, implicit interest rate, present value of lease payables, and underlying asset depreciation table). Hence, the instrument was comprised of a brief description of a hypothetical airline company activities and financial statements prepared either in accordance with IAS 17 or IFRS 16. Participants received the entity's balance sheet, income statement, statement of cash flows and the notes. Tasks were simple, respondents were asked to calculate the entity's EBITDA and Net Debt figures based on information provided. Table 2 presents the expected calculations of both metrics under both accounting policies.

Table 2: EBITDA and Net Debt theoretical values

	IFRS 16	**IAS 17**
EBITDA formula		
(+) Operating Profit	$ 749,108	$ 586.036
(+) Airplanes rental expenses	N/A	$ 300.000
(+) Depreciation and amortization (airplanes)	$ 136,928	N/A
(+) Depreciation and amortization (other fixed assets)	$ 100,000	$ 100.000
(=) EBITDA theoretical values	**$ 986,036**	**$ 986.036**
Net Debt formula		
(+) Current portion of long-term debt (current liability)	$ 125,000	$ 125,000
(+) Long-term debt (non-current liability)	$ 557,000	$ 557,000
(+) Lease payable (current liability)	$ 275,229	N/A
(+) Lease payable (non-current liability)	$ 2,060,616	N/A
(+) Lease payable (presented in the notes)	N/A	$ 2,335,845
(=) Gross Debt theoretical values	*$3,017,845*	*$3,017,845*
(–) Cash and Cash Equivalents	($ 716,884)	($ 716,884)
(=) Net Debt theoretical values	**$ 2,300,961**	**$ 2,300,961**
Net Debt / EBITDA ratio (*)	**2.33355**	**2.33355**
(*) Calculating the ratio Net Debt / EBITDA was not a task performed by participants. But, calculated indirectly on the bases of both values measured by participants.		

values" used to compare with respondents' calculations for testing H2.

The survey was applied to Colombian accountants, during a train-the-trainers workshop about IFRS 16 held on Cartagena, on 22nd August 2018. This survey followed a within-subject type methodology. In other words, the same responds performed the task twice. The workshop began with a brief explanation of IAS 17, followed by the application of the first survey (based on IAS 17). Then, there was a 90 min section on IFRS 16; after that the second survey (based on IFRS 16) was applied. Due to the fact that these surveys were hosted on different web questionnaires, answered anonymously, it was not possible to track answers and determine how differently a particular respondent answered the tasks. There was also no collection of demographic data for those respondents. From now on, this data collection will be named as "Colombian survey". In total, 200 professional accountants attended to the workshop. Among them, 83 accountants completely answered the questionnaire based on IFRS 16, and 92 completed it based on IAS 17.

The second data collection was an experiment applied to Brazilian professionals from September 2018 until August 2019 and followed a between-subject methodology. In other words, the questionnaire was randomly distributed, creating two groups of respondents. One group was requested to calculate the valuation proxies under the IFRS 16, and the other group under the IAS 17. For this questionnaire, there were collection of demographic data. From now on, this experiment will be named as "Brazilian experiment". In total, 320 individuals participated in this experiment, of which 278 self-declared to be a finance or accounting professional. Therefore, 42 participants were eliminated from the sample because they declared themselves as students only or professionals from other fields. Among the 278 qualified respondents, 79 participants answered the full questionnaire, making this the total number of available answers to analyze. All questionnaires for the Brazilian experiment were applied throw internet and the invitations sent by e-mail, social medias such as LinkedIn and classroom verbal communication.

As mentioned above, both data collections employed the same questionnaire, differentiating themselves only by the application methodology, the collection of demographic data and the idiom (i.e., Portuguese in Brazil, and Spanish in Colombia).

Tables 3 and 4 present descriptive statistics and t-test for EBITDA and Net Debt after excluding outliers.

Considering responses that are 1.5 times the length of the box away from either the lower or the upper quartiles as outliers, we excluded responses from 19 participants in the Brazilian experiment and 61 in the Colombian survey were excluded, lasting 60 and 114 valid answers.

EBITDA

To investigate whether analysts perceive the lessees' financial position and performance differently depending on the applied accounting policy (i.e., IAS 17 or IFRS 16) despite the fact that their operating and business model are the same, we first analyzed the assessment of EBITDA independently of how it was accounted for, as depicted in Table 3.

Table 3: Results for EBITDA

	Brazilian experiment		*Colombian survey*	
	IFRS 16	*IAS 17*	*IFRS 16*	*IAS 17*
Panel A: Comparison IFRS 16 versus IAS 17 (H1 – EBITDA)				
Average	$986,036	$730,851	$976,964	$684,224
Variance	$0	$12,456,702,051	$4,656,551,508	$7,496,585,768
Samples size	33	27	57	57
Grouped Variance	$5,584,038,850		$6,076,568,638	
Means difference hypothesis	0.00		0.00	
Degree of Freedom	58.00		112.00	
Stat t	13.16		20.05	
p(T<=t) two-tailed	0.00		0.00	
Critical t two-tailed	2.00		1.98	
Panel B: Comparison values assigned versus theoretical values (H2 – EBITDA)				
	Brazilian experiment		*Colombian survey*	
Theoretical value	*IFRS 16*	*IAS 17*	*IFRS 16*	*IAS 17*
Average	$986,036	$730,851	$976,964	$684,224
t-value	-	-11.80533	-1.003704	-26.317353
p-value	1	< .00001	.319839	< .00001

Panel A in table 3 shows that the average EBITDA attributed by analysts differ significantly depending on the adopted accounting policy. Both Brazilian and Colombian analysts assessed EBITDA much lower (average 730,851 and 684,224, respectively) on the IAS 17 scenario, where rental expenses are presented on the face of Income Statement as operating activity, than on the IFRS 16 scenario, where the lessee does not recognize rental expense, but

differences are statistically significant (t = 13.16, p value 0.000, and t = 20.05, p value 0.000, respectively). Hence, H1 is not rejected, meaning that under IAS 17 analysts do not adjust Income Statement figures to information disclosed in the notes about lease arrangements; i.e., they are *humans*.

Table 3 (panel B) also presents that IFRS 16 is an effective decision-aid to measure EBITDA; i.e., H2 is not rejected. The average EBITDA assigned by Brazilian analysts that received financial reports prepared in accordance with IFRS 16 is exactly the theoretical value ($986.036), and the EBITDA value measured by Colombian is not statistically different from the theoretical value (i.e., $976,964, t-test = -1.003704, p-value = .319839). On the contrary, analysts that received financial reports prepared in accordance with IAS 17 measured EBITDA significantly different from the theoretical value (i.e., Brazilians = $730,851, t-test = -11.80533, p-value < .00001, Colombians = $684,224, t-test = -26.317353, p-value < .00001).

Net Debt

The same procedures described for analyzing EBITDA responses were performed to test H1 and H2 in regard to Net Debt, as shown in Table 4.

Table 4: Results for Net Debt

	Brazilian experiment		*Colombian survey*	
	IFRS 16	*IAS 17*	*IFRS 16*	*IAS 17*
Panel A: Comparison IFRS 16 versus IAS 17 (H1 – Net Debt)				
Average	$1,859,793	$482,242	$2,770,543	$888,235
Variance	$1,240,184,742,272	$714,654,184,338	$913,527,563,738	$330,628,247,388
Samples size	33	27	57	57
Grouped Variance	$1,004,602,078,371		$622,077,905,563	
Means difference hypothesis	0.00		0.00	
Degree of Freedom	58.00		112.00	
Stat t	5.30		12.74	
p(T<=t) two-tailed	0.00		0.00	
Critical t two-tailed	2.00		1.98	

Panel B: Comparison values assigned versus theoretical values (H2 – Net Debt)

	Brazilian experiment		*Colombian survey*	
Theoretical value	*IFRS 16*	*IAS 17*	*IFRS 16*	*IAS 17*
$2,300,961	$1,859,793	$482,242	$2,770,543	$888,235
t-value	-2.275714	-11.178911	3.709269	-18.549209
p-value	.029698	< .00001	.000479	< .00001

depending on the accounting policies applied to account for leases, not rejecting H1. In accordance with IAS 17, operating lease liability was kept off-balance sheet; while under IFRS 16 all lease payables are recognized at lease inception and measured at present value. As presented on Table 4 – panel A, Net Debt assessment by both Brazilians and Colombian are significantly different when they received information prepared in accordance with IFRS 16 or IAS 17 (t = 5.30, p value 0.000, and t = 12.74, p value 0.000, respectively). Hence, differently from predicted by the finance literature, users of financial statements do not adjust balance sheet information to data disclosed in the notes; but consistently with behavioral economics literature, analysts are *humans.*

Although the average Net Debt assigned by Brazilian and Colombian analysts that received financial reports prepared in accordance with IFRS 16 ($1,859,793 and $2,770,543, respectively) are not much different from the theoretical value (i.e., $2,300,961), such differences are statistically relevant (at 5% for Brazilians, and at 1% for Colombians). Hence, we cannot conclude that IFRS 16 is an effective decision-aid for the measurement of Net Debt, rejecting H2 in regard to Net Debt assessment. However, when participants received financial reports prepared in accordance with IAS 17, they also measured Net Debt significantly different from the theoretical value (i.e., Brazilians = $482,242, t-test = -11.178911, p-value < .00001, Colombians = $888,235, t-test = -18.549209, p-value < .00001); and such differences are visually much more salient.

Since in both scenarios (IAS 17 and IFRS 16) H2 is rejected in regard to Net Debt, we decided to zoom in data.

A more detailed look at the data shows that a conceptual issue influenced the statistical analyzes and leaded to the above conclusion. If EBITDA responses did not show a relevant volatility among respondent's answers, the same would not be expected for Net Debt. The experiment was expecting respondents to calculate Net Debt as the sum of the present value of lease future payments and long term debt (considering both current and no-current portion) less Cash and Cash Equivalents, but what actually happened was a mix of formulas adopted by respondents to calculate Net Debt as shown in the Table 5.

Net Debt formula	Brazilian Experiment	Colombian Survey
Calculated as expected	35,00%	15,79%
Did not deduct Cash and Cash equivalents from the Gross Debt	3,33%	21,05%
Did not consider lease as a debt	36,67%	1,75%
Did not consider lease as a debt and did not deducted cash	1,67%	–
Considered Net Debt as total liability	0,00%	24,56%
Considered Net Debt as total liability less Cash and Cash Equivalents	0,00%	8,77%
Not identified (other formulas)	23,33%	28,07%
Total	**100%**	**100%**

The difference in Net Debt calculation between Brazilian experiment and Colombian survey may be due the fact that the samples have different composition. While Colombian survey is composed mostly of accountants, the Brazilian experiment is composed of a more diversified mix of financial analysts, such as Equity and M&A professionals. Since Brazilian experiment sample better reflect financial report end-users, it's possible to assume that its results better reflect how market is expected to behave. This assumption can be attested by the fact that p-value on Brazilian experiment almost achieved the significance level to not reject H_0, such as on EBITDA test.

Net Debt/EBITDA ratio

The Net Debt/EBITDA ratio is a very common financial ratio used in covenants clauses on capital raising. Based on its importance, the same analyzes for EBITDA and Net Debt was performed for the ratio EBITDA/Net Debt.

It's important to underline that the financial ratio EBITDA/Net Debt calculation was not part of the task performed by participants, but indirectly since it's a pure consequence of the two financial metrics they calculated.

	Brazilian experiment		*Colombian survey*	
	IFRS 16	*IAS 17*	*IFRS 16*	*IAS 17*
Panel A: Comparison IFRS 16 versus IAS 17 (H1 – Net Debt / EBITDA)				
Average	1.89	.61	2.84	1.32
Variance	1.28	1.09	1.04	.88
Samples size	33	27	57	57
Grouped Variance	1.19		1	
Means difference hypothesis	0.00		0.00	
Degree of Freedom	58.00		112.00	
Stat t	4.51		8.28	
p(T<=t) two-tailed	0.00		0.00	
Critical t two-tailed	2.00		1.98	

Panel B: Comparison values assigned versus theoretical values (H2 – Net Debt / EBITDA)

	Brazilian experiment		*Colombian survey*	
Theoretical value	*IFRS 16*	*IAS 17*	*IFRS 16*	*IAS 17*
Average	1.89	.61	2.84	1.32
t-value	-2.267492	-8.575858	3.783219	-8.111231
p-value	.03025	< .00001	.000379	< .00001

Similar to results from the analyses of EBITDA and Net Debt, participants indirectly measured the ratio Net Debt/EBITDA differently depending on the applied accounting policy (IFRS 16 or IAS 17), as depicted in Table 6 (panel A). Therefore, H1 is not rejected in regard to the ratio Net Debt/EBITDA.

Indeed, focusing on the ratio Net Debt/EBITDA, IFRS 16 is a valuable decision-aid (not rejecting H2 – at least based on the Brazilian experiment). Although Brazilian analysts have assessed Net Debt significantly different from the theoretical value ($2,300,961), such difference was not material; hence the Net Debt/EBITDA ratio they assessed is not significantly different from the theoretical value (2.33).

Both Brazilian experiment and Colombian survey bring the same conclusions: Analyst measure EBITDA and Net Debt (valuation proxies) differently under different lease accounting policies. And the new lease accounting policy will add to market new relevant information to calculate lessees' value regarding EBITDA, but not regarding Net debt, since there is no uniqueness among analysts on how to calculate it or what should be included or not in its formula.

Lease accounting has been questioned for a long time, mainly because companies have been using it to keep relevant amounts of liabilities off-balance sheet. Many authors have questioned its practice and suggested managerial adjustments to capitalize leases in order to estimate the true intrinsic value of a company, as Graham & Dodd (1934), Hendriksen & van Breda (1992), and many contemporary American and Latin-American authors. Based on this academic guideline, would be reasonable to expect analysts to adjust lease accounting in its spreadsheets. However, as this study testifies, analysts do not behave as theory guide.

Because analysts are *humans*, busy and have limited attention, their choices are influenced in ways that would not be anticipated in a standard economic framework (Thaler & Sustain 2008, 37). In this experiment, analysts show a tendency to rely on the accounting information provided in the face of financial statements and do not proceed with any adjustment based on information disclosed in the notes, even if financial analyses literature suggest doing so.

Due to a large mix of factors such as nescience, scarce time, conflict of interests etc., financial analysts behave more as *humans* than as *econs* and, based on that, after the implementation of IFRS 16 we can expect that companies with relevant lease contracts will have its EBITDA and Net Debt higher measured than before, impacting on capital markets and M&A transactions.

It means that IFRS 16 will be a *nudge* and a *decision-aid to* analysts, providing market with better information about the true patrimonial situation of a particular company, enabling analyst to calculate more precisely the intrinsic value of a business.

Another conclusion, not related with the main question, but also relevant is that, based on the volatility of the answers provided, there is no consensus among analysts on how to calculate Net Debt. This observation may be subject of further research.

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