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THE IMPACT OF ACCRUALS OVER THE ABNORMAL RETURNS OF FIRMS THE STOXX 600 AND S&P 500 BY SECTORS

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Abstracts

English
The objective of this work is to study the accrual anomaly in Europe and America by sector and use the accrual anomaly as a trading strategy. This work uses five types of accruals to study the accrual anomaly in the STOXX Euro 600 and S&P 500 by sectors. The five types of accruals used are the working capital accruals, non-current operative asset accruals, non-current operative liability accruals, operative accruals, and long-term accruals. There are abundant studies about the accrual anomaly but not many about the accrual anomaly and how it affects specific sectors. The sample uses data from 1999 to 2019. This paper empirically proves the generalization of the accrual anomaly to the European equity market, and the existence of the accrual anomaly in the Telecommunication and Technology sectors using non-current operative asset accruals and operative accruals respectively. Most importantly, this paper finds a Telecommunication and Technology portfolio that uses Sloan's (1996) accrual-hedging strategy to buy long low accrual stocks and sell short high accrual stocks in the mentioned industries using as a reference the two accruals mentioned to outperform across a 20-year average the benchmark index, the STOXX Euro 600 as well as portfolios composed of Telecommunication and Technology stocks from the sample of the STOXX Euro 600 index.

Key Words: Accruals, Abnormal Returns, Accrual Anomaly, STOXX 600, Sectors, non-current operative asset accruals, working capital accruals, operative accruals, long-term accruals, non-current operative liability accruals.

Spanish
El objetivo de este trabajo es estudiar la *accrual anomaly* o anomalía de los ajustes por devengo en Europa y América por sector y utilizar la anomalía mencionada como estrategia de inversión. Este trabajo utiliza cinco tipos de *accruals* o devengos para estudiar la *accrual anomaly* en el STOXX Euro 600 y S&P 500 por sectores. Los cinco tipos de *accruals* o devengos utilizados son los devengos de fondo de maniobra o capital circulante, devengos de activos operativos no corrientes, devengos de pasivos operativos no corrientes, devengos operativos y devengos a largo plazo. Hay abundantes estudios sobre la *accrual anomaly*, sin embargo, pocos se centran en la anomalía de los ajustes por devengo y cómo afecta a sectores específicos. La muestra utiliza datos de 1999 a 2019 para probar las siguientes conclusiones. Este artículo demuestra empíricamente la generalización de la anomalía de los ajustes de devengo al mercado de renta variable europeo, y la existencia de la *accrual anomaly* en los sectores de Telecomunicaciones y Tecnología utilizando devengos de activos operativos no corrientes y devengos operativos respectivamente. Lo que es más importante, este documento encuentra una portfolio de telecomunicaciones y tecnología que utiliza la estrategia de cobertura de devengo de Sloan (1996) para comprar acciones de bajo devengo y vender en corto acciones de alto devengo en las industrias mencionadas usando como referencia los dos *accruals* mencionados para superar el índice de referencia, el STOXX Euro 600, así como carteras compuestas por acciones de empresas de Telecomunicaciones y Tecnología de la muestra del índice STOXX Euro 600 de media durante los últimos 20 años.

Palabras Clave: devengo, retornos anormales, anomalia de los ajustes por devengos, STOXX 600, sectores.

1. Introduction

1.1 Objectives

Inspired by the work of Sloan (1996) on the accrual anomaly and the specific development on this topic from Chichernea et al. (2019), Morton Pincus et al. (2007), Papanastasopoulos (2014) and Sandoval et al. (2022). This paper introduces the study of the accrual anomaly by sector. The first hypothesis consists of testing if the accrual anomaly is more present in Europe than in America as the effect of the accrual anomaly has been reducing since the original work about the accrual anomaly was published by Sloan in 1996. The first hypothesis determines whether to use the S&P 500 sample to study the accrual anomaly by sectors or not. The second hypothesis is which industries are affected more by accruals over abnormal returns and which type of accrual has a greater impact on a specific industry. The third hypothesis is to find which sectors are more volatile and generate higher returns. The final hypothesis is to evaluate a hedging strategy based on accruals by sectors to beat the index in which they are publicly listed, the STOXX 600 or S&P500. The main objective of this study is to examine the presence of the accrual anomaly in a specific sector in Europe and North America as well as implement a hedge accrual-based trading strategy based on investing in long-short positions in specific sectors to outperform the respective benchmark index.

1.2 Topic Rationale

Following the work of Sloan in 1996 discovering the accrual anomaly in which He demonstrates that stock returns are consistently positive for firms with low accruals and consistently negative for firms with high accruals following earnings announcements. Many scholars have further explored the accrual anomaly, there are four main hypotheses explaining the accrual anomaly. The first, the earnings fixation hypothesis was proposed by Sloan in 1996. He postulates that the accrual anomaly is the result of investors' overweighting the net income component of earnings while underweighting cashflows and their failure to recognize accrual's lower reliability. The second is the growth anomaly hypothesis proposed by Fairfield in 2003. He explains that businesses experiencing rapid growth earn fewer returns. Accruals measured in changes in working capital or increase in net operating assets should have the same predictive potentials for future returns as the change in long-term operating assets, another proxy for growth. The third is the risk hypothesis proposed by Kahn in 2008. It quantifies risk and finds that a considerable part of the cross-sectional variance in average returns for high and low accrual firms is accounted for risk. The fourth is the arbitrage limit hypothesis proposed by Mashruwala in 2006. He proposes that the accrual anomaly is caused by idiosyncratic volatility and transaction costs that impede risk-averse arbitrageurs' abilities. Moreover, when market inefficiencies exist, the effect should be more pronounced and persistent when arbitrage risk is greater. Part of this idiosyncratic volatility that can´t be explained a priori, is sometimes given by the practice of earnings management in which top management manipulate net income using accruals. Xie proposed this as an explanation for the accrual anomaly in 2001. Given that the accrual anomaly was found in the American stock market, several studies attempted to generalize the anomaly in other countries. Morton Pincus et al. (2007), Papanastasopoulos (2014) and Sandoval et al.

(2022) study the effect of the accrual anomaly in Europe. As mentioned by Artikis et al. (2022) and Green et al. (2011) the effect of the accrual anomaly has diminished in the American Equity Market. All the factors mentioned above have motivated the search for the effect of the accrual anomaly in certain industries in Europe compared to the United States.

1.3 Methodology

This study examines whether the accrual anomaly exists across industries in a sample of companies from the STOXX Europe 600 and the S&P 500. Everything was done the same from one index to the other, including variable treatment and computations. The stocks were divided into quartiles based on the amount of accruals they had, which were scaled by the average of assets from the previous two years in which that specific accrual was determined. This classification was done with the five types of accruals studied, Non-Current Operative Asset Accruals, Non-Current Operative Liability Accruals, long-term accruals, and Operative Accruals. The abnormal returns used as the dependent variable are calculated by subtracting each annual stock return from its benchmark, in this case, the annual return of either the STOXX Europe 600 or the S&P 500. The use of the index as the benchmark was used because it seemed fairer to use it when comparing the hedge returns in the industry portfolios versus a strategy based on investing in a specific reference index like the STOXX Europe 600 or the S&P 500. The sample consists of the list of companies in the STOXX Europe 600 and the S&P 500 index from 1999 to 2019. The data was retrieved from their financial statements and their stock price and return information available at Refinitiv Eikon. The STOXX Europe 600 Index represents large, mid and small capitalization companies across 14 countries of the European Union as well as the United Kingdom and Switzerland. The S&P 500 is an index that tracks 500 publicly listed North American companies. The data was retrieved from the Balance sheet, Income Statement, and Cash Flow Statement of all the companies belonging to the studied indexes during the selected time frame. To analyze the significance level of each accrual, a model was estimated for each accrual, setting the abnormal return as the dependent variable and the accruals as the independent variable. Similar to Sloan (1996) approach, the coefficient of the linear regression and its p-value determine the magnitude of the effect of the accrual anomaly over abnormal returns and whether it is significant or not. To obtain the results from the long-short position hedge strategy, a one-sample t-test was done for every sector to assess whether its long-short position is significant and to measure the impact of the accrual anomaly in terms of average annual abnormal return.

1.4 Structure

This paper is structured as follows, the first section is the introduction, in which the structure is part of it includes the objectives of the paper, the topic rationale where the justification of this paper is found, and the main reasons why it is relevant to the modern literature as well as professionals, the methodology which includes a brief description of the quantitative methods used to gather and analyze the data. The second section is the literature review which contains the definitions of accruals, the main explanations of the accrual anomaly, the main authors contributing to the literature, the international evidence that justifies searching for the accrual anomaly in Europe, contributions of several authors in the study of different types of accruals and its effect on the accrual anomaly and abnormal returns. The third section is a deeper explanation of the objectives including the hypothesis development. The fourth section is Methodology which is also a more in-depth explanation of section one that includes the composition of the sample, the calculation, and definitions of the dependent and independent variables as well as the procedures and

statistics involved in calculating the results. This is precisely the fifth section; results where all the four hypotheses are tested, and the results are shown and analyzed. The sixth section is the conclusion which includes a summary of all the points analyzed in the previous section and a discussion of the implications. Section number seven is the reference list which includes a list of all the works cited using the American Psychologist Association (APA) citing style. The last section is the appendix in which all the data calculated in the statistical analysis is included in the study.

2. Literature Review

Definition of Accruals

To understand the complexity of the accrual anomaly, it is important to return to the definition of the Accrual Accounting system, the revenues and expenses are recognized when the revenue is earned, and the expense is incurred. This is the alternative to cash accounting method which is simple and has some limitations which lead to its little to no use. The International Financial Reporting Standards, from now on (IFRS) as well as the Generally Accepted Accounting Principles, from now on (GAAP) only contemplate the use of Accrual Accounting. Earnings management is the practice of manipulating the income statement and accrual accounting can be used to make it. Earnings management varies from industry to country, and its official reporting standards. Accruals are included in the earnings stated by companies in their financial statements, in addition to real cash flows. These are financial reporting regulations-compliant accounting adjustments to the firm's cash flows from activities. The claimed regulatory goal of accounting accruals is to make reported earnings more accurately represent the firm's economic performance since the timing of cash transactions might be misaligned with the timing of economic activities. Because accruals include crucial information about the firm's future earnings, an investor or financial analyst who misinterprets them will have a skewed perspective of the firm's future prospects. This is why high accrual firms may be overvalued and low accrual firms undervalued (Teoh & T. J. Wong, 2002).

Sloan (1996) First documented the accrual anomaly which is the negative relationship between short-term accruals and abnormal returns in the equity market in the United States. This study is motivated by the naïve expectations of investors regarding earnings. Ou and Penman (1989) identified that investors generally do not consider all the earnings components when buying a certain stock, thus systematically underestimating Cash Flow from Operations as an earnings component. As mentioned before, earnings are subject to manipulation by top management, therefore, not considering all the components of earnings might lead to a biased valuation of the company’s stock price. The Cash Flow from operations is an objective data point that is not subject to interpretation nor manipulation, therefore, underestimating this component of earnings implicitly assigns a certain degree of subjectivity to the stock valuation of a company. As a result, companies with large (low) accruals have negative (positive) future anomalous stock returns that are concentrated around earnings releases. Consequently, Sloan proposed a trading strategy that consisted of a long position with low accrual firms and a short position in high accrual firms predicting an abnormal return. What is unique about the study of Sloan is that it is contrary to the efficient market hypothesis (EMH), developed independently by Samuelson (1965) and Fama (1963, 1965). EMH was key to the modern financial theory and assumes that stock prices fully reflect all publicly available information. The accrual anomaly evidenced a leak on this theory and appeared as an investment strategy.

Teoh and T. J. Wong (2002) explored the effectiveness in which the accounting information was used by financial analysts and concluded that analysts misuse the accrual component of earnings resulting in a systematic error. The forecast made by analysts is used by the average investor who makes the same forecast errors resulting in a systematic error and market inefficiency as the value of a firm no longer represents its fair value.

Shi and Zhang (2012) compile and explain the four current explanations for the accrual anomaly. The first explanation of the accrual anomaly is the Earnings Fixation hypothesis raised by Sloan (1996). He postulates that the accrual anomaly is the result of investors' obsession with reported earnings and their failure to recognize accruals' lower reliability. According to one interpretation, investors' expectations of future earnings are skewed upwards (downward) for enterprises with high (low) accruals. Sloan (1996) demonstrates that stock returns are consistently positive for firms with low accruals and consistently negative for firms with high accruals following earnings announcements, whereas Bradshaw et al. (2001) demonstrate that financial analyst forecasts are relatively optimistic for firms with high accruals and pessimistic for firms with low accruals. Dechow and Dichev (2002) demonstrate that enterprises with a low accrual quality profit is less in the long run. claim that the discrepancy in persistence between accruals and cash flows is due to measurement inaccuracy in accruals. The second theory, the growth explanation, asserts that the accrual anomaly is a subset of the growth anomaly, meaning that businesses experiencing rapid growth earn fewer returns. Accruals, which are measured as changes in working capital accounts, can also be understood as an increase in current net operating assets. If the accrual anomaly is caused by accruals representing growth, Fairfield et al. (2003) argue that other growth measures, such as the rise in long-term net operating assets, should have the same predictive potential as accruals for future returns. Their empirical data corroborate this hypothesis. While Fairfield et al's findings do not refute the earnings fixation theory, they do imply that lesser accrual persistence may be due to declining rewards to growth rather than accrual estimate errors. They propose and demonstrate that accruals are more closely related to growth in invested capital, which serves as the numerator in the calculation of future earnings than cash flows are. Additionally, they demonstrate that after accounting for the denominator impact, there is no difference in the persistence level between accruals and cash flows. According to Zhang (2007), if the growth anomaly is the root cause of the accrual anomaly, the accrual anomaly should be stronger when accruals are more likely to be used to gauge growth. As a result, his research supports the hypothesis that the accrual anomaly is the outcome of the growth anomaly. The third explanation holds that risk is responsible for the accrual anomaly. Khan (2008) uses a four-factor model inspired by the Intertemporal Capital Asset Pricing Model to quantify risk. He discovers that risk accounts for a substantial percentage of the cross-sectional variance in average returns for high- and low-accrual enterprises. Wu et al. (2010) interpret accruals as working capital investments and explain the accrual anomaly to businesses responding efficiently to fluctuations in discount rates, as anticipated by the q-theory of investment. The fourth hypothesis establishes a connection between the accrual anomaly and the arbitrage limit. According to Mashruwala et al. (2006), the accrual anomaly is concentrated in enterprises with a high degree of idiosyncratic volatility and high transaction costs. Their results are consistent with the concept that the accrual anomaly is caused by idiosyncratic volatility and transaction costs that impede risk-averse arbitrageurs' abilities. If market inefficiencies exist, it is anticipated to be more pronounced and persistent when arbitrage risk is greater.

The fourth explanation supports that the accrual anomaly is present in firms with high idiosyncratic volatility, this is the part of the variability of the returns that cannot be explained. This unpredictability can be attributed to the practice of Earnings Management as forecasting the use of accruals by top management to manipulate the net income is highly unforeseeable. Earnings Management is a subject that is tightly related to accounting accruals because these are useful tools to change or manipulate the net profit. The degree to which the net profit is manipulated is positively related to the quantity of accruals a firm presents. The Earnings Management Hypothesis as an explanation of the Accrual Anomaly was first proposed and analyzed by Xie (2001)

The table below elaborated by Saavedra and Cabrera (2016) summarizes the possible reasons and incentives for top management to manipulate earnings. According to Bannister & Newman (1996) firms whose earnings fall short of analyst projections use discretionary accruals that boost revenue. If this is added to Teoh et al.'s (1998) contribution on analysts underestimating accruals, it results in a firm with a relatively high valuation regarding its actual performance and it is the most convenient scenario in which the accrual anomaly manifests in the long run as the earnings reported are not fully representative of past and actual performance. As well as Pastor & Poveda Fuentes (2006) conclude that the subsequent bad performance after IPOs might be explained by the slow correction of the initial overvaluation generated by earnings management methods. Literature indicates that it is that precise autocorrection of valuation that generates the accrual anomaly and with the financial statements of the previous year predict the following years' stock returns.

Table 1: Summary of Earnings Management Explanations elaborated by (Saavedra & Cabrera, 2016)

Motivatinos	Author	Relevant Conclusions of the Article
Motivations related to debt contracts	(DeFond & Jiambalvo, 1994)	They examined abnormal accruals from a sample of firms that reported debt covenant violations in annual reports. In the year prior to default, abnormal total accruals and abnormal working capital accruals were significantly positive. In the year of the violation, they found evidence of abnormal and positive working capital accruals.
	(Dechow et al., 1996)	A high level of indebtedness can encourage firms to manipulate profits upwards to avoid violating financial clauses and incurring technical default costs, if the leverage measures proximity to the debt covenants; or obtain equity contributions, if leverage is a proxy for the demand for external equity financing.
Motivations related to remuneration contracts	(Watts & Zimmerman, 1978)	In small (low political costs), unregulated firms, management would have incentives to report higher profits if the expected profit (compensation) is greater than the tax consequences.
Motivations related to political costs	(Watts & Zimmerman, 1978)	They posited the political costs hypothesis, which predicts that large firms face greater political scrutiny when they report high profits.

		This produces an incentive for firms to manipulate profit downward.
	(Gill-de-Albornoz & Illueca, 2005)	Ceteris paribus, the greater the political costs to the firm, the greater the incentives for management to artificially reduce profit.
Motivations related to regulatory processes	(Jones, 1991)	The results were consistent with the hypothesis that management reduced the benefit through earnings management practices, during the period in which the ITC investigated whether it was appropriate to apply any import relief (import restrictions that protect domestic producers from competition). foreign), to increase the probability of obtaining some measure of protection from the government.
Valuations	(Chaney & Lewis, 1995)	They showed that earnings management practices affect firm value when management and investors are asymmetrically informed.
	(Bannister & Newman, 1996)	They found that firms whose earnings fall short of analyst projections use discretionary accruals that boost revenue.
	(Teoh, Welch, et al., 1998)	They noted that IPO issuers can report benefits that exceed cash flow, by using positive accruals.
	(Teoh, Wong, et al., 1998)	They found evidence that IPO firms had high earnings and high positive abnormal earnings in the year of issuance, followed by low long-term earnings and negative abnormal earnings.
	(Pastor & Poveda Fuentes, 2006)	The poor performance shown after the IPO would be due to the gradual correction of excessive optimism or the initial overvaluation caused by earnings management practices.
	(Gill-de-Albornoz & Illueca, 2005)	They subdivided this type of motivation into: (1) valuation motivations generated around specific events, such as management buyouts, initial public offerings of shares, secondary public offerings of shares, and mergers and acquisitions; and (2) ongoing valuation motivations, originating from the pressure that agents exert on stock market firms, and which may give rise to earnings management practices that, a priori, would be positively valued by said agents.
Tax	(Guenther, 1994)	Provided evidence of income manipulation, in response to large decreases in the US income tax rate.

	(Monem, 2003)	He analyzed profit manipulation in the Australian gold mining industry in response to the introduction of a profit tax rate. It evidenced significant downward profit manipulation by gold mining firms prior to the introduction of the tax, which was consistent with attempts to mitigate political costs.
	(Ullah et al., 2014)	They examined the impact of fraudulent public information on stock prices and transaction volume. They found that false information, even after being denied by a credible source, led to abnormal returns and transaction volumes. They also found that the effects on returns and volume can be persistent for at least two weeks, and that perpetrators of fake news attacks can make huge profits.

Source: (Saavedra & Cabrera, 2016)

After exploring and gathering information about Accruals, the academic timeline of the study of the accrual anomaly, and its possible explanations, it is also important to document what the academia has written about the specific types of accruals used for this paper. Earlier studies about the accrual anomaly used the variable Accruals as the difference between Net Income and Cash Flow from Operations, which yielded good results. However, Richardson et al. (2005) concluded that lower reliability of accruals results in weaker earnings persistence, which investors did not appear to expect, resulting in considerable stock mispricing. Therefore, the use of more unreliable accruals would increase the accrual anomaly, this is why the study recommended the use of broader accruals in order to achieve the mentioned weak reliability. Richardson et al. (2005) First introduce the use of Non-Current Operative Accruals to document the accrual anomaly. The unreliability of these makes the overweighting of Non-Current Operative Accruals have a greater impact on overpricing stocks thus the accrual anomaly is stronger. In line with this study, Chichernea et al. (2019) argue that the long-term component of accruals is the source of the predictive power of accruals across the equity and debt markets. Furthermore, Chichernea et al., (2019) conclude that it is the asset part of the long-term accrual or non-current operative accrual that drives the actual result. This paper uses five types of accruals, Non-Current Operative Liability Accruals, Working Capital Accruals, Long Term Accruals, Operative accruals, and non-current operative asset accruals. However, the main focus of the study of the accrual anomaly is on non-current operative asset accruals as suggested by Chichernea et al. (2019) and Richardson et al. (2005), as mentioned, its low reliability to obtain greater security mispricing benefits the amplification of the accrual anomaly.

None of the hypotheses explained above are mutually exclusive. It is clear enough that market inefficiencies exist. There have been many studies that attempt to explain the variability of returns in the stock market, however, it is hardly impossible to obtain a statistically significant model that explains the variability of the stock returns. This is one of the reasons why there are different hypotheses that attempt to explain the accrual anomaly and they are all still equally valid and empirically proven.

Having accepted the accrual anomaly for the US capital stock market, it was natural for the academia to explore if the anomaly generalized in other countries where the reporting standards, culture, or law are different. This was the motivation of Morton Pincus et al. (2007) to explore the accrual anomaly across 20 different countries where they found that stock prices overweight Accruals. In addition, accrual anomaly especially manifests in Australia, the U.K., Canada, and the U.S., countries that share a common law tradition. This study confirms that the accrual anomaly is also an international phenomenon. According to Morton Pincus et al. (2007) in code law countries where the accrual anomaly was not present, the board of directors for the companies studied had a broader representation of its stakeholders, this allowed greater information accessibility across investors, suppliers, employees, and clients. Having access to more information across the stakeholders helps the market to remain efficient and it is perhaps the reason why the accrual anomaly does not present in other countries studied with a code law tradition. As mentioned above, Morton Pincus et al. (2007) link the extent of the impact of the accrual anomaly with country-level differences such as common law vs code law tradition. The common law tradition is used in a country's legal and financial system, it is based on the principle that accounting standards develop as they become widely accepted and court rulings establish valid jurisprudence. Common law tradition countries include the US, UK, and Australia. On the other hand, Code law tradition is used in a country's legal and financial system, it is based on using fixed statutes to establish accounting and legal principles. Code law countries include France, Germany, Italy, Spain, and other European countries that will be included in the sample to analyze the accrual anomaly in Europe. However, the adoption of the International Financial Reporting Standards, (IFRS) by the European Union's publicly listed firms might have potentially changed the impact of the accrual anomaly in the European stock market. There are several differences between the US GAAP and the IFRS. The principal difference is that US GAAP is rule-based while IFRS is principle-based. Consequently, the US GAAP has much more detailed rules and guidelines while the IFRS has fewer guidelines that result in a theoretical framework that leaves much more room for interpretation than the US GAAP. The management of inventories is perhaps the most significant distinction between GAAP and IFRS. Last-in, first-out (LIFO) inventory accounting systems are prohibited under IFRS requirements. LIFO is permitted under GAAP. The first-in, first-out (FIFO) and weighted average-cost methods are available in both systems. Inventory reversals are not permitted under GAAP; however, they are permitted under IFRS under specific situations. The extent to which the adoption of IFRS or the use of US GAAP affects the companies in the sample will depend on the industry it belongs to, as mentioned, the main difference is in the treatment of inventory, therefore, those industries with heavy average inventories will have a significant difference between firms using US GAAP and its counterparts using the IFRS. Chen & Jiang (2012) empirically prove that the accrual anomaly did not exist in common law countries in the European Union as well as the UK. As mentioned before, there are a lot of versions and explanations of the accrual anomaly as well as different studies that aim to refute this hypothesis. This alternative finding by Chen & Jiang (2012) will be considered in this paper to account for the adoption of the IFRS and its potential impact on the sample.

These key findings of this study have motivated academia to persevere in the study of the international evidence of the accrual anomaly. Papanastasopoulos (2014) Studies the accrual anomaly across 14 countries in the European Union plus UK when they were part of the EU and Switzerland. The study relates accepted explanations of the accrual anomaly with country-level factors and proved that the Anomaly generalized in 11 of the

16 countries studied. Papanastasopoulos concluded that the effect of the accrual anomaly on stock returns is greater in countries with a higher level of individualism, a lower level of uncertainty avoidance, a higher level of equity market development, a higher level of equity market liquidity, lower transaction costs, increased analyst coverage, lower analyst optimism. He also concluded that the accrual anomaly strategy should yield stronger and higher stock returns with lower ownership concentration. Since this paper is focused on industry-level differences in the accrual anomaly, ownership concentration differences might also explain the different impacts of the accrual anomaly between industries. Generally, the United States is presented as an example of individualism and low uncertainty avoidance so it will be interesting to see how the conclusions of this paper apply to this thesis. According to Papanastasopoulos's conclusions, the United States-based index S&P 500, should present a higher level of accrual anomaly and its effect on stock returns than the Europe-based index STOXX 600. The outcome of the academic papers focused on the generalization of the accrual anomaly in different countries lays the ground for further study of the international evidence. This is the reason why the papers from Morton Pincus et al. (2007), Papanastasopoulos (2014), and Sandoval et al. (2022) serve as an inspiration to pursue the investigation of the accrual anomaly in Europe and how does it compare to its homonymous index in the United States where the accrual anomaly was originally documented by Sloan (1996). However, it is expected that the accrual anomaly is less present in European stocks than in the US stock market. This is the reason the first hypothesis is a comparison of the accrual anomaly in the American and European stock markets.

Since the study of the accrual anomaly by Sloan (1996) there have been many studies about the accrual anomaly, the generalization in different stock markets, in different countries, and even in the bond market. But there is not much literature about the study of the accrual anomaly by industries. As mentioned before, earnings management is a possible hypothesis of the accrual anomaly proposed by Xie (2001). Some studies explore if the earnings management phenomena were given more intensively in certain industries. He and Yang (2014) explore how industry regulation affects the efficiency of audit committees in limiting earnings management with a panel data set from the S&P 500. He & Yang (2014) conclude that in unregulated industries, the share of outside CEO directors on an audit committee is linked to greater levels of earnings management. In the study, unregulated industries include Technology or Industrials sectors which will be analyzed later. This relationship between earnings management was negative among regulated industries thus concluding that the telecommunication industry presents very low to no earnings management practices. For the study, the following industries we included among the regulated industries, electric, gas, oil and gas extraction, transportation, telecommunication, sanitary services, and financial. As mentioned, there are many explanations for the accrual anomaly, and the fact that the accrual anomaly in one industry if present is not explained by the earnings management hypothesis is possible and is expected to happen. This is the reason why this paper aims to explore a different path to understand the accrual anomaly and use it as a trading strategy. If the earnings management hypothesis is a possible explanation for the accrual anomaly, studying the accrual anomaly in industries where the earnings management systematically occurs should yield a greater effect on the accrual anomaly thus obtaining greater abnormal returns. Some industries where the accrual anomaly is present might have different explanations for it. As mentioned above, unregulated industries might be prone to high levels of earnings management and the accrual anomaly of other industries might be explained by the growth anomaly. There are several studies that point towards the

Technology industry as having an extraordinary effect on the accrual anomaly and its respective stock return with a hedging strategy, Ze-To (2012) studies the effect of the accrual anomaly by industry and concludes that the accrual anomaly exists in the NYSE and varies across industries. Moreover, Ze-To (2012) empirically evidences that the largest accrual earnings are found in the technology, healthcare, and consumer goods sectors in the NYSE and AMEX indexes. It will be very interesting to study if this conclusion also generalizes to the STOXX 600 and S&P 500. Zhang (2007) ties the accrual anomaly with the growth hypothesis and finds consistent evidence that the accrual anomaly varies across industries in which accruals vary with employee growth. In addition, he concludes that the accrual Anomaly, on the other hand, is significantly smaller in businesses where accruals have a minimal association with staff growth.

3. Objectives

3.1 Hypothesis Development

Unlike most of the literature, in this paper I take a novel approach to the study of accruals, I study the relationship between Non-Current Operative Asset Accruals over the abnormal returns of the companies in the Euro STOXX 600 index which tracks the top 600 publicly listed companies in Europe. The study has a focus on which industries present if so, high or low accruals to apply the accrual anomaly suggested by Sloan (1996) as a trading strategy and create a Portfolio with long positions on low-accrual key industries and a short position in high-accrual key industries. In this study other types of accruals such as Non-Current Operative Liability Accruals, Working Capital Accruals, Long Term Accruals, and Operative accruals. To implement this trading strategy, the industries with significant accruals over abnormal returns were considered, not limiting the study to one specific accrual. The purpose of this is to obtain the highest return portfolio with the minimum standard deviation while outperforming its benchmark, the Stoxx 600. To create the accrual portfolio by industry, a series of hypotheses were determined and empirically proven to establish the foundations of an accrual-based trading strategy.

The first step to achieve the main goal of this paper is to demonstrate whether the accrual anomaly is present in Europe and America, the outcome of this shapes the entire paper as several sources confirm that the effect of accrual anomaly has been diminishing since the study of the anomaly was first published by Sloan in 1996. Artikis et al. (2022) and Green et al. (2011). The second particularity of this study is the distinction of industries when studying the accrual anomaly in the sample selected. This paper finds the industries that generate the greatest average annual returns as well as the average annual standard deviation using daily returns during the observation period of 20 years. Once the most profitable industries are studied and their industry level characteristics described and analyzed, the paper studied the relationship between accruals, industries, and abnormal returns. The impact of the five types of accruals over abnormal returns segmenting the data sample by industry reveals that not all industries present the accrual anomaly and that some industries' specific accruals have a greater or lower impact on their abnormal returns than others. In short, not all the abnormal returns of the industries contemplated respond the same to changes in Non-Current Operative Asset Accruals, Non-Current Operative Liability Accruals, Working Capital Accruals, Long Term Accruals, and Operative Accrual. This information is very useful when creating a portfolio composed of industries with significant accruals. The portfolios are composed of long positions in companies in the first quartile with significant accruals that have the 25% lowest accruals

in the sample of the specific industry considered and short positions in the firms in the fourth quartile with significant accruals that have higher accruals than 75% of the sample of the industry considered. The portfolio is constructed in line with what Sloan (1996) found about the accrual anomaly and the fact that low accrual firms generate positive abnormal returns and high accrual firms generate fewer returns or negative abnormal returns. The result of this portfolio should aim at outperforming the benchmark index the companies are part of while reducing the volatility of the stocks. At the same time, one of the main goals of this paper is to study which sectors experience the effect of the accrual anomaly, and what accounts for it, whether it is any accounting particularities, fewer regulations in that sector, or an idiosyncratic business model of the companies belonging to that sector.

4. Methodology

This work evaluates the presence of the accrual anomaly among industries in a sample of stocks taken from the STOXX Europe 600 and the S&P 500. The sample was divided between the two indexes, everything that was done was the same from one index to the other, and the variable treatment and calculations were the same to maintain a fair comparison between both indexes. The stocks were classified in quartiles according to their quantity of accruals scaled by the average of the assets from the last two years in which that specific accrual was calculated. The first quartile corresponds with the 25% lowest accrual quantity in the sample, the second quartile, between 25% and 50%, the third quartile between 50% and 75%, and finally the fourth quartile, with higher values than 75% of the sample. This classification was done with the five types of accruals studied, Non-Current Operative Asset Accruals, Non-Current Operative Liability Accruals, long-term accruals, and Operative Accruals. As mentioned above, if the accrual anomaly is present, it is expected that the stock returns in the first quartile are positive and negative stock returns in the fourth quartile. This is why Sloan (1996) proposes a hedging strategy by going long with stocks in the first quartile and short with the stocks in the fourth quartile. Alternatively, in this paper, the hedging strategy is going to be more specific in classifying the sample in sectors, so the trading strategy is going to contemplate buying long with stocks in the first quartile where the accrual anomaly is more present and selling short stocks in the fourth quartile where the accrual anomaly is more present. In addition, the volatility of the stocks is also going to be analyzed to figure out if there is a difference in volatility and returns by industry and if so, how it could be mitigated with the hedging strategy mentioned above.

The abnormal returns used as the dependent variable are calculated by subtracting each annual stock return from its benchmark, in this case, the annual return of either the STOXX Europe 600 or the S&P 500. This was the election to calculate the abnormal return, as there are many others, like adjusting to firm size using market value, or using an industry benchmark rather than an index benchmark. The use of the index as the benchmark was used because it seemed fairer to use it when comparing the hedge returns in the industry portfolios versus a strategy based on investing in a specific reference index like the STOXX Europe 600 or the S&P 500.

To analyze the significance level of each accrual, a model was estimated for each accrual, setting the abnormal return as the dependent variable and the accruals as the independent variable. Similar to Sloan's (1996) approach, the coefficient of the linear regression and

its p-value determine the magnitude of the effect of the accrual anomaly over abnormal returns and whether it is significant or not.

4.1 Sample

The sample consists of the list of companies in the STOXX Europe 600 and the S&P 500 index from 1999 to 2019. The data was retrieved from their financial statements and their stock price and return information available at Refinitiv Eikon, previously named Thompson Reuters DataStream. The STOXX Europe 600 Index represents large, mid and small capitalization companies across 14 countries of the European Union: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Spain, Sweden, and three from the European region, the United Kingdom, Norway, and Switzerland. The S&P 500 is an index that tracks 500 publicly listed North American companies. The data retrieved from the Balance sheet were Total Assets, Total Current Assets, Cash, Total Current Liabilities, Total Liabilities, Short Term Debt & Current Portion of Long-Term Debt, Long Term Debt, Other Investments, Investments in Unconsolidated Subsidiary. The data obtained from its Income Statement is Sales and Net Income. The data obtained from the Cash Flow Statement is Net Cash Flow from Operating Activities.

Taking the approach of Sandoval et al. (2022), the sample uses companies that formed the index as of the 2nd of May of every year in the sample to simulate a plausible trading strategy. Similar to previous research, this paper excludes financial firms because the components of the accruals are expected to be distorted from other industries given the specific characteristics of financial firms and their accounting reporting standards. In addition, companies that had missing data points from their financial statements to calculate accruals were removed, resulting in a considerable loss of data from both the STOXX Europe 600 and the S&P 500 index.

The study period ranges from December 31, 1999, to December 31, 2020. The yearly return calculations commence between May 2, 2000, and May 2, 2021, since stock returns are calculated four months after the year-end. There are 9,240 observations from the STOXX Europe 600 and 7,107 observations from the S&P 500, which is 16,347 observations in total. A large number of observations is considered optimal for estimating a model which can also be representative of the population of publicly listed companies not present in the sample.

To avoid survival bias and more precisely replicate a genuine trading strategy that takes advantage of the anomaly, the random sample represents the varied composition of the index over the research period. Several authors, including Sloan (1996) and Xie (2001), used non-random samples to choose securities with net income present on the year following the portfolio composition observing the level of accruals to allow investigation of the future persistence of accruals, according to Kraft et al. (2006). However, the absence of randomness provides a look-ahead bias that is not present in a random sample, which also includes companies that may leave the portfolio following an event, such as a company's bankruptcy. Look-ahead bias skews higher abnormal sample returns, according to Kraft et al. (2006), since it only includes equities that survive the year of the occurrence.

4.2 Variables

Independent variables: Accruals.
To calculate the independent variables, the five accrual types, this paper used the approach of Sandoval et al. (2022) using the definitions of Larson et al. (2018) and Richardson et al. (2005).

Richardson et al. (2005) defined Total Accruals (TACC) as the change in net working capital (ΔWC) plus the change in net non-current operating assets (ΔNCO) plus the change in net financial assets (ΔFIN):

1. $TACC = \Delta WC + \Delta NCO + \Delta FIN$

This paper uses two types of accruals, Working Capital Accruals and Long-term Operating Accruals, to obtain the three other accruals used. The last accrual is decomposed to obtain Non-Current Operative Asset Accrual and Non-Current Operative Liability Accrual.
Using the definition of Larson et al. (2018) of Working Capital Accruals:

2. $WCACC = (\Delta CA - \Delta CHE) - (\Delta CL - \Delta DLC)$

WCACC are working capital accruals, ΔCA the change in current assets, ΔCHE, the change in cash and cash equivalents, ΔCL the change in current liabilities and ΔDLC the change in debt in current liabilities.

Richardson et al. (2005) computed ΔNCO as the change in non-current operating assets, net of long-term non-equity investments and advances (ΔNCOA), less the change in non-current operating liabilities, net of long-term debt (ΔNCOL):

3. $\Delta NCO = \Delta NCOA - \Delta NCOL$

Where:

4. $\Delta NCOA = \Delta TA - \Delta CA - \Delta OI - \Delta IIUS$

ΔTA is the change in total assets, ΔCA the change in current assets, ΔOI the change in other investments and ΔIIUS the change in investments in unconsolidated subsidiaries.

5. $\Delta NCOL = \Delta TL - \Delta CL - \Delta LTD$

ΔTL is the change in total liabilities and shareholder equity, ΔCL the change in current liabilities, and ΔLTD the change in long-term debt.
To limit the impact of the size of the firms analyzed, all the measures of accruals are scaled by average total assets from the year in which the accrual is calculated and the previous year.

Dependent variable: Stock returns.
Following the approach of Sandoval et al. (2022), the date of portfolio creation, which is the second of May of each year, is used to calculate monthly returns for each company. According to Alford et al. (1994), practically all corporations have their yearly financial statements available to the public four months after the fiscal year ends. Total returns for each stock have been computed using adjusted prices since May 2000, with net dividends (after-tax) reinvested. As mentioned before, the dependent variable is the abnormal return

from each company in the sample. The abnormal return is calculated as the difference between the stock return and its benchmark index.

Sectors

The sectors included in this paper are the basic Global Industry Classification Standard (GICS), they are used because they are universal and reliable, meaning that they are accurate for the companies in the S&P 500 and the Stoxx Europe 600 sample. The basic materials industry comprises companies that dedicate to chemical processing, mining, and lumber processing. It is considered an industry that is focused on processing raw materials and essential goods for production purposes. Its business cycle is similar to the consumer goods industry, with low demand peaks and a steady demand for its resources. According to Equity Clock, the Basic Materials sector's seasonal strength runs from late November to early May. The sector's seasonal strength correlates to higher demand for industrial production throughout the spring months. Consumer Discretionary sector is made up of companies that offer non-essential goods or services to the consumer. This industry might include companies within auto components, automobiles, household durables, leisure products, textiles, apparel & luxury products, hotels, restaurants, diversified consumer services, distributors, internet & direct marketing retail, multiline retail, and specialty retail. Its demand is subject to economic cycles as this industry trades non-essential goods. When the economy is growing, and the disposable income of consumer grows so does the sales and typically the stock performance of companies in the Consumer Discretionary sector. This sector experiences seasonality as sales are typically larger from October to April. As mentioned before, the Consumer Staples sector includes all companies that trade essential goods for consumers and households, these include food, beverages, and hygiene products to name a few. Its essential traded goods make this industry non-cyclical. Unlike the Consumer Discretionary sector, the Consumer Staples has seasonality from April to November when sales are stronger. The Energy sector is composed of companies within oil & gas drilling, oil & gas equipment & services, integrated oil & gas, oil & gas exploration & production, oil & gas refining & marketing, oil & gas storage & transportation, coal & consumable fuels. According to Equity Clock, the industry experiences seasonality from mid-January to early May when the sector is stronger. It is considered by the Morning Star a sensitive sector that has a moderate impact over business cycles. Businesses that offer medical services, manufacture medical equipment, provide medical insurance, or research for medical purposes make up the healthcare industry. It is considered to be a defensive industry as it is anticyclical, it does not experience the effect of economic cycles. However, according to Equity Clock, the Health Care sector has seasonal strength from late April to early December due to several fairs, congresses, and conferences that take place during these months. The industrial sector is made up of companies within the Aerospace & defense, building products, construction & engineering, electrical equipment, industrial conglomerates, machinery, transportation, and trading companies & distributors industries. The Morning Star considers this sector sensitive because it has a moderate impact on business cycles. According to Equity Clock, this sector has seasonality, from late October to mid-May there is seasonal strength. The Real Estate sector is made up of equity real estate investment trusts and real estate management & development. The Real Estate sector is considered to be highly cyclical by the Morning Star. According to Equity Clock, the Rel Estate seasonality is highly correlated with the financial sector which experiences seasonal strength from mid-November to early April. The technology sector includes companies in IT services, software, communications equipment, technology

hardware, storage & peripherals. It is considered by the Morning Star a sensitive sector that has a moderate impact over business cycles. According to Equity Clock Technology sector's seasonal strength runs from early October to mid-February. Around the time that firms in the sector report profits for the fourth quarter of the calendar year, which includes Christmas sales, the seasonal tendency comes to an end. The telecommunications sector is made up of firms within the diversified telecommunications services, wireless telecommunication services, media, entertainment, and interactive media & services. The telecommunications sector is also a sensitive sector according to Morning Star as it has a moderate impact on cyclicality. In terms of seasonality, Equity Clock does not mention much seasonality in the telecom sector, however, Chart 32 indicates that there is a seasonal growth in December across the 20-year average of the sample. The last sector studied in the sample is the Utilities sector which is made up of firms within the electric utilities, gas utilities, multi-utilities, water utilities, and independent power & renewable electricity producers. It is considered to be a defensive industry by the Morning Star as it is non-cyclical. According to Equity Clock, the Utilities Sector's seasonal strength runs from July to early October. The sector's strength is attributed to lower borrowing prices during the summer months, as well as higher water and electricity use as a result of the warmer weather.

4.3 Procedures and Statistics

Quartile abnormal stock returns

The companies were divided into quartiles, in which for each year, the companies in the sample were organized into 4 quartiles, with the companies being in the first quartile presenting the lowest scaled accruals, and the companies being in the fourth quartile with the highest accruals. However, part of the analysis is going to use cross-sectional data points so there will be no distinction between years and the analysis is not going to include an independent variable with each year. In addition, to compute for hedge return calculations, the analysis uses the arithmetic average of the 20 periods of the stock returns used in the sample.

Hedge-return calculations

The hedge return strategy is based on an accrual-based trading strategy first implemented by Sloan (1996). This strategy consists in buying long stocks belonging to the first quartile and selling short stocks belonging to the fourth quartile. The long position should be financed with the short position which should be held for a period of one year commencing on May 2nd. This hedge portfolio is liquidated at the end of the year, forming a new portfolio based on the new sample value of accruals for the following year. During the study period, this process is repeated every year.

5. Results

5.1 The presence of the accrual anomaly in Europe vs the United States

H1: it is expected that the accrual anomaly is more present in European stocks than in the US stock market

The first hypothesis of this paper is crucial for this paper due to several reasons. The first one is that, if proven it contradicts a large part of classic literature on the accrual anomaly. As Morton Pincus et al. (2007) point out, the accrual anomaly was present in Australia, Canada, the UK, and the US, leaving out all the countries in the European Union that

were considered in the paper. This hypothesis is motivated by the novel work of Artikis et al. (2022) where they study the effect of the asset growth anomaly across Europe proving that the effect of the anomaly has not reduced since its first publication. Unlike the accrual anomaly, whose effect appears to have been diminished in the US stock market following publication in an academic journal. The second reason is the extent to which this hypothesis affects this paper and the following hypothesis. If the first hypothesis is proven not to be wrong, the sample of companies in the S&P 500 is not going to be used for the following hypothesis as the effect of the accrual anomaly would be minimized, thus yielding lower returns for the accruals hedge strategy using industry difference level accruals.

Tables 4 and 5 indicate that the accrual anomaly is present in the STOXX EUROPE 600 in WCACC, NCOAACC, LTACC, and OPACC. While the accrual anomaly is present in the S&P 500 in NCOAACC and NCOALACC. However, with a p-value of 37.1%, the significance of the effect of long-term accruals on abnormal returns is rejected. This is interesting since long-term accruals are composed of non-current operative asset accruals less non-current operative liability accruals which are both significant to the 1% level for the S&P 500. In addition, to further analyze the accrual anomaly in the non-current operative asset component, a model was selected dividing the data into quartiles of non-current operative asset accruals and index. Table 6 shows that the sample in the Stoxx 600 follows the exact definition of accrual anomaly proposed by Sloan (1996) in which companies with large (low) accruals have negative (positive) future abnormal stock returns. This is that companies in the first quartile should have positive abnormal returns. The model in Table 6 shows that NCOAACC in the first quartile for the Stoxx 600 is significant to the 1% level. The interpretation of this result is that every time the amount of non-current operative asset accruals increases by 1 unit in the first quartile, the abnormal return increases by 6.6% caeteris paribus. In the fourth quartile, highest non-current operative asset accruals in the sample of the Stoxx 600, the coefficient is significant to 1% level. The interpretation of this result is that every time the amount of non-current operative asset accruals increases by 1 unit in the fourth quartile, the abnormal return decreases by 7.4% caeteris paribus.

On the other hand, the sample of the S&P 500 does not show significant results in the first quartile, if it was significant the beta would be negative which is contrary to the theory of the accrual anomaly. In the fourth quartile, the NCOAACC is significant to the 5% level. The interpretation of this result is that every time the amount of non-current operative asset accruals increases by 1 unit in the fourth quartile, the abnormal return decreases by 5.8% caeteris paribus.

The other variable whose effect on abnormal returns appears to be significant in Table 4, is Non-Current Operative Liability Accruals on the S&P 500, which is significant to 1% level. However, it has a positive coefficient, of 0,072. This is that whenever the Non-Current Operative Liability Accruals increase by one unit, the abnormal returns increase by 7.2% caeteris paribus which is contrary to what Sloan proposed in his novel work in 1996. Even though the variable has a contrary effect, due to its 1% significance, the effect of this variable is still going to be further analyzed and decomposed in table 7. For the S&P 500, the NCOLACC variable in the first quartile is not significant thus there is no point in interpreting its effect on abnormal returns. In the fourth quartile, NCOLACC variable for the S&P 500 shows to be significant at the 1% level. The interpretation of this result is that every time the amount of non-current operative liability accruals

increases by 1 unit in the fourth quartile, the abnormal return increases by 8.9% caeteris paribus. This result is also contrary to the accrual anomaly, to be relevant, the results should have yielded positive abnormal returns in the first quartile as accruals are lower and negative abnormal returns in the fourth quartile where accruals are larger.

On the other hand, the Non-Current Operative Liability Accruals in the STOXX 600 appear not to be significant in table 4 as the p-value is 78.39%. However, further analyzing the effect of NCOLACC on abnormal returns decomposing the companies by size of accruals by quartile, demonstrates that the Non-Current Operative Liability Accruals in the STOXX 600 are significant to 1% level in the fourth quartile. Moreover, the effect is consistent with the accrual anomaly as increasing the NCOLACC in the STOXX 600 by one unit decreases the abnormal returns of companies in the fourth quartile by 7.0%. This proves that a hedge trading strategy could still be used with companies that are in the fourth quartile for Non-Current Operative Liability accruals in the STOXX 600 by selling short companies with large accruals generating positive abnormal returns.
These regressions and results on Non-Current Operative Asset and Liability Accruals prove that the approach used to decompose Long Term Accruals into its Asset and Liability component makes sense and it produces better and more significant results for the asset accrual component consistent with the accrual anomaly. Thus, proving the approach used by Chichernea et al. (2019), Richardson et al. (2005), and Sandoval et al. (2022) to decompose accruals to use asset accruals, whose low reliability to obtain greater security mispricing benefits the amplification of the Accrual Anomaly.

Tables 4, 5, 6, and 7 show how the effect of low accruals on positive abnormal returns and high accruals on negative abnormal returns is systematically higher in the sample in Europe and statistically more significant. Therefore, it H1 hypothesis can´t be rejected. The sample companies for the STOXX 600 and S&P 500 throughout the 21st century show that the accrual anomaly is more present in the STOXX Europe 600 in Europe, contradicting the works of Morton Pincus et al. (2007). Green et al. (2011) suggest that in the United States, the accrual anomaly appears to have declined to the point that it is no longer dependably positive. As assessed by hedge fund assets under management and trading volume in extreme accrual companies, their empirical findings imply that the anomaly's decline is due in part to an increase in the amount of capital spent by hedge funds in exploiting it. As a result, large capital investments to exploit the hedge trading strategy proposed by Sloan (1996) has distorted the effect of the accrual anomaly in the US. The US stock market is more efficient and sophisticated than the European stock market there are several consequences to the fact that the US stock market is more closely tracked by institutional investors, and a large amount of capital invested annually cannot be compared to the European equity market. This could be the reason why the effect of the accrual anomaly has not diminished and is still present in Europe.

As mentioned before, the outcome of the first hypothesis directly affects the rest, as the sample of the S&P 500 is not going to be used to implement a hedging strategy based on accruals by sectors to outperform the benchmark index, in this case, the STOXX Europe 600. Thus, the trading strategy will be largely composed of companies in industries where the Working Capital Accruals, Non-Current Operative Asset Accruals, and to a lesser extent the Long-Term Accruals and Operative Accruals.

5.2 Which sectors are more volatile and generate higher returns

H2: Which sectors are more volatile and generate higher returns?

More than a hypothesis it is a question of investigation which is necessary for the other hypothesis. The object of this hypothesis is to figure out which sector presents higher returns and their volatility to later assess if those sectors with high returns and volatility can be used to implement a hedging strategy based on accruals by sectors while reducing volatility and potentially increasing the return.

Table 8 shows the average return, abnormal return, and standard deviation of returns by sectors of the STOXX 600. On average the industry with the highest return, 15.39% is Basic Materials and it has an average abnormal return of 9.07%, this is that on average investing in the basic materials sector outperforms the STOXX 600 by 9.07%. The firms within the sector of Basic Materials have an average standard deviation of their total returns of 2.14%. The Industrials sector closely follows Basic Materials in terms of returns, it has an average annual return of 15% over the last 20 periods, an average abnormal return of 8.73% over the STOXX 600, and an average standard deviation of 2.02%. The Health Care sector has an average annual return of 13.45% over the last 20 periods, an average abnormal return of 6.73% over the STOXX 600, and an average standard deviation of 1.89%. As, the stocks are tight to the same index benchmark, the industries with the highest average returns are also going to be the industry with the highest average abnormal return. The only sector with a negative average abnormal return is the Telecommunications sector, which has an average return of 0.75% and an average abnormal return of -4.23%.

The volatility of a stock, portfolio, or index is measured with the standard deviation. Typically, there is a tradeoff between risk and reward, the higher the return, the higher the risk, and most likely the higher volatility. The standard deviation is calculated using the daily returns of every firm each year. The standard deviation of each sector is the result of the average of the daily standard deviation of the returns of firms belonging the industry measured in any given year. In this case, the technological sector presents the highest average standard deviation of its returns, which is 2.57%. Rarely, it also has the second-lowest average return with 6.33% and an average abnormal return of 1.24%, slightly outperforming the benchmark index on average. On the other hand, the sector with the lowest average standard deviation of daily returns is the Consumer Staples sector with 1.66%. This sector comprises all the companies that sell essential products to their customers, these goods are characterized by being very inelastic to price. The Consumer Staples industry is considered to be non-cyclical with very limited to no seasonality. Therefore, it makes a lot of sense that this industry presents the lowest average standard deviation in the daily returns as its core business and revenue generation are not subject to much volatility. The consumer staples sector has an average return of 12.58% and an average abnormal return of 6.13%

Table 8 shows that there are two sectors with the lowest returns and lowest average abnormal returns, the Technology and Telecom sectors. Unregulated industries like Technology typically present higher levels of earnings management, as mentioned before, earnings management could one of the main potential drivers of the accrual anomaly He & Yang (2014). Therefore, it could be very interesting to use the accrual anomaly to yield a higher return on the Technological sector. The use of the accrual anomaly as a hedge trading strategy to take advantage of market inefficiencies could lead to higher returns. The extent to which the accrual anomaly is present across the different industries and the

different accrual types will determine how to use the information collected about European firms to build an accrual hedge portfolio using the firms amongst the most significant accrual type by industry to yield the highest average abnormal return.

5.3 Which sector is more affected by accruals over abnormal returns

H3a: Most affected industries by accruals over abnormal returns

As mentioned before, one of the main goals of this paper is to create a hedge trading strategy based on taking advantage of the accrual anomaly. To create this hedging portfolio, it is necessary to identify which industries are more affected by accruals and the type of accrual that affects each industry.

The industry with the most significant number of accruals in which the accrual anomaly is present in the health care sector. Tables 9 and 10 show that the working capital accruals, non-current operative liability accruals, and operative accruals are significant to the 1% level, and the three of them show a negative relationship between the size of accruals and abnormal returns. In the Health Care sector, when the working capital accruals increase by one unit the abnormal returns decrease by 12.2% holding everything else constant. In the Health Care sector, when the non-current operative liability accruals increase by one unit the abnormal returns decrease by 12.2% holding everything else constant. Additionally, when the operative accruals increase by one unit the abnormal return for companies in the health care industry on average generates a 41.2% decrease in its abnormal return.

Following the Health Care Industry, the Basic Materials industry is the next one in terms of significant accruals portraying the accrual anomaly. It has four significant accruals, all except for the non-current operative asset accrual. However, the only significant accruals with the accrual anomaly effect are the working capital accruals and operative accruals. They are significant at 5% level and 10% level respectively. When the working capital accruals increase by one unit, the abnormal returns for the basic materials industry decrease by 9.0% on average and hold everything else constant. Additionally, when the operative accruals increase by one unit the abnormal return for companies in the Basic Materials industry on average generates a 19.4% decrease in its abnormal return.
With the Basic Materials industry, the Industrials sector is the next one after the Health Care industry in terms of significant accruals portraying the accrual anomaly. It has four significant accruals, all except for the non-current operative liability accrual. However, the only significant accruals with the accrual anomaly effect are the working capital accruals and operative accruals. Their p-value is inferior to 0.01 so they are significant at a 1% level. When the working capital accruals increase by one unit, the abnormal returns for the companies in the Industrials sector decrease by 6.2% on average and hold everything else constant. Additionally, when the operative accruals increase by one unit the abnormal return for companies in the Industrials sector on average generates a 1.7% decrease in its abnormal return.

The telecommunications industry has two significant accruals that have the effect of the accrual anomaly. These are the non-current operative asset accruals which are significant to the 1% level and operative accruals which are significant to the 5% level. In the Telecom sector, when the non-current operative asset accruals increase by one unit the abnormal returns decrease by 19.9% holding everything else constant. Likewise, when

the operative accruals increase by one unit the abnormal returns decrease by 40.9% on average and caeteris paribus.

The technological sector has one significant accrual that has the effect of the accrual anomaly, it is the non-current operative asset accrual which is significant to the 1% level as its p-value is inferior to 0.01. When the non-current operative asset accruals increase by one unit the abnormal return for companies in the technological sector on average generates a 1.7% decrease in its abnormal return holding everything else constant. In the Consumer Discretionary sector, the non-current operative liability accrual is significant at the 10% level, and it is coherent with the accrual anomaly. when the non-current operative liability accruals increase by one unit the abnormal return for companies in the Consumer Discretionary industry on average generates a 4.7% decrease in its abnormal return caeteris paribus. Finally, in the Consumer Staples industry, there are two significant accruals with only the non-current operative liability accruals being coherent with the accrual anomaly. It is significant to the 5% level and when non-current operative liability accruals are increased by one unit the abnormal returns of companies in the consumer staples industry decrease by 8.8% on average and holding everything else constant as seen in tables 9 and 10.

Some industries proved to not have any significant accruals, Utilities, Real Estate, and Energy sectors are the ones that did not have any significant accruals. Even though some of these industries generated positive abnormal returns with low accruals and negative or lower abnormal returns with high accruals, they were not significant. The fact that three industries did not have significant accruals proves the validity of segmenting the data into sectors, as industry segmented regressions can capture more accurately the intricacies of the accrual anomaly. This represents a total of 1,133 companies that were included in the Stoxx 600 sample. It is about 10% of the sample that, if the data wasn´t segmented into industries, these non-significant industries would have still been part of the data analyzed, yielding less significant and accurate results.

H3b: Which type of accrual generates the greatest impact on specific industries

This part consists of analyzing which type of accrual generates the most impactful result within the different industries considered in the paper that showed significant abnormal returns by accruals. The Working capital accruals are present and significant in the Basic Materials, Health Care, and Industrials sectors. The most impactful result is in the Health Care sector with a 1% significance level and a negative beta of -0.122. The non-current operative asset accruals are only present in the Telecommunications and the Technology sectors. Non-current operative asset accruals generate the greatest impact over abnormal returns in the Technology industry with a 1% significance level and a -0.215 beta. Non-current operative liability accruals are present in the Consumer Staples, Health Care, and Industrials sectors. Non-current operative liability accruals generate the greatest impact over abnormal returns in the Health Care industry with a 1% significance level and a -0.122 beta. The operative accruals are present in Basic Materials, Health Care, Industrials, and Telecommunications sectors. It is most impactful in the Health Care sector with a 1% significance level and a -0.412 beta. It makes sense that the Health Care sector has the greatest impact on non-current operative liability accruals as it is the result of adding working capital accruals which have the greatest impact on this industry and long-term accruals. Unlike expected, there are no significant long-term accruals for any of the industries in the sample. However, it also means that decomposing the accruals generates a greater impact on abnormal returns.

In line with what Richardson et al. (2005) explained Lower reliability of accruals results in weaker earnings persistence, which investors did not appear to expect, resulting in considerable stock mispricing, and the unreliability of these makes the overweighting of Non-Current Operative Accruals have a greater impact on overpricing stocks thus the accrual anomaly is stronger. These results justify the use of the five types of accruals to exploit the accrual anomaly and use it as an accrual-based hedge trading strategy to outperform the reference index, the Stoxx 600. There are industries in which their own idiosyncratic accounting characteristics, natural to their business model allow for the exitance of some types of accruals presenting the accrual anomaly more than others.

5.4 Hedge Trading Strategy

H4: Can an Accrual-based hedge trading strategy outperform the STOXX 600 Europe?

The hypotheses previously mentioned and analyzed have achieved the purpose to reach the point where the paper aims at proving that an accrual-based trading strategy can outperform the STOXX 600 EUROPE. All the previous hypotheses are used as the building blocks to establish a trading strategy to beat the market. Starting with the first one, empirically demonstrating that the accrual anomaly also happens in the European equity market. In addition, the first hypothesis also studies whether the accrual anomaly is more present in European equity markets than in American equity markets. This hypothesis was motivated by the works of Artikis et al. (2022) and Green et al. (2011) proving the demise of the accrual anomaly in the American stocks market as mentioned above. In this paper, the hypothesis could not be rejected as there was enough evidence to prove that the accrual anomaly was more present in Europe. This represents the first step to shaping the fourth and last hypothesis, using the Stoxx 600 as the benchmark to outperform because the companies selected in the data sample are excluded from the Stoxx 600. The next step in shaping and formulating this hypothesis is to examine the industries that are more volatile and generate higher returns. This is only a study of the characteristics of some of the industries mentioned in this paper to have a more profound understanding of them. The third hypothesis identifies which industries are more affected by accruals and the type of accrual that affects more each industry. Arrived at the conclusion that indeed it is relevant to classify the sample data by industries as there are industries where the accrual anomaly is not present like the energy, real estate, and utilities sectors. On the other hand, there were industries that presented significant accruals when they were decomposed.

Therefore, the goal of the last hypothesis is to use all the previous work to build an accrual hedge trading strategy based on investing in specific industries. To test the investigation question, the test to prove it is more accurate than the tests performed to prove hypothesis 3 as the accruals are also decomposed by quartile, yielding more precise results. In the working capital accruals, the only two sectors that proved to be significant in the long-short position for the first and fourth quartile respectively are the Basic Materials and the Industrials sector. As Table 13 shows, the 1-4 position in the Basic Materials sector is significant to the 1% level and yields an abnormal return of 5.51% and a standard deviation of 41.42%. However, the abnormal returns were positive trough out the four quartiles, so the 1-4 hedge result is lower than the abnormal return in the first quartile which is higher than the abnormal return in the fourth quartile. The same occurs with the Industrials sector, it is significant to a 10% level, and the abnormal return is 1.91% and a

standard deviation of 35.95%, however, the fourth quartile is positive, and going short on the companies in the fourth quartile yields a negative impact on the portfolio. Even though the hedge positions are positive and significant in both sectors, there is no point in investing in something that on average across the 20 years of the sample yields lower results than just investing in the companies belonging to the first quartile. In addition, the Health Care sector which appeared to be the one in which the accrual anomaly was more present for working capital accruals, has an insignificant long-short position, even though the abnormal returns constantly decrease from the first quartile to the fourth quartile.

In the non-current operative asset accruals, the Basic Materials, Industrials, Consumer Discretionary, Utilities, Telecom, and Technology are significant as seen in Table 17. However, like in the section above about the working capital accruals, the long-short hedge position abnormal return is lower than the abnormal return in the first quartile for the Basic Materials, Industrials, and Consumer Discretionary sectors. For the Consumer Discretionary sector, its returns are decreasing when the accruals increase, however, the returns in the fourth quartile are still positive so the long-short position is not very reliable, it has a standard deviation of 38.29%. The Technology sector has an abnormal return in the long-short position of 5.12% and it is significant to the 5% level. This is the perfect example of the accrual anomaly, as the returns in the first quartile are one of the highest and the abnormal returns in the fourth quartile are negative, making the long-short position a better alternative over investing only in the companies belonging to the first quartile. The standard deviation of the long-short position is 37.53% which is slightly lower than the standard deviation in the first quartile, 38% shown in Table 15. The Telecommunication sector has an abnormal return in the long-short position of 5.01% and it is significant at a 1% level, its standard deviation is 33.02% (Table 18) one of the lowest out of the sample. The telecommunication sector takes advantage of the accrual anomaly as its abnormal return is just about positive in the first quartile, however, it is negative throughout the other three quartiles. Thus, it is a true hedging strategy that uses the accrual anomaly to hedge against negative returns.

Table 21 shows that in the non-current operative liability accruals, Basic Materials, Consumer Discretionary and Consumer Staples are the sectors that appear to be significant. The long-short position in the Basic Materials sector is significant to the 10% level, however, the average abnormal return is negative as the abnormal return in the fourth quartile is larger than the abnormal return in the first quartile, showing the opposite effect of the accrual anomaly. In the case of the Consumer Discretionary sector, the long-short position is significant to the 1% level. However, the average abnormal return, 3.61% is lower than the return in the first quartile or even lower than the average abnormal return in the sector. Even though the standard deviation in the long-short position (1-4), 33%, is lower than the standard deviation in the first quartile, 34.01%, it does not make sense to use this sector in a hedge trading strategy based on the accrual anomaly. The Consumer Staples sector experiences the same problem in the non-current operative liability accruals as it is significant to a 5% level but the average abnormal return in the long-short (1-4) position (Table 21) is lower than the first quartile while the standard deviation is similar for both positions (Table 19). The behavior of the accrual anomaly in non-current operative liability accruals is comparable to the working capital accruals as there isn´t an industry in which the anomaly can be distinguished and taken advantage of as a trading strategy.

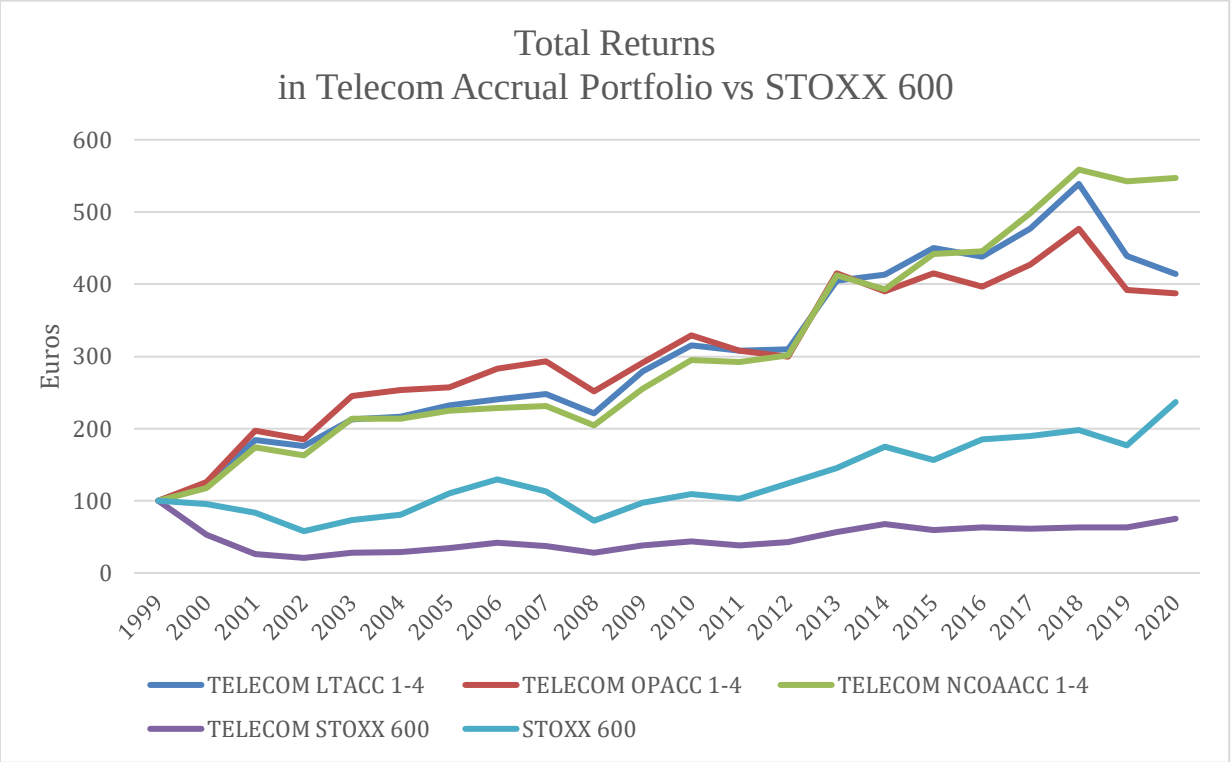
The long-term accruals have several sectors where the long-short position is significant, Basic Materials, Consumer Discretionary, Industrials, Telecommunications, and Technology sectors. The basic Materials sector is significant to a 5% level with an average abnormal return of 4.10% in the long-short position (1-4) found in Table 25 which is lower than the abnormal return in the first quartile (Table 23). The same applies to the Consumer Discretionary and Industrials sectors, they are significant at 5% and 10% respectively, but their average abnormal returns are lower than the first quartile. Like other sectors in previous accruals analyzed there is no point in pursuing this as an accrual-based trading strategy. The long-short position of the telecommunication sector is significant at a 1% level, and its average abnormal return is 4.91% (Table 25) which is higher than the abnormal return in the first quartile which is negative. On the other hand, the standard deviation is lower in the first quartile, 31.12% than in the long-short position with 31.81% (Table 26). Table 25 shows that the Technology sector has a significance of 10% level in the average abnormal return long-short position with 4.25%. However, this result does not look consistent as the average abnormal return is negative in the first quartile is negative and it is –0.97% in the fourth quartile. Consequently, this result will not be used to make an accrual-based portfolio.

The last accrual studied is the operative accrual, the average abnormal return in the long-short position is significant in the Basic Materials, Industrials, Utilities, Telecommunication, and Technology sectors as shown in Table 29. In line with the previous results, it can be found that the Basic Materials, Industrials, and Utilities are significant at 1%, 1%, and 5%, respectively. However, their average abnormal return is lower than the return in the first quartiles respectively. Therefore, it does not make sense to use these sectors with this specific type of accrual to make the accrual-based portfolio. The Telecommunication sector has an average abnormal return of 5.67% with a p-value inferior to a 1% level. It has a standard deviation of 33.04% which is very similar to the standard deviation of the first quartile, 33.08%. The Technology sector has an average abnormal return in the long-short (1-4) position of 6.87% and it is significant at a 1% level. It has a standard deviation of 40.22% (Table 30) which is very similar to the standard deviation of the first quartile, 40.38% (Table 28). The Telecommunications and Technology sectors depict a good example of the accrual anomaly as the average abnormal return is on average positive in the first quartile and negative in the fourth quartile.

This section has found that the accrual anomaly is actually present in the Telecommunications and Technology sectors. More accurately, the accrual anomaly is present in the non-current operative asset accruals, long-term accruals, and operative accruals for the Telecommunication sector and non-current operative asset accruals and operative accruals in the Technology sector. As a result, it is difficult to make a hedge accrual-based portfolio with only two sectors out of the ten sectors represented in the Stoxx Europe 600 because it is not representative of companies belonging to the index. Moreover, cyclicality could be another reason why these two industries should not be used to hedge against the risk of the Stoxx Europe 600 because the inclusion of different companies across different sectors with distinct cyclical effects and seasonality accounts for a big part of the diversification and thus lower volatility. This is the reason why it might be interesting to use the accrual anomaly in the Telecommunication sector to hedge against risk compared to a benchmark that only uses companies belonging to the Telecommunication sector in Europe. This benchmark could be part of the sample of the STOXX 600 belonging to the Telecommunication and Technology sector.

Table 31 contains the information of the graph below with the total returns in different Telecommunications potential portfolios and the performance of the STOXX Europe 600 across the last twenty years. The lowest-performing portfolio is the portion of Telecommunication companies in the Stoxx 600. The STOXX Europe 600 is situated above it, a 100 € investment in the year 2000 would be worth 236.75€ in 2020. Likewise, a 100€ investment in a long-short portfolio using non-current operative asset accruals to determine which quartile they belong to with European Telecommunication companies with equal weight in the portfolio would be worth 547.43€. This sectorial portfolio clearly outperforms any benchmark compared to it confirming the accrual anomaly and Sloan's theory about the predictive power of the accruals to use to generate abnormal returns. In addition, it has a standard deviation of the returns across the last 20 years of 15.31% which is lower than the standard deviation of the STOXX 600, 20.56%, the Telecommunication companies in the sample of the STOXX 600, 23.92%, lower than the standard deviations of the long-short hedge portfolio of the Operative Accruals which is 18.04% and lower than the standard deviation of Long-Term Accruals is lower at 15.44%.

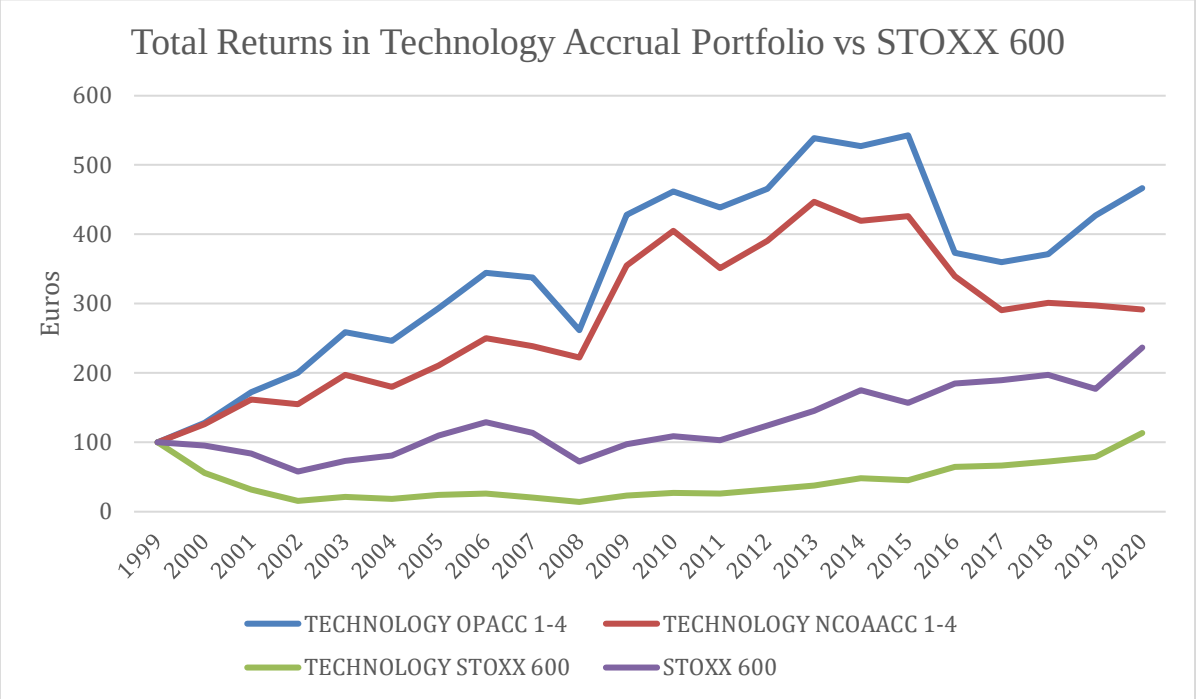
Graph 31: Total Returns in Telecommunications Accrual Portfolio versus STOXX 600



Graph 33 which corresponds with table 33 shows the total returns in different potential Technology portfolios and the performance of the STOXX Europe 600 across the last twenty years. The Operative Accruals long-short position is the best performing portfolio out of those included in the graph. Over the twenty years of the sample, the investment would have gone from 100€ to 466.40€, beating the non-current operative asset long-short portfolio, the technological portion of the STOXX 600 sample, and the STOXX 600 itself. It has a standard deviation of the returns across the last 20 years of 20.22% which is still inferior to the standard deviation of the STOXX 600, 20.56%, and the Technology companies in the sample of the STOXX 600 which is 31.39%. The non-current operative

asset technology portfolio has a lower standard deviation 18,77% but also has a lower total return with 291.87€.

Graph 33: Total Returns in Technology Accrual Portfolio versus STOXX 600



6. Conclusion

The process of reviewing all the relevant academic work about the accrual anomaly has contributed to defining the investigation question and the consequent hypothesis to be able to provide a valid answer. As mentioned before, the main objective of this study is to examine the presence of the accrual anomaly in a specific sector in Europe and North America as well as implement a hedge accrual-based trading strategy based on investing in long-short positions in specific sectors to outperform the respective benchmark index. The first hypothesis showed that the accrual anomaly was more present in Europe with the STOXX Euro 600 than in the United States with the S&P 500. At this point of the study, the data was not segmented into sectors, but it served to establish the fact that the effects of the accrual anomaly have been diminishing in the United States as Artikis et al. (2022) and Green et al. (2011) pointed out in their studies. Some point out that the American equity market has regained efficiency on this topic because its equity market is much more sophisticated, and either financial analysts have changed their overweight of accruals and underweight of cash flows or the exploitation of the accrual anomaly to obtain benefit has distorted the market causing the effect of the anomaly to almost disappear.

The second to the third hypothesis serves the purpose of analyzing the risk and return characteristics of each industry. The Basic Materials sector appeared to be the one with the highest returns with an average abnormal return of 9.07%, On the other hand, the sector with the lowest average standard deviation of daily returns is the Consumer Staples sector with 1.66%. As mentioned, it made sense since this sector is defensive and non-

cyclical, and it is not very affected by seasonality as it represents a sector retailing necessity goods. In hypothesis number three we segment for the first time sectors to analyze the behavior of different types of Accruals by sectors. Utilities, Real Estate, and Energy did not have any significant abnormal returns as a result of the accruals. Therefore, it can be affirmed that the fact that some sectors had significant accruals and others not, made the study of the accrual anomaly in sectors worth pursuing as it should yield more coherent results because industry segmented regressions are able to capture more accurately the intricacies of the accrual anomaly.

The last hypothesis aims at creating a long-short hedge accrual-based portfolio capable of outperforming the STOXX Euro 600 and the companies belonging to the specific sector of the sample of the STOXX Euro 600. In this case, a long position in the companies belonging to the first quartile and a short position to those in the fourth quartile of the non-current operative asset accruals in the Telecommunication industry were able to outperform any benchmark including the STOXX Euro 600. The accrual anomaly was also present in the Technology sector, a long position in the companies belonging to the first quartile and a short position to those in the fourth quartile of the non-current operative asset accruals in the Technology industry were able to outperform any benchmark that was compared to. As mentioned before, He & Yang (2014) concluded that in unregulated industries like the Technology sector, the share of outside CEO directors on an audit committee is linked to greater levels of earnings management, which use accruals to achieve the desired results through earnings management. It generates unreal results that in the long run, tends to correct itself in the equity market, this is why the accrual anomaly can be used to generate abnormal returns. In the case of the Telecommunication sector, Marco et al. (2019) concluded that earnings management practices were commonly used in the sector. However, since the new IFRS 15 was approved, it has had major implications for companies in Europe, especially those in the Telecommunications sector. As mentioned early in the paper, IFRS offered certain guidelines which allowed more room for change and interpretation, this has changed with IFRS 15 introducing more detailed guidelines. According to a report from Deloitte, this change impacts the profile of revenue and profit recognition; the allocation of revenue, contract modifications, the capitalization or not certain costs attached to contracts, the time value of money, and more disclosures related to revenue generation. This new guideline might have affected the reporting standards of the Telecommunication sector and could potentially diminish the effect of the accrual anomaly.

In short, we can conclude that the accrual anomaly generalizes not only to European companies but especially to European Telecommunication and Technology companies. The Non-Current Operative Asset Accruals and Operative Accruals have proved to have predictive power over the returns as of May of any given year after the financial statements are published from the previous fiscal year.

The study of the accrual anomaly in this paper has some limitations. The first limitation is the sample size. At first, it was expected that the companies in the STOXX Euro 600 across twenty years would be more than enough to analyze the accrual anomaly. However, 1/4 of the downloaded sample from Refinitiv Eikon had missing data. In the first three hypotheses, the year is not included to segment the data as it was already divided into ten sectors. In the last hypothesis to calculate the main goal of the paper, each sector was divided by quartile of the five types of accruals contemplated in the study. This also reduced the sample number for each regression. The last statistical procedure

was a one-sample t-test mean comparison for every sector by accrual by quartile and year. Logically the sample number of these variables was very small. This may have contributed to obtaining less reliable results. If I were to study the effect of the accrual anomaly on specific sectors in Europe, I would probably use the information of all publicly traded firms in the European Union to obtain a larger sample and a more cohesive sample. Another limitation of this work is the fact that the reporting standards are not consistent throughout the sample. This paper documents that the IFRS was mainly adopted in 2005 and changed in 2015. Therefore, the sample is not consistent as it could be divided into three periods, pre-IFRS, 1999-2005, IFRS, 2006-2015, and updated IFRS, 2016-2019. If only one period was selected there would not be enough information to perform valid statistical tests. This is the reason why it would have been convenient to select all the publicly listed companies in the European Union.

7. Reference List

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8. Appendix

Table 2: Descriptive Statistics STOXX EUROPE 600

	Market Value MayN+1	TR 2/5/n+1 2/5/n+2	Abnormal Returns	TWCACC	TNCOAACC	TNCOLACC	TLTACC	TOPACC
Mean	13119,461	0,119	0,059	0,001	0,057	0,006	0,051	0,052
Standard Error	238,872	0,004	0,003	0,001	0,002	0,001	0,002	0,002
Median	5554,480	0,103	0,031	0,001	0,026	0,003	0,024	0,028
Mode	4973,800	0,016	0,143	-0,005	0,056	0,000	0,053	0,022
Standard Deviation	22961,573	0,385	0,328	0,056	0,178	0,049	0,164	0,170
Sample Variance	527233820,982	0,148	0,108	0,003	0,032	0,002	0,027	0,029
Kurtosis	30,721	4,346	7,359	25,511	22,807	91,081	23,162	19,772
Skewness	4,671	0,820	1,263	0,374	2,835	2,975	2,838	2,496
Minimum	165,270	-0,999	-1,332	-0,798	-1,633	-0,670	-1,466	-1,491
Maximum	305148,930	4,647	4,381	0,725	1,921	1,213	1,816	1,778
Count	9240	9240	9240	9240	9240	9240	9240	9240

Table 3: Descriptive Statistics S&P 500

	Market Value 2/5/2000	TR 2/5/n+1 2/5/n+2	Abn. Return	TWCACC	TNCOAACC	TNCOLACC	TLTACC	TOPACC
Mean	25963,559	0,117	0,035	0,000	0,050	0,010	0,040	0,041
Standard Error	649,507	0,004	0,004	0,001	0,002	0,001	0,002	0,002
Median	10581,770	0,095	0,008	0,000	0,030	0,006	0,025	0,026
Mode	8632,400	0,337	0,434	-0,010	0,137	0,000	0,122	0,112
Standard Deviation	54755,441	0,366	0,309	0,051	0,166	0,049	0,145	0,157
Sample Variance	2998158301,138	0,134	0,095	0,003	0,027	0,002	0,021	0,025
Kurtosis	116,135	5,472	8,180	38,681	14,207	43,618	15,734	12,432
Skewness	8,377	1,089	1,424	-1,423	2,163	1,405	2,145	1,669
Minimum	195	-1,00	-1,04	-0,81	-1,06	-0,71	-1,08	-1,14
Maximum	1202556,400	4,138	3,765	0,584	1,729	0,940	1,575	1,554
Count	7107	7107	7107	7107	7107	7107	7107	7107

Table 4: Model with Abnormal Returns as the dependent variable, WCACC, NCOAACC and NCOLACC as independent variable, segmenting the data by index

Index	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
S&P 500	1	(Constant)	0,038	0,004		9,916	0,000 ***
		TWCACC	-0,065	0,072	-0,011	-0,901	0,368
		TNCOAACC	-0,153	0,026	-0,082	-5,817	0,000 ***
		TNCOLACC	0,455	0,089	0,072	5,129	0,000 ***
STOXX 600	1	(Constant)	0,064	0,004		17,971	0,000 ***
		TWCACC	-0,248	0,061	-0,042	-4,033	0,000 ***
		TNCOAACC	-0,079	0,021	-0,043	-3,748	0,000 ***
		TNCOLACC	-0,021	0,076	-0,003	-0,274	0,784

Table 5: Model with Abnormal Returns as the dependent variable LTACC, and OPACC as independent variable, segmenting the data by index

Index	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
S&P 500	1	(Constant)	0,040	0,004		10,460	0,000 ***
		TLTACC	-0,070	0,078	-0,033	-0,895	0,371

		TOPACC	-0,054	0,072	-0,028	-0,749	0,454
STOXX 600	1	(Constant)	0,064	0,004		17,914	0,000 ***
		TLTACC	0,174	0,063	0,087	2,748	0,006 ***
		TOPACC	-0,256	0,061	-0,133	-4,196	0,000 ***

Table 6: Model with Abnormal Returns as the dependent variable NCOAACC as independent variable, segmenting the data by index and its NCOAACC quartile

Index	NCOAACC	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
S&P 500	1	(Constant)	0,039	0,008		4,790	0,000 ***
		TNCOAACC	-0,048	0,062	-0,018	-0,781	0,435
	2	(Constant)	0,047	0,008		6,203	0,000 ***
		TNCOAACC	0,012	0,126	0,002	0,093	0,926
	3	(Constant)	0,034	0,008		4,171	0,000 ***
		TNCOAACC	-0,033	0,081	-0,010	-0,412	0,680
	4	(Constant)	0,035	0,011		3,228	0,001 ***
		TNCOAACC	-0,087	0,036	-0,058	-2,409	0,016 **
STOXX 600	1	(Constant)	0,092	0,008		11,992	0,000 ***
		TNCOAACC	0,198	0,059	0,066	3,370	0,001 ***
	2	(Constant)	0,044	0,007		6,011	0,000 ***
		TNCOAACC	1,902	0,225	0,176	8,459	0,000 ***
	3	(Constant)	0,023	0,011		2,120	0,034 **
		TNCOAACC	0,634	0,152	0,088	4,168	0,000 ***
	4	(Constant)	0,050	0,010		4,815	0,000 ***
		TNCOAACC	-0,104	0,030	-0,074	-3,470	0,001 ***

Table 7: Model with Abnormal Returns as the dependent variable NCOLACC as independent variable, segmenting the data by index and its NCOLACC quartile

Index	Q TNCOLACC		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		

S&P 500	1	(Constant)	0,017	0,008		2,055	0,040 **
		TNCOLACC	-0,171	0,155	-0,025	-1,105	0,269
	2	(Constant)	0,042	0,007		5,673	0,000 ***
		TNCOLACC	0,796	0,609	0,031	1,307	0,191
	3	(Constant)	0,044	0,010		4,371	0,000 ***
		TNCOLACC	0,155	0,459	0,008	0,338	0,735
	4	(Constant)	0,002	0,011		0,148	0,883
		TNCOLACC	0,487	0,132	0,089	3,698	0,000 ***
STOXX 600	1	(Constant)	0,068	0,008		8,339	0,000 ***
		TNCOLACC	0,235	0,145	0,033	1,623	0,105
	2	(Constant)	0,071	0,007		9,585	0,000 ***
		TNCOLACC	3,720	1,637	0,048	2,272	0,023 **
	3	(Constant)	0,053	0,013		4,112	0,000 ***
		TNCOLACC	1,918	1,320	0,031	1,454	0,146
	4	(Constant)	0,060	0,009		7,098	0,000 ***
		TNCOLACC	-0,356	0,106	-0,070	-3,353	0,001 ***

Table 8: Average return, abnormal return, and standard deviation by sector for the STOXX 600

Sector	Average Return	Average Abnormal Return	Average Standard Deviation of Returns
Consumer Staples	12,58%	6,13%	1,66%
Basic Materials	15,39%	9,07%	2,14%
Utilities	10,37%	5,22%	1,67%
Telecom	0,75%	-4,23%	2,13%
Health Care	13,45%	6,73%	1,89%
Industrials	15,00%	8,73%	2,02%
Consumer Discretionary	11,75%	6,24%	2,17%
Technology	6,33%	1,24%	2,57%
Energy	9,70%	3,01%	2,32%
Real Estate	6,79%	0,82%	2,22%

Table 9: Model with Abnormal Returns as the dependent variable WCACC, NCOAACC and NCOLACC as independent variables, segmenting the data by industry

Sector		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Basic Materials	(Constant)	0,092	0,013		7,157	0,000 ***
	TWCACC	-0,641	0,254	-0,090	-2,519	0,012 **
	TNCOAACC	-0,116	0,115	-0,046	-1,007	0,314
	TNCOLACC	1,071	0,434	0,112	2,466	0,014 **
Consumer Discr	(Constant)	0,065	0,008		8,171	0,000 ***
	TWCACC	-0,018	0,116	-0,003	-0,153	0,878
	TNCOAACC	-0,025	0,045	-0,013	-0,554	0,580
	TNCOLACC	-0,323	0,166	-0,047	-1,948	0,052 *
Consumer Staples	(Constant)	0,057	0,009		6,393	0,000 ***
	TWCACC	-0,189	0,182	-0,034	-1,042	0,298
	TNCOAACC	0,136	0,062	0,086	2,178	0,030 **
	TNCOLACC	-0,773	0,344	-0,088	-2,249	0,025 **
Energy	(Constant)	0,030	0,016		1,866	0,063 *
	TWCACC	-0,199	0,225	-0,038	-0,882	0,378
	TNCOAACC	-0,056	0,098	-0,029	-0,574	0,566
	TNCOLACC	0,440	0,358	0,061	1,229	0,219
Health Care	(Constant)	0,086	0,013		6,781	0,000 ***
	TWCACC	-0,743	0,214	-0,122	-3,472	0,001 ***
	TNCOAACC	-0,148	0,067	-0,081	-2,209	0,027 **
	TNCOLACC	-0,653	0,195	-0,122	-3,344	0,001 ***
Industrials	(Constant)	0,083	0,007		12,011	0,000 ***
	TWCACC	-0,420	0,141	-0,062	-2,982	0,003 ***
	TNCOAACC	0,096	0,054	0,042	1,789	0,074 **
	TNCOLACC	0,018	0,149	0,003	0,120	0,904
Real Estate	(Constant)	-0,025	0,075		-0,329	0,745
	TWCACC	-0,065	0,884	-0,017	-0,073	0,942
	TNCOAACC	0,567	0,523	0,236	1,083	0,289
	TNCOLACC	-0,327	1,730	-0,047	-0,189	0,852
Technology	(Constant)	0,044	0,018		2,471	0,014
	TWCACC	-0,254	0,249	-0,046	-1,022	0,307
	TNCOAACC	-0,358	0,074	-0,215	-4,804	0,000 ***
	TNCOLACC	0,441	0,375	0,054	1,178	0,239
Telecom	(Constant)	-0,030	0,013		-2,374	0,018 **
	TWCACC	-0,510	0,237	-0,092	-2,155	0,032 **
	TNCOAACC	-0,228	0,052	-0,199	-4,385	0,000 ***
	TNCOLACC	0,206	0,296	0,031	0,696	0,487
Utilities	(Constant)	0,052	0,011		4,709	0,000 ***

	TWCACC	-0,387	0,272	-0,060	-1,426	0,155
	TNCOAACC	0,041	0,069	0,030	0,592	0,554
	TNCOLACC	-0,175	0,181	-0,048	-0,967	0,334

Table 10: Model with Abnormal Returns as the dependent variable OPACC and LTACC as independent variables, segmenting the data by industry

Sector		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Basic Materials	(Constant)	0,093	0,013		7,254	0,000 ***
	TOPACC	-0,481	0,247	-0,194	-1,945	0,052 *
	TLTACC	0,492	0,298	0,164	1,650	0,099 *
Consumer Discretionary	(Constant)	0,064	0,008		8,045	0,000 ***
	TOPACC	-0,043	0,116	-0,022	-0,369	0,712
	TLTACC	0,009	0,117	0,005	0,080	0,936
Consumer Staples	(Constant)	0,057	0,009		6,310	0,000 ***
	TOPACC	-0,215	0,182	-0,129	-1,182	0,238
	TLTACC	0,296	0,190	0,169	1,559	0,119
Energy	(Constant)	0,032	0,016		1,994	0,047 **
	TOPACC	-0,177	0,225	-0,084	-0,789	0,431
	TLTACC	0,153	0,234	0,070	0,653	0,514
Health Care	(Constant)	0,079	0,013		6,189	0,000 ***
	TOPACC	-0,746	0,216	-0,412	-3,448	0,001 ***
	TLTACC	0,618	0,228	0,324	2,713	0,007 ***
Industrials	(Constant)	0,083	0,007		12,058	0,000 ***
	TOPACC	-0,417	0,141	-0,170	-2,960	0,003 ***
	TLTACC	0,518	0,147	0,202	3,516	0,000 ***
Real Estate	(Constant)	-0,020	0,067		-0,299	0,767
	TOPACC	0,002	0,752	0,001	0,002	0,998
	TLTACC	0,574	0,779	0,229	0,737	0,468
Technology	(Constant)	0,044	0,018		2,494	0,013 **
	TOPACC	-0,240	0,240	-0,142	-0,997	0,319
	TLTACC	-0,117	0,246	-0,068	-0,475	0,635
Telecom	(Constant)	-0,030	0,013		-2,380	0,018 **
	TOPACC	-0,513	0,233	-0,409	-2,203	0,028 **
	TLTACC	0,284	0,223	0,237	1,274	0,203
Utilities	(Constant)	0,051	0,011		4,633	0,000 ***
	TOPACC	-0,404	0,271	-0,262	-1,493	0,136
	TLTACC	0,434	0,283	0,269	1,537	0,125

Table 11: One-sample t-test for abnormal returns by Working Capital Accruals quartiles by Sector

One-Sample Test								
Sector	TWCACC	Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	1	5,523	204	0,000	0,000	0,172	0,111	0,234
	2	3,242	232	0,001	0,001	0,073	0,028	0,117
	3	4,540	226	0,000	0,000	0,097	0,055	0,138
	4	1,665	259	0,049	0,097	0,037	-0,007	0,081
Consumer Discr	1	2,819	558	0,002	0,005	0,044	0,013	0,074
	2	5,694	491	0,000	0,000	0,095	0,062	0,127
	3	4,163	453	0,000	0,000	0,060	0,031	0,088
	4	3,742	494	0,000	0,000	0,054	0,026	0,082
Consumer Staples	1	3,789	231	0,000	0,000	0,072	0,034	0,109
	2	4,776	306	0,000	0,000	0,068	0,040	0,096
	3	3,037	237	0,001	0,003	0,050	0,018	0,083
	4	2,662	179	0,004	0,008	0,052	0,013	0,090
Energy	1	0,106	151	0,458	0,916	0,003	-0,059	0,066
	2	1,075	116	0,142	0,285	0,029	-0,024	0,081
	3	3,322	121	0,001	0,001	0,099	0,040	0,158
	4	0,118	154	0,453	0,907	0,003	-0,053	0,060
Health Care	1	2,854	179	0,002	0,005	0,093	0,029	0,157
	2	3,984	182	0,000	0,000	0,090	0,046	0,135
	3	3,350	192	0,000	0,001	0,066	0,027	0,105
	4	1,381	225	0,084	0,169	0,029	-0,012	0,071
Industrials	1	8,041	569	0,000	0,000	0,113	0,085	0,141
	2	7,002	594	0,000	0,000	0,083	0,060	0,106
	3	6,853	578	0,000	0,000	0,078	0,056	0,100
	4	5,008	563	0,000	0,000	0,076	0,046	0,105
Real Estate	1	-0,574	9	0,290	0,580	-0,049	-0,242	0,144
	2	0,061	5	0,477	0,954	0,010	-0,424	0,445
	3	2,050	2	0,088	0,177	0,418	-0,459	1,294
	4	-0,791	8	0,226	0,452	-0,066	-0,259	0,127
Technology	1	0,310	154	0,379	0,757	0,010	-0,053	0,073
	2	1,712	92	0,045	0,090	0,078	-0,013	0,169
	3	0,340	122	0,367	0,735	0,009	-0,042	0,060
	4	-0,701	149	0,242	0,484	-0,023	-0,087	0,041
Telecom	1	-2,310	161	0,011	0,022	-0,066	-0,123	-0,010
	2	-0,976	181	0,165	0,330	-0,019	-0,059	0,020
	3	-0,751	152	0,227	0,454	-0,017	-0,063	0,028

	4	-3,030	105	0,002	0,003	-0,081	-0,133	-0,028
Utilities	1	3,051	117	0,001	0,003	0,066	0,023	0,110
	2	3,749	187	0,000	0,000	0,065	0,031	0,100
	3	1,789	172	0,038	0,075	0,033	-0,003	0,069
	4	1,370	90	0,087	0,174	0,044	-0,020	0,108

Table 12: One-sample statistics for abnormal returns by Working Capital Accruals quartiles by Sector

One-Sample Statistics					
Sector	WCACC	N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	1	205	0,172	0,447	0,031
	2	233	0,073	0,342	0,022
	3	227	0,097	0,320	0,021
	4	260	0,037	0,361	0,022
Consumer Discretionary	1	559	0,044	0,367	0,016
	2	492	0,095	0,369	0,017
	3	454	0,060	0,305	0,014
	4	495	0,054	0,320	0,014
Consumer Staples	1	232	0,072	0,289	0,019
	2	307	0,068	0,248	0,014
	3	238	0,050	0,254	0,016
	4	180	0,052	0,260	0,019
Energy	1	152	0,003	0,388	0,032
	2	117	0,029	0,287	0,027
	3	122	0,099	0,328	0,030
	4	155	0,003	0,357	0,029
Health Care	1	180	0,093	0,437	0,033
	2	183	0,090	0,307	0,023
	3	193	0,066	0,274	0,020
	4	226	0,029	0,318	0,021
Industrials	1	570	0,113	0,335	0,014
	2	595	0,083	0,289	0,012
	3	579	0,078	0,273	0,011
	4	564	0,076	0,359	0,015
Real Estate	1	10	-0,049	0,270	0,085
	2	6	0,010	0,414	0,169
	3	3	0,418	0,353	0,204
	4	9	-0,066	0,251	0,084
Technology	1	155	0,010	0,396	0,032
	2	93	0,078	0,441	0,046
	3	123	0,009	0,285	0,026
	4	150	-0,023	0,398	0,033

Telecom	1	162	-0,066	0,366	0,029
	2	182	-0,019	0,268	0,020
	3	153	-0,017	0,286	0,023
	4	106	-0,081	0,274	0,027
Utilities	1	118	0,066	0,237	0,022
	2	188	0,065	0,239	0,017
	3	173	0,033	0,241	0,018
	4	91	0,044	0,306	0,032

Table 13: One-sample t-test for abnormal returns by Working Capital Accruals long-short position (1-4) by Sector

One-Sample Test								
Sector		Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	abn.ret 1-4	2,870	464	0,002	0,004	0,0551	0,0174	0,0929
Consumer Discretionary	abn.ret 1-4	-0,193	1053	0,423	0,847	-0,0021	-0,0232	0,0190
Consumer Staples	abn.ret 1-4	1,282	411	0,100	0,201	0,0179	-0,0095	0,0453
Energy	abn.ret 1-4	-0,002	306	0,499	0,998	-0,0001	-0,0418	0,0417
Health Care	abn.ret 1-4	1,323	405	0,093	0,187	0,0250	-0,0121	0,0620
Industrials	abn.ret 1-4	1,794	1133	0,037	0,073	0,0191	-0,0018	0,0401
Real Estate	abn.ret 1-4	0,093	18	0,464	0,927	0,0056	-0,1200	0,1311
Technology	abn.ret 1-4	0,715	304	0,238	0,475	0,0162	-0,0285	0,0609
Telecom	abn.ret 1-4	-0,398	267	0,345	0,691	-0,0083	-0,0491	0,0326
Utilities	abn.ret 1-4	0,972	208	0,166	0,332	0,0184	-0,0189	0,0557

Table 14: One-sample statistics for abnormal returns by Working Capital Accruals long-short position (1-4) by Sector

One-Sample Statistics					
Sector		N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	abn.ret 1-4	465	0,0551	0,4142	0,0192
Consumer Discretionary	abn.ret 1-4	1054	-0,0021	0,3493	0,0108

Consumer Staples	abn.ret 1-4	412	0,0179	0,2832	0,0140
Energy	abn.ret 1-4	307	-0,0001	0,3722	0,0212
Health Care	abn.ret 1-4	406	0,0250	0,3800	0,0189
Industrials	abn.ret 1-4	1134	0,0191	0,3595	0,0107
Real Estate	abn.ret 1-4	19	0,0056	0,2606	0,0598
Technology	abn.ret 1-4	305	0,0162	0,3965	0,0227
Telecom	abn.ret 1-4	268	-0,0083	0,3399	0,0208
Utilities	abn.ret 1-4	209	0,0184	0,2738	0,0189

Table 15: One-sample t-test for abnormal returns by Non-Current Operative Asset Accruals quartiles by Sector

One-Sample Test								
Sector	NCOAACC	Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	1	4,428	261	0,000	0,000	0,0990	0,0550	0,1430
	2	5,593	215	0,000	0,000	0,1453	0,0941	0,1965
	3	3,374	227	0,000	0,001	0,0795	0,0331	0,1260
	4	1,495	218	0,068	0,136	0,0384	-0,0122	0,0890
Consumer Discretionary	1	6,843	567	0,000	0,000	0,1003	0,0715	0,1291
	2	3,979	500	0,000	0,000	0,0559	0,0283	0,0835
	3	3,905	496	0,000	0,000	0,0514	0,0255	0,0772

	4	1,669	433	0,048	0,096	0,0329	-0,0058	0,0717
Consumer Staples	1	5,023	283	0,000	0,000	0,0796	0,0484	0,1108
	2	4,290	219	0,000	0,000	0,0720	0,0389	0,1050
	3	2,073	235	0,020	0,039	0,0323	0,0016	0,0630
	4	2,951	216	0,002	0,004	0,0581	0,0193	0,0970
Energy	1	1,564	126	0,060	0,120	0,0469	-0,0125	0,1063
	2	3,564	109	0,000	0,001	0,1061	0,0471	0,1651
	3	0,532	129	0,298	0,596	0,0129	-0,0351	0,0610
	4	-0,529	178	0,299	0,597	-0,0162	-0,0765	0,0441
Health Care	1	3,542	209	0,000	0,000	0,1043	0,0463	0,1624
	2	2,649	184	0,004	0,009	0,0613	0,0156	0,1069
	3	2,186	160	0,015	0,030	0,0522	0,0050	0,0994
	4	2,608	225	0,005	0,010	0,0487	0,0119	0,0855
Industrials	1	7,107	601	0,000	0,000	0,0957	0,0693	0,1222
	2	6,713	654	0,000	0,000	0,0772	0,0546	0,0998
	3	7,218	581	0,000	0,000	0,0971	0,0707	0,1235
	4	5,415	468	0,000	0,000	0,0784	0,0499	0,1069
Real Estate	1	-0,637	6	0,274	0,548	-0,0465	-0,2252	0,1322
	2	-0,399	8	0,350	0,700	-0,0405	-0,2741	0,1931
	3	-0,851	5	0,217	0,434	-0,0882	-0,3545	0,1781
	4	1,238	5	0,135	0,271	0,2414	-0,2600	0,7427
Technology	1	1,445	134	0,075	0,151	0,0472	-0,0174	0,1119
	2	0,444	127	0,329	0,658	0,0145	-0,0501	0,0791

	3	1,469	110	0,072	0,145	0,0566	-0,0198	0,1331
	4	-1,785	146	0,038	0,076	-0,0548	-0,1156	0,0059
Telecom	1	0,073	228	0,471	0,942	0,0016	-0,0412	0,0444
	2	-0,767	110	0,222	0,445	-0,0186	-0,0666	0,0294
	3	-1,972	110	0,026	0,051	-0,0457	-0,0916	0,0002
	4	-4,748	151	0,000	0,000	-0,1232	-0,1744	-0,0719
Utilities	1	2,264	157	0,012	0,025	0,0424	0,0054	0,0794
	2	3,438	115	0,000	0,001	0,1003	0,0425	0,1581
	3	4,285	157	0,000	0,000	0,0761	0,0410	0,1112
	4	-0,220	137	0,413	0,826	-0,0042	-0,0424	0,0339

Table 16: One-sample statistics for abnormal returns by Non-Current Operative Asset Accruals quartiles by Sector

One-Sample Statistics					
Sector	NCOAACC	N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	1	262	0,099	0,362	0,022
	2	216	0,145	0,382	0,026
	3	228	0,080	0,356	0,024
	4	219	0,038	0,380	0,026
Consumer Discr	1	568	0,100	0,349	0,015
	2	501	0,056	0,314	0,014
	3	497	0,051	0,293	0,013
	4	434	0,033	0,411	0,020
Consumer Staples	1	284	0,080	0,267	0,016
	2	220	0,072	0,249	0,017
	3	236	0,032	0,239	0,016
	4	217	0,058	0,290	0,020
Energy	1	127	0,047	0,338	0,030
	2	110	0,106	0,312	0,030
	3	130	0,013	0,277	0,024
	4	179	-0,016	0,409	0,031
Health Care	1	210	0,104	0,427	0,029
	2	185	0,061	0,315	0,023
	3	161	0,052	0,303	0,024
	4	226	0,049	0,281	0,019
Industrials	1	602	0,096	0,331	0,013
	2	655	0,077	0,294	0,012
	3	582	0,097	0,325	0,013
	4	469	0,078	0,314	0,014
Real Estate	1	7	-0,047	0,193	0,073

	2	9	-0,040	0,304	0,101
	3	6	-0,088	0,254	0,104
	4	6	0,241	0,478	0,195
Technology	1	135	0,047	0,3798	0,033
	2	128	0,014	0,369	0,033
	3	111	0,057	0,406	0,039
	4	147	-0,055	0,372	0,031
Telecom	1	229	0,002	0,329	0,022
	2	111	-0,019	0,255	0,024
	3	111	-0,046	0,244	0,023
	4	152	-0,123	0,320	0,026
Utilities	1	158	0,042	0,235	0,019
	2	116	0,100	0,314	0,029
	3	158	0,076	0,223	0,018
	4	138	-0,004	0,227	0,019

Table 17: One-sample t-test for abnormal returns by Non-Current Operative Asset Accruals long-short position (1-4) by Sector

One-Sample Test								
Sector		Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	abn.ret 1-4	2,126	480	0,017	0,034	0,0365	0,0028	0,0701
Consumer Discr	abn.ret 1-4	3,523	1001	0,000	0,000	0,0426	0,0189	0,0664
Consumer Staples	abn.ret 1-4	1,565	500	0,059	0,118	0,0200	-0,0051	0,0450
Energy	abn.ret 1-4	1,329	305	0,092	0,185	0,0289	-0,0139	0,0718
Health Care	abn.ret 1-4	1,427	435	0,077	0,154	0,0250	-0,0095	0,0595
Industrials	abn.ret 1-4	1,907	1070	0,028	0,057	0,0195	-0,0006	0,0395

Real Estate	abn.ret 1-4	-1,397	12	0,094	0,188	-0,1364	-0,3492	0,0763
Technology	abn.ret 1-4	2,290	281	0,011	0,023	0,0512	0,0072	0,0952
Telecom	abn.ret 1-4	2,961	380	0,002	0,003	0,0501	0,0168	0,0834
Utilities	abn.ret 1-4	1,827	295	0,034	0,069	0,0246	-0,0019	0,0511

Table 18: One-sample statistics for abnormal returns by Non-Current Operative Asset Accruals long-short position (1-4) by Sector

One-Sample Statistics					
Sector		N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	abn.ret 1-4	481	0,0365	0,3761	0,0171
Consumer Discr	abn.ret 1-4	1002	0,0426	0,3829	0,0121
Consumer Staples	abn.ret 1-4	501	0,0200	0,2854	0,0128
Energy	abn.ret 1-4	306	0,0289	0,3809	0,0218
Health Care	abn.ret 1-4	436	0,0250	0,3663	0,0175
Industrials	abn.ret 1-4	1071	0,0195	0,3344	0,0102
Real Estate	abn.ret 1-4	13	-0,1364	0,3521	0,0977
Technology	abn.ret 1-4	282	0,0512	0,3753	0,0224
Telecom	abn.ret 1-4	381	0,0501	0,3302	0,0169
Utilities	abn.ret 1-4	296	0,0246	0,2317	0,0135

Table 19: One-sample t-test for abnormal returns by Non-Current Operative Asset Liability quartiles by Sector

One-Sample Test								
Sector	NCOLACC	Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	1	3,215	242	0,001	0,001	0,0653	0,0253	0,1053
	2	2,086	189	0,019	0,038	0,0510	0,0028	0,0993
	3	4,484	236	0,000	0,000	0,1145	0,0642	0,1648
	4	4,689	254	0,000	0,000	0,1222	0,0709	0,1735
Consumer Discr	1	5,689	549	0,000	0,000	0,0825	0,0540	0,1110
	2	5,400	524	0,000	0,000	0,0893	0,0568	0,1218
	3	3,522	438	0,000	0,000	0,0560	0,0247	0,0872
	4	1,163	485	0,123	0,245	0,0164	-0,0113	0,0440
Consumer Staples	1	4,691	220	0,000	0,000	0,0874	0,0507	0,1241
	2	4,738	282	0,000	0,000	0,0752	0,0440	0,1064
	3	2,821	258	0,003	0,005	0,0445	0,0134	0,0756
	4	1,914	193	0,029	0,057	0,0339	-0,0010	0,0687
Energy	1	0,865	122	0,194	0,389	0,0295	-0,0380	0,0969
	2	1,262	128	0,105	0,209	0,0370	-0,0210	0,0951
	3	0,994	132	0,161	0,322	0,0259	-0,0256	0,0774
	4	0,966	160	0,168	0,336	0,0284	-0,0297	0,0864
Health Care	1	2,976	236	0,002	0,003	0,0768	0,0260	0,1276
	2	2,650	162	0,004	0,009	0,0684	0,0174	0,1193

	3	3,771	177	0,000	0,000	0,0774	0,0369	0,1179
	4	2,079	203	0,019	0,039	0,0467	0,0024	0,0911
Industrials	1	5,448	589	0,000	0,000	0,0715	0,0457	0,0973
	2	7,012	600	0,000	0,000	0,0916	0,0659	0,1172
	3	8,087	579	0,000	0,000	0,1108	0,0839	0,1377
	4	5,975	536	0,000	0,000	0,0745	0,0500	0,0990
Real Estate	1	-0,954	4	0,197	0,394	-0,0812	-0,3178	0,1553
	2	-0,273	3	0,401	0,803	-0,0472	-0,5983	0,5038
	3	-0,001	4	0,500	1,000	-0,0001	-0,6284	0,6282
	4	0,716	13	0,243	0,487	0,0589	-0,1188	0,2367
Technology	1	-0,222	131	0,412	0,825	-0,0072	-0,0712	0,0569
	2	0,308	136	0,379	0,759	0,0104	-0,0565	0,0774
	3	1,689	117	0,047	0,094	0,0617	-0,0106	0,1340
	4	-0,308	133	0,379	0,759	-0,0097	-0,0723	0,0528
Telecom	1	-1,705	183	0,045	0,090	-0,0391	-0,0844	0,0062
	2	-1,974	118	0,025	0,051	-0,0587	-0,1175	0,0002
	3	-1,397	136	0,082	0,165	-0,0319	-0,0771	0,0133
	4	-1,765	162	0,040	0,080	-0,0426	-0,0903	0,0051
Utilities	1	3,672	137	0,000	0,000	0,0693	0,0320	0,1066
	2	2,158	115	0,017	0,033	0,0517	0,0042	0,0992
	3	2,367	148	0,010	0,019	0,0522	0,0086	0,0958
	4	1,977	166	0,025	0,050	0,0385	0,0000	0,0770

Table 20: One-sample statistics for abnormal returns by Non-Current Operative Asset Liability quartiles by Sector

One-Sample Statistics					
Sector	NCOLACC	N	Mean	Std. Deviation	Std. Error Mean

Basic Materials	1	243	0,0653	0,3165	0,0203
	2	190	0,0510	0,3371	0,0245
	3	237	0,1145	0,3930	0,0255
	4	255	0,1222	0,4162	0,0261
Consumer Discr	1	550	0,0825	0,3401	0,0145
	2	525	0,0893	0,3789	0,0165
	3	439	0,0560	0,3330	0,0159
	4	486	0,0164	0,3104	0,0141
Consumer Staples	1	221	0,0874	0,2769	0,0186
	2	283	0,0752	0,2670	0,0159
	3	259	0,0445	0,2538	0,0158
	4	194	0,0339	0,2464	0,0177
Energy	1	123	0,0295	0,3778	0,0341
	2	129	0,0370	0,3332	0,0293
	3	133	0,0259	0,3002	0,0260
	4	161	0,0284	0,3729	0,0294
Health Care	1	237	0,0768	0,3972	0,0258
	2	163	0,0684	0,3294	0,0258
	3	178	0,0774	0,2738	0,0205
	4	204	0,0467	0,3211	0,0225
Industrials	1	590	0,0715	0,3188	0,0131
	2	601	0,0916	0,3202	0,0131
	3	580	0,1108	0,3300	0,0137
	4	537	0,0745	0,2890	0,0125
Real Estate	1	5	-0,0812	0,1905	0,0852
	2	4	-0,0472	0,3463	0,1732
	3	5	-0,0001	0,5060	0,2263
	4	14	0,0589	0,3079	0,0823
Technology	1	132	-0,0072	0,3720	0,0324
	2	137	0,0104	0,3963	0,0339
	3	118	0,0617	0,3967	0,0365
	4	134	-0,0097	0,3659	0,0316
Telecom	1	184	-0,0391	0,3112	0,0229
	2	119	-0,0587	0,3243	0,0297
	3	137	-0,0319	0,2673	0,0228
	4	163	-0,0426	0,3084	0,0242
Utilities	1	138	0,0693	0,2217	0,0189
	2	116	0,0517	0,2581	0,0240
	3	149	0,0522	0,2693	0,0221
	4	167	0,0385	0,2520	0,0195

Table 21: One-sample t-test for abnormal returns by Non-Current Operative Liability Accruals long-short position (1-4) by Sector

One-Sample Test								
Sector		Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	abn.ret 1-4	-1,793	497	0,037	0,074	-0,0307	-0,0644	0,0029
Consumer Discr	abn.ret 1-4	3,523	1035	0,000	0,000	0,0361	0,0160	0,0562
Consumer Staples	abn.ret 1-4	2,319	414	0,010	0,021	0,0307	0,0047	0,0567
Energy	abn.ret 1-4	-0,149	283	0,441	0,881	-0,0033	-0,0472	0,0405
Health Care	abn.ret 1-4	1,119	440	0,132	0,264	0,0196	-0,0149	0,0541
Industrials	abn.ret 1-4	0,206	1126	0,418	0,837	0,0019	-0,0164	0,0202
Real Estate	abn.ret 1-4	-1,020	18	0,161	0,321	-0,0648	-0,1982	0,0686
Technology	abn.ret 1-4	0,059	265	0,476	0,953	0,0013	-0,0431	0,0458
Telecom	abn.ret 1-4	-0,043	346	0,483	0,966	-0,0007	-0,0337	0,0322
Utilities	abn.ret 1-4	0,732	304	0,232	0,465	0,0102	-0,0173	0,0378

Table 22: One-sample statistics for abnormal returns by Non-Current Operative Liability Accruals long-short position (1-4) by Sector

One-Sample Statistics					
Sector		N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	abn.ret 1-4	498	-0,0307	0,3823	0,0171

Consumer Discr	abn.ret 1-4	1036	0,0361	0,3301	0,0103
Consumer Staples	abn.ret 1-4	415	0,0307	0,2697	0,0132
Energy	abn.ret 1-4	284	-0,0033	0,3755	0,0223
Health Care	abn.ret 1-4	441	0,0196	0,3687	0,0176
Industrials	abn.ret 1-4	1127	0,0019	0,3134	0,0093
Real Estate	abn.ret 1-4	19	-0,0648	0,2768	0,0635
Technology	abn.ret 1-4	266	0,0013	0,3684	0,0226
Telecom	abn.ret 1-4	347	-0,0007	0,3121	0,0168
Utilities	abn.ret 1-4	305	0,0102	0,2444	0,0140

Table 23: One-sample t-test for abnormal returns by Long-Term Accruals quartiles by Sector

One-Sample Test								
Sector	LTACC	Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	1	4,947	257	0,000	0,000	0,1156	0,0696	0,1616
	2	4,813	241	0,000	0,000	0,1194	0,0705	0,1682
	3	3,131	207	0,001	0,002	0,0712	0,0264	0,1160
	4	1,828	216	0,034	0,069	0,0477	-0,0037	0,0991
Consumer Discr	1	5,938	591	0,000	0,000	0,0815	0,0546	0,1085
	2	4,173	491	0,000	0,000	0,0615	0,0326	0,0905
	3	3,593	480	0,000	0,000	0,0474	0,0215	0,0734

	4	2,675	434	0,004	0,008	0,0539	0,0143	0,0935
Consumer Staples	1	3,866	272	0,000	0,000	0,0659	0,0323	0,0994
	2	4,357	225	0,000	0,000	0,0640	0,0350	0,0929
	3	3,260	237	0,001	0,001	0,0529	0,0209	0,0849
	4	3,181	219	0,001	0,002	0,0621	0,0236	0,1005
Energy	1	0,986	113	0,163	0,326	0,0260	-0,0262	0,0782
	2	3,211	137	0,001	0,002	0,0954	0,0367	0,1542
	3	1,309	124	0,096	0,193	0,0366	-0,0187	0,0919
	4	-0,825	168	0,205	0,411	-0,0254	-0,0862	0,0354
Health Care	1	2,953	206	0,002	0,004	0,0924	0,0307	0,1541
	2	1,799	161	0,037	0,074	0,0416	-0,0041	0,0872
	3	3,401	183	0,000	0,001	0,0699	0,0294	0,1105
	4	3,190	228	0,001	0,002	0,0609	0,0233	0,0984
Industrials	1	7,628	580	0,000	0,000	0,1057	0,0785	0,1329
	2	6,696	651	0,000	0,000	0,0735	0,0520	0,0951
	3	6,231	601	0,000	0,000	0,0854	0,0585	0,1124
	4	6,029	472	0,000	0,000	0,0861	0,0580	0,1142
Real Estate	1	-0,482	7	0,322	0,645	-0,0439	-0,2597	0,1718
	2	0,051	8	0,480	0,961	0,0045	-0,1983	0,2072
	3	-0,963	2	0,219	0,437	-0,1385	-0,7571	0,4802
	4	0,726	7	0,246	0,491	0,1195	-0,2698	0,5088
Technology	1	1,127	132	0,131	0,262	0,0370	-0,0279	0,1019
	2	2,234	125	0,014	0,027	0,0795	0,0091	0,1498
	3	-0,325	109	0,373	0,746	-0,0115	-0,0818	0,0588
	4	-1,569	151	0,059	0,119	-0,0474	-0,1071	0,0123
Telecom	1	-0,289	215	0,386	0,773	-0,0061	-0,0480	0,0357
	2	-0,457	116	0,324	0,649	-0,0122	-0,0654	0,0409
	3	-0,976	102	0,166	0,331	-0,0251	-0,0762	0,0260
	4	-4,995	166	0,000	0,000	-0,1206	-0,1683	-0,0730
Utilities	1	1,968	157	0,025	0,051	0,0389	-0,0001	0,0780
	2	4,305	133	0,000	0,000	0,1106	0,0598	0,1614
	3	3,186	157	0,001	0,002	0,0563	0,0214	0,0911
	4	-0,036	119	0,485	0,971	-0,0007	-0,0403	0,0388

Table 24: One-sample statistics for abnormal returns by Long-Term Accruals quartiles by Sector

One-Sample Statistics					
Sector	LTACC	N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	1	258	0,1156	0,3753	0,0234
	2	242	0,1194	0,3858	0,0248

	3	208	0,0712	0,3278	0,0227
	4	217	0,0477	0,3842	0,0261
Consumer Discr	1	592	0,0815	0,3341	0,0137
	2	492	0,0615	0,3271	0,0147
	3	481	0,0474	0,2896	0,0132
	4	435	0,0539	0,4200	0,0201
Consumer Staples	1	273	0,0659	0,2815	0,0170
	2	226	0,0640	0,2207	0,0147
	3	238	0,0529	0,2503	0,0162
	4	220	0,0621	0,2894	0,0195
Energy	1	114	0,0260	0,2814	0,0264
	2	138	0,0954	0,3492	0,0297
	3	125	0,0366	0,3124	0,0279
	4	169	-0,0254	0,4002	0,0308
Health Care	1	207	0,0924	0,4501	0,0313
	2	162	0,0416	0,2941	0,0231
	3	184	0,0699	0,2789	0,0206
	4	229	0,0609	0,2886	0,0191
Industrials	1	581	0,1057	0,3339	0,0139
	2	652	0,0735	0,2804	0,0110
	3	602	0,0854	0,3364	0,0137
	4	473	0,0861	0,3107	0,0143
Real Estate	1	8	-0,0439	0,2580	0,0912
	2	9	0,0045	0,2638	0,0879
	3	3	-0,1385	0,2490	0,1438
	4	8	0,1195	0,4657	0,1646
Technology	1	133	0,0370	0,3784	0,0328
	2	126	0,0795	0,3992	0,0356
	3	110	-0,0115	0,3721	0,0355
	4	152	-0,0474	0,3725	0,0302
Telecom	1	216	-0,0061	0,3122	0,0212
	2	117	-0,0122	0,2901	0,0268
	3	103	-0,0251	0,2615	0,0258
	4	167	-0,1206	0,3121	0,0242
Utilities	1	158	0,0389	0,2487	0,0198

	2	134	0,1106	0,2975	0,0257
	3	158	0,0563	0,2219	0,0177
	4	120	-0,0007	0,2188	0,0200

Table 25: One-sample t-test for abnormal returns by Long-term Accruals long-short position (1-4) by Sector

One-Sample Test								
Sector		Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	abn.ret 1-4	2,305	474	0,011	0,022	0,0410	0,0060	0,0759
Consumer Discr	abn.ret 1-4	2,046	1026	0,020	0,041	0,0242	0,0010	0,0474
Consumer Staples	abn.ret 1-4	0,667	492	0,252	0,505	0,0088	-0,0171	0,0346
Energy	abn.ret 1-4	1,210	282	0,114	0,227	0,0256	-0,0161	0,0674
Health Care	abn.ret 1-4	0,651	435	0,258	0,515	0,0119	-0,0240	0,0478
Industrials	abn.ret 1-4	1,886	1053	0,030	0,060	0,0196	-0,0008	0,0400
Real Estate	abn.ret 1-4	-0,894	15	0,193	0,386	-0,0817	-0,2766	0,1132
Technology	abn.ret 1-4	1,917	284	0,028	0,056	0,0425	-0,0011	0,0862
Telecom	abn.ret 1-4	3,023	382	0,001	0,003	0,0491	0,0172	0,0811
Utilities	abn.ret 1-4	1,582	277	0,057	0,115	0,0224	-0,0055	0,0504

Table 26: One-sample statistics for abnormal returns by Long-term Accruals long-short position (1-4) by Sector

One-Sample Statistics

Sector		N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	abn.ret 1-4	475	0,0410	0,3876	0,0178
Consumer Discr	abn.ret 1-4	1027	0,0242	0,3787	0,0118
Consumer Staples	abn.ret 1-4	493	0,0088	0,2918	0,0131
Energy	abn.ret 1-4	283	0,0256	0,3566	0,0212
Health Care	abn.ret 1-4	436	0,0119	0,3814	0,0183
Industrials	abn.ret 1-4	1054	0,0196	0,3373	0,0104
Real Estate	abn.ret 1-4	16	-0,0817	0,3658	0,0914
Technology	abn.ret 1-4	285	0,0425	0,3746	0,0222
Telecom	abn.ret 1-4	383	0,0491	0,3181	0,0163
Utilities	abn.ret 1-4	278	0,0224	0,2366	0,0142

Table 27: One-sample t-test for abnormal returns by Operative Accruals quartiles by Sector

Sector	Q TOPACC	Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basicc Materials	1	5,909	263	0,000	0,000	0,1443	0,0962	0,1923
	2	4,178	203	0,000	0,000	0,1027	0,0542	0,1512
	3	3,520	222	0,000	0,001	0,0790	0,0348	0,1233
	4	1,231	233	0,110	0,220	0,0307	-0,0185	0,0799
	1	4,979	573	0,000	0,000	0,0734	0,0444	0,1023

Consumer Discr	2	6,322	519	0,000	0,000	0,0847	0,0584	0,1110
	3	2,552	451	0,006	0,011	0,0354	0,0081	0,0627
	4	2,597	453	0,005	0,010	0,0499	0,0121	0,0876
Consumer Staples	1	4,875	260	0,000	0,000	0,0793	0,0473	0,1114
	2	3,776	269	0,000	0,000	0,0602	0,0288	0,0915
	3	2,281	220	0,012	0,024	0,0373	0,0051	0,0695
	4	3,353	204	0,000	0,001	0,0658	0,0271	0,1046
Energy	1	2,094	122	0,019	0,038	0,0604	0,0033	0,1176
	2	1,147	127	0,127	0,254	0,0349	-0,0253	0,0950
	3	1,733	137	0,043	0,085	0,0430	-0,0061	0,0920
	4	-0,274	156	0,392	0,784	-0,0090	-0,0737	0,0557
Health Care	1	3,413	207	0,000	0,001	0,1054	0,0445	0,1664
	2	2,102	146	0,019	0,037	0,0478	0,0028	0,0927
	3	2,690	195	0,004	0,008	0,0558	0,0149	0,0967
	4	2,842	230	0,002	0,005	0,0553	0,0170	0,0936
Industrials	1	7,593	615	0,000	0,000	0,1020	0,0757	0,1284
	2	7,771	628	0,000	0,000	0,0939	0,0701	0,1176
	3	6,274	587	0,000	0,000	0,0799	0,0549	0,1049
	4	4,736	474	0,000	0,000	0,0687	0,0402	0,0972
Real Estate	1	-0,995	9	0,173	0,346	-0,0747	-0,2444	0,0951
	2	-0,130	3	0,452	0,905	-0,0204	-0,5190	0,4782
	3	-0,768	4	0,243	0,485	-0,0799	-0,3686	0,2088
	4	1,118	8	0,148	0,296	0,1619	-0,1720	0,4958
Technology	1	1,993	135	0,024	0,048	0,0690	0,0005	0,1375
	2	0,503	116	0,308	0,616	0,0161	-0,0472	0,0793
	3	1,504	114	0,068	0,135	0,0493	-0,0156	0,1142
	4	-2,106	152	0,018	0,037	-0,0685	-0,1327	-0,0042
Telecom	1	0,247	201	0,402	0,805	0,0058	-0,0401	0,0516
	2	-0,856	135	0,197	0,394	-0,0186	-0,0616	0,0244
	3	-1,912	118	0,029	0,058	-0,0468	-0,0952	0,0017
	4	-4,836	145	0,000	0,000	-0,1272	-0,1791	-0,0752
Utilities	1	2,611	166	0,005	0,010	0,0512	0,0125	0,0899
	2	3,779	142	0,000	0,000	0,0903	0,0431	0,1376
	3	3,629	144	0,000	0,000	0,0646	0,0294	0,0998
	4	-0,426	114	0,336	0,671	-0,0092	-0,0523	0,0338

Table 28: One-sample statistics for abnormal returns by Operative Accruals quartiles by Sector

One-Sample Statistics					
Sector	OPACC	N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	1	264	0,1443	0,3967	0,0244
	2	204	0,1027	0,3511	0,0246

	3	223	0,0790	0,3353	0,0225
	4	234	0,0307	0,3820	0,0250
Consumer Discr	1	574	0,0734	0,3530	0,0147
	2	520	0,0847	0,3055	0,0134
	3	452	0,0354	0,2950	0,0139
	4	454	0,0499	0,4092	0,0192
Consumer Staples	1	261	0,0793	0,2629	0,0163
	2	270	0,0602	0,2617	0,0159
	3	221	0,0373	0,2430	0,0163
	4	205	0,0658	0,2812	0,0196
Energy	1	123	0,0604	0,3200	0,0289
	2	128	0,0349	0,3440	0,0304
	3	138	0,0430	0,2911	0,0248
	4	157	-0,0090	0,4104	0,0328
Health Care	1	208	0,1054	0,4456	0,0309
	2	147	0,0478	0,2755	0,0227
	3	196	0,0558	0,2904	0,0207
	4	231	0,0553	0,2955	0,0194
Industrials	1	616	0,1020	0,3336	0,0134
	2	629	0,0939	0,3029	0,0121
	3	588	0,0799	0,3087	0,0127
	4	475	0,0687	0,3162	0,0145
Real Estate	1	10	-0,0747	0,2373	0,0750
	2	4	-0,0204	0,3133	0,1567
	3	5	-0,0799	0,2325	0,1040
	4	9	0,1619	0,4344	0,1448
Technology	1	136	0,0690	0,4038	0,0346
	2	117	0,0161	0,3456	0,0319
	3	115	0,0493	0,3515	0,0328
	4	153	-0,0685	0,4021	0,0325
Telecom	1	202	0,0058	0,3308	0,0233
	2	136	-0,0186	0,2536	0,0217
	3	119	-0,0468	0,2668	0,0245
	4	146	-0,1272	0,3177	0,0263
Utilities	1	167	0,0512	0,2535	0,0196
	2	143	0,0903	0,2858	0,0239
	3	145	0,0646	0,2145	0,0178
	4	115	-0,0092	0,2329	0,0217

Table 29: One-sample t-test for abnormal returns by Operative Accruals long-short position (1-4) by Sector

One-Sample Test

Sector		Test Value = 0						
		t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
				One-Sided p	Two-Sided p		Lower	Upper
Basic Materials	abn.ret 1-4	3,468	497	0,000	0,001	0,0620	0,0269	0,0972
Consumer Discr	abn.ret 1-4	1,583	1027	0,057	0,114	0,0189	-0,0045	0,0424
Consumer Staples	abn.ret 1-4	1,192	465	0,117	0,234	0,0155	-0,0100	0,0410
Energy	abn.ret 1-4	1,414	279	0,079	0,158	0,0316	-0,0124	0,0755
Health Care	abn.ret 1-4	1,145	438	0,127	0,253	0,0209	-0,0150	0,0567
Industrials	abn.ret 1-4	2,716	1090	0,003	0,007	0,0277	0,0077	0,0477
Real Estate	abn.ret 1-4	-1,497	18	0,076	0,152	-0,1160	-0,2787	0,0468
Technology	abn.ret 1-4	2,905	288	0,002	0,004	0,0687	0,0222	0,1153
Telecom	abn.ret 1-4	3,201	347	0,001	0,001	0,0567	0,0219	0,0915
Utilities	abn.ret 1-4	2,330	281	0,010	0,021	0,0341	0,0053	0,0629

Table 30: One-sample statistics for abnormal returns by Operative Accruals long-short position (1-4) by Sector

One-Sample Statistics					
Sector		N	Mean	Std. Deviation	Std. Error Mean
Basic Materials	abn.ret 1-4	498	0,0620	0,3992	0,0179
Consumer Discr	abn.ret 1-4	1028	0,0189	0,3836	0,0120
Consumer Staples	abn.ret 1-4	466	0,0155	0,2802	0,0130
Energy	abn.ret 1-4	280	0,0316	0,3736	0,0223
Health Care	abn.ret 1-4	439	0,0209	0,3823	0,0182
Industrials	abn.ret 1-4	1091	0,0277	0,3368	0,0102
Real Estate	abn.ret 1-4	19	-0,1160	0,3377	0,0775

Technology	abn.ret 1-4	289	0,0687	0,4022	0,0237
Telecom	abn.ret 1-4	348	0,0567	0,3304	0,0177
Utilities	abn.ret 1-4	282	0,0341	0,2457	0,0146

Table 31: Total Returns in Telecommunications Accrual Portfolio and the STOXX 600

Total Returns in Telecommunications Accrual Portfolio versus STOXX 600					
Year	TELECOM LTACC 1-4	TELECOM OPACC 1-4	TELECOM NCOAACC 1-4	TELECOM STOXX 600	STOX X 600
1999	100	100	100	100	100
2000	123,83	125,96	117,45	53,11	95,59
2001	183,74	197,23	174,27	25,96	83,48
2002	175,38	185,26	163,31	20,89	57,91
2003	213,08	244,67	213,94	27,76	73,33
2004	216,08	253,82	213,63	28,69	80,72
2005	231,92	257,04	224,80	34,81	109,80
2006	240,48	282,56	228,15	41,47	129,36
2007	247,86	292,97	231,17	37,68	113,34
2008	221,20	251,69	203,98	28,10	71,93
2009	278,92	291,10	255,66	37,73	96,85
2010	315,70	329,34	295,14	43,66	109,22
2011	307,59	307,59	292,02	38,22	103,01
2012	309,61	299,31	301,06	42,52	123,96
2013	404,80	415,40	411,93	56,31	145,17
2014	413,03	389,97	393,10	67,71	175,05
2015	449,77	415,09	441,78	59,86	156,55
2016	437,74	396,27	445,42	63,22	184,85
2017	477,24	426,98	498,25	61,43	190,01
2018	538,80	476,67	558,62	63,27	197,52
2019	438,59	392,28	542,56	63,24	176,81
2020	413,90	387,69	547,43	74,68	236,75

Table 32: Seasonal strength timeline of main sectors from Equity Clock

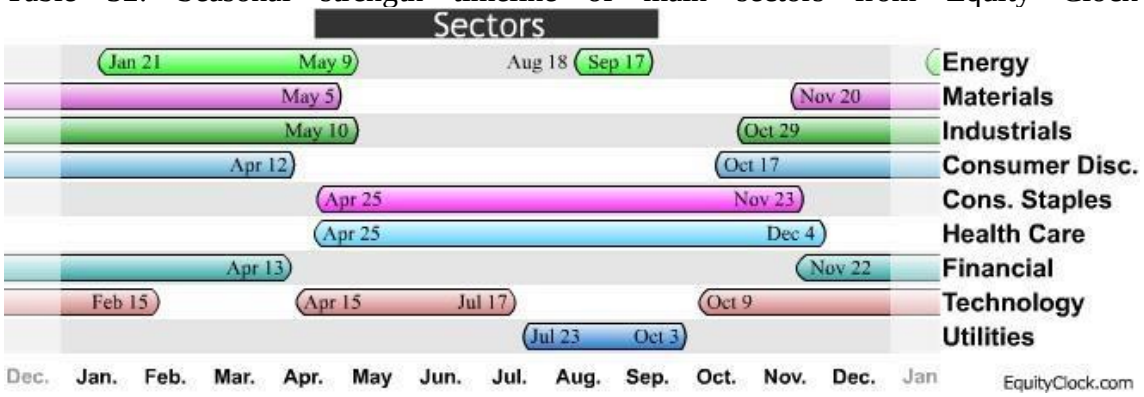

Table 33: Total Returns in Technology Accrual Portfolio and the STOXX 600

Total Returns in Technology Accrual Portfolio versus STOXX 600				
	TECHNOLOGY OPACC 1-4	TECHNOLOGY NCOAACC 1-4	TECHNOLOGY STOXX 600	STOX X 600
1999	100	100	100	100
2000	127,76	125,92	56,15	95,59
2001	172,40	161,46	32,06	83,48
2002	200,53	155,26	15,29	57,91
2003	259,14	197,83	21,52	73,33
2004	246,53	180,24	18,83	80,72
2005	293,85	210,44	24,02	109,80
2006	344,31	250,12	26,29	129,36
2007	337,73	238,36	20,78	113,34
2008	261,81	222,21	14,06	71,93
2009	427,88	355,45	22,89	96,85
2010	461,88	404,66	26,99	109,22
2011	438,92	351,01	25,90	103,01
2012	465,52	390,58	32,14	123,96
2013	538,83	446,98	37,72	145,17
2014	527,32	420,03	48,26	175,05
2015	542,86	425,87	45,76	156,55
2016	373,09	339,59	65,02	184,85
2017	359,95	290,85	66,69	190,01
2018	371,65	300,93	72,54	197,52
2019	427,09	297,32	79,48	176,81
2020	466,40	291,87	113,49	236,75