

Persistence and Relevance of Accruals: Evidences From the Brazilian Capital Market

Abstract

The main objective in this research is to analyze the persistence and relevance of accruals, as well as the existence of the accrual anomaly in the Brazilian capital market. Therefore, this study is conducted by three research hypotheses: (i) the accruals are less persistent than the cash flows in the explanation of future earnings; (ii) the market does not correctly recognize the information contained in the accruals; and (iii) extraordinary gains can be obtained when using the magnitude of the accrual levels as an investment strategy. The sample included all non-financial companies traded on the São Paulo Stock Exchange (BMF&BOVESPA) between January 1st 1995 and December 31st 2011. The results indicated that the estimated coefficient of the accrual persistence was lower than the cash flow coefficient, thus sustaining the first research hypothesis. In the second part of the research, it was verified that the market correctly prices the accrual component of earnings, as a positive and statistically significant relation exists between accruals and future stock returns, which was not expected. Finally, the results found in the third hypothesis sustain the non-existence of the accrual anomaly in the Brazilian market, as the hedge portfolios were positive in only five out of 15 years under analysis. The results obtained in this study can encourage the establishment of policies to reduce the information asymmetry, making the improper transfer of wealth to companies with a low earnings quality impossible.

Key words: Persistence; Relevance; Accrual Anomaly.

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1. Introduction

In finance research, the behavior of the capital market has been investigated in different studies. What is possibly the first paper in this sense was written by Bachelier (1900), in which the author investigated the possibility of speculation in the French capital markets. It was mainly as from the 1950's, however, that research on capital market behavior was scientifically developed, when experts like Markowitz (1952), Sharpe (1964), among others, incorporated mathematical and statistical models into finance research.

Based on these mathematical and statistical models and the high level of theoretical development in that age, the efficient market hypothesis (EMH) emerged, proposed by Fama (1970). According to that hypothesis, the market is considered efficient if it rapidly reflects any information in the stock prices, which would make any abnormal gains impossible (Fama, 1970).

The empirical verifications undertaken in the 1970's and 1980's tried to sustain the efficient market hypothesis and the conclusion was that the market revealed to be efficient (Sewell, 2011). As from the mid-1980's, however, due to the development of informatics, increasingly sophisticated statistical techniques and better databases, plenty of evidence emerged to reject the premises of the EMH (Costa & Neves, 2000). These studies disclosed consistent abnormal behaviors in stock returns, which is completely inconsistent with market efficiency. These investment strategies based on stock return behaviors were called anomalies.

In parallel with the development of new statistical techniques, many researchers in the last decades have attempted to investigate the existence of systematic anomalies detected in stock pricing. Thus, they detected trading strategies that produced positive abnormal returns that were consistent in the long term, including: size factor (Banz, 1981); book-to-market ratio (Stattman, 1980); momentum factor (Jegadeesh & Titman, 1993) and liquidity factor (Amihud & Mendelson, 1989).

Amidst these findings, primarily in the North American market, the possibility of gaining abnormal returns through an accrual-based trading strategy was discovered. In accounting, accruals represent the difference between the book value and the cash flow of operating activities. In fact, accruals are adjustments in the book value of allocations that did not turn into cash in the current period (Lustosa, Fernandes, Nunes & Araújo, 2010; Sloan, 1996).

Sloan (1996) was the first researcher to investigate the relation between accruals and stock returns, proposing a positive relation between abnormal returns and companies with low accrual levels, rejecting the EMH. The author demonstrated that investors do not correctly assess information about accruals in the stock prices, thus permitting the gaining of abnormal returns through a trading strategy based on the magnitude of entities' accrual levels. According to Sloan (1996), because the accruals are less persistent than the cash flows, the investors did not consider the relevance of the information contained in the accruals on future earnings, as the accruals were overestimated and the cash flows underestimated in forming their future expectations about the earnings, that is, the investors did not perceive the differential in the persistence of accruals and cash flows (Sloan, 1996).

Hence, by overestimating the persistence of accruals and underestimating the persistence of cash flows in the formation of their expectations, the investors underestimate the future earnings of companies with low accrual levels and overestimate the future earnings of companies with high accrual levels. Consequently, this situation leads to bad stock pricing, as the earnings is considered a key variable in the future prediction of stock returns or prices, as well as for performance measurement in management and debt contracts (Chan, Chan, Jegadeesh & Lakonishok, 2006). Due to this pricing error, abnormal returns can be gained, investing in a portfolio of companies with low accrual levels, as their future earnings are underestimated, making current stock prices undervalued.

In view of the above, in this paper, the following hypotheses were tested: H1: the persistence of accruals is lesser than that of cash flows in the explanation of future earnings; H2: Investors' pricing of the information contained in the accruals is bad; and H3: Extraordinary gains can be obtained through the exploration of an investment strategy based on the magnitude of accrual levels.

Thus, the objective in this paper is to analyze the persistence and relevance of accruals in the Brazilian capital market, in the intent to verify the possibility of gaining extraordinary returns through a strategy based on the magnitude of the accrual levels. It should be highlighted that this type of research is related to accounting studies that are based on the premise that accounting information can anticipate the prices as they capture its intrinsic value, making that information relevant or not. According to Lopes and Martins (2005), the analysis of the irrelevance of accruals, as one of the characteristics of the accounting model, raises doubts about the actual usefulness of accounting in the capital market context (LOPES; MARTINS, 2005).

Therefore, the main contribution in this paper when compared to earlier publications in Brazilian literature, mainly considering the study by Cupertino (2010), is that it analyzes the role of accounting information, in this case accruals, in capturing or summarizing information which the market participants use to determine stock prices or returns, taking into account their interaction with other important variables in the explanation of variable returns. In additions, this study stands out because a different method is used to construct the portfolios, through procedures similar to those used by Fama and French (1995).

2. Theoretical Framework and Literature Review

2.1 Accounting earnings

In the theoretical sense, earnings is accounting information on an accrual basis, which rests on the combination of two principles: the recognition of revenues and the confrontation between revenues and expenses. When following this regime, for example, revenues and expenses need to be registered as they occur and not at the moment of their financial realization. Hence, the revenues need to be recognized in accordance with their corresponding expenses with a view to verifying the net income of the economic event in question (Richardson, Sloan, Soliman, & Tuna, 2005; Lustosa *et al.*, 2010).

This shows that the accrual basis is linked to the economic instead of the financial event of cash inflows or outflows, which would be represented by the cash regime. Consequently, Barth, Cram and Nelson (2001) emphasize that accounting earnings, verified on an accrual basis, differs from the cash produced or consumed, giving rise to the problem of time lags between the economic recognition in the income and its reflexes in the cash flow.

These allocations, which alter the income but do not influence the cash in a specific period, are called accruals. The term accruals can be understood as the recognition of expenses or revenues and the corresponding assets or liabilities deriving from an accounting event, but the occurrence of the event in question is not related to the cash inflow or outflow (Richardson *et al.*, 2005).

Therefore, the accruals and cash flows are basically the two components of accounting earnings. The difference between both is based on the matter of the cash flow basis and the accrual basis, as the difference between the accounting earnings and the net cash flow equals the net change in all non-cash items.

2.2 Market Anomalies

The basic premise of the efficient market hypotheses sustains that an investor could not gain extraordinary returns in the risk-adjusted stock market, as sustained in different studies, mainly in the 1960's and 1970's. Nevertheless, many empirical studies have been published that reveal the opposite, demonstrating the possibility to create investment strategies based on a company's particular characteristics.

Evidence against the premise that the efficient market immediately absorbs relevant information, which would make it impossible to obtain abnormal returns, were called anomalies. Cuthbertson and Nitzche (2004) argue that the anomalies identified in the market are irrationalities or inabilities of rational investors to equal the fair value (fundamental price) with the market value.

Among the main studies in that sense, the most noteworthy are the abnormal returns produced by investment strategies based on the size factor (Banz, 1981), on the price/earnings ratio (Basu, 1983), on the book-to-market (B/M) ratio (Stattman, 1980) and on the momentum factor (Jegadeesh & Titman, 1993). In those studies, the authors discovered strategies that historically produced statistically significant abnormal anomalies across several years, independently of the risk level.

Accrual anomaly is also part of this research category, in the attempt to find evidence that violates the efficient market hypothesis. The first study to document the possibility of creating a business strategy based on companies' level of accruals was Sloan (1996).

2.2.1 Accrual anomaly

The pioneering work by Sloan (1996) examined whether the investors incorporated the persistence differential of future earnings components in their expected future prices. The authors showed that the cash flow component is more persistent in the prediction of future earnings when compared to the accrual component. These results demonstrated coefficients of approximately 0.8 and 0.5 for cash flow and accruals, respectively. This result indicates the possibility that investors will not fully reflect the persistence differential of the earnings components. More specifically, investors could be underestimating the accrual persistence and overestimating the cash flow persistence, which would result in bad stock pricing.

Sloan (1996) basically divided his research in three parts: first, he identified that the accruals component is less persistent than the cash flow component in the explanation of future earnings; second, he verified that the market neglected this persistence differential, empirically identifying that investors tend to overvalue accruals in the formation of their expectations about companies' future earnings; and, finally, he discovered that an investment strategy can be adopted based on the market's bad pricing of accruals, disclosing the achievement of statistically significant abnormal returns throughout almost 20 years.

After the seminal work by Sloan (1996), further research investigated the theme accrual anomaly, but with different foci. Studies about accrual anomaly can be largely categorized in four groups. The first research group was aimed at investigating what accrual components were able to better explain the returns deriving from an investment strategy based on accrual levels. Xie (2001) created portfolios based on total accruals and, then, only on discretionary accruals or abnormal accruals, estimated using Jones' model (1991). The author found evidences that only the portfolios classified based on discretionary accruals were able to gain abnormal returns. In a more complete study, Thomas and Zhang (2002) analyzed each accrual component in the explanation of abnormal returns and reached the conclusion that the element that most contributed to bad accrual pricing in the North American market was the inventory variation.

The second research line was aimed at verifying whether the accrual anomaly differs or not from previously identified anomalies. To give an example, the work by Collins and Hribar (2000) compared two anomalies based on the accounting earnings: the post-earnings announcement drift and the accrual anomaly. The results showed that both anomalies captured different investment opportunities. More specifically, the authors found evidence that, by combining both, a greater opportunity for extraordinary gains was created.

Desai, Rajgopal and Venkatachalam (2004) investigated the relation between the accruals (ACC) and cash flow (OCF) variables to identify which best explained its incidence in North American stock returns. The authors observed that, after controlling for the OCF variable, the investment strategy based on accruals did not produce significant abnormal returns, concluding that the accrual anomaly is in fact a manifestation of the *value/glamour anomaly*.

A similar study was developed by Taylor and Xu (2011), who investigated the relation between the market returns associated with three market anomalies: the accrual anomaly and two forms of the value/glamour anomaly: cash flow/price (OCFP) and book-to-market (BM). The results found sustain that, although the accrual anomaly shares some factors with the other two anomalies (OCFP and BM), the accrual anomaly has unique characteristics that distinguish it from the two value/glamour anomalies.

In the study by Fairfield, Whisenant and Yohn (2003), it is suggested that the accrual anomaly results from investors' inability to assess the persistence of future profitability associated with the Return on Investment (ROI). Hence, the authors conclude that the accrual anomaly, documented by Sloan (1996), is a subset of an anomaly related to the growth of net operational assets.

The third research group related the accruals' properties to the behavior of the most sophisticated financial statement users, such as analysts, auditors, institutional investors, among others. The research by Bradshaw, Richardson and Sloan (2001) examined the published opinions of two types of professionals (auditors and analysts) who serve as intermediaries for investors. Evidence indicates that neither analysts nor auditors alert the investors about future earnings problems associated with high accrual levels, in accordance with earlier findings (Sloan, 1996; Chan *et al.*, 2006) that the investors do not anticipate these problems in their expected future earnings.

Lev and Nissim (2006) highlight that the accrual anomaly has been recognized and, in fact, explored by certain kinds, but a limited number of institutional investors. In general, the institutions avoid companies with extreme levels of accruals because their characteristics, like small size, low profitability and high risk for example, contrast with the attributes most of them prefer. Also, in general, individual investors are incapable of gaining profit when using accrual information as the information and transaction costs are high when associated with the implementation of a consistent and reliable accrual-based strategy. Finally, the authors conclude that the accrual anomaly persists and will probably continue persisting.

Collins, Gong and Hribar (2003) examined the role of institutional control in accrual pricing. The authors found evidences that strong institutional control reduces bad accrual pricing. In addition, the authors concluded that companies with low levels of institutional control are smaller, less profitable and have a low business volume, so that the limits for arbitrage impede institutional investors from exploring the apparently high abnormal returns for such companies. Mashuwala, Rajgopal and Shevlin (2006) support the work by Collins *et al.* (2003) when they affirm that the accrual anomaly is found in cheap stocks with a low trading volume, which suggests that the transaction cost raises additional barriers for the exploration of bad accrual pricing.

Finally, the last study category examines the relation between abnormal returns and the accrual-based investment strategy. Supporting the findings by Sloan (1996), Chan *et al.* (2006), in an analysis of the predictive power of accruals through the relation between future returns and current earnings quality, found evidence that the market was temporarily mistaken, as it reacted slowly to accrual information. Nevertheless, the authors concluded that companies with higher future returns were part of the group of companies with low accrual levels, showing that the market negatively interprets high accrual levels associated with high earnings.

On the other hand, Ali, Hwang and Trimbley (2000) found evidence that goes against the "naïve" investor hypothesis documented by Sloan (1996), as the capacity of accruals to predict annual and three-monthly future returns was not smaller for large companies, presuming that analysts, investors etc. monitor these companies more closely. In other words, the authors conclude that the capacity of accruals to predict future returns is not justified by the market participants' inability to understand the relevance of accruals.

In the Brazilian context, accrual anomaly-related research remains relatively new in comparison with countries with more developed capital markets, like the United States and the United Kingdom for example. Specifically with regard to accrual anomaly, two studies are observed in the literature: Cupertino (2010) and Takamatsu (2011). Both studies aimed to analyze the persistence of accruals and the possibility to create an investment strategy based on accrual levels. The results indicated that the accrual component is not badly priced by the market and that the trading strategy based on accrual levels does not result in abnormal returns. In general terms, the results of these two studies explain the absence of the so-called accrual anomaly in the Brazilian capital market. The different methods used in the portfolio formation process should be highlighted, however, as well as in the study periods and the econometric models employed.

Finally, it is perceived that the phenomenon known as accrual anomaly involves findings with different research foci (relation with other anomalies, the role of sophisticated investors, institutional control, etc.). In fact, although countless evidences sustain the existence of this anomaly, the reasons for its occurrence remain a source of great discussion and controversies.

3. Method

3.1. Research Characteristics

What the research characteristics is concerned, this study is classified as empirical-analytic, which according to Martins (2002, p. 34):

[...] are approaches that share the use of clearly quantitative data collection, treatment and analysis techniques [...]. They are strongly concerned with the causal relation between variables. The validation of scientific evidence is sought through instrument tests, levels of significance and the systemization of operational definitions.

3.2. Sample

The sample consisted of all companies listed on the São Paulo Stock Exchange – BM&FBOVESPA – between January 1st 1995 and December 31st 2011. It is highlighted that this period was used due to the greater macroeconomic stability after July 1994. The following companies were excluded from the sample: (a) companies active in the financial sector, because they act in regulated sectors with specific legislation and procedures, which creates a series of impacts on their accounting; (b) companies without monthly quotes for 24 consecutive months, that is, 12 months before and 12 months after the date when the portfolios were constituted; (c) companies without market value on December 31st and June 30th of each year; and (d) companies with a negative Net Equity on December 31st of each year. In addition, companies without the information needed to estimate the accruals were excluded.

Figure 1 shows the amount of stock that was part of the population and the sample analyzed for each year. On average, the data of 139 stocks per year were analyzed, showing the small number of publicly traded Brazilian companies in comparison with more developed markets, like the North-American and Australian markets for example. For the sake of comparison, in the work by Sloan (1996), on average, 1,356 stocks/year of North American companies were analyzed between 1962 and 1991. In a shorter analysis period, on average, Ali, Hwang and Trombley (2000) analyzed 3,322 stocks/year, also of North American companies, between 1987 and 1995.

Year	Population	Sample	% of the Population
1995	419	-	-
1996	507	149	29.39
1997	534	132	24.72
1998	509	130	25.54
1999	547	126	23.03
2000	558	111	19.89
2001	578	112	19.38
2002	568	146	25.70
2003	542	161	29.70
2004	587	163	27.77
2005	609	153	25.12
2006	565	141	24.96
2007	598	142	23.75
2008	605	143	23.64
2009	630	156	24.76
2010	623	130	20.87
2011	617	130	21.07
Mean	564	139	24.33

Figure 1. Population and sample of the survey

Source: Research data.

Therefore, on average, per year, data from 139 stocks were analyzed (24.33% of the population), ranging from a minimum of 111 stocks analyzed in 2000 (19.89% of the population) to a maximum of 163 (27.77% of the population) in 2004. All data needed to develop this research were extracted from the Economática database.

3.3. Description of the Models

The study will be guided by three related hypotheses: (1) the persistence of earnings and their components in the explanation of future earnings; (2) the relevance of the information contained in the accruals; and (3) the possibility to obtain extraordinary gains from the exploration of an investment strategy based on the magnitude of accrual levels.

To verify the persistence of earnings and its components, a widely used research measure was applied, which is aimed at analyzing earnings persistence: the model developed by Dechow and Dichev (2002). Hence, a self-regressive univariate model was applied to identify the persistence of current earnings for future earnings. The former was obtained through the coefficient β_1 in Equation 1.

According to Sloan (1996), the coefficient has to vary between 0 and 1, as the earnings calculation method used (earnings on total assets) represents the accounting ratio of return on assets, which possesses the mean-reverting property (Sloan, 1996). It should be highlighted that, if the regression presents the parameter $\beta_1 < \beta_2$, the hypothesis that the accruals are less persistent than the cash flows in the determination of future earnings will be accepted.

$$\text{Earnings}_{t+1} = \beta_0 + \beta_1 \text{Accruals}_t + \beta_2 \text{Cash Flow}_t + \varepsilon_t \quad (1)$$

Where: Earnings is the EBIT (Earnings before Interest and Taxes); Accruals were estimated by the Balance Sheet focus; Cash Flow is the difference between the EBIT and the Accruals; and ε_t is the random error (white noise) with normal distribution, zero mean and constant variance.

The second part of the research (Hypothesis 2) is aimed at verifying whether investors rationally incorporate the persistence difference between accruals and cash flows in pricing information related to future earnings, that is, the relevance (value relevance approach) of accruals. The testing of the second hypothesis was based on the work by Sloan (1996) and Ali *et al.* (2000), who tested the relation between past accruals and future stock returns.

The model used relates the future stock returns with accruals and some control variables, according to Equation 2:

$$R_{t+1} = \beta_0 + \beta_1 \text{Accruals}_t + \beta_2 \text{BM}_t + \beta_3 \text{Beta}_t + \beta_4 \text{Siz}_t + \beta_5 \text{EP}_t + \varepsilon_t \quad (2)$$

Where: R_{t+1} is the annual return of each stock; *BM* is the book-to-market ratio; Beta is the systemic risk of stocks; *Siz* is the company size, obtained by the natural logarithm of total assets; *EP* is the earnings/price ratio; and ε_t is the random error (white noise) with normal distribution, zero mean and constant variance.

The justification to use these control variables is the fact that some researchers have already shown that they are related to future stock returns. To give an example, Banz (1981), Basu (1983), Fama and French (1992, 1995), among others, discovered trading strategies that produced statistically significant positive abnormal returns over the years, based on the variables book-to-market, systematic risk (beta), earnings/profit ratio and company size.

In the regression, β_1 measures the capacity of accruals to predict future returns. Hence, if β_1 is different from zero, there is a possibility to obtain extraordinary returns through a strategy based on accrual levels. It is highlighted that Sloan (1996) found the negative parameter of accruals, indicating that the purchase (sale) of company stock with low (high) accrual levels provided positive (negative) returns.

Finally, the third part of the study is aimed at strictly analyzing the relation between stock profitability and accruals. Therefore, portfolios were used, as this method provides better results than the analysis of individual assets. In addition, the function of this technique is to eliminate or reduce the diversifiable part of the total risk of the stock used in the sample (Costa & Neves, 2000; Vaihekoski, 2004).

To constitute the portfolios, the following procedures were used:

- At end June of each year t , as from 1995 and ending in 2011, all stocks in the sample were ranked in increasing order, in function of the accrual variable;
- In June of each year t , after the previous ranking, five portfolios were constituted;
- From June of year t till June of year $t+1$, the monthly return of each stock was calculated;
- Finally, from June of year t till June of year $t+1$, the monthly return was calculated in each of the five portfolios by weighing the market value of the stock in relation to the market value of the portfolio of the returns of the component stock.

The portfolios will be reformulated each year, at the end of June, so that portfolios in each year will contain different stocks. In addition, the data to be extracted from the financial statements will relate to the month December of year $t-1$, with a view to avoiding the look-ahead bias, that is, for the market to have assimilated this information already (MACHADO; MEDEIROS, 2011).

After determining the profitability of each portfolio between June 1995 and June 2011, the return of the hedge portfolio was calculated. The hedge portfolio is commonly used in accrual anomaly research. Its name is based on the supposition of reduced risk among assets with different accrual sizes (Sloan, 1996).

The hedge portfolio will be calculated as follows, according to Gabrielson and Gjaever (2007):

$$\text{Return}_{\text{hedge}} = -1 \times \text{return}_{\text{high}} + 1 \times \text{return}_{\text{low}} \quad (3)$$

Where:

$\text{Return}_{\text{low}}$ Return of the portfolio of low accruals.

$\text{Return}_{\text{high}}$ Return of the portfolio of high accruals.

Thus, the occurrence of accrual anomaly will only exist if the returns of a hedge portfolio are consistently positive over the analyzed years (Sloan, 1996; Bernard, Thomas & Wahlen, 1997). Therefore, if the returns of the hedge portfolio are positive and consistent, this means that companies with high (low) accrual levels obtain negative (positive) abnormal returns.

To analyze a possible difference between the portfolio returns with extreme accrual levels, the returns of these portfolios were compared through a test of difference of means. The difference of means tests are aimed at evaluating whether the means of the two populations are statistically equal, observing the difference in the sample means (Brooks, 2002). Therefore, Student's t-test was used to assess the statistical significance of the differences between the returns of the portfolios of companies with the largest and smallest proportion of accruals, that is, the companies in the first and last quintile.

3.4. Definition of the Variables

The earnings measure used will be the Operational Earnings, defined as EBIT (Earnings before Interest and Taxes). The main justification for the use of this measure is based on the exclusion of non-current items, such as extraordinary items, special items and non-current income, which permits the unambiguous assessment of the persistence of cash flows and accruals in continuous operations (Sloan, 1996).

The total accruals were measured from a balance sheet focus, according to Equation 4.

$$\text{Accruals}_t = \frac{(\Delta CA_t - \Delta Avail_t) - (\Delta CL_t - \Delta Deb_t - \Delta Tax_t) - Depr_t}{\frac{1}{2}(\text{TotalAssets}_t + \text{TotalAssets}_{t-1})} \quad (4)$$

Where:

$Accruals_t$ Total (operational) accruals of the company in period t .

ΔCA_t Variation in current assets of the company between the end of period $t-1$ and the end of period t .

ΔCL_t Variation in current liabilities of the company between the end of period $t-1$ and the end of period t .

$\Delta Avail_t$ Variation in current available funds of the company between the end of period $t-1$ and the end of period t .

ΔDeb_t Variation in short-term funding and loans of the company between the end of period $t-1$ and the end of period t .

ΔTax_t Variation in taxes payable of the company between the end of period $t-1$ and the end of period t .

$Depr_t$ Amount of company's depreciation expenses during period t .

The Cash Flow component was measured by the difference between the Operational Earnings (EBIT) and the total accruals. As shown in an earlier section, the accounting earnings equal the sum of cash flows and accruals. Therefore, cash flows can be measured by the difference between earnings and total accruals. It is highlighted that, until the publication of Law 11.638/2007, publishing information about cash flows was not compulsory.

Returns were measured using the continuous capitalization system, according to Equation 5, considering that, when calculating returns in the logarithmic form, the return distribution tends towards normal (Soares, Rostagno & Soares, 2002). In addition, Machado and Medeiros (2011) highlight that market information happens at any time and stocks react continuously to this information.

$$r_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad (5)$$

Where P_t and P_{t-1} represent, respectively, the nominal closing price of asset i on date t and $t-1$, both adjusted to the proceeds.

The formula used to calculate the portfolio returns was:

$$R_{p,t} = \sum_{i=1}^n \left(\frac{MV_{i,t}}{MV_{p,t}} \times R_{i,t} \right) \quad (6)$$

Where:

$R_{p,t}$ Return of portfolio p in year t .

$R_{i,t}$ Return of stock i , belonging to portfolio p , in year t .

$MV_{i,t}$ Market value of stock i , at the end of year t .

$MV_{p,t}$ Market value of portfolio p , at the end of year t , represented by the sum of the market values of the stock in the portfolio.

Finally, the market value was calculated as follows:

$$MV_{i,t} = \sum (P_{y,i,t} \times N_{y,i,t}) \quad (7)$$

Where:

$MV_{i,t}$	Market value of company i , in period t .
$P_{y,i,t}$	Price of type y stock, belonging to company i , in period t .
$N_{y,i,t}$	Number of type y stock, of company i , in period t .

The book-to-market ratio was calculated according to Equation 8, where the book value of the company's net equity at the end of the year before the start of year t was used, divided by the market value of the stock at end-December of the same period. According to Fama and French (1992), the intent of this procedure is to guarantee that the B/M ratio will be measured using information available in the market before the calculation period of the stock returns.

$$BM_{i,t} = \frac{BVNE_{t-1}}{MVNE_{t-1}} \quad (8)$$

Where:

$B/M_{i,t}$	B/M ratio, calculated using data for December $t-1$.
$BVNE_{dec(t-1)}$	Book value of net equity on December 31 st of year $t-1$.
$MVNE_{dec(t-1)}$	Market value of net equity on December 31 st of year $t-1$.

The variable company size was calculated through Equation 9:

$$Siz_t = \ln AT_t \quad (9)$$

Where:

TA_t	Total Assets of December 31 st of year t .
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To assess the systematic risk, the Beta coefficient of the stock in the sample was used. The Beta of each company stock under analysis was obtained from the Economática database.

Finally, the Earnings-price ratio (Equation 10) equaled the company's EBITDA (Earnings before interest, taxes, depreciation and amortization) at the end of the year before the start of year t , divided by the market value of the stock at end-December, also six months before the start of year t .

$$EP_t = \frac{EBITDA_{t-1}}{MV_{t-1}} \quad (10)$$

Where:

$EBITDA_{t-1}$	Value of Net Earnings on December 31 st of year $t-1$;
MV_{t-1}	Market Value of Net Equity on December 31 st of year $t-1$.

4. Data Analysis

4.1 Results of the First Hypothesis

Table 1 demonstrates the results of the regression for Equation 1, in which the accounting earnings

variable was broken up in its two components, accruals and cash flows. The inclusion of these variables is justified, as highlighted by Sloan (1996), by the fact that it permits the identification of the difference in the persistence separately from the current earnings components in the future earnings over time. Thus, according to Equation 1, the coefficients β_1 and β_2 capture the persistence of the accruals and cash flow, respectively. It is highlighted that the research hypothesis establishes that the persistence of the accruals is shorter than that of the cash flow component, that is, $\beta_1 < \beta_2$.

Table 1

Regression of accruals and cash flow for future earnings

<i>Earnings_{t+1} = $\beta_0 + \beta_1$Accruals_t + β_2Cash Flow_t + ϵ_t</i>				
Panel A				
Explanatory Variable	Coefficient	Standard error *	t statistics	p-value
C	0.031871	0.0054	5.8427	0.000
ACC	0.58839	0.04595	12.8045	0.000
CF	0.62725	0.04828	12.9903	0.000
Panel B				
Description	Value	Description	Value	
R ²	0.31983	F test (Statistics)	491.859	
Adjusted R ²	0.31918	F test (p-value)	0.000	
Schwarz	1.9506	White test (Statistics)	38.114	
Akaike	1.9587	White test (p-value)*	0.000	
Jarque-Bera (statistics)	21.236	Breusch-Godfrey test (p-value)	0.000	
Jarque-Bera (p-value)**	0.000	Number of Observations	2,095	

* Standard errors estimated by applying Newey-West's robust matrix.

To detect the presence of multicollinearity, the VIF (Variance Inflation Factor) test was used. Thus, a VIF of 3,789, 5,185 and 1,956 was obtained for the variables ABCH, LLPA, PLPA, respectively. Thus, it is concluded that multicollinearity does not exist (GUJARATI, 2000).

The analysis of Table 1 shows that the regression was statistically significant at 1% according to F statistics. That is complemented by the significance of the coefficients of the ACC (accruals) and CF (cash flow) variables, as indicated by the p-values of the t tests, with values below 1%.

As regards the premises of the serial correlation of the residues and the heteroscedasticity, the estimated regression presents these problems. In accordance with the Breusch-Godfrey test, the null hypothesis about the absence of self-correlation can be rejected, considering that the p-value obtained is inferior to 0.01. Similarly, according to the White test, the null hypothesis about homoscedastic variance is rejected, considering that the p-value is inferior to 0.01. Thus, the standard errors were estimated, using the Newey-West correction for heteroscedasticity and self-correlation, making the estimates more robust. Finally, according to the Jarque-bera test, the null hypothesis about the normal distribution of the residues was rejected at 1%. According to the central limit theorem and considering that 2,095 observations were used, however, the premise can be relaxed (Brooks, 2002).

The analysis of Table 1 also shows that the coefficients β_1 and β_2 are statistically significant and that their parameters confirm the first research hypothesis, as β_1 was lower than β_2 . The coefficient of the accruals component corresponded to 0.58839, while that of the cash flow component was 0.62725. Similar evidence was found by Sloan (1996), Gabrielson and Giaever (2007) and Cupertino (2009). For the mere sake of comparison, Sloan (1996), using evidence from the North American market, found coefficients equal to 0.765 and 0.855 for accruals and cash flows, respectively, while Gabrielson and Giaever (2007) found 0.328 and 0.861, respectively, for the Swiss market. Cupertino (2010), using data from Brazilian companies, found coefficients of 0.375 and 0.394 for accruals and cash flows, respectively.

More interesting that verifying whether β_1 is lower than β_2 , however, is to verify if the coefficient of the accruals component is significantly lower than the cash flow component. Therefore, Wald's test was applied, using F statistics, as shown in Table 2. According to Wald's test, the persistence of the accruals is significantly lower than the persistence of the cash flows, as the null hypothesis about the equality of the coefficients was rejected (p -value < 0.05).

Table 2

Persistence test between the accrual and cash flow variables (Wald test)

Restriction	Chi-Square	F-statistics	p -value
$-\beta_1 + \beta_2 = 0$	4.1503	4.1503	0.0416

Source: Research data.

Therefore, the findings obtained in this first part of the research sustain the hypothesis that the accruals are less persistent than the cash flows in the explanation of the future earnings, in the Brazilian capital market.

4.2. Results of the Second Hypothesis

This subsection provides evidence about the relation between the accruals and the stock return (Table 3). The analysis departs from a general view on the relation between accruals and future annual returns, with a view to identifying how the investors use information about the accruals in the formation of their future expectations.

Table 3

Regression of annual future returns by accrual values and risk variables

$R_{t+1} = \beta_0 + \beta_1 \text{Accruals}_t + \beta_2 \text{BM}_t + \beta_3 \text{Beta}_t + \beta_4 \text{Siz}_t + \beta_5 \text{EP}_t + \varepsilon_t$				
Panel A				
Explanatory Variable	Coefficient	Standard error *	t -statistics	p -value
C	0.032499	0.088161	0.368634	0.7521
ACC	0.166358	0.091331	1.821484	0.0687
B/M	0.00021	0.000682	3.126113	0.0018
BETA	-0.180048	0.030101	-5.981499	0.0000
SIZ	0.016147	0.006017	2.683390	0.0073
EP	0.00022	0.000547	4.091701	0.0000
Panel B				
Description	Value	Description	Value	
R ²	0.02410	F-Test (Statistics)	10.3182	
Adjusted R ²	0.02176	F-Test F (p -value)	0.000	
Schwarz	1.40448	White test (Statistics)	1.4489	
Akaike	1.3883	White test (p -value)	0.000	
Jarque-Bera (statistics)	2968.21	Durbin-Watson	1.3125	
Jarque-Bera (p -value)**	0.000	Number of Observations	2,095	

*Standard errors estimated by applying White's correction.

To detect the presence of multicollinearity, the VIF test was used. Thus, a VIF of 1.011, 1.013, 1.130, 1.024 and 1.134 was obtained for the variables ACC, EP, SIZ, BM and BETA, respectively. Thus, it is concluded that multicollinearity does not exist (GUJARATI, 2000).

Based on the analysis of Table 3, it is verified that the regression was statistically significant at 1%, considering that the p-value obtained for the F-statistics is inferior to 0.01. What regards the serial correlation of the residues, through the Durbin-Watson test, it is verified that the null hypothesis of self-correlation cannot be rejected.

As observed, the regressions present heteroscedasticity problems, considering that, according to the White test, the null hypothesis of homoscedastic variance is rejected as the p-value obtained is inferior to 0.01. Thus, the standard errors were estimated using White's correction for heteroscedasticity, turning their estimate more robust. Finally, according to the Jarque-Bera test, the regression also presents normality problems, as the null hypothesis that the residues are normally distributed was rejected at 1%. According to the central limit theorem, however, and considering that 2,095 observations were used, the normality premise can be relaxed (Brooks, 2002).

Also according to Table 3, the adjusted R^2 corresponded to 0.02176. In the study by Sloan (1996), using data from North American companies, between 1962 and 1991, the adjusted R^2 corresponded to 0.057. All coefficients of the variables are significant at 5%, except for the accruals variable, which was significant at 10%. Therefore, the significance of the variables is in accordance with the theoretical contribution expected in the model for the Brazilian market.

Specifically regarding the accruals variable, focused on in this study, its coefficient was significant but positive, as opposed to expectations. In order to sustain the hypothesis that investors do not correctly acknowledge accrual information for future pricing, its coefficient would have to be negative, which would demonstrate a certain degree of inability to understand the characteristics inherent in the accruals with regard to their expected future returns. It should also be highlighted that, when considering that the Brazilian capital market has a range of characteristics that hamper communication between companies and Accounting users (Lopes & Martins, 2005), a negative influence between accruals and earnings was even more expected. Nevertheless, these research results are in accordance with earlier studies in the Brazilian market (Cupertino, 2010; Lustosa *et al*, 2010; Takamatsu, 2011).

One possible justification for the result found can be attributed to the agency theory. Kothari, Loutskina and Nikolaev (2008) argue that, in line with that theory, managers tend to manipulate earnings to respond to the investors' expectations, thus permitting a higher valuation for those companies with high accrual levels. Hence, the agency theory previews an asymmetric relation between earnings and accruals (Kothari, *et al.*, 2008).

It should be highlighted that the coefficient Sloan (1996) obtained for the accrual variable was also significant at 1%, but negative. Similar results were found by Lafond (2005) and Pincus, Rajgopal and Venkatachalam (2007) for 17 and 20 countries under analysis, respectively, including Australia, Canada, France, Germany, Italy, Japan, Spain, Switzerland, United Kingdom and the United States.

As regards the B/M ratio, also according to Table 3, the estimated coefficient was positive and significant at 1%, as expected. The B/M index was also statistically significant in all models in Sloan's study (1996) and positively correlated with the stock returns of companies in the United States. The same was true for the E/P variable. Sloan (1996) also found a positive relation between the E/P variables and earnings.

What the beta variable is concerned, its coefficient was statistically significant at 1%, but negative, going against the theoretical hypothesis that risk and return are directly proportional variables. In the study by Sloan (1996), the beta was also negative but not statistically significant.

Furthermore, against expectations, the size variable was positive, which does not confirm the expected negative relation between company size and stock returns. This result supports the findings by Clubb and Naffi (2007) and Machado and Medeiros (2011), who also observed the existence of the size effect favorable to large companies. On the other hand, Sloan (1996) found a significant and negative relation between the size and stock return variables.

In view of the above, the results indicate that the market as a whole is somehow able to identify the effects of accruals on future earnings, that is, the market is able to anticipate the effect of accruals on accounting earnings when creating its future expectations about the companies. It is highlighted that the

results evidenced in this subsection partially differ from the findings by Sloan (1996), Gabrielson and Giaever (2007), Lafond (2007) and Pincus *et al.* (2007). In addition, they support the findings from Brazilian studies like Cupertino (2010), Lustosa *et al.* (2010) and Takamatsu (2011).

4.3. Results of the Third Hypothesis

In the search for an additional analysis about the relation between earnings and accruals, this section is aimed at verifying the possibility of gaining extraordinary earnings through a trading strategy based on the magnitude of the analyzed companies' accruals. At first, the general characteristics of the extreme accrual portfolios were analyzed. Thus, Table 3 presents the mean values for the period from June/1996 till June/2011 for the variables Beta, size (SIZ), book-to-market (B/M) ratio, market value (MV) and annual returns (RET).

According to Table 4, the mean beta of the low accrual portfolio (Q1) corresponds to 0.7187, while that of the high accrual portfolio (Q5) equals 0.6596. In addition, using the t-test, a significant difference between the mean values of the portfolios' betas is observed, at 1%. Hence, with a statistically higher mean beta, it can be concluded that companies with low accrual levels are riskier when compared to companies with high accrual levels. This result is in accordance with the conclusions by Khan (2008). It is observed that, although companies with low accrual levels present greater risks, their mean earnings were significantly inferior to those of companies with high accrual levels. This result goes against what is normally proposed in the literature, considering that, according to earlier evidence, stocks with higher betas present higher returns than those with lower betas.

Table 4

Characteristics of portfolios with low and high accrual levels

Total Accrual Levels/Variables	Beta	SIZ	B/M	MV**	RET
Low Accruals (Q1)	0.7187	14.8143	1.8494	1.378.143	0.0419
High Accruals (Q5)	0.6596	14.3100	4.2783	405.061	0.1221
t-test	2.6184*	4.6772*	-1.5908	3.9727*	-2.6274*

*Significant at 1%; **Amounts in millions.

Also according to Table 4, it is observed that the companies from the portfolio of low accrual levels (Q1) presented significantly higher market values than the companies with high accrual levels (Q5), against the findings by Palmon, Sudit and Yezegel (2008). This result can be justified by the size factor, as the mean return of companies with low accrual levels (higher market values) was statistically inferior to the companies with high accrual levels (lower market values). As well highlighted in the financial literature (Banz; 1981; Fama & French, 1992), smaller companies offer higher risks than larger companies, demanding a higher return. Finally, according to the t-test, the mean B/M ratios of the portfolios of companies with low accrual levels did not significantly differ from the companies with high accrual levels.

In sum, on average, companies with high accrual levels (Q5), which presented higher mean returns, obtained lower risks, low market values and higher B/M ratios. On the other hand, on average, the portfolio of companies with low accrual levels (Q1) presents high risk, high market value and lower B/M ratios. It should be highlighted that these results partially support the findings by Lev and Nissim (2006), but differ from the results of the studies by Collins *et al.* (2003) and Mashuwala *et al.* (2006).

Figure 2 presents the gross returns of the annual hedge portfolios. It is highlighted that the hedge portfolio is based on the premise of reduced risks among assets with extreme accruals. Therefore, the return of this portfolio is calculated based on a long position in companies with low accrual levels and a short position in companies with high accrual levels. According to Bernard *et al.* (1997), accrual anomaly will only exist if the earnings provided by a hedge portfolio are consistently positive throughout the analysis period.

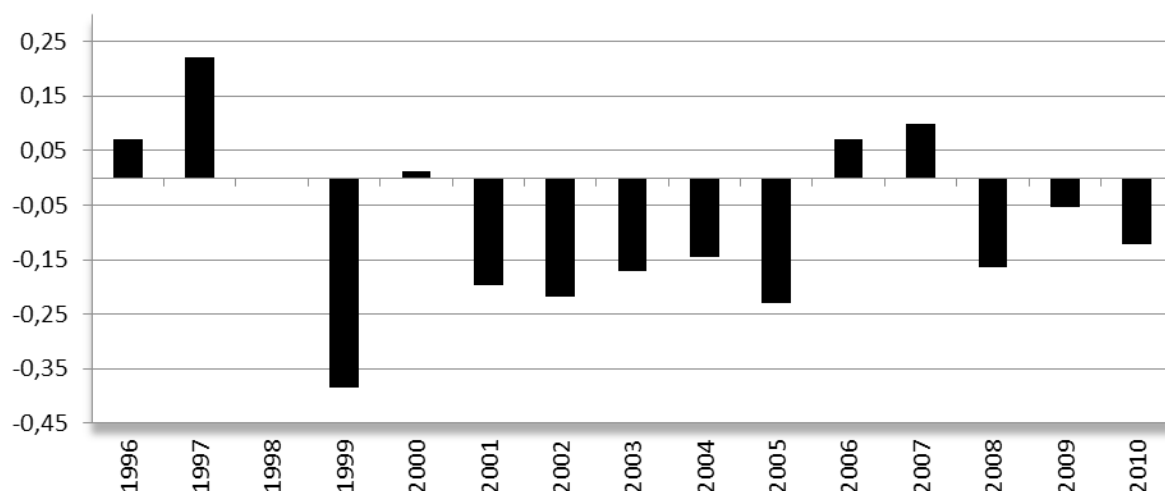


Figure 2. Annual earnings using accrual-based trade strategy - hedge portfolio

According to Figure 2, once again, it is difficult to draw any conclusion, as the results do not show any consistent behavior throughout the period. Nevertheless, the hedge portfolio presented a mean return of -8%, which was somehow expected, as the mean earnings of the portfolios with high accrual levels were higher in almost all years of the analysis. For the mere sake of comparison, Sloan (1996) and Gabriellson and Giaever (2007) found mean returns of the hedge portfolio corresponding to 11.2% and 8%, respectively.

The gross returns of the hedge portfolio were positive in only five out of 15 years analyzed, sustaining the hypothesis that the accrual anomaly does not occur in the Brazilian market. As mentioned earlier, to confirm the existence of the accrual anomaly, the returns of the hedge portfolio would have to be positive and consistent over the years (Bernard *et al*, 1997). This result contrasts with the findings by Sloan (1996) and Xie (2001), both in the North American market, besides the study by Gabriellson and Giaever (2007) for the Swiss market. It does support the study by Cupertino (2010) though, using data from the Brazilian market.

Finally, Table 5 discloses the results of the portfolio analysis, which contains the mean monthly returns for the period from June/1996 till June/2010 of the five portfolios constituted based on the accrual variable. As observed, a strong positive relation exists between accruals and returns, as the mean returns increase almost monotonically in relation to the accrual variable. The mean returns increased from 4.19% in the lowest quintile (Q1) to 12.21% in the highest quintile (Q5), resulting in a negative and statistically significant difference of 8%. This result ratifies the evidence presented in Table 3 and Figure 2, indicating that companies with lower accrual levels provide inferior earnings.

Table 5
Returns of portfolios constituted based on accrual variable

Variable/Portfolios	Q1	Q2	Q3	Q4	Q5	1-5
Returns (%)						
<i>Accruals</i>						
Mean Return	4.19%	8.17%	12.61%	12.80%	12.21%	-8.02%
Standard Deviation	48.29%	46.42%	48.25%	57.35%	50.00%	62.47%
t-test	1.7748**	3.5999*	5.3505*	4.5693*	4.9966*	-2.6274*

*Significant at 1%; **Significant at 10%

In view of the above, the results indicate the non-occurrence of the accrual anomaly in the Brazilian market. As shown, the gross returns of the hedge portfolios were positive in only five out of 15 years under analysis, showing a mean return of -8%. In addition, the portfolios with high accrual levels presented higher returns than the portfolios with low accrual levels in 10 out of 15 years under analysis, that is, 67% of the sample period.

5. Final Considerations

Based on the Efficient Market Theory (Fama, 1970, 1991), this research aimed to contribute to the discussion about the relevance of accounting information through the relation between the magnitude of the accruals and the stock returns. The specific aim was to analyze the persistence and relevance of the accruals in the Brazilian capital market. In that sense, an empirical-analytic study was undertaken based on the seminal work by Sloan (1996), which considered 139 stocks/year, in the period from 1996 till 2010.

Like in Sloan's work (1996), initially, the persistence of the earnings components was investigated, which are the accruals and cash flows, in the explanation of future earnings. Then, the capacity of the accruals to predict future earnings was analyzed. Finally, the existence of the accrual anomaly in the Brazilian market was verified, using a hedge portfolio. The study was divided in three phases because of the fact that the existence of the accrual anomaly is associated with the low persistence of accruals and, therefore, the investors fail to correctly assess their relevance in the creation of their expected future earnings. Based on this bad pricing, extraordinary earnings can be obtained through a trading strategy based on accrual information (Sloan, 1996).

In the first part of the research, the results show that the coefficient of the accrual component corresponded to 0.588, while the coefficient of the cash flow component equaled 0.627. Therefore, the parameters sustain the first research hypothesis, as the accrual coefficient was lower than the cash flow coefficient. Sloan (1996) found similar evidence for the North American market and Cupertino (2010) for the Brazilian market.

The second part of the research investigated the relevance of accruals to predict future returns. Against expectations, the accrual variable, although statistically significant, showed a positive coefficient, suggesting a positive relation between returns and accruals. This result indicates that the market correctly prices the accrual component of earnings, which does not confirm the first part of the second research hypothesis. This evidence contrasts with the results by Sloan (1996) and Xie (2001). After verifying the persistence and relevance of the accruals, the final part aimed to verify the existence of the accrual anomaly in the Brazilian market through the result of the hedge portfolio. The evidence found indicates the non-existence of the accrual anomaly in the Brazilian market, in line with the findings by Cupertino (2010), as its returns were positive in only five out of 15 years under investigation.

In short, the results obtained in this study can contribute to a better understanding of how current accruals influence future earnings, as well as whether the accruals are able to explain the future stock returns. It should be highlighted that this kind of research is important as many studies focus primarily and solely on the earnings' ability to explain the price or future return. Thus, knowledge about the predictive capacity of the earnings components enhances the possibility that its asset values will not be distanced from their intrinsic value. In addition, as highlighted by Lopes and Martins (2005, p. 37), "the analysis about the irrelevance of accruals casts doubt on the utility itself of accounting in the capital market context". In addition, the results obtained can contribute to understanding the relevance of accounting information for the Brazilian capital market. The importance of this study is also related to the fact that it was applied in a country with little empirical evidence about a very noteworthy theme in the international literature.

Finally, it is important to emphasize that this study comes with some limitations, which are: a) in the calculation of accruals, as the balance sheet focus was used, which is susceptible to estimation errors, to the detriment of the Cash Flow Statement (CFS) focus; b) in the sampling period, as the data were col-

lected from January 1995 till December 2011, justified by avoiding the inclusion of data with inflationary distortions that existed in the Brazilian economy until the implementation of the *Real* Plan in 1994. Therefore, these limitations should be taken into account in the interpretation and analysis of the results.

6. References

- Ali, A., Hwang, L. & Trombley, M. A. (2000). Accruals and future stock returns: tests of the naive investor hypothesis. *Journal of Accounting, Auditing & Finance*, 15(2), 45-63.
- Amihud, Y. & Mendelson, H. (1989). The effects of beta, bid-ask spread, residual risk, and size on stock returns. *The Journal of Finance*, 44(2), 479-486.
- Bachelier, L. (1900). Théorie de la spéculation. *Annales scientifiques de l'É.N.S.*, 3(17), 21-86.
- Banz, R.W. (1981). The relationship between return and market value of common stocks. *Journal of Financial Economics*, 9(2), 3-18.
- Barth, M.E., Cram, D.P & Nelson, K.K. (2001). Accruals and the prediction of future cash flows. *The Accounting Review*, 76(1), 27-58.
- Basu, S. (1983). The relationship between earnings yield, market value, and return for NYSE common stocks: further evidence. *Journal of Financial Economics*, 12(2), 129-156.
- Bernard, V., Thomas, J. & Wahlen, J. (1997). Accounting-based stock price anomalies: separating market inefficiencies from risk. *Contemporary Accounting Research*, 14(2), 44-87.
- Bradshaw, M., Richardson, S. & Sloan, R. (2001). Do analysts and auditors use information in accruals? *Journal of Accounting research*, 39(1), 45-74.
- Brooks, C. (2002). *Introductory econometrics for finance*. Cambridge: Cambridge University Press.
- Clubb, C. & Naffi, M. (2007). The Usefulness of Book-to-Market and ROW Expectations for Explaining UK stock returns. *Journal of Business Finance & Accounting*, 34, 1-32.
- Costa, N. C. A. Jr. & Neves, M.B.E. (2000). Variáveis fundamentalistas e retornos das ações. *Revista Brasileira de Economia (FGV)*, 54(2), 123-137.
- Chan, K., Chan, L. K. C., Jegadeesh, N. & Lakonishok, J. (2006). Earnings quality and stock returns. *Journal of Business*, 79(3), 1041-1082.
- Collins, D. W., Gong, G. & Hribar, P. (2003). Investor sophistication and the mispricing of accruals. *Review of Accounting Studies*, 1(8), 251-276.
- Collins, D. W. & Hribar, P. (2000). Earnings-based and accrual-based market anomalies: one effect or two? *Journal of Accounting and Economics*, 29(1), 101-123.
- Cupertino, C. M. (2010). *Anomalia dos accruals no mercado brasileiro de capitais*. Tese de doutorado, Universidade Federal de Santa Catarina. Florianópolis, SC, Brasil.
- Cuthbertson, K. & Nitzche, D. (2004). *Quantitative financial economics*. (2a ed). West Sussex: Wiley.
- Dechow, P. M. & Dichev, I. D. (2002). The quality of accruals and earnings: the role of accrual estimation errors. *Accounting Review*, 77(2), 35-59.
- Desai, H., Rajgopal, S. & Venkatachalam, M. (2004). Value-glamour and accruals mispricing: one anomaly or two. *The Accounting Review*, 79(2), 355-385.
- Fairfield, P., Whisenant, J. & Yohn, T. (2003). Accrued earnings and growth: implications for future profitability and market mispricing. *The Accounting Review*, 78(1), 353-371.

- Fama, E. F. (1970). Efficient capital markets: a review of theory and empirical work. *Journal of Finance*, 25(2), 383-417.
- Fama, E. F. & French, K. R. (1995). Size and book-to-market factors in earnings and returns. *Journal of Finance*, 50(1), 131-155.
- Fama, E. F. & French, K. R. (1992). The cross-section of expected stock returns. *Journal of Finance*, 47(2), 427-465.
- Gabrielsson, T. & Gjaever, H. (2007). *The accruals anomaly in Sweden*. Dissertação de mestrado, Lund University, Lund, Suécia.
- Jegadeesh, N. & Titman, S. (1993). Returns to buying winners and selling losers: implications for stock market efficiency. *Journal of Finance*, 48(3), 65-91.
- Khan, M. (2008). Are accruals mispriced? Evidence from tests of an intertemporal capital asset pricing model. *Journal of Accounting and Economics*, 45(2), 55-77.
- Kothari, S.P., Loutskina, E. & Nikolaev, V. (2008). *Agency theory of overvalued equity as an explanation for the accrual anomaly* [Working Paper]. University of Virginia. Retrieved on April 14, 2012, from <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.144.7499>.
- Lafond, R. (2005). *Is the accrual anomaly a global anomaly?* [Working Paper], MIT Sloan School of Management Retrieved on October 1, 2011, from <http://ssrn.com/paper=782726>.
- Lev, D. M. & Nissim, D. (2006). The persistence of the accruals anomaly. *Contemporary Accounting Research*, 23(1), 193-226.
- Lopes, A.B. & Martins, E. (2005). *Teoria da contabilidade: uma nova abordagem*. São Paulo: Atlas.
- Lustosa, P. R. B., Fernandes, J. L. T., Nunes, D. M. S. & Araújo, J. B., Jr (2010).. Estimativas contábeis e qualidade do lucro: análise setorial no Brasil. *Revista de Educação e Pesquisa em Contabilidade*, 4(2), 43-61.
- Machado, M. A. V. & Medeiros, O. R. (2011). Modelos de precificação de ativos e o efeito liquidez: evidências empíricas no mercado acionário brasileiro. *Revista Brasileira de Finanças*, 9(3), 383-412.
- Markowitz, H. H. (1952). Portfolio selection. *Journal of Finance*, 7(77), 91.
- Martins, G. (2002). *Manual para elaboração de monografias e dissertações*. (3a ed.) São Paulo: Atlas.
- Mashuwalla, C., Rajgopal, S. & Shevlin, T. (2006). Why is the accrual anomaly not arbitrated away? The role of idiosyncratic risk and transaction cost. *Journal of Accounting and Economics*, 43(1-2), 3-33.
- Palmon, D., Sudit, E. & Yezegel, A. (2008). The accruals anomaly and company size. *Financial Analysts Journal*, 65(5), 47-60.
- Pincus, M., Rajgopal, S. & Venkatachalam, M. (2007). The accrual anomaly: international evidence. *Accounting Review*, 82(1), 169-203.
- Richardson, S. A., Sloan, R. G., Soliman, M. T. & Tuna, A. I. (2005). Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics*, 39(2), 437-485.
- Sharp, E. W. F. (1964). Capital asset prices: a theory of market equilibrium under conditions of risk. *Journal of Financial*, 19(2), 425-442.
- Sewell, M. (2011). History of the efficient market hypothesis. *UCL Research*, 11(4), 11-35.
- Sloan, R.G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *Accounting Review*, 71(3), 289-315.
- Soares, R. O., Rostagno, L. M., & Soares, K. T. C. (2002, setembro). Estudo de eventos: o método e as formas de cálculo do retorno anormal. *Anais do Encontro Nacional da Associação Nacional de Pós-Graduação e Pesquisa em Administração*, Salvador, BA, Brasil, 26.

- Stattman, D. (1980). Book values and stock returns. *A Journal of Slected Papers*, 4(1), 25-45.
- Takamatsu, R. T. (2011). *Accruals contábeis, persistência dos lucros e retorno das ações*. Dissertação de mestrado, Universidade de São Paulo, São Paulo, SP, Brasil.
- Taylor, G. & Xu, R. Z. (2011). Accruals and value/glamour anomalies: the same or related phenomena? *International Journal of Business and Management*, 6(9), 14-23.
- Thomas, J. & Zhang, H. (2002). Inventory changes and future returns. *Review of Accounting Studies*, 7(2), 163-187.
- Vaihekoski, M. (2004). Portfolio construction for tests of asset pricing models. *Financial Markets, Institutions & Instruments*, 13(1), 1-39.
- Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review*, 76(3), 357-373.