FTS Real Time Project Web Based Instructions: The Accruals Anomaly (Advanced)

In this project, your objective is to develop and apply your financial reporting skills to a real-world trading problem. The basic task requires working with the "accruals anomaly" first identified by Sloan (1996). The anomaly is described below, but basically says that companies that have low "non-cash" earnings significantly outperform companies that do not. The implied investment strategy is to buy companies whose earnings are mostly cash income and to go short others.

An interesting underlying theme for this project is whether the accruals anomaly arises from some market inefficiency (e.g., investors are unable to evaluate the impact of excessive accruals upon future earnings) versus whether it arises from its impact upon real economic decision making (i.e., reliance upon excessive accruals is associated with weaker investment decision making)? As a result, both Balance Sheet and Income/Cash Flow measures of accruals are provided in this project.

The project is designed around the FTS 500 Stock case and the cloud version of FTS Real Time Client (RTFTS). That is, being browser based you can complete the project using your laptop, smartphone or iPad.

You will do the following:

- Stock selection: Identify two subsets of stocks, Set A and Set B, such that: based on the accruals anomaly, Set A is predicted to have strong fundamentals relative to Set B and these stronger fundamentals are underpriced in the market relative to Set B.
- Portfolio construction: You will then construct a market neutral position using RTFTS by going long Set A and short Set B. You can use the "long-short" analytic of RTFTS to make your portfolio market-neutral.
- Portfolio Management: In this project, the goal is to see how the stocks in the different sets performed, so once the position is established, you should hold it until the end.
- Performance Analysis: You will compare the performance of the two sets of stocks as well as the overall portfolio, when drawing conclusions about the accruals anomaly.

RTFTS provides a measurement of your performance along several dimensions in terms of the absolute performance generated from being simultaneously long and short.

Depending upon time allocated to this project by your instructor you may have to provide a small team presentation. This presentation should combine both the qualitative (e.g., your strategy), the predicted and realized performance, what worked what didn't and recommendations for the future.

In completing this project, you will work with real world data and gain experience with the many judgment calls that need to made when working with the accruals anomaly. The FTS tools required to complete this project are designed to develop your real world problem solving skills by working on the problem in small teams.

Background Information

Overview

The "accruals anomaly" was first identified by Sloan (1996). It is unusual for accounting to make the cover story of Business Week, however October 2004 this happened and it was observed that:

"*[I]nvestors are clamoring to exploit this market inefficiency. "They seem in a bit of a frenzy about it," says Sloan. ... But as more people catch on, this trading opportunity should diminish. How long it lasts depends on the ability and determination of investors to review earnings estimates skeptically. ... More portfolio managers are using sophisticated screening to identify companies that make aggressive estimates. ... Goldman Sachs Asset Management, BG1, Citadel, Starmine, and Susquehanna Financial Group, among many others, are employing versions of the Sloan-Richardson models to guide their investments. Strategists at brokerages, including Sanford C. Bernstein Research, CSFB, and UBS have built model portfolios using similar techniques."*

The anomaly exploits information that results from decomposing accounting income into cash income and accruals. In this project your task is to apply various forms of the decomposition and identify two sets of stocks, from the set of stocks in the FTS 500 Case, Set A and Set B, such that Set A:

I. Set A, given the accruals anomaly has stronger predicted fundamentals relative to Set B, and II. The stronger predicted fundamentals are underpriced in the market relative to Set B.

For part I, you should decompose accounting income into two components, cash income and accruals. Cash income is predicted to have greater persistence than accruals. Accounting accruals arise from the application of the accounting matching principle which attempts to match "efforts" to "performance" when measuring accounting income. For an obvious example consider selling commissions that have not been paid for sales made on account. Under the accounting matching principle cash sales, sales on account, paid and unpaid commissions are all recognized when measuring income, whereas cash income only recognizes cash sales and cash commissions when measuring cash income. However, this principle extends to other situations that have less obvious cause and effect relationships such as accelerated depreciation and expense recognition based upon managerial judgments and income smoothing. That is, the accounting rules are such that many accruals have a tendency to revert over time especially whenever accruals result in the smoothing of income.

Insights such as above have resulted in extensive empirical testing of the hypothesis that the cash income component of accounting income has greater persistence than the accrual component of accounting income. These empirical tests have:

i. tested the hypothesized fundamental relationships hold (e.g., equations (8) and (10) below), and
ii. market returns are consistent with observed fundamental relationships (i.e., (8) and (9) are consistent and (10) and (11) are consistent) in the formal description below:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + \upsilon_{t+1} \quad (8)$$

$$(r_{t+1} - \hat{r}_{t+1} | \phi_t) = \beta(Earnings_{t+1} - \alpha_0 - \alpha_1^* Earnings_t) + \varepsilon_{t+1}. \quad (9)$$

Market efficiency imposes the constraint that $a_1 = a_1^*$. This nonlinear constraint requires that stock prices correctly anticipate the average persistence of earnings performance.

Combining the expanded earnings forecasting model in equation (5) with equation (7) gives:

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 Cash\ flows_t + \upsilon_{t+1}, \quad (10)$$

$$(r_{t+1} - \hat{r}_{t+1} | \phi_t) = \beta(Earnings_{t+1} - \gamma_0 - \gamma_1^* Accruals_t - \gamma_2^* Cash\ flows_t) + \varepsilon_{t+1}. \quad (11)$$

Reference: Sloan 1996

The above allows this important anomaly to be identified and described as follows. First, empirical evidence supports that in aggregate the market gets it right. That is, equations (8) and (9) are consistent with each other. Second, the evidence suggests that the market fails to decompose earnings into its two important components (i.e., (10) and (11) are inconsistent with each other. The anomaly is that the market overweight's the importance of accruals and underweights the importance of cash income.

In other words, buying stocks with earnings dominated by cash flows from operating activities and selling stocks with earnings dominated by accruals has resulted in past excess returns. Your task is to see whether this anomaly persists for the duration of this project!

Estimating Accruals

The cloud (i.e., web based) version of FTS Real Time provides complete support for the accruals project. But first some background theory!

Important Accrual Concepts

Earnings

Quality

Financial Reporting Quality is an area that has attracted both academic and practitioner attention. The quality of financial reports affects both the accuracy of the financial statements as well as how relevant they are for predicting future cash flows. This has led to a large body of research that attempts to understand accrual accounting and its impact upon financial reporting quality.

Accrual versus Cash Income

Accrual income differs from cash income by carefully accounting for expenses incurred but not yet paid for and expenses paid for but not yet realized. For example, an expense paid for but not yet realized is prepaid insurance. This covers a future accounting period and similarly future depreciation expense represents the cost of future services from plant property and equipment that has already been acquired. Examples of expenses incurred but not yet paid for arise from invoices that come into the business *after* the accounting period has ended. This is a common event in practice. On the revenue recognition side accrual income will deviate from cash income on the basis of whether or not the revenue is recognized

in the current period. These cases arise when the goods or services provided have been paid for but not yet provided. Under accrual accounting this creates liability items (i.e., credits) on the balance sheet referred to as unearned revenue that can be both current and noncurrent.

Accounting resolves these differences between accrual and cash income by applying the matching principle. That is, accrual income attempts to match expenses to revenue per period irrespective of the timing of cash inflows and outflows. Cash accounting on the other hand matches cash inflows and outflows to the period. Accounting for these real economic differences in practice require managerial judgment and the accounting standards provide flexibility to allow for managerial judgment. As a result, both income measures are subject to being managed over time but accrual accounting provides management with greater flexibility for managing earnings. Financial Reporting Quality attempts to assess the degree to which management is relying upon accruals to meet earnings target. Earnings' are judged to be of higher quality the lower the dependence upon accruals. It is important to note that the use of accruals does not imply that earnings are being manipulated or that earnings management is bad, instead what is important is that the impact upon income from the use of accruals, tend to *reverse* over time whereas cash income tends to *persist* over time. As a result, earnings are judged to be more persistent the higher the quality of earnings is judged to be.

The reversal of accruals results from the matching principle and historical cost accounting. For example, if a firm chooses straight line over accelerated depreciation for their plant, property and equipment

then current income is higher than later income under straight line depreciation compared to an accelerated depreciation method. The hypothesized difference between cash flows and accruals, in terms of a sustainable earnings impact, is supported empirically. For example, a higher proportion of accruals relative to cash earnings is associated with lower earnings performance in the subsequent period (Sloan 1996). As a result, the question facing outside analysts is:

To what degree is the flexibility provided by accrual accounting being applied?

In the Earnings' Quality branch there are two calculators. These ratios are designed to provide an analyst with insight into earnings quality.

Important Note: There are two main approaches to estimating accruals. The first is a balance sheet approach and the second is an income statement/cash flow approach. From a trading perspective there is a subtle difference between these two approaches. The second assumes (as did Sloan) that the market is inefficient with respect to interpreting the impact of accruals upon a firm's future earnings. The Balance Sheet approach lets you test whether the inefficiency is driven by the impact of using accruals upon management's current and future investment decisions. That is, the use of accruals can have a real impact upon investment decisions.

In this project each team is encouraged to consider both approaches when formulating your investment strategies.

Quality of Earnings (Balance Sheet)

The scaling variable under the balance sheet measure is referred to as Net Operating Assets. This term is the difference between operating assets and liabilities and it is constructed to meet several needs. First, operating assets subtracts out cash and near cash in a consistent manner with the subtraction of cash earnings from Aggregate Accruals. Second, in the liabilities part financing decision effects are subtracted. Thus, Net Operating Assets sharpens the measurement of the impact of accounting accruals upon the numbers resulting from the investment decision.

Operationally these are defined relative to two successive Consolidated Balance Sheets as follows:

NOA(t) = Net Operating Assets (t) = (Total Assets(t) – Cash & Near Cash(t)) – (Total Liabilities(t) – Total Debt(t)) Average Net Operating Assets = (NOA(t) + NOA(t-1))/2

Net Operating Assets at time t is the difference between operating assets and operating liabilities after eliminating accounts that are not subject to accounting accrual measurements.

The quality of earnings using the balance sheet approach is now defined as:

Balance Sheet Accruals Ratio (t) = ((Net Operating Assets (t) - Net Operating Assets (t-1)) / Average Net Operating Assets (t, t-1)

That is, both the numerator and the denominator of the measure of accruals come entirely from the balance sheet. An increase in the Balance Sheet Accruals ratio implies greater use of accruals.

Quality of Earnings (Cash Flow)

The Aggregate Accruals (AA) can be defined from the Consolidated Statement of Cash Flows as follows:

Aggregate Accruals(t) = Net Income(t) – (Cash Flows from Operating Activities(t) + Cash Flows from Investing Activities(t))

Cash Flow Accruals Ratio (t) = Aggregate Accruals (t) / Average Net Operating Assets (t, t-1)

The above measure differs from the balance sheet measure in terms of the numerator which measures aggregate accruals from the cash flow statement. This measure raises the question – why include Cash Flow from Investing Activities in the numerator?

The answer to this question depends upon whether or not future operations are included in the measure. That is, by including cash flow from investing activities includes cash capital expenditures that support *future operating activities* with current cash operating activities but excludes investments that are financed via a stock or debt issue. As noted earlier cash income is predicted to persist and accruals are predicted to reverse, the inclusion of investing activities and its relation to future operating activities is designed to reinforce this property.

Quality of Earnings (Cash Flow) Scaled by Net Income

Percent Operating Accruals = (Net Income – Cash from Operations)/Net Income

This relates the non-cash earnings to earnings to provide what is argued to be a more sensitive measure of the relative importance of earnings management.

A variation for assessing earnings quality that drops cash flows from investing activities is also provided in the calculator. In this variation the focus is purely on cash flow from operations and the scaling variable is changed to Net Income in an attempt to increase the sensitivity of the measure of the impact from accruals upon Income.

Free Cash Flow Statement Approach

Another popular approach today exploits information in the cash flow statement and the concept of Free Cash Flow:

Earnings Quality = (Net Income (NI) – Free Cash Flow (FCF))/Total Assets

It is assumed that if Free Cash Flows are higher than net income then this is a signal of positive earnings quality.

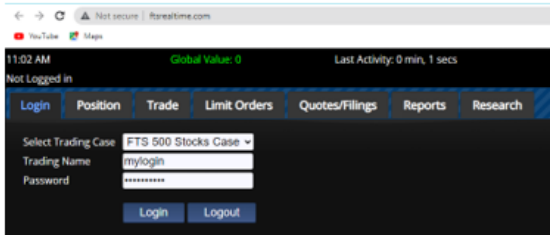
The support screen below provides the relevant support for each of the above measures.

Application of the Concepts Using RTFTS Support

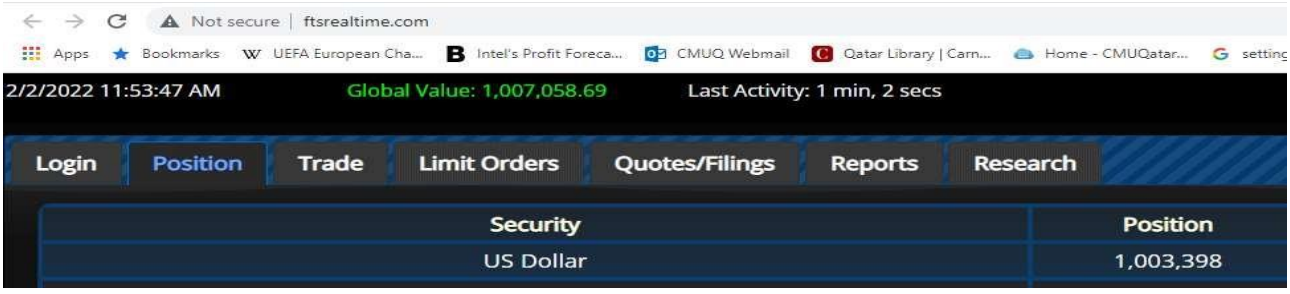
Step 1: Launch the cloud version of FTS Real time and log into your trading case/position. The following illustrates this for the FTS30 case but it is not restricted to this case.

Go to www.ftsrealtime.com, or if your browser does not support this then go to www.rtfts.com

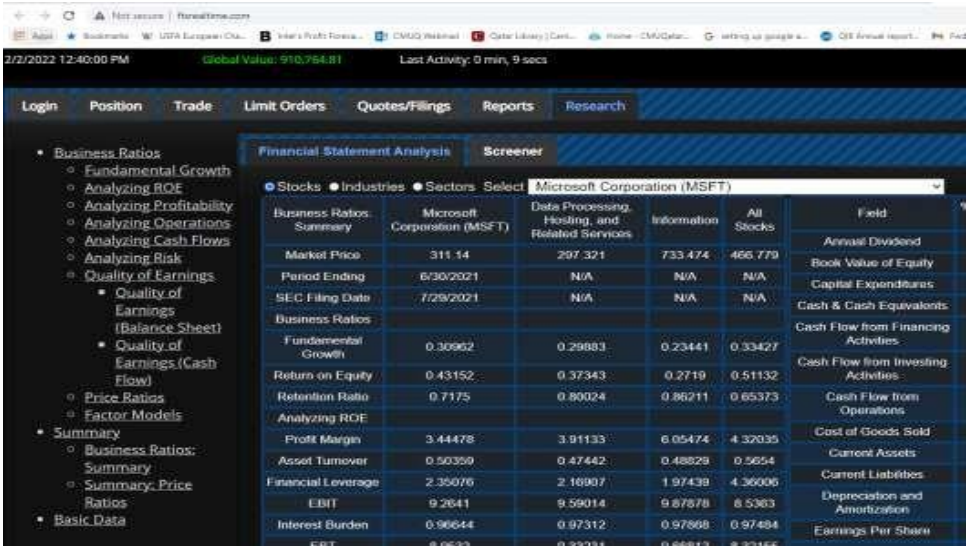
Login to your trading case (for illustrative purposes the FTS500 case is used below):



Step 2: Next get to the earnings quality accrual data by clicking on the menu item Research:



This takes you to the support screen – lets select Microsoft:



You can then immediately get the current earnings quality data by selecting "Business Ratios: Summary" (see LHS of the screen above) Step 3:

Scroll down and you will see the three basic earnings quality ratios summarized for Microsoft along with a bunch of additional important information:

The summary of earnings' quality ratios are provided by scrolling down to near the bottom:

Interpretation:

The basic idea is that the more a company relies upon accruals to increase their net income the lower is the quality of their earnings. As a result, negative accruals are preferred to positive accruals from an earnings quality perspective.

Microsoft traditionally has high quality earnings and in the above you can see that the numbers are negative and more negative than the average provided in the last column.

Back to the Project!

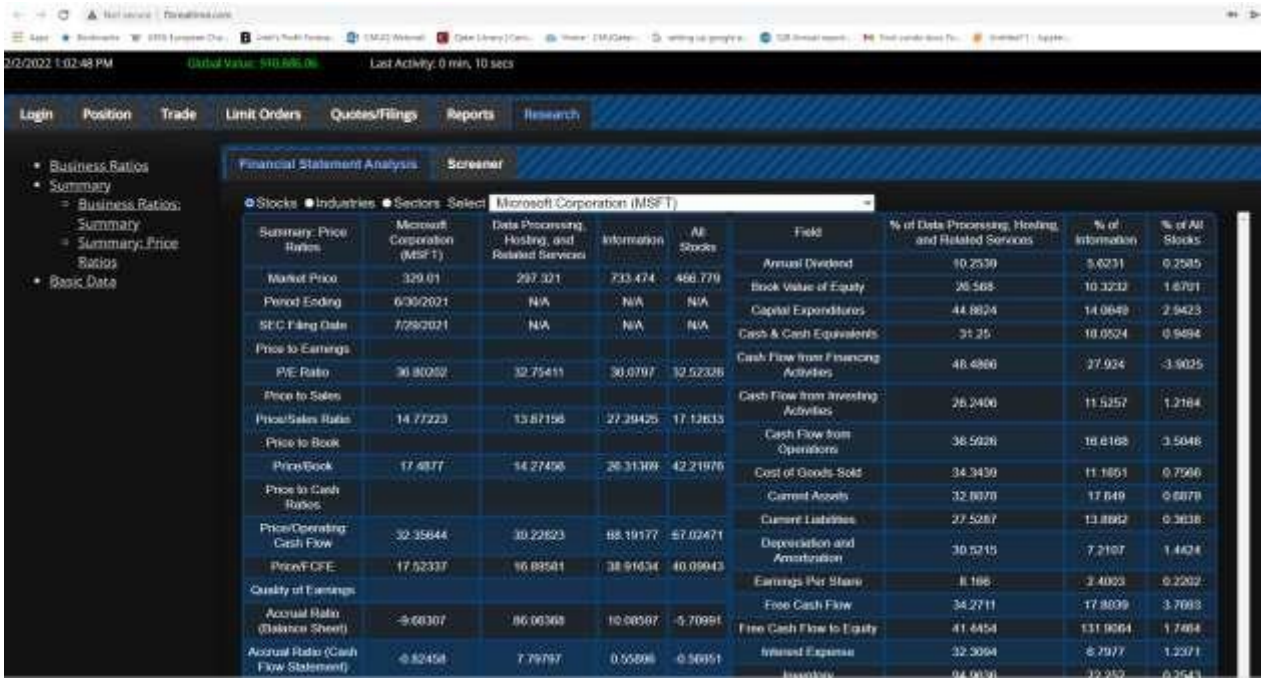
Team Task I

Your task is to analyze a larger set of stocks than you plan to use and assess an approximate ranking for how much their financial statements reflect using accruals. That is, are accruals over-used (i.e., accrual ratios are strictly positive) to under-used.(accrual ratios are strictly negative.

Team Task II

Given you have ranked accrual use in team task I your team's second task is to assess whether the accruals are relatively over or under priced given the spot stock price. Here your goal is to identify whether price ratios tend to be relatively high or low.

You can also immediately access the price ratios by selecting Summary Price Ratios above:



To answer these types of questions you can examine the price ratios. Here the traditional measures are Price to Earnings Ratio (PE) and Price to Earnings to Growth (PEG) ratios. The latter is important because current market prices reflect the consensus analyst growth forecasts (e.g., 5-year consensus analyst forecast) and dividing by growth provides a control for this. In this project you can extend the basic PEG ratio to your cash flow and accrual measures to assess whether you think the market is currently over- or under-valuing these parameters when forming the two portfolios.

Finally, once you have identified your two sets of stocks and their rankings then form a long/short position from a subset of stocks such that you have at least 5 stocks in each position (i.e., 5-long and 5short).

Implementation Phase: Portfolio Construction

In this phase you will implement your positions using RTFTS. Each team will go long/short their selections. This forms a market neutral position that is predicted to exploit your analysis of accruals. All positions are marked-to-market every day and your relative performance compared to the other teams in this class is available in real time. You will have one million dollars to work with and be

careful to note that when selling short you do not get use of the all of the proceeds from a short sale. You should practice working with long and short positions in your personal trading accounts before working with the team account. Once positions are set it is not recommended that you engage in day-to-day adjustments but if you do you should document this in your final report.

Grading (Suggested only or as announced by your Professor)

You will be graded in terms of both actual performance and the quality of your team's analysis that is written up in the report. The final project grade will be broken up into 30% for relative performance and 70% for project quality. Relative performance will be evaluated in terms of absolute performance as well as specific performance over the set of days the market went up and down respectively. Project quality is assessed in terms of both the form of your write-up and presentation, as well as its content. In terms of the 70% allocated to project quality the breakdown between form and content is 30% (i.e., .3*.7 = 0.21) for form and 70% for content (.7*.7 = 0.49).

Report Requirement:

Main body should not exceed 7-pages including the Executive Summary. You can add additional material to appendices if you want.

Page 1: Executive Summary --- this should be a self-contained summary of the bottom-line findings in your report. Well over 90% of users in business never read past the executive summary so you should write up an executive summary carefully.

Pages 2-7: The main body of your report. You can organize this in any logical way. That is, it should present clearly your objectives, how you evaluated and selected your two sets of stocks in terms of strong versus weak financials, relative pricing analysis and the results from the investing phase. You should use a combination of text and graphics in your report to communicate this information. Finally, your report should include a summary of the bottom-line results and concluding comments in terms of what you learned including what you would change if you were doing this again.

For additional details you can use appendices. For example, support numbers for a chart or an assertion in the main body can be provided in the appendix. These numbers should be selected summary support numbers --- that is *we do not want* every financial statement in the appendix.

Summary of Important Events

1. Form teams
2. Planning Phase: Screening and analysis of your subset of stocks, planning of long/short position.
3. Implementation Phase
4. Implementation phase ends
5. Analysis phase
6. Team Presentations