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Accruals according to the Cash Flow Statement and Balance Sheet Approaches: A Comparative Analysis

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Abstract

Objective: To verify whether accruals calculated according to the balance sheet and cash flow statement approaches are similar.

Method: This study included 348 non-financial companies listed on B3 from 2011 to 2020, totaling 2,786 observations. First, a non-parametric test of difference in means was performed to verify whether there were significant differences between the accruals calculations according to the approach used. Next, both approaches were tested in a prediction model of cash flows to identify the most adequate measurement.

Results: The results showed a difference between the two approaches, indicating that they are not statistically similar. The cash flow prediction model showed that the accruals approach calculated by the cash flow statement proved to be most appropriate than the balance sheet approach.

Contributions: This study contributes to the academic milieu by indicating that accruals calculated by the balance sheet and the cash flow statement approach are not similar, suggesting researchers adopt both calculation approaches in academic research.

Keywords: accruals; profits; balance sheet; cash flow statement.

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1. Introduction

Financial statements are the primary source of information regarding a company's financial and equity condition. There are a variety of stakeholders, including equity and debt investors, regulators, employees, and competitors, who review these statements to obtain information about a company's transactions, economic conditions, growth prospects, and risks (Casey et al., 2017).

The Conceptual Framework, CPC 00 (R2), reports that the objective of financial statements is to provide financial information regarding the reporting entity that existing and potential investors, lenders, and other creditors use when making decisions regarding the allocation of resources to this entity.

According to CPC 00 (R2), the usefulness of accounting information is related to its relevance and ability to represent what it is intended to. Being relevant means the information has a predictive and/or confirmatory value and can make a difference in users' decisions. Hence, accounting information that has predictive value is considered good quality information.

Disclosed accounting information includes accounting income, as it is used for various purposes, such as contractual obligations, asset valuation, executive compensation, and bonus plans, and provides relevant information that proves to be useful for various stakeholders (Cupertino et al., 2016). Accounting profit plays a central role in accounting and is widely used to assess stocks, management, and debt contracts (Dechow et al., 1998).

Thus, Earnings Quality is fundamental in accounting and financial economics (Dichev et al., 2013). This concept does not have a precise definition though. It is generally defined as the extent to which the earnings disclosed in financial statements represent the economic context of a company and the extent to which they reflect the basic accounting concepts (Yoon, 2007). Furthermore, such quality is related to different aspects for the different users of financial statements (Dechow & Schrand, 2004).

Dichev et al. (2013) note that besides differences in its definition, there are also different strategies to measure them, such as earnings persistence, predictability, and smoothing, among others. Dechow et al. (2010) organized earnings quality proxies into three categories: a) earnings properties, b) investor response to earnings, and c) external indicators of earnings distortion. Regarding earnings properties, among other proxies, this category includes accruals.

Accruals concern accumulations arising from income accounts that are included in the calculation of accounting profit but which do not imply a necessary change in cash flow (Martinez, 2001), due to inter-temporal differences between economic recognition in income, because of the accrual principle and its impact on cash flow (Malacrida, 2009).

According to Hribar & Collins (2002), the measurement of accruals plays a central role in the accounting literature, especially when studying the properties of earnings. Hribar & Collins (2002) observed, however, that despite the availability of cash flow statements (CFS), most American studies at that time continued to calculate accruals using the Balance Sheet (BS) approach. The authors above note a difference between the calculation of accruals by the two approaches, especially when there are mergers and acquisitions, discontinued operations, or foreign currency conversions that affect the Balance Sheet accounts but which have no impact on the cash flow statement (Hribar & Collins, 2002).

Analogously, this fact can be verified in some studies in the Brazilian context, among which Novaes et al. (2018), Oliveira and Cavalcante (2018), and Rodrigues et al. (2019), despite the mandatory disclosure of CFS in Brazil beginning in 2010. Thus, the results may have been influenced if the events listed by Hribar & Collins (2002) occurred in these studies' samples and periods.

Given this context, the following research problem arises: ***in what ways are the accruals calculated according to the balance sheet and the cash flows statement approaches similar?***

Therefore, this study's objective is to verify in what ways accruals calculated by the balance sheet and the cash flow statement approaches are similar. This variable is often used in studies addressing earnings management, earnings persistence, and the ability to predict cash flows, among others, without presenting a uniform way of calculating it, which may cause these studies' results to be misinterpreted. Therefore, this study intends to analyze the accruals calculated by the two approaches among companies listed on the B3 between 2011 and 2020, when the CFS became mandatory.

This study is expected to contribute to the academic milieu by revealing the relationship between the accruals calculated according to the BS and CFS approaches, clarifying how the results of previous studies compare, and how the accruals' differences and similarities impact those using accounting information, suggesting a potential direction for future studies using this variable, especially in the field of accounting and finances.

2. Theoretical Framework

2.1 Earnings Quality

Profit is one of the leading accounting items relevant for decision-making since it represents an organization's current performance and is the primary metric used by investors and analysts (Barker & Imam, 2008; Francis et al., 2020). According to Chang (1962, p. 639), "profit can be defined as the maximum amount a firm may distribute as dividends and still expect to be as well off at the end of the period as it was at the beginning."

For efficient decision-making, financial statements must disclose accurate and trustworthy data without manipulating numbers that may modify the organization's actual conditions, mainly evidenced by profits (Barth et al., 2019). High-quality information provides an accurate and reliable picture of a company's performance and is informative and necessary for decision-making (Dechow et al., 2010; An, 2017). According to Martins (2012), the quality of financial information is fundamentally based on the usefulness and relevance of its content for users.

The relevance of accounting information is linked to the quality of earnings. High-quality earnings present useful numbers for managers and investors for decision-making purposes (An, 2017) and provide more information about a company's financial performance, relevant for specific decisions (Dechow et al., 2010).

According to Dechow et al. (2010), earnings quality can be defined as the ability of accounting reports to provide more detailed information on a company's performance that is relevant for decision-making. However, some authors argue that this concept is not well established or that there is divergence among researchers (Givoly et al., 2010). Accordingly, Dechow et al. (2010) report that such quality is conditioned to the information's relevance for decision-makers. In addition to conceptual divergences regarding the quality of information, there are different ways of measuring it. For example, earnings persistence, smoothing, and the magnitude of accruals are proxies of such quality (Dechow et al., 2010; Dichev et al., 2013).

Several quality measures have been used in the literature to measure earnings quality. For example, Dechow et al. (2010) reviewed more than 300 studies addressing earnings characteristics or attributes. They identified the proxies for earnings quality in these studies, organizing proxies into three broad categories: 1) earnings ownership – this category includes earnings persistence, earnings smoothing, and accruals; 2) investors' responsiveness to results, which considers the earnings response coefficient (ERC), or the R^2 of the stock return model; and, finally, 3) indicators of distortions in results, such as deficiencies in internal controls and re-disclosure required by regulatory bodies.

In the earnings properties proxy, earnings persistence reflects earnings sustainability, as it shows that earnings persistence from one period to the next is estimated by regressing earnings for the current period on earnings for the previous period (Kohlbeck & Warfield, 2010). Earnings smoothing aims to reduce fluctuations and stabilize earnings over time and can be defined as an intentional effort to reduce fluctuations in reported earnings (Martinez, 2006). Finally, accruals are measures to capture the quality of earnings to measure economic profit regardless of a company's cash flow (Martinez, 2006). The following topic provides an explanation of accruals.

2.2 *Accruals*

Accruals are all income accounts included in the calculation of profits and which, although they do not cause changes in cash, improve the ability of profits to reflect a company's performance (Dechow, 1995). Profits are accounting information based on the accrual basis, which determines that an entity's accounting transactions are recorded in the period in which they are realizable. Thus, revenue is recognized in the period when it was realized, confronting the expenses necessary for its effectiveness (Martinez, 2001). Thus, under this regime, revenues, expenses, and costs must be recorded, as they occur, not at the time of financial realization. In addition, following the principle of comparing expenses, revenues must be recognized according to their related expenses to determine the net result of the economic event in question (Machado et al., 2014).

According to Machado et al. (2014, p. 6), "the accrual basis is linked to the economic event rather than to the financial event of cash inflows or outflows, which the cash basis would represent." Thus, the name accruals are given to all accumulations from income accounts included in the accounting profit calculation, but which does not imply necessary changes in cash flow (Martinez, 2001). That is, they arise when there is a discrepancy between the moment cash flows occurred, and the transaction was recognized in accounting (Roneen & Yaari, 2008).

Studies addressing accruals are present in some fields of accounting research, especially when one wants to verify the quality of accounting information with a view to the capital market. The accounting information system's usefulness is providing valuable information to change investors' beliefs, thus reducing existing information asymmetry between managers and stakeholders. This role is played by accruals, as it is where the informational content of accounting resides (Lopes & Martins, 2007). It turns out that, as observed by Hribar & Collins (2002) in the American context at the time, many studies used two approaches to calculate accruals: the Balance Sheet approach and the Cash Flow Statement approach, even though the CFS had been published for a while.

2.2.1 Accrual Estimation Approach

Accrual estimates can be performed using the balance sheet or the cash flow statement approaches (Hribar & Collins, 2002). The balance sheet estimation is based on a supposed connection between the accrual components (revenues and expenses) in the income statement and the net working capital accounts in the balance sheet (Paulo, 2007). The balance sheet method approach is the most frequently used in the Brazilian context since the mandatory preparation of the cash flow statement was only implemented after Law No. 11,638, of December 28th, 2007 (Macedo et al., 2011).

Following some authors such as Dechow et al. (1995) and Paulo (2007), one can estimate the total accruals using the Balance Sheet according to Equation 1:

$$TA = \Delta(AC - DISP) - \Delta(PC - FCP) - DD \quad (1)$$

Where:
TA = total accruals estimated by the balance sheet approach;
ΔAC = variation in current assets in period t;
ΔDISP = variation in cash and cash equivalents in period t;
ΔPC = variation in current liabilities in period t;
ΔFCP = variation in short-term financing and loans in period t;
DEP = depreciation and amortization of period t.

Several authors have used the balance sheet method to estimate accruals, e.g., Hirshleifer et al. (2009), Kang et al. (2010), Dechow et al. (2012), Martinez (2008) and Medeiros et al. (2019). The objectives and results of these studies are summarized in Table 1:

Table 1
Some of the studies using accruals according to balance sheet

Authors	Studies' objectives	Results
Martinez (2008)	Discuss statistical models of aggregated accruals and verify whether accounting earnings management occurs in Brazil and what would be some of its motivations.	The statistical model test results indicated that Brazilian public companies manage their results in response to market stimuli.
Hirshleifer et al. (2009)	Examine whether accumulation and cash flow effects at the firm level extend to aggregate market returns.	The authors concluded that aggregate accruals positively predict future market returns.
Kang et al. (2010)	Analyze and evaluate the predictive ability of discretionary and non-discretionary accruals to predict future cash flows.	This study concluded that aggregated discretionary accruals positively predict future market returns, while aggregated non-discretionary accruals lack predictive ability.
Dechow et al. (2012)	Propose a new approach to identify and test competency-based earnings management.	The results indicated that the new approach to detecting management earnings leads to substantial improvements in the estimation. Any interference in the increases at a point in time will lead to a reversal in one of the following periods.
Medeiros et al. (2019)	Verify whether the companies listed on B3 from 2010 to 2015 managed their results simultaneously by real activities and discretionary accruals to avoid profit surprises.	The authors found no evidence that earnings management was simultaneously performed using real activities and discretionary accruals to avoid earnings surprises.

Source: developed by the authors.

Although the method above is the most frequently used, Martinez (2013) states that the balance sheet approach will likely remain the preferred one for a longer time, considering the need to have larger samples to ensure the robustness of the results observed. However, according to Paulo (2007, p. 93), "the accruals under the balance sheet approach used in several studies may contaminate empirical evidence due to the accruals estimates' measurement error."

Another method to calculate accruals is the cash flow statement approach, which became possible in Brazil after adopting IFRS and became mandatory. Under this approach, accruals can be determined from the difference between net income for the year and the amount of cash generated or consumed in operating activities, as shown in Equation 2:

$$TADFC = LL - FCO \quad (2)$$

Where:
TADFC = Total accruals estimated by the cash flow statement in period t;
LL = Net Income for period t;
FCO = Operating Cash Flow in period t.

Calculating accruals with this equation is justified by the fact that the subtraction of operating cash flow from net income specifically represents the portion of the result that does not change a company's financial resources, removing from net income the effects of the accrual basis relative to the cash basis.

According to Hribar and Collins (2002), the approach using the Balance Sheet to estimate accruals contaminates discretionary accruals and may lead to wrong conclusions about the occurrence of earnings management. Thus, some authors used the estimation of accruals according to CFS. Table 2 summarizes some of the studies using this approach:

Table 2
Some of the studies using accruals according to cash flow statement.

Authors	Studies' objectives	Results
Machado et al. (2014)	Verify which accounting information is most relevant in predicting future cash flow.	The results revealed an increase in the explanatory power of net income and operating cash flow combined with accruals, calculated using the cash flow approach, during the post-convergence period, compared to the pre- and partial convergence periods. Additionally, the results showed that earnings disaggregated into cash flow and accruals significantly increase the predictive capacity of future cash flows.
Boina and Macedo (2018)	To analyze and evaluate the predictive ability of discretionary (DA) and non-discretionary accruals (NDA) to predict future cash flows before and after Brazil's implementation of the International Financial Reporting Standards (IFRS).	The authors concluded that current aggregated accruals have informational gains relative to those produced before IFRS. The DA and NDA produced before IFRS are negative and statistically significant for predicting cash flows. In contrast, the DA and NDA produced after IFRS are positive and statistically significant for predicting future cash flows.
Al Azeez et al. (2019)	Analyze whether board characteristics impact earnings management among the largest oil and gas companies	The study's results revealed that board independence and CEO duality have a considerable impact on reducing earnings management.
Martins et al. (2019)	Analyze how the pricing of accruals is configured in the Brazilian market; that is if it represents a market mispricing or a priceable risk factor.	The authors found evidence that confirmed the existence of the accruals anomaly in the Brazilian capital market, directing the explanation of the presence of this anomaly in terms of the mispricing hypothesis.
Rodrigues et al. (2019)	To investigate the behavior of the management level of quarterly earnings of Brazilian public companies.	The results suggest that managers' discretionary behavior affects the accounting numbers reported quarterly by companies, which may influence the perception of investors, shareholders, and remaining stakeholders.

Source: developed by the authors.

According to Boina & Macedo (2018), measuring accruals using the CFS approach is especially useful in economic environments in which business mergers are intense, as has been the case of the Brazilian market in recent years.

2.2 Previous Studies

According to Hribar and Collins (2002), accruals are central in a large body of accounting literature. Therefore, the authors sought to examine and compare the measurement of accruals estimated by the balance sheet and the cash flow statement and show the implications of empirical studies based on the balance sheet approach. They analyzed US companies listed on the NYSE and AMEX from 1988 to 1997, concluding that measurement errors in accrual estimates might contaminate studies using the balance sheet approach.

Nallareddy et al. (2020) used accruals to forecast future cash flows for American companies from 1989 to 2015. The results of the estimates according to the balance sheet and the cash flow statement were compared, and the conclusion was that the use of the BS approach might provide a better measure for cash flow forecasting purposes. According to the authors, the measurement of accruals using the BS approach considers unrelated events, such as mergers and acquisitions, which also impact a company's future cash flows.

Heater et al. (2021) used the accruals estimated through the balance sheet and the cash flow statement to analyze the impact of mergers and acquisitions (M&A) on US companies' market returns from 1988 to 2017. First, the authors analyzed the role of M&A in measuring accruals, focusing on the difference between BS-based and CFS-based accruals. The evidence suggests that the accruals measured according to the balance sheet method contain more helpful information about a company's specific economic activities relevant to predicting the return.

These two more recent studies confront the results of Hribar and Collins (2002), showing that the accruals calculated using the balance sheet approach present higher information quality. The reason is precisely that they consider some economic events, such as mergers and acquisitions, which would not be captured using the CFS approach only.

3 Method

3.1. Typology, sample, and data collection

This descriptive, documental, and quantitative study followed the categorization indicated by Raupp & Beuren, 2006 to verify to what extent the accruals, calculated according to the balance sheet and cash flow statement approaches, are similar.

All publicly traded companies listed on B3 from 2011 to 2020 were selected to compose this study's sample, except those belonging to the financial sector and funds, considering that besides the infeasibility of using the metric adopted to estimate accruals, these companies have characteristics that hinder comparisons with the other sectors in the sample (Rodrigues et al., 2014). Furthermore, this timeframe was chosen because the CFS disclosure became mandatory beginning in 2010, enabling comparisons between these approaches to calculate accruals. Thus, one can work with the annual data available in the Economática® database up to 2020, when this study was performed.

Furthermore, the data set missed information that hindered the calculation of the accruals. However, we decided to work with an unbalanced panel to avoid data loss. Hence, a total of 2,786 observations were collected, considering the 348 companies from 2011 to 2020, treating the outliers in the variables with the winsorization technique, which consists of trimming extreme values (above or below the minimum and maximum percentiles defined) and replacing them with the smallest and largest values remaining in the distribution (Fortunato et al., 2012). In this study, 1% and 99% were considered.

3.2. Variables and procedures

At first, accruals were estimated following the two approaches discussed in section 2: balance sheet (Equation 1) and cash flows statement (Equation 2). These calculation methodologies adhere to the current literature, such as Boina and Macedo (2018) and Rodrigues et al. (2019).

To compare the results obtained by the two accrual estimation approaches, exploratory data analysis was initially performed, which, according to Triola (2005), consists of using statistical tools to investigate the data set and understand its characteristics. Thus, mean, median, standard deviation and minimum and maximum values were calculated for accrual estimates. This procedure enabled obtaining indications of the differentiation potential of the variables analyzed.

Next, the difference in means test was performed, containing the two accrual estimation approaches. Hence, initially, we verified the sample's normality by applying the Doornik and Hansen (2008) test, considering that if data did not meet this assumption, non-parametric tests would be required (Fávero & Belfiore, 2017).

Finally, as a mechanism to provide further robustness to the results, both accrual estimation approaches were applied in an operating cash flow prediction model to verify whether it is possible to identify in practice differences in the adjustment capacity of the model by changing the accruals proxy. The models used are similar to the one applied by Nallareddy et al. (2020), as shown in Equations 3 and 4, in which the variables will be divided by the Total Assets of the previous period.

$$FCO_{it} = \alpha + \beta_1 TA\_DFC_{it-1} + \beta_2 FCO_{it-1} + \varepsilon_{it} \quad (3)$$

$$FCO_{it} = \alpha + \beta_1 TA\_BP_{it-1} + \beta_2 FCO_{it-1} + \varepsilon_{it} \quad (4)$$

Where:

FCO_{it} = Operating Cash Flow of company i in period t;
FCO_{it-1} = Operating Cash Flow of company i in period t-1;
TA_DFC_{it-1} = Total Accruals estimated by the CFS approach of company i in period t-1; and
TA_BP_{it-1} = Total Accruals estimated by the BS approach of company i in period t-1.

The multiple regression technique with panel data was used to test the models presented in Equations 3 and 4. According to Gujarati and Porter (2011), this method is more informative, presents a more efficient estimation with less collinearity between the variables, being suitable for samples that combine cut-off data with a time series. We decided to estimate models with standard errors corrected by the HC1 Robust Standard Error technique for heteroscedasticity, with fixed effects per company, considering that the heterogeneity of companies is correlated with the independent variables. The parameters of the models controlling the fixed effects between companies were estimated, considering the heterogeneity between them. We estimated Equations 3 and 4 with the unbalanced panel to avoid losing potentially relevant information.

Three statistical measures were used: the adjusted R^2, the Akaike Information Criteria (AIC), and the Bayesian Information Criteria (BIC), also known as the Schwarz Criteria, to verify the models' goodness of fit. According to Gujarati (2006), the higher the adjusted R^2 and the lower the AIC and BIC, the better a model's goodness of fit.

4. Analysis And Discussion Of Results

The variables used in this study concern the period from 2011 to 2020, totaling 10 years, with just over 2,700 observations, constituting an unbalanced panel. Table 1 presents the variables' descriptive statistics.

Table 1
Descriptive Statistics of the Study's Variables

Variables	Obs.	Q1	Median	Q3	Mean	Standard deviation	D-H
FCO	2789	0,00828	0,06031	0,11732	-0,01226	0.56241	0.000
TABP	2786	-0,08764	-0,03435	0,01914	-0,03565	0,17812	0.000
TADFC	2786	-0,09709	-0,04127	0,00910	-0,05597	0,16704	0.000

Source: developed by the authors.

The information presented in Table 1 enables us to infer that both the accruals calculated by the BS and by the CFS approaches present negative means; at least 50% of the sample present negative values. In addition, considering Doornik and Hansen's (2008) normality test, the variables were not normal, which makes the mean difference test necessary to verify whether this study's objective is non-parametric. For comparative purposes, the t-test was also performed, that is, the parametric test for differences in means.

Table 2
Mean Differences Test

Variables	P-value	Test statistics	Test
TABP *versus* TADCF	0,0150**	2.433	Wilcoxon test
TABP *versus* TADCF	0,0002***	3.714	t-test

Note: ***Significant at 1%, **Significant at 5%

Source: developed by the authors.

Table 2 presents the Wilcoxon Test for mean differences in samples that do not show normality. This test's null hypothesis is the non-difference between the two groups. Given the p-value presented in Table 2 and considering a significance level of 5%, the null hypothesis can be rejected. That is, a statistically significant difference exists between the accruals calculated using the BS approach and those calculated using the CFS approach. Considering the t-test for differences in means, the result is similar to the Wilcoxon Test.

This result is important for studies adopting accruals as a proxy for earnings quality, especially for those on earnings management. Such studies usually use this variable to determine whether a company manages its results. Given this result, studies that do not consider calculating accruals using both approaches may mistakenly infer that a company manages its accounting results when in reality, it does not. After identifying the mean differences between the two metrics, we verified which of the two variables fits better to the operating cash flow estimation model, adapted from Nallareddy et al. (2020) and presented in Table 3.

Table 3
Regression Coefficients – Robust Errors

Variables	Equation (3)	Equation (4)
FCO_{it-1}	0.74731*** (0.000)	0.75132*** (0.000)
$TABP_{it-1}$	-0.04915 (0.128)	
$TADFC_{it-1}$		0.46362*** (0.000)
Intercept	0.07761 (0.153)	0.09039* (0.070)
F Test	0.0000	0.0000
VIF Test	1.0000	1.0000
Breusch-Pagan Test	0.0000	0.0000
Adjusted R^2	0.8753	0.8787
AIC	-503.23	-767.57
BIC	1.471.17	1209.13
Dependent Variable	FCO_{it}	FCO_{it}
Observations	2777	2747
FE Company	Yes	Yes

Note: ***Significant at 1%, *Significant at 10%

Source: developed by the authors.

Table 3 presents the estimates of Equations 3 and 4, which aim to verify which of the two models presents the best goodness of fit. In this context, Equation 3 calculates accruals using the balance sheet approach as an independent variable, and Equation 4 calculates accruals using the cash flow statement approach.

The model with robust standard errors was used to estimate the two equations with fixed effects per company. The F test shows that, in general, the coefficients of the models are valid. At least one of the estimated coefficients is statistically different from zero.

An analysis of the coefficients shows that the current period's operating cash flow positively impacts future cash flows. The coefficients were positive and statistically significant in both models, similar to the results found by Boina and Macedo (2018). It supports the view of the conceptual framework of accounting, which states that information about an entity's cash flows during the period also helps users to assess the entity's ability to generate future net cash inflows (CPC 00, R2).

As for the variable of interest, the accruals were calculated using the BS and CFS approaches. However, only the accruals calculated with the CFS approach were significant, at a 1% significance level. This difference may be related to the accruals' source. Since accruals are the difference between the accrual basis (earnings) and the cash basis, obtaining accruals by the difference between earnings and cash flow may have a better relationship with future cash flows. On the other hand, calculating accruals through the balance sheet approach uses less dynamic information, making an estimate possible to find a difference between profit and cash.

Another potential explanation is the existence of business combinations in the Brazilian economic environment. Hribar and Collins (2002) point out that mergers and acquisitions may be one of the main factors for this difference. For Boina and Macedo (2018), measuring accruals using the CFS approach is especially useful in business environments with intense combination processes, as has been the case in the Brazilian market in recent years.

It shows that accruals have different impacts on statistical models depending on how they are calculated, suggesting that both alternatives should be considered when the objective is to use accruals in scientific research. Hence, different conclusions about a given event can be reached depending on the calculation method. Hribar and Collins (2002), for example, report that using the balance sheet to estimate accruals contaminates discretionary accruals and may lead to wrong conclusions about the occurrence of earnings management.

To verify the quality of the models' goodness of fit, the R^2, AIC, and BIC criteria show that the model, having the accruals calculated by the cash flow statement approach as the independent variable, better fits data than when using the variable calculated by the balance sheet. It is in line with the results found by Hribar and Collins (2002) but is contrary to the results presented by Nallareddy et al. (2020) and Heater et al. (2021).

5. Final Considerations

This study's objective was to verify in what ways the accruals calculated by the balance sheet and the cash flow approaches were similar. Thus, we analyzed the accruals calculated by the two approaches among companies listed on the B3 between 2011 and 2020, when the CFS became mandatory.

The results of the means tests indicated a statistically significant difference between the accruals calculated by the BS approach and those calculated by the CFS approach; hence, no similarity was found. This result is significant for studies using total accruals to estimate accruals that can be considered earnings management. Thus, if there is evidence that the way one calculates accruals leads to different results and the researchers do not consider the two calculation approaches, results may disagree with the theory, for example.

Additionally, this study was intended to verify which accruals metric had the best predictive power of future cash flows. Using a model with panel data, corrected for heteroscedasticity problems, we found that only the accruals calculated using the CFS approach were significant, at a 1% significance level, corroborating the findings by Hribar & Collins, 2002.

Thus, considering accounting information from Brazilian companies listed on B3 between 2011 and 2020, the conclusion is that the accruals calculated using the balance sheet and the cash flow statement approaches are not similar, suggesting that researchers need to adopt both forms of calculation when using accruals in academic research, as suggested by Novaes et al. (2018), considering that these variables behave differently, possibly leading to mistaken conclusions.

However, one must use caution when interpreting these results since the accruals calculated using the balance sheet approach may contain important information about a company's specific economic activities, as noted by Heater et al., 2021. Likewise, it is worth mentioning that this study's findings do not invalidate previous studies using the balance sheet approach. Therefore, researchers need to be clear about their studies' objectives, evaluate which of both approaches to use, and compare the results.

Additionally, this study's limitations regarding data availability need to be acknowledged. We decided to use all the companies' available information, so the panel was unbalanced. As the information is incomplete for some companies throughout the period, this may have impacted the results, considering that the estimates may receive influence from a given sector where there are more companies with complete information. Also, as it is a non-probabilistic sample collected according to its accessibility, the results cannot be generalized. Nonetheless, the results presented here are considered relevant despite these limitations.

Therefore, we suggest future studies consider the complete information of all companies addressed to analyze the predictive capacity of accruals in another context, in addition to comparing the two approaches between the sectors of the Brazilian economy.

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