THE IMPLICATIONS OF US NON-GAAP REPORTING ON STOCK PRICING

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Abstract

The United States stock markets hold critical investments for shareholders. Half of U.S. households keep investments such as essential personal savings, retirement pensions, and employee compensations in the stock markets (NW et al., 2020). The Securities and Exchange Commission ("SEC") enforces market regulation dictating that these investors must have access to quality information, e.g., reputable corporate earnings information (*How the SEC Protects Investors, Maintains Market Integrity*, 2000). SEC laws require corporations to publish financial information according to Generally Accepted Accounting Principles ("GAAP"). However, the SEC also allows corporations to publish elective "non-GAAP" earnings numbers each quarter to investors. Because of its discretionary nature, company management can use Non-GAAP reporting to mislead investors. The differences between non-GAAP earnings over GAAP earnings are known as expense exclusions, which management can manipulate to fictitiously increase firm value. Based on research indicating the unreliability of non-GAAP earnings, investors should discount their estimation of future company earnings when expense exclusions are high. However, contrary to my hypothesis, the correlation direction between expense exclusions and stock prices changes with the direction of the stock price change. Investors trust expense exclusions when their perception of the company's well-being is good, but discount expense exclusions when the opposite is true. Therefore, I conclude that investors are not receiving enough quality information for fair decision-making, so policies need to be altered to give them a more transparent market. This paper seeks to further contribute to research regarding investor evaluation of non-GAAP data.

Introduction

The US Stock market is worth nearly half of the world's stock market capitalization, estimated at up to $37 Trillion as of the end of 2019 (Raul Amoros, 2018; Surz, 2018; *Total Market Value of U.S. Stock Market*, 2020). Furthermore, the combined US stock market has grown 186% over the past decade, compared to the average growth rate for all other stock markets at 50% (Daily, 2019). It is no wonder that the size and growth rate has attracted investors to the US stock market from more than half of US households in 2020 and many more worldwide (NW et al., 2020). These investors have very essential savings like employee compensation, life savings, estate trusts, and retirement plans in the US market.

The Securities and Exchange Commission ("SEC") in the US is tasked with ensuring that investors are given enough accurate information about corporations to make informed investment decisions. This is an enormous responsibility and requires reading the room—knowing what investors need to see from corporations. If investors make informed decisions, the efficiency of the US stock market is upheld. However, when investors make poor decisions due to poor information, markets become inefficient. For example, inaccurate information regarding the credibility of mortgage-backed securities contributed to the stock market crash of 30% during the financial crisis in 2008 (Kosakowski, 2020). Investors in these instruments relied on faulty credit ratings and poor information. It is a current focus of the SEC to ensure investors are provided sufficient and high-quality information about corporations (*How the SEC Protects Investors, Maintains Market Integrity*, 2000) in order to price corporate stocks correctly.

In total there are about 30,000 publicly listed corporations in the world, 5,000 of them being from the US (Surz, 2018). These US corporations are, in general, large and highly priced (Surz, 2018). Therefore, the mispricing of even one large US corporation can have a huge effect on the economy as a whole.

One aspect of great importance to investor decisions is earnings announcements. Each quarter, the SEC requires corporations to report their earnings to the public. Based on historical predictions, the public can then gauge whether the company has met or missed earnings expectations, which then allows them to decide whether the company is worth investment for the future. Because these decisions affect stock prices, stock volatility is high during earnings announcement dates (Bittman, 2013). The way that a company reports their earnings can have a significant impact on how investors price stock, therefore regulations from the SEC are strict. However, there is a major exception to this rule.

This exception is non-GAAP reporting. Non-GAAP reporting is a way of reporting quarterly financial earnings that allows US corporations to publish earnings numbers without conforming to some of the strict requirements of the United States' Generally Accepted Accounting Principles ("GAAP"). This means that management can strip out income or expenses from their GAAP net income that they believe skew their results, like one-time accounting adjustments, in order to give their shareholders a better picture of their general operations. However, because companies report non-GAAP earnings differently each quarter, there is a general lack of comparability across companies and across time periods. Furthermore, management has full discretion as to which amounts are excluded.

A major problem with non-GAAP reporting is when management is able to 'manage' their earnings to purposefully meet or beat analyst estimates, which will not accurately or fairly reflect their true financial position for investors (Hsu et al., 2019, p 13-14). Presenting higher non-GAAP earnings is a cheap way to manage earnings compared to other methods like accrual earnings management, real earnings management, or forecast guidance (Doyle et al., 2013, p. 41; Lopez et al., 2019, p. 28-29). There are many incentives to manage earnings ranging from management's non-GAAP-based or stock-based compensation, to presenting acceptable results for acquisition. David Trainer from Forbes explains,

> "Unfortunately, companies led by executives looking to maximize their pay are not motivated to give investors a more accurate picture of their business. They want to give investors the most favorable picture, and non-GAAP has become a handy tool to achieve that goal" (Trainer, 2016).

Along with the issues that non-GAAP reporting presents, it has also grown in popularity among corporations. Audit Analytics reported that "97% of S&P 500 companies used non-GAAP financials in 2017", compared to 59% of the same companies in 1996 (Bernstein et al., 2019). Furthermore, CFO.com reported that not only is non-GAAP usage increasing, but the use of non-GAAP to manage earnings has increased (Bernstein et al., 2019). They report,

> "The rising use of opportunistic non-GAAP numbers has coincided with a doubling over the last 17 years of the percentage of companies (25%) reporting dramatic upside earnings surprises, even though according to GAAP the percentage of major earnings surprises has remained stagnant" (Bernstein et al., 2019).

Investors rely heavily on non-GAAP reporting as a key tool for making important investment decisions. Financial analysts depend on non-GAAP releases to create estimates for the following quarter, and the press focus on announcing non-GAAP measurements and whether companies

beat or lag behind estimates. Non-GAAP earnings are the first numbers that investors focus on after corporate earnings announcements. Many websites, including CNBC and Yahoo, only present non-GAAP earnings on their webpages (Keulen, 2015). The access to regulated information, i.e. GAAP numbers, is an issue the SEC aimed to address by releasing Regulation G ('Reg G'). Reg G, established in 2002 with further guidance published in 2003, 2010, and 2017, requires companies to disclose GAAP earnings alongside non-GAAP metrics (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). Companies must not only release GAAP numbers in their earnings releases but must also create a reconciliation between the two earnings numbers so that investors understand what the differences are. These differences are known as 'expense exclusions' because non-GAAP reporting often excludes expenses that are required in GAAP reporting, such as: one-time special fees, amortization of acquired intellectual property, investment losses unrelated to the core business, or stock-based employee compensation (Keulen, 2015; Theresa F. Henry et al., 2017).

Examples of some of the most popular non-GAAP expense exclusions are non-cash activities. Benjamin Whipple from the University of Georgia found that 22% of non-GAAP exclusions relate to employee stock-based compensation and 21% to amortization of intangible assets (Whipple, 2015, p. 3). These popular exclusions are used so often, year-over-year, that they are considered a recurring exclusion (Whipple, 2015, p. 3). In an article in Seeking Alpha, author Pim Keulen points out that Twitter excluded stock-based compensation from their non-GAAP earnings in 2015 and then tried to misguide investors by asking "Why would you care anyway?" (Keulen, 2015). In actuality, stock-based compensation dilutes investor-held shares and can also

contribute to shortages in cash, which are very relevant consequences for forward-looking investors (Keulen, 2015).

How firms decide to use expense exclusions is entirely up to management discretion, although audit firms like PwC have recommended that the board of directors should review non-GAAP measures for higher quality results (PricewaterhouseCoopers, 2019). However, the lack of regulation and the fact that investors rely heavily on non-GAAP measures indicate that expense exclusions are a tool used to the advantage of management and to the potential detriment to quality reporting for investors.

Excluding one or more expenses from non-GAAP reporting can be a way for a corporation to meet investor earnings expectations. Because it is difficult for outside analysts to estimate the amount of expense exclusions a company will present, companies can easily bump their earnings to just the right level (Maurer, 2019). This affects the stock price after earnings announcements because investors may believe that a company is more valuable in the future if their earnings this quarter beat out expectations.

The authors of the research paper, "Are Investors Misled by non-GAAP Expense Exclusions Used to Beat Analysts' Earnings Forecasts?" define firms that use non-GAAP expense exclusions to make earnings targets 'opportunistic' (Lopez et al., 2019, p. 3). They identify these firms as those that miss their GAAP projected estimates, but are able to make their non-GAAP projections (i.e. through expense exclusions) (Lopez et al., 2019, p. 3). Lopez et al. present strong evidence that opportunistic firms end up worse off in the future compared to firms that

make both targets (based on measurements of future return on assets, return on equity, earnings per share, and loss frequency) (Lopez et al., 2019, p. 17). Lopez et al. argue that these opportunistic firms use expense exclusions to manipulate earnings to meet or beat non-GAAP estimates, yet actually have similar future results to companies that meet *neither* targets (Lopez et al., 2019, p. 23). Furthermore, these authors present evidence that investors overvalue opportunistic firms by appraising at face value the success of beating non-GAAP goals without fully discounting the reliability of non-GAAP numbers (Lopez et al., 2019, p. 25).

To further their research, I test how investors react to the amount of expense exclusions companies report as an indicator of potentially unreliable non-GAAP earnings. My literature review suggests that investors should be wary of high expense exclusions because of the capability for companies to use them to cheat their earnings goals. I test this hypothesis on a subset of U.S. Russell 4,000 corporations over 10 years. My results indicate that a higher amount of expense exclusions is an indicator for opportunistic firms and for poorer future performance compared to lower expense exclusions. I then find that investors are not discounting the amount of expense exclusions, echoing Lopez et al.'s results. Instead, the amount of expense exclusions in an earnings announcement contributes to higher volatility in stock price fluctuations. When a stock price rises after an earnings announcement, the presence of more expense exclusions further raises stock price. When stock prices fall, a higher amount of expense exclusions contributes to lower stock prices.

Therefore, my research contributes to the argument that investors can still be fooled by opportunistic non-GAAP reporting because they are not discounting expense exclusions

consistently. They are only discounting higher expense exclusions when a company's stock is already falling. Further transparency on company earnings should be required in order to prevent investor mispricing of corporate stock.

The following paper is organized into a Literature Review, Methodology of my data analysis, Data Analysis, Results of my analyses, and finally, Conclusions, Limitations, and Policy Implications.

I. Literature Review and Background

Non-GAAP reporting is an elective way for public companies to report their income. They can exclude certain revenues and expenses that would otherwise be required to be reported under GAAP (U.S. Generally Accepted Accounting Principles). It allows management more control over what earnings they are presenting to investors and the public. Financial forecasters, analysts, and investors all depend on non-GAAP reporting (Bernstein et al., 2019), therefore it is tied closely to company valuation i.e., stock price. If non-GAAP reporting is less accurate than analysts believe, then the efficiency of stock markets can be called into question.

Non-GAAP measures can aid investor decisions by signaling "the relative importance of earnings components that managers choose to include, versus exclude, in calculating non-GAAP earnings" (Gu and Chen, 2004; Hsu and Kross, 2011 cited Hsu et al., 2019, p.1). Furthermore, "investors find these alternative performance metrics to be more informative than GAAP earnings" (e.g., Bradshaw and Sloan, 2002; Bradshaw et al., 2018 cited Hsu et al., 2019, p.1). Non-GAAP reporting can present more insight into the company in order to "aid in valuation" and also can "increase comparability of earnings metrics across firms" (Brown and Sivakumar, 2003; Gu and Chen, 2004; Black et al., 2018a cited Hsu et al., 2019, p.2).

However, non-GAAP reporting can also be used to

> "Refocus investors' attention away from the negative aspects of firm performance. Moreover, prior research finds that managers can use non-GAAP earnings as a substitute for other forms of earnings management" (Doyle et al., 2013; Black et al., 2017 cited Hsu et al., 2019, p.1).

Hsu, Wang, and Whipple find that when companies reported non-GAAP earnings more frequently, the probability of their stock price crashing within the next year increases (Hsu et al., 2019, p. 19). They explain that the stock declines because the company is being overvalued in the present and subsequently endures an adjustment in the future (Hsu et al., 2019).

Even more interesting is that the positive relationship between non-GAAP and stock price crashes only exists when non-GAAP income exceeded GAAP income (i.e., when expense exclusions were present) (Hsu et al., 2019, p. 20). When non-GAAP income is higher, it allows companies to overvalue their earnings compared to GAAP. Furthermore, Hsu, Wang, and Whipple show that a stock price crash is more likely when "non-GAAP earnings more frequently allow firms to report a positive earnings surprise" (Hsu et al., 2019, p.4). This indicates that stock price crashes happen more often when firms use expense exclusions to make or beat earnings estimates. These stock price crashes, the authors believe, are due to misinformation about negative news, meaning that investors are over-valuing firms (Hsu et al., 2019, p.6). The stock price drops when the market corrects itself. These crashes hurt investors who buy company stock for future investment based on flawed non-GAAP information (Hsu et al., 2019, p.2).

Hsu, Wang, and Whipple also look into the incentives for earnings management through non-GAAP reporting. They indentify these incentives as when management compensation is tied to stock price changes and when management is likely to engage in insider sales (Hsu et al., 2019, p.24). Again they find a stronger relationship with stock price crashes when these two scenarios are tested (Hsu et al., 2019, p.24-25). Lastly, they find that these stock price crashes are not

merely short-term corrections, but rather have long-term negative effects for investors (Hsu et al., 2019, p. 1).

Lopez et al. also show that companies using non-GAAP earnings opportunistically suffer in the future (Lopez et al., 2019, p. 4). For company earnings from 2003-2013, those that only beat non-GAAP earnings estimates ('opportunistic' firms) do worse long-term than companies that are able to beat both GAAP and non-GAAP earnings estimates (Lopez et al., 2019, p. 4). The authors explain that these opportunistic companies are pursuing a strategy of non-GAAP reporting to avoid market penalties of missing expectations (Lopez et al., 2019, p. 4). Shockingly, these companies are rewarded for this behavior by investors (Lopez et al., 2019, p. 4). This leads Lopez et al to believe that non-GAAP reporting is being used to deceive investors (Lopez et al., 2019). From Lopez et al 2019: "our evidence suggests that firms using non-GAAP exclusions to beat analysts' forecasts are priced more like other beat firms [firms that beat targets] even though their operating performance is more consistent with miss firms" (Lopez et al., 2019, p. 28). Their research reveals that investors do not discount the stock price of companies that use expense exclusions to hit targets.

The popularity of using non-GAAP reporting has been increasing since the 1990s, even after Regulation G in 2002. According to Fortune Magazine in 2020, "the proportion of S&P 500 companies that reported non-GAAP metrics in 8-K or 10-K regulatory filings climbed from 59% in 1996, to 76% in 2006, to 96% in 2016." (McCann 2018). Furthermore, most of these companies have a higher amount of non-GAAP earnings to GAAP earnings. See below a graph

from Investopedia showing that most Dow Jones Industrial Average companies present higher non-GAAP earnings than GAAP.

Figure 1 Dow Jones Industrial Average Non-GAAP Reporting

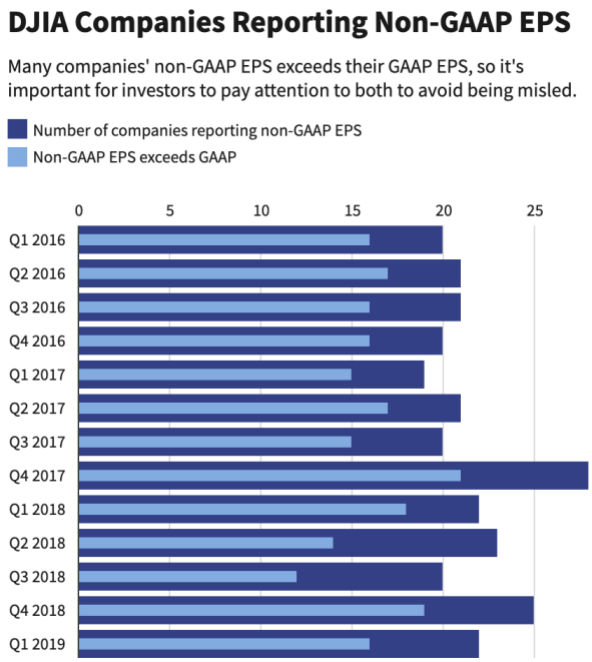


Chart Source: (Tuovila, 2020) Data Source: Factset

Non-GAAP earnings exceed GAAP earnings oftentimes because companies are excluding expenses, but not excluding related income. Author Trainer from Forbes magazine warns,

> "Companies regularly exclude these costs, but they rarely excluded non-operating income. You won't see many examples of companies using non-GAAP numbers to highlight how their GAAP profits are actually inflated by foreign currency fluctuations, decreasing reserves, or changes in contingent considerations" (Trainer, 2016).

Even if non-GAAP expenses are not related to core business activities, the gains from these activities are not excluded. For example, gains on investments might be included in non-GAAP earnings, but the related losses might be excluded.

Not only is non-GAAP reporting becoming more popular, but companies are also increasing the amount of expense exclusions used, meaning that the differences between GAAP and non-GAAP earnings are widening. According to CFO.com: "Among companies within the sample that used non-GAAP metrics, the number of such metrics used per filing shot up even more, tripling from 2.35 in 1996 to an eye-catching 7.45 in 2016" (McCann 2018). These 7.45 metrics include both expense exclusions and income inclusions/exclusions.

Doyle, Jennings, and Soliman find that non-GAAP exclusions are used to achieve analyst forecasts in lieu of more costly alternatives such as "discretionary accruals and discretionary cash flows" (Doyle et al., 2013, p. 41). Managing non-GAAP earnings is a cheaper way to achieve earnings projections, which can allow for further benefits for company management.

Despite issuing Reg G in 2002 and publishing further guidance recently, the SEC is still wary of non-GAAP reporting issues that have "the potential to mislead investors" (e.g., Black et al., 2017b; Leone, 2010; Michaels and Rapoport, 2015; Rapoport, 2013 cited Lopez et al., 2019, p. 1). In 2016, the SEC tightened restrictions on non-GAAP expense exclusions through specific guidance on how companies can report GAAP numbers as prominently as non-GAAP in SEC filings (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). Specifically, the SEC prohibits "describing a non-GAAP measure as "record performance" or "exceptional" without at least an equally prominent descriptive characterization of the comparable GAAP measure" (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). This is a step towards further regulation; however, these

recent publications have still showed that non-GAAP expense exclusions can misrepresent real earnings to investors.

What are the most popular forms of expense exclusions that could allow companies to overstate earnings? Components of non-GAAP exclusions are amortization of intangible assets, which could be from purchasing other companies with goodwill, R&D intangibles, or other assets (Theresa F. Henry et al., 2017; Trainer, 2016). Another exclusion mentioned above is stock-based compensation or buyback of stock. However, Forbes author Trainer asserts that the next most dangerous exclusion is found in various overhead costs:

> "Companies lump all sorts of minor general and administrative expenses into buckets that they exclude for the purposes of non-GAAP earnings. Eliminating $10 million in 'advisory costs' or 'personnel costs' here and there can be a great way to just barely meet earnings expectations" (Trainer 2016).

These expenses are usually categorized as non-recurring, but in practice are likely to occur frequently.

The CPA Journal provided an investigation into Non-GAAP reporting from social media companies, which provides further examples of expense exclusions (Theresa F. Henry et al., 2017). The following is a summarized version of their findings on common expense exclusions:

1. Large one-off costs, such as asset write-downs or organizational restructuring: These should be non-recurring and special items, but the amount that the company writes down or excludes could be subjective.
2. Litigation expense: When companies have to estimate their legal fees or believe that they are unrelated to core business operations.

3. Foreign currency gains and losses: International companies and those with international consumers are subject to currency fluctuations. The magnitude of the fluctuation is often a result of their risk appetite and how the company chooses to hedge its risk.
4. Loss or income from discontinued operations: Bankruptcy, spin-offs, and other items that could also be categorized as 'restructuring'. The amount of the loss could be up to interpretation.
5. Non-cash interest expense related to convertible senior notes: Debt that could be converted to company equity. This is useful for investors to see because exercise of convertibility may dilute their shares held.
6. Fair value adjustment on derivative: This is related to risk appetite and financial investments, which hits the balance sheet, but is technically non-cash. The risk could be subjectively dismissing losses on derivatives and incorporating gains into non-GAAP income.
7. Subscription return reserve: This is an exclusion of income for the portion of customers that will cancel their subscription and request a refund. When excluding this expense, it increases income because it assumes all sales are final, which is not the case for most businesses. This is a part of normal future operating expenses.
8. Legal settlement charges: The company considers legal settlement fines to be outside the scope of business, which it usually is. However, legal fines do affect cash flow in the short term, not only from paying the fine, but paying the price on reputation, which should be of interest to investors.
9. Royalty charge, or transaction costs: These are vague expenses that should tip off to investors that they could be material as business expenses.

10. Income tax effects of non-GAAP adjustments: Lastly, Reg G requires companies to break out the specific tax effects of the exclusions.

(Theresa F. Henry et al., 2017)

Another use for non-GAAP reporting has presented itself recently with the outbreak of COVID19 and the subsequent worldwide pandemic in 2020. Corporations used non-GAAP reporting to back out COVID-related expenses and setbacks, which as of Q1, have helped ease the public's concerns about corporate longevity and profitability. For example, the airline industry has been hit hard by the global pandemic due to international travel restrictions early in the year and customer reluctance to board flights later on in the year. See below for the United Airlines Holdings Inc. ("United") non-GAAP financial reconciliation (*United Airlines Announces First Quarter 2020 Financial Results*, 2020).

Figure 2 United Airlines Holdings, Inc. Non-GAAP Financial Reconciliation- March 31st, 2020

Diluted earnings (loss) per share (GAAP)	$	(6.86)
Adjusted to exclude:		
Special charges (B)		0.25
Nonoperating credit loss on BRW term loan and related guarantee (B)		2.81
Unrealized (gains) losses on investments, net (B)		1.29
Interest expense on ERJ 145 finance leases (C)		—
Income tax benefit related to adjustments, net of valuation allowance		(0.06)
Adjusted diluted earnings (loss) per share (Non-GAAP) (A)	$	(2.57)

Source: (United Airlines Announces First Quarter 2020 Financial Results, 2020)

From the first appearance, these items do not seem related to COVID19's pandemic. However, the notes at the end of the page indicate that many of these are related.

1.Special Charges: $0.25 cents per share (or $63,000,000 on the income statement) comes from an impairment expense on the value of its routes to China, which were suspended due to the COVID19 outbreak (*United Airlines Announces First Quarter 2020 Financial Results*, 2020).

2. The Nonoperating credit loss on the BRW loan: $2.81 per share (or $697,000,000 total) comes from a loan with an affiliated company. BRW is Avianca Holdings, a Colombian and El Salvadorian airline, majority owned by a United-affiliated Holding company, that is currently in default (Gallón et al., 2020). United expects less to be recovered from this loan, especially since the airline is no longer operating due to COVID (as of June 2020) (*United Airlines Announces First Quarter 2020 Financial Results*, 2020).

3. The Unrealized Losses: $1.29 per share (or $319,000,000) is also partially attributed with United's relationship with BRW, as it received as part of the loan, investments and options in companies that subsequently lost value (assumed, in part, from COVID19) (*United Airlines Announces First Quarter 2020 Financial Results*, 2020).

These non-GAAP expense exclusions, United explains, "are not indicative of UAL's ongoing performance" and so are useful to investors to see split out (*United Airlines Announces First*

Quarter 2020 Financial Results, 2020). However, investors should still be wary of these expense exclusions. Even if these are one-time charges, the effect that they will have on tight cash flows is still a present concern. United Airlines will have less cash flow if their loan will remain unpaid from underwater Avianca (who filed for chapter 11 bankruptcy in May 2020), which trickles down to how much United can afford to spend on investment in new safety technologies, new protections against the disease, or new routes for the future. United will need access to liquidity to address this cash-restraint (which might come from additional COVID-related federal loan programs). Additionally, the impairment on routes to China could signal future impairments on international routes from countries who have not lifted restrictions on travel from the United States, where United is headquartered. In this way, this impairment could affect future operations. Even if companies pick out these one-time COVID19 exclusions, it does not mean that investors should not use the exclusions for future investment decisions.

Like United, many management teams argue that non-GAAP reporting presents a more accurate financial picture that is more useful to their shareholders. For example, U.S. GAAP requires strict disclosure and presentation of financial statements that ultimately allows companies to be comparable across the same metrics, but the rules can be less useful for investors in certain companies. For example, Trainer from Forbes agreed that "GAAP was originally designed for debt investors, not equity investors. It requires companies to report their earnings in a way that can significantly distort the true operating profitability that matters most to equity holders" (Trainer, 2016). Therefore, this makes sense that companies are leaning towards non-GAAP presentation as an alternative to the shortfalls of GAAP reporting. However, Trainer argues that non-GAAP should not be the solution to these problems (Trainer, 2016). Non-GAAP reporting

is wholly dependent on management's motivation, which often can be skewed towards painting "the most favorable picture" instead of the most useful for investors (Trainer, 2016).

Another argument for the use of non-GAAP reporting is based on the accuracy of analyst predictions about exclusions. If markets were perfect and wholly transparent, analysts would be able to predict the amount of exclusions that companies would use and therefore prevent earnings management for the sake of meeting or beating estimates. This would mean that the amount of earnings surprise for non-GAAP earnings would echo closely the earnings surprise for GAAP. However, this has not been the case. "The rising use of opportunistic non-GAAP numbers has coincided with a doubling over the last 17 years of the percentage of companies (25%) reporting dramatic upside earnings surprises, even though according to GAAP the percentage of major earnings surprises has remained stagnant" (Bernstein et al., 2019). If non-GAAP estimates were more accurate, non-GAAP earnings would not be seeing a large amount of positive earnings surprises when GAAP earnings are stagnant.

Further research has confirmed this imperfection of the market. Doyle, Jennings, and Soliman find that when a firm uses 'other' exclusions (unexpected exclusions from an analyst's perspective), the probability of them meeting or beating their earnings estimates increases by 20% (Doyle et al., 2013, p. 41). This endorses the ideas that firms are not only using unexpected exclusions, but that analysts cannot perfectly predict expense exclusions.

Overall, the negative aspects of non-GAAP reporting indicate that companies have the potential to perform earnings management to increase their value in the eyes of investors. My further

research aims to prove whether or not investors are aware and actively able to react properly to these risks.

II. Methodology:

Lopez et al. find that investors reward companies that beat non-GAAP estimates the same as for those that beat GAAP earnings estimates, even if expense exclusions can be used to manipulate non-GAAP earnings (Lopez et al., 2019, p. 4). I continue their research by testing how investors react to the presence and the amount expense exclusions by using 10 years of recent data.

In Lopez et al 2019 they consider expense exclusions for testing as the difference between non-GAAP earnings per share ("non-GAAP EPS") and GAAP earnings per share ("GAAP EPS") (Lopez et al., 2019, p. 37). This can be considered the net expense exclusions because gain exclusions would also be included in this calculation. For the related study, I assume all positive differences between non-GAAP income and GAAP income to be expense exclusions. In my data analysis I calculate expense exclusions as non-GAAP EPS minus GAAP EPS when this number is positive.

Lopez et al. focuses on recurring expense exclusions because they say that these earnings are hard to defend as abnormal business expenses (Lopez et al., 2019, p. 3-4). However, I do not focus on recurring expenses. In short, this is because I believe that the average investor does not break out expenses into recurring and non-recurring.

When companies release earnings, by law they release a reconciliation of Non-GAAP earnings to GAAP. Below is Google's (ABC Inc.) reconciliation in their Q2 2020 earnings release on April 28, 2020 (Alphabet Inc., 2020, p.7). The following expense exclusions are made up of a

European Commission (EC) fine of $1.7 billion and foreign exchange gain (Alphabet Inc., 2020, p.7).

Figure 3 Google's Non-GAAP Reconciliation April 2020

	Quarter Ended March 31, 2019
Operating income (GAAP)	$ 6,608
Add: EC fine*	1,697
Operating income (Non-GAAP)	$ 8,305
Operating margin (GAAP)	18 %
Operating margin (Non-GAAP)	23 %
Net income (GAAP)	$ 6,657
Add: EC fine, net of the foreign exchange gain*	1,682
Net income (Non-GAAP)	$ 8,339
Diluted net income per share (GAAP)	$ 9.50
Diluted EPS (Non-GAAP)	$ 11.90
Shares used in diluted per share calculation (in thousands)	700,879

*There is no tax effect as this charge is not tax deductible.

Source: (Alphabet Inc., 2020, p.7)

The reason I don't think it is necessary to break up exclusions into non-recurring and recurring items is because they are not explicitly broken out by companies. Therefore, to the average investor with limited accounting knowledge, these reconciling items are hard to classify. Google does not say whether they took an unusually large risk in their foreign exchange portfolio this quarter, or if it is to be expected the next quarter. Without proper accounting knowledge, investors are not classifying expense exclusions into categories, but rather looking at the total difference.

A higher amount of expense exclusion means that more expenses are being reclassified as not 'normal' business operations. This could differ based on company size, profitability, and industry, which my model will control for. However, investors, according to the literature, should be paying attention to the unreliability of non-GAAP earnings by taking precautions on a case by case basis.

My model will test if the amount of expense exclusions indicates a higher probability that the firm is acting opportunistically.

H_1 = Opportunistic firms report higher amounts of expense exclusions compared to non-opportunistic firms.

Similar to aforementioned studies from Lopez et al. and Hsu, Wang, and Whipple, I will test if opportunistically acting firms (those that hit earnings estimates from a non-GAAP perspective, but not a GAAP perspective) display poorer future performance. I test this by looking at average GAAP earnings per share over the next year.

H_2 = Opportunistic firms exhibit poorer future performance than non-opportunistic firms.

If a firm is opportunistic, investors should be discounting the firm by decreasing its stock price in relation to non-opportunistic firms after earnings dates. I hypothesize that quarters with more non-GAAP expense exclusion will have lower stock price changes after earnings announcements because investors will discount the impact of the company's quarterly results. If a company beats

non-GAAP earnings expectations with high expense exclusions, the stock price increase should be lower than a company that does the same with low expense exclusions. Even if a company misses non-GAAP earnings expectations, if they have high expense exclusions, I expect a more negative stock price reaction than if they had lower expense exclusions.

H_3 = The higher amount of expense exclusions reported, the more negative the change in stock price.

If a positive relationship exists when companies hit earnings targets (their stock price positively reacts to expense exclusions), this could be a sign that investors are overvaluing non-GAAP reporting and may be misled. If the relationship is negative and investors are rewarding low expense exclusions, they are correctly discounting the impact of expense exclusions on meeting earnings targets. This conclusion would be based on the previous research showing that expense exclusions can be a device for companies to manipulate earnings to hit targets, so investors should be wary of higher non-GAAP earnings compared to GAAP.

III. Data Analysis:

I collected panel data on a quarterly, company basis over ten years from 2009-2019. The sample consists of 1,500 companies from the Russell 3,000. In total there are 42,000 observations by company by quarter.

I used 3 sources to get the data: Reuters, Estimize, and the SEC database.

Thomson Reuters provides a software service called Eikon that allows subscribers to access financial data—including historical time series data. I used their Eikon web platform to download quarterly company data including: Market Capitalization, Price-to-Book ratio, Non-GAAP and GAAP: Earnings Per Share, Earnings Per Share Estimates and Earnings Surprise. For the purposes of my research, GAAP EPS in Reuters is "Earnings per Share Reported – Actual" and non-GAAP EPS is "Earnings per Share – Actual," which I cross-checked with Eikon Reuters Helpdesk and with my Estimize figures (Szklarski, n.d.).

Estimize is a crowd-sourced financial startup that's primary operation is to allow users to publish their own estimates for company earnings before the announcements (*Frequently Asked Questions - Estimize.Com*, n.d.). This allows the public to have more information on which to base investment decisions. However, outside of crowd-sourced data, Estimize also provides Factset data for Earnings Report Dates, Wall Street Estimates, and non-GAAP EPS, which are the figures that I collected from their available API for academics. I used the official Ticker symbols from the SEC database for my datagrab from Estimize.

Using my Eikon downloaded data and the Estimize data as my source for my sample population, I then used the Eikon Data API to find the daily stock prices 5 business days before and 5 business days after the earnings release date for each quarter and company. Finally, I calculated the average change in stock price after the earnings release.

Below I show a chart of the variables included in my models. Note that I chose to transform my data using inverse-hyperbolic sine ("IHS") in order to manage skewed data that included zero and negative values.

Figure 4 Variable List

Number	Name of Variable	Variable	Type	Details
1	Stock Return	Dependent Y	Numeric	Change in stock price 5 business days before and after the earnings release date
2	OpIncome	Dependent Y	Binary	1 if a company makes non-GAAP EPS estimates, but misses GAAP estimates, AND reports expense exclusions
3	FutureIncome	Dependent Y	Numeric	Average GAAP EPS 4 Quarters in Future (Lead)
4	ExpenseExclu	Independent X	Numeric	Amount of expense exclusions this quarter (Non-GAAP earnings per share - GAAP earnings per share)
5	EE01	Independent X	Binary	Whether or not a company reports expense exclusions this quarter
6	GAAP Earnings	Control variable	Numeric	Amount of GAAP EPS
7	Loss	Control variable	Binary	1 if Company reported GAAP loss (<0)
8	Average GAAP EPS 1 YR	Control variable	Numeric	Average of past year GAAP EPS
9	Average GAAP Growth 1 YR	Control variable	Numeric	Average of past year GAAP EPS growth
10	MarketCap	Control variable	Numeric	Market Capitalization per quarter on a company basis
11	PricetoBook	Control variable	Numeric	Stock price over book value provided by Eikon
12	Non-GAAP SURP	Control variable	Numeric	Non-GAAP EPS earnings surprise
13	GAAP SURP	Control variable	Numeric	GAAP EPS earnings surprise
14	Naicssectorname	Control variable	Category	Naics Industry
15	α	Control variable	Company fixed effects	To see how reporting expense exclusions affects stock price per company over 10 years
16	δ	Control variable	Time fixed effects	Control for effects that happen by year across all companies

Note: Control Variables 6 – 13 are time and company varying and used for matching principal models
Control Variables 6 & 10 – 13 are used for fixed effect models

Four Initial Models for 3 Hypotheses:

My below models use the matching principle and fixed effects with a panel data OLS linear regression. For the first 3 models it uses the control variables to compare observations with similar company and time attributes, and in the fourth model I used fixed effects to compare company to itself across time.

Hypothesis 1: Opportunistic firms report higher amounts of expense exclusions over non-opportunistic firms.

1. Model 1: Matching Principle

$$OpIncome_{c\,t} = \beta_0 + \beta_1 EE01_{c\,t} + \beta_2 ExpenseExclu_{c\,t} + \beta_3 ControlVars_{c\,t} + \beta_3 Naicssectorname_{c}\ \delta_{t} + u_{c\,t}$$

Hypothesis 2: Opportunistic firms exhibit poorer future performance than non-opportunistic firms.

2. Model 2: Matching Principle

$$FutureIncome_{c\,t} = \beta_0 + \beta_1 OpIncome_{c\,t} + \beta_2 ControlVars_{c\,t} + \beta_3 Naicssectorname_{c} + + \delta_{t} + u_{c\,t}$$

Hypothesis 3: The higher amount of expense exclusions reported, the lower the change in stock price. Therefore, for stock gains, the change will be a smaller gain, for stock losses, a larger loss.

3. Model 3: Matching Principle

$$\Delta\ Stock\ Price_{c\,t} = \beta_0 + \beta_1 ExpenseExclu_{c\,t} + \beta_2 ControlVars_{c\,t} + \beta_3 Naicssectorname_{c} + + \delta_{t} + u_{c\,t}$$

4. Model 4: Fixed Effects

$$\Delta\ Stock\ Price_{c\,t} = \beta_0 + \beta_1 ExpenseExclu_{c\,t} + \beta_2 NControlVars_{c\,t} + \alpha_{c} + \delta_{t} + u_{c\,t}$$

c = company; t = time

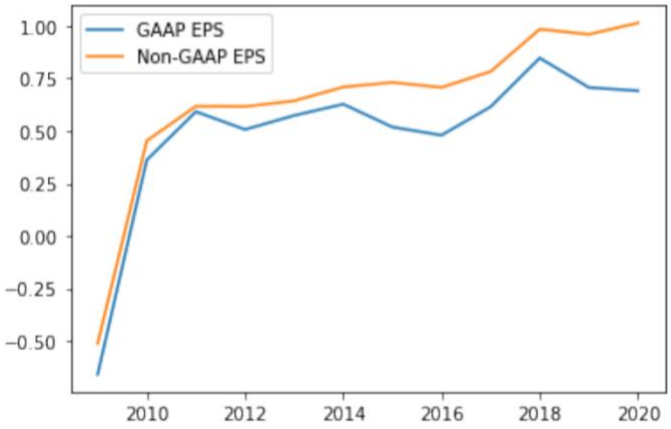
Note: All models use robust standard errors; with matching principle models the robust standard errors are clustered on industry.

IV. Results:

Data Descriptive Statistics and Metrics

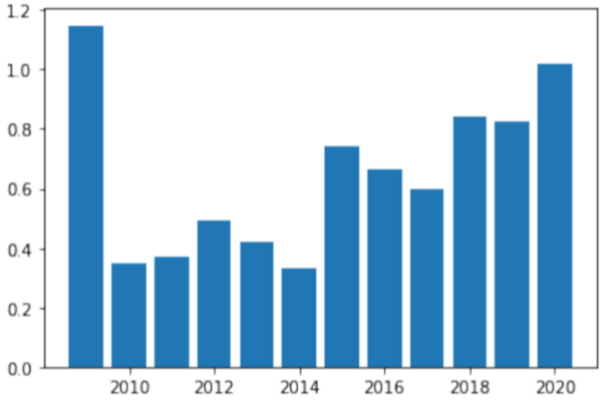
In my population, 73% of non-GAAP company earnings meet or beat non-GAAP earnings estimations. This is even more than in Lopez et al.'s population, which had 60% of firm quarters' meeting or beating estimates. In comparison to this number, 54% meet or beat GAAP earnings estimations, meaning the 73% - 54% = 19% of firms were opportunistic. Lopez et al. had a similar number of opportunistic firms at 17%. The average Non-GAAP EPS across all time periods is $0.67, while the GAAP EPS mean is significantly lower at $0.52 (average EPS is $0.15). For those companies that did choose to report expense exclusions, the average is $0.50 The average amount of expense exclusions for opportunistic income firms is $.64.

Figure 5 GAAP EPS vs. Non-GAAP EPS by Year



This chart above shows that the average Earnings per Share on a GAAP vs. a Non-GAAP basis has diverged from one another since 2012. In the 2020 data, which only consists of one quarter, there is a large gap. This shows that the amount of expense exclusions on average is increasing.

Figure 6 Average Expense Exclusions by Year



The average amount of expense exclusions in this data has been increasing since 2010, although the highest average amount was in 2009, during the recession. However, the large average amount in 2009 is skewed by one company that reported 1,996.20 in expense exclusions per share, which is an outlier.

Figure 7 Expense Exclusions 1-3 Quartile

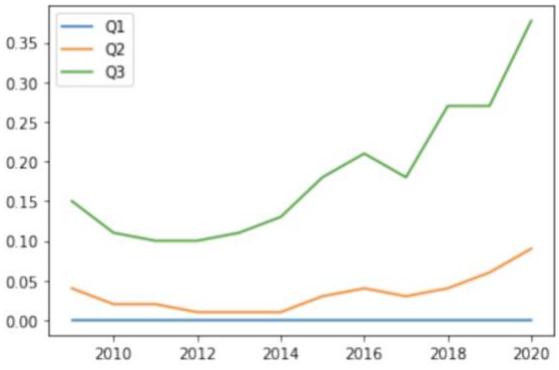
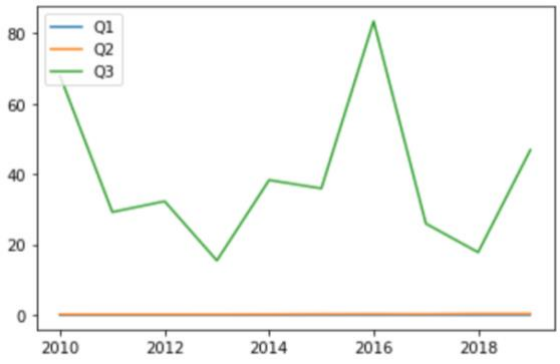
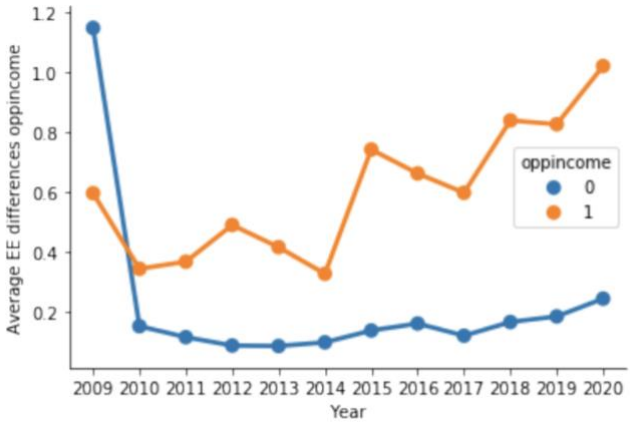


Figure 8 Expense Exclusions 4th Quartile



According to the quartile data, the second quartile is very close to zero, while the third quartile is still below one. To plot the fourth quartile below shows that the other quartiles become illegible, with average exclusions up to 80. This confirms that the variability in expense exclusions is high. Most companies report close to zero quarterly, but there are a few that report high amounts of exclusions.

Figure 9 Opportunistic Firms vs Non-Opportunistic Average Expense Exclusions



In the graph above, the average amount of expense exclusions is plotted for each year; the opportunistic firms are in orange and the non-opportunistic firms are in blue. This graphic shows my first introduction into my key assumption, that higher amounts of expense exclusions are an indicator of opportunistic use of non-GAAP earnings. Again, opportunistic income firms are those that beat non-GAAP estimates, but came up short for GAAP estimates, therefore using expense exclusions to their advantage. The opportunistic firms had a higher average amounts of expense exclusions every year except for in 2009 (which was previously discussed as skewed by an outlier). Continuing the test for this assumption, I test the following model.

Model 1: **Matching & Fixed Effects**

$$OpIncome_{c\,t} = \beta_0 + \beta_1 EE01_{c\,t} + \beta_2 ExpenseExclu_{c\,t} + \beta_3 ControlVars_{c\,t} + \beta_3 Naicssectorname_{c}\ \delta_{t} + u_{c\,t}$$

$$OpIncome_{c\,t} = \beta_0 + \beta_1 EE01_{c\,t} + \beta_2 ExpenseExclu_{c\,t} + \beta_3 ControlVars_{c\,t} + \alpha_{c} + \delta_{t} + u_{c\,t}$$

Figure 10 Model 1 Regression Table

			Fixed Effects	Fixed Effects
VARIABLES	(1) opincome	(2) opincome	(3) opincome	(4) opincome
EE01	0.263***		0.241***	
	(0.00881)		(0.00542)	
IHS ExpenseExclu		0.217***		0.208***
		(0.0278)		(0.0149)
IHS GAAP Earnings	-0.000317	0.0442***	-0.00563	0.0450***
	(0.00611)	(0.00638)	(0.00591)	(0.00735)
Loss	-0.0114	-0.0290	-0.0114	-0.0262**
	(0.0190)	(0.0347)	(0.0100)	(0.0113)
IHS Average of Past Year GAAP Earnings	-0.00678	-0.0205*		
	(0.00562)	(0.0120)		
IHS Average of Past Year's Quarterly growth	-0.00441***	-0.00262		
	(0.00170)	(0.00217)		
IHS Market Cap	0.0195***	0.0158***	0.0229***	0.00818
	(0.00293)	(0.00283)	(0.00586)	(0.00639)
IHS PricetoBook	-0.000306	-0.000533	4.36e-05	0.000155
	(0.00249)	(0.00232)	(0.00222)	(0.00249)
IHS Non-GAAP SURP	0.166***	0.172***	0.167***	0.170***
	(0.0123)	(0.0117)	(0.00483)	(0.00535)
IHS GAAP SURP	-0.130***	-0.148***	-0.129***	-0.146***
	(0.0191)	(0.0186)	(0.00494)	(0.00513)
Constant	-0.386***	-0.217***	-0.442***	-0.0483
	(0.0713)	(0.0678)	(0.132)	(0.144)
Observations	30,856	30,839	40,345	40,311
R-squared	0.2344	0.1768	0.230	0.180
Number of unit_id	1,315	1,315	1,354	1,354

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In the first and third models, I can see that the binary variable for whether a company reports expense exclusions is significantly positively correlated with the opportunistic income variable.

This model includes all available observations that have no missing control variables and importantly include that observations that do not report expense exclusions. In the first model, I use a matching principle, and in the third, I exchange it for a fixed effect model. Holding all else equal, if a firm is choosing to report expense exclusions, they are 26% more likely to be an opportunistic firm. This makes logical sense, since expense exclusions are the difference between GAAP and non-GAAP earnings and enable opportunistic firms to hit their non-GAAP targets.

In the second and fourth models, which are linear probability models, there is positive correlation between the likelihood of increasing the amount of expense exclusions and being an opportunistic firm. If we interpret the IHS independent variable like a logarithmically transformed variable (Marc F. Bellemare & Casey J. Wichman, 2019, p. 6-7), the interpretation can be interpreted that a 10% increase in the amount of expense exclusions will increase the probability that the company is opportunistic by about 2%.

From these data tests, I conclude that my hypothesis 1 has been proven right, opportunistic firms report higher amounts of expense exclusions over non-opportunistic firms. Therefore, I will use the amount of expense exclusions as an indicator for a firm being opportunistic in my final model and continue into the next steps. This means that even if investors may not know if a firm is opportunistically hitting their income expectations, they can see the amount of expense exclusions directly on the earnings announcement. Therefore, a higher amount of expense exclusions can indicate a higher probability that the firm is opportunistic.

The next step is to employ a model to test if opportunistic income is a representation of poorer future performance, meaning that this income may not be reliable.

Model 2: **Matching & Fixed Effects**

$$FutureIncome_{c\,t} = \beta_0 + \beta_1 OpIncome_{c\,t} + \beta_2 ControlVars_{c\,t} + \beta_3 Naicssectorname_{c} + + \delta_{t} + u_{c\,t}$$

$$FutureIncome_{c\,t} = \beta_0 + \beta_1 OpIncome_{c\,t} + \beta_2 ControlVars_{c\,t} + \alpha_{c} + \delta_{t} + u_{c\,t}$$

Figure 11 Model 2 Regression Table

		Fixed Effects
VARIABLES	(1) IHS Average Next year's GAAP EPS	(2) IHS Average Next year's GAAP EPS
opincome	-0.0246***	-0.0179**
	(0.00734)	(0.00756)
IHS ExpenseExclu	-0.0550**	-0.110***
	(0.0239)	(0.0287)
IHS Average of Past Year GAAP Earnings	0.319***	
	(0.0510)	
IHS Average of Past Year's Quarterly growth	-0.0201***	
	(0.00604)	
IHS Market Cap	0.106***	0.346***
	(0.0152)	(0.0206)
IHS PricetoBook	0.000184	-0.0137**
	(0.00443)	(0.00570)
IHS Non-GAAP SURP	-0.0497***	-0.0356***
	(0.0102)	(0.00868)
IHS GAAP SURP	0.00670	-0.0114
	(0.0110)	(0.00820)
Constant	-1.979***	-7.228***
	(0.309)	(0.466)
Observations	24,797	31,291
R-squared	0.0834	0.154
Number of unit_id	1,015	1,320

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As seen above, opportunistic income is significantly negatively correlated with future earnings performance. If a firm is opportunistic, the average GAAP Earnings Per Share over the next year

is lower than a firm that is not opportunistic. An approximate interpretation of this binary variable would be that opportunistic firms report 2.4% less GAAP earnings per share over the next year compared to non-opportunistic firms. For the fixed effects model, when a firm reports opportunistic earnings in a particular quarter, they report 1.7% less in the subsequent year compared to quarters they do not report opportunistically. To interpret the amount of expense exclusions with accuracy as Bellemare and Wichman have suggested, I used the following equation to get the relative elasticities.

Figure 12 Computation of Elasticity for IHS – IHS Transformed Variables

$$= \hat{\beta} \cdot \frac{\sqrt{y^2+1}}{y} \cdot \frac{x}{\sqrt{x^2+1}}.$$

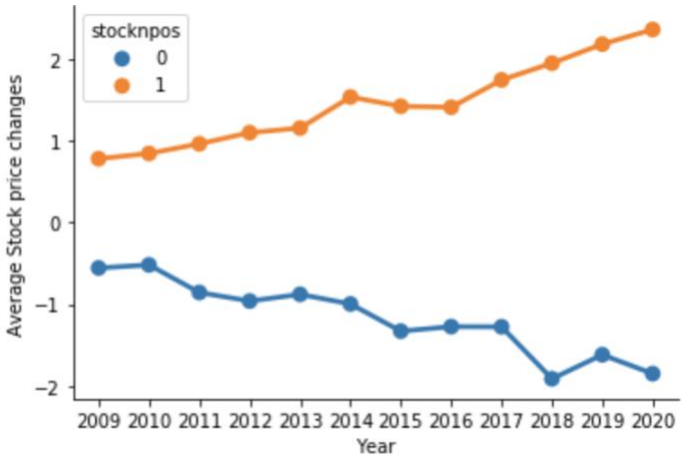
(Marc F. Bellemare & Casey J. Wichman, 2019, p.9)

Based on the following equation, where 'y' and 'x' are the mean values of the population, a 10% increase in expense exclusions would predict a 0.2% decrease in future GAAP earnings per share. For the fixed effect model, when a company increases expense exclusions in one quarter by 10%, we can expect that their future GAAP earnings will decrease by 0.4%.

Based on my previous model, the amount of expense exclusions indicates a higher probability of a firm being opportunistic, and now from this model I know that opportunistic firms have poorer future earnings. This confirms the belief that the presence of higher expense exclusions should encourage investors to discount stock price gains. My hypothesis 2 is confirmed, opportunistic firms exhibit poorer future performance than non-opportunistic firms.

For models 3 and 4, the dependent variable becomes the change in stock price after an earnings announcement.

Figure 13 Price Growth vs. Price Decline ($)



This graph shows the orange line as gains and the blue line as average losses. There is an increase in the gap between average stock price wins and losses after earnings dates over the past 10 years. This might signal more volatility in the market and more risk for companies to win big or lose big.

The first model I ran is in Figure A of the index. The choice of reporting expense exclusions is insignificantly correlated with the stock price differences, while the amount of expense exclusions is positively and significantly correlated with stock price differences. This means that firms reporting more expense exclusions have on average, more positive stock changes. This model does not have a high explanatory power shown by a very low R-squared.

Here is an extension of Model 3 and the Fixed Effect Model, where I use the transformed IHS Expense Exclusions Variable:

Model 3 & 4: **Matching & Fixed Effects**

$$\Delta \text{ Stock Price}_{c\,t} = \beta_0 + \beta_1 \text{ExpenseExclu}_{c\,t} + \beta_2 \text{NControlVars}_{c\,t} + \beta_3 \text{Naicssectorname}_{c} + \delta_t + u_{c\,t}$$

$$\Delta \text{ Stock Price}_{c\,t} = \beta_0 + \beta_1 \text{ExpenseExclu}_{c\,t} + \beta_2 \text{NControlVars}_{c\,t} + \alpha_c + \delta_t + u_{c\,t}$$

Figure 14 Model 3&4 Regression Table A

		Fixed Effects
	(1)	(2)
VARIABLES	ihs_avrgdif	ihs_avrgdif
IHS ExpenseExclu	0.0530	0.0202
	(0.0377)	(0.0329)
IHS GAAP Earnings	0.0506**	0.0404*
	(0.0250)	(0.0218)
Loss	0.0641**	0.0680***
	(0.0319)	(0.0228)
IHS Average of Past Year GAAP Earnings	0.124***	
	(0.0186)	
IHS Average of Past Year's Quarterly growth	-0.00740**	
	(0.00376)	
IHS Market Cap	0.0340***	0.249***
	(0.00692)	(0.0161)
IHS PricetoBook	0.0255***	0.0245***
	(0.00918)	(0.00605)
IHS Non-GAAP SURP	0.236***	0.223***
	(0.0214)	(0.0135)
IHS GAAP SURP	0.0679***	0.0619***
	(0.0107)	(0.00828)
Constant	-0.325**	-5.733***
	(0.153)	(0.356)
Observations	30,839	40,311
R-squared	0.0518	0.057
Number of unit_id	1,315	1,354
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

This model shows no significant correlation between expense exclusions and the average stock price changes. According to this model, the amount of expense exclusions does not trigger a discount on the amount a stock price rises, or a premium in the amount a stock price falls.

However, since I know that the difference between 'winning' and 'losing' after earnings announcements is so great, I check to see how splitting the dependent variable into two groups would affect the results. Because stock price changes can be positive or negative, I check to see if there is a difference in correlation direction that is interfering with my results above.

First, I display the stock price increase population with the amount of expense exclusions:

Figure 15 Expense Exclusions and Stock Gains

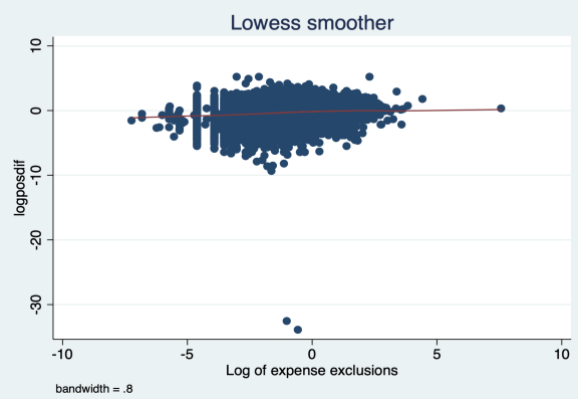
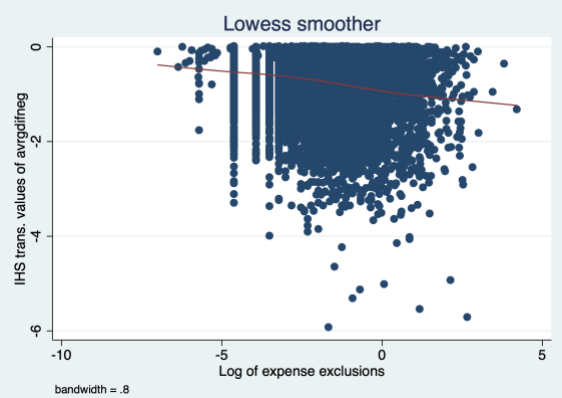


Figure 16 Expense Exclusions and Stock Losses



The first Lowess scatterplot gives an approximate positive linear relationship between expense exclusions and the stock price increases. However, the sample of price decline observations shows a negative relationship. The regression shows similar results.

Extension of Models 3 & 4: **Matching & Fixed Effects**

With positive and negative stock changes separately.

Figure 17 Model 3 & 4 Regression Table B

			Fixed effects	Fixed effects
	Positive Stock Changes	Negative Stock Changes	Positive Stock Changes	Negative Stock Changes
	(1)	(2)	(3)	(4)
VARIABLES	ihs_avrgdifpos	ihs_avrgdifneg	ihs_avrgdifpos	ihs_avrgdifneg
IHS ExpenseExclu	0.238***	-0.337***	0.158***	-0.172***
	(0.0216)	(0.0269)	(0.0230)	(0.0236)
IHS GAAP Earnings	0.184***	-0.241***	0.111***	-0.113***
	(0.0137)	(0.0233)	(0.0159)	(0.0190)
Loss	0.0903***	-0.0356	0.0865***	-0.0237
	(0.0293)	(0.0256)	(0.0177)	(0.0173)
IHS Average of Past Year GAAP Earnings	0.0876***	-0.0155		
	(0.0135)	(0.0138)		
IHS Average of Past Year's Quarterly growth	-0.00543	-0.00248		
	(0.0047)	(0.0040)		
IHS Market Cap	0.150***	-0.0628***	0.408***	-0.230***
	(0.0160)	(0.0131)	(0.0141)	(0.0137)
IHS PricetoBook	0.0221**	-0.00893	0.00657	0.00986*
	(0.0098)	(0.0061)	(0.0060)	(0.0055)
IHS Non-GAAP SURP	0.0831***	0.0944***	0.0888***	0.0830***
	(0.0098)	(0.0110)	(0.0087)	(0.0081)
IHS GAAP SURP	0.0221**	0.0106	0.0232***	0.00607
	(0.0098)	(0.0097)	(0.0064)	(0.0069)
Constant	-2.482***	0.743**	-8.339***	4.238***
	(0.3730)	(0.3140)	(0.3190)	(0.3000)
Observations	18,612	12,226	24,027	16,283
Number of unit_id	1,247	1,099	1,344	1,341
R-squared	0.1899	0.1394	0.238	0.183

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In each of the models, expense exclusions increase stock gains and decrease stock losses. The calculated elasticities are as followed: for the gains, models 1 & 3, an increase of expense

exclusions by 10% predicts a .5% increase in stock gains (.3% for the fixed effects model). For the stock losses in models 2 & 4, an if there is an increase of expense exclusions by 10%, I can expect greater stock loss by -1% (or -.5% for fixed effects model 4). These results show exacerbating of symptoms. Investors are quick to trust expense exclusions when their overall picture of the company well-being is good, but quick to punish expense exclusions when the opposite is true.

One possible explanation for the negative impact on stock losses could be because of behavioral economics principle of 'loss aversion', which according to Tversky and Kahneman, indicates that an impact becomes greater to a person when the "difference is evaluated as a loss than when the same difference is evaluated as a gain" (Tversky & Kahneman, 1991, p. 1040). It could be that investors trust non-GAAP income until some other signal alerts them to distrust exclusions. What I see is that investors, when they see expense exclusions in a company earnings report, use them to justify their other beliefs. If so, this means that expense exclusions are not being used to identify opportunistic, poor future income, even if it predicts poorer future performance.

Robustness Check:

I ran the following models based on the last model to check if expense exclusions in the current period explained past or far future stock price changes. My hypothesis would be that it would not affect prior or future time periods.

An interesting result of the model shows that the stock price one quarter before affects the amount of expense exclusions in the present in the same direction. This effect does not persist in

when going back further than one year (see Figure B in Appendix). This means that the stock price and the amount of exclusions affect one another in the same direction.

My interpretation is such: when companies have a negative stock price shock (due in part to expense exclusions), they report less expense exclusions the next quarter. This makes logical sense because companies are reacting to shareholder wants and needs. This does not cause a problem with reverse causality in my original regressions because of the timing. Corporations have to decide on expense exclusions and reporting before the earnings release date, while investors have to react to them after this date. Therefore, from this study there is a relationship between companies reacting to their stock price changes by reporting more or less expense exclusions. See below for the significant relationship between present expense exclusions and stock price changes one quarter in the past.

Robustness Check: Fixed Effects

Figure 18 Robustness 1 Q Lag Regression Table

Fixed effects		
1 Quarter Prior	Positive Stock Changes	Negative Stock Changes
VARIABLES	L.logposdif	L.ihs_avrgdifneg
IHS ExpenseExclu	0.0534***	-0.0592***
	(0.0146)	(0.0149)
Lagged IHS ExpenseExclu	0.155***	-0.163***
	(0.0242)	(0.0251)
Lagged IHS GAAP Earnings	0.112***	-0.111***
	(0.0171)	(0.0195)
Lagged Loss	0.0752***	-0.0170
	(0.0185)	(0.0178)
Lagged IHS Market Cap	0.406***	-0.231***
	(0.0145)	(0.0141)
Lagged IHS PricetoBook	0.00735	0.0106*
	(0.00602)	(0.00579)
Lagged IHS Non-GAAP SURP	0.0938***	0.0879***
	(0.00976)	(0.00848)
Lagged IHS GAAP SURP	0.0210***	0.00726

	(0.00663)	(0.00704)
Constant	-8.294***	4.251***
	(0.327)	(0.310)
Observations	22,370	15,521
R-squared	0.233	0.182
Number of unit_id	1,334	1,331

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The following table shows the insignificant effect that current expense exclusions have on stock price changes after earnings dates in the far future.

Figure 19 Robustness 10 Q Lead Regression Table

Fixed effects

10 Quarters Future VARIABLES	Positive Stock Changes F10.logposdif	Negative Stock Changes F10.ihs_avrgdifneg
IHS ExpenseExclu	0.00325	-0.0183
	(0.0137)	(0.0156)
Lead IHS ExpenseExclu	0.141***	-0.135***
	(0.0266)	(0.0291)
Lead IHS GAAP Earnings	0.0953***	-0.0950***
	(0.0187)	(0.0244)
Lead Loss	0.0758***	-0.00708
	(0.0199)	(0.0198)
Lead IHS Market Cap	0.396***	-0.208***
	(0.0173)	(0.0167)
Lead IHS PricetoBook	0.00520	0.0116**
	(0.00650)	(0.00560)
Lead IHS Non-GAAP SURP	0.0784***	0.0732***
	(0.0103)	(0.00924)
Lead IHS GAAP SURP	0.0204***	0.0139*
	(0.00747)	(0.00813)
Constant	-8.409***	4.014***
	(0.399)	(0.379)
Observations	16,780	11,304
R-squared	0.200	0.140
Number of unit_id	1,078	1,066

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

This table shows that expense exclusions today do not significantly affect stock price changes in the far future and supports my claim that expense exclusions affect current stock price changes after earnings releases.

V. Conclusions, Limitations, and Policy Implications

My findings continue the work of previous researchers who have determined that non-GAAP reporting can be detrimental to transparency and investor understanding. I have shown that the amount of expense exclusions reported is positively correlated with opportunistic firms. I have re-confirmed also that opportunistically reporting companies have a negative future earnings outlook. Furthermore, my last results show that investors do not react to expense exclusions in the way that I had predicted. I had predicted that investors would discount expense exclusions because they are an indicator of opportunistic income and therefore poor future performance. However, this was not the case.

For stock gains, expense exclusions increased stock price. This means that the more expense exclusions (i.e. the more non-GAAP income), the more investors rewarded companies. Expense exclusions means higher non-GAAP income and therefore investors trust this income when stock prices increase. This finding disproved my original hypothesis.

However, when companies had stock losses, an increased amount of expense exclusions meant more stock price dips, as if the investors did not trust the non-GAAP income. This finding is as predicted by my original hypothesis.

These results are interesting because it means that investors are not discounting opportunistic non-GAAP income completely, they are only discounting it when stock prices drop. This could show a pattern that investors trust non-GAAP exclusions unless there are other indicators of the

company underperforming that are not included in my model. In which case, to avoid further loss in the future, they discount non-GAAP expense exclusions. This could be an example of loss aversion.

Investors should be wary of non-GAAP accounting when it is significantly higher than GAAP accounting. Higher expense exclusions indicate opportunistic income, which has a lower future performance. From my model, investors are not discounting non-GAAP exclusions when a company presents good news and stock prices increase. This indicates a problem in the regulation of non-GAAP reporting, which aims to "protect investors" by ensuring that they receive "timely, comprehensive and accurate information" about their investments (*How the SEC Protects Investors, Maintains Market Integrity*, 2000). Investors are not discounting expense exclusions when they should, so the SEC should reexamine the usefulness of non-GAAP reporting from an investor perspective.

Now, I identify limitations and further areas for study. I chose to transform my data using inverse hyperbolic sine ("IHS") to account for expense exclusion observations that were '0'. These '0' values were either because the firms reported equal GAAP and non-GAAP EPS, did not report non-GAAP EPS, reported higher GAAP EPS than non-GAAP, or had missing values. Because these observations were meaningful and often by company choice, I wanted to include them in my regression. Furthermore, using IHS helped me include negative stock price changes without manipulating a log transformation. As authors Bellemare and Wichman write, there are alternatives to IHS manipulation like "a Tobit or zero-inflated Poisson or negative binomial model" when there is an excess of zero-values in a population (Marc F. Bellemare & Casey J.

Wichman, 2019, p. 16). My model included zero values (around 40% for reported expense exclusions), so one of these models could have be used to compare results and see if there is a bias in my models.

Unlike Lopez et al., I did not separate out nonrecurring and recurring expenses as two variables (Lopez et al., 2019). As explained in the Methodology section, I decided that most investors would not classify expense exclusions into these categories and their reaction was my indicator. Therefore, in Models 1 & 2 there could be a differing effect absorbed for nonrecurring vs. recurring expenses. In Lopez et al. they conclude that specifically recurring expenses are associated with poor future performance (2019). Furthermore, nonrecurring expenses should not definitively affect stock price if investors correctly measure stock price as the value of future cash flows. However, because I do not separate nonrecurring and recurring expense exclusions, I measure the combined effect and cannot determine whether investors are affected differently by nonrecurring expense exclusions. Further research could focus on whether investors are affected adversely by specifically nonrecurring non-GAAP exclusions. If they are not, the SEC can take further actions to only restrict recurring expense exclusions (like stock compensation or amortization of intangibles), and permit companies to exclude one-time items from non-GAAP earnings.

When choosing to use fixed effects, I compare a company to itself across time. Another way I could have adjusted my model using fixed effects would be to calculate an average expense exclusion by company and then see what the stock price effect is when they report higher or lower exclusions. I did not conduct this method because I assume that company earnings,

analyst expectations, and therefore decisions to report exclusions, vary widely period by period, even at the same company. However, using this method might produce interesting results if my assumptions are not accurate.

My model accounts for some of the incentives that companies have to report expense exclusions: for example, stock price, earnings estimates, and GAAP income. In the case that my model encompasses all incentives for reporting expense exclusions, there is a causal relationship. However, I realize that this model excludes alternative incentives for companies to report expense exclusions, which might affect both expense exclusions and stock price changes. Examples of these alternatives are non-GAAP earnings-based compensation and stock-based compensation. These variables could be important to test for in the future as indicators for why a company would be reporting high expense exclusions and how these indicators affect stock price. I also cannot include all possible variables that might affect stock price, so my model is constrained by this limitation.

Further research could test the stock price adjustments later in the period or in subsequent periods. This would further shed light on how investors are affected when stock prices are revised, and company evaluations decreased. Further research could also calculate the *amount* by which investors *should* be discounting non-GAAP income and the *amount* by which they, in practice, *value* non-GAAP income. The difference between these values would help calculate the financial impact of this issue for policy makers. Furthermore, non-GAAP accounting is a global issue. Worldwide, firms are reporting earnings outside local accounting standards. This

study could be repeated with international firms to test if investors react similarly to less-regulated earnings reports.

Based on my conclusions, there are policy implications for regulating the US stock markets. Since investors are not discounting non-GAAP expense exclusions as predicted, further actions should be taken by the SEC to make sure that investors are provided with relevant, transparent information when it comes to non-GAAP earnings.

1. Prohibit non-GAAP Reporting

A policy option would be to disallow non-GAAP reporting and have corporations mandatorily and exclusively report earnings under U.S. GAAP. However, this option clearly would have negative consequences. GAAP reporting requires companies to present themselves in a strict fashion, which means that certain industries and growth stage companies can be at a disadvantage. For example, Fortune Magazine provides the example that the "gross revenue" GAAP metric is less useful for the resort industry (Sherman, 2020). For investors, the revenue metric does not tell you the average occupancy of the resort, nor the average price per room, which are important for investors evaluating a resort's success (Sherman, 2020). Non-GAAP metrics can help fill in blanks that GAAP accounting isn't able to on an industry-level basis. It would also be harder for companies to separate out to investors their core operating activities. As much as non-GAAP accounting has faults, the ability for management to highlight to their shareholders important amounts is still useful for investing decisions.

2. Identify Non-recurring and Recurring Expense Exclusions in Earnings Announcements

In the absence of banning non-GAAP reporting, further regulation can be done to make sure that investors have all available information to make informed decisions. Currently, all non-GAAP exclusions cannot be "normal, recurring, cash operating expenses" (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). However, there is further guidance explaining that if an expense is non-recurring, it "does not mean that that the registrant cannot adjust for that charge or gain" (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). "Registrants can make adjustments they believe are appropriate" (*SEC.Gov | Compliance and Disclosure Interpretations: Non-GAAP Financial Measures*, 2018). Since there are still expense exclusions up for interpretation, the SEC could require companies to identify recurring and nonrecurring expense exclusions, which will allow further insight for investors that might not have the financial background to classify the expenses themselves. Lopez et al. attributed poor performance of opportunistic firms to specifically recurring expenses (Lopez et al., 2019, p. 4). Disclosing recurring vs. non-recurring expense exclusions would allow investors and analysts to decide for themselves whether an expense exclusion should affect future performance and therefore stock price. If recurring exclusions account for a majority of a company's non-GAAP accounting, it may be in an investors best interest to discount their evaluation of the company's stock price.

3. Disclose non-GAAP and GAAP Estimates Alongside One Another in Earnings Announcements

Another option that the SEC could explore might be requiring companies to disclose non-GAAP and GAAP *earnings estimates* in their earnings announcements. This could allow investors to see which firms are opportunistically reporting non-GAAP income to beat their estimates. It would provide investors with more information about the reliability of non-GAAP income, which would help them decide whether a company's expense exclusions pertain to performance evaluation.

On March 25, 2020, the SEC released special COVID-19 guidance. Among other guidelines, there is guidance on reporting non-GAAP and GAAP earnings for coronavirus-affected quarters. For example, companies can present estimates for GAAP results affected by COVID-19 in earnings reports (*SEC.Gov | Coronavirus (COVID-19)*, 2020). These GAAP numbers affected could be impairment expense of assets, like United's COVID-related impairment of routes to China discussed in the Literature Review (*United Airlines Announces First Quarter 2020 Financial Results*, 2020). It is currently unknown how accurate companies can or want to be regarding estimates for COVID-related expenses. Coronavirus-related expenses are given more leniency to help support corporations during a tough time, but it also means placing more responsibility on investors for figuring out how many of these COVID-related losses are temporary or related to future earnings.

Current research has pointed to significant problems in the way that investors are evaluating non-GAAP income. The SEC has been expressing a desire to reign in non-GAAP accounting and doing so will allow more transparency into the stock market. Although the current state of

financial markets is precarious due to COVID-19 and subsequent shutdowns, the SEC can use this period of time to plan for further regulation when corporations recover.

For the short-term future, the coronavirus-related slowdown has encouraged more relaxed guidance from the SEC to help alleviate some of the financial burdens that corporations are facing. However, the SEC needs to consider proper standards for non-GAAP reporting so that investors are being given fair and sufficient corporate earnings information. These standards could include identifying exclusions as recurring or non-recurring and/or presenting GAAP and non-GAAP earnings estimates in earnings announcements. Further research should be done regarding the costs of these policies for implementation and enforcement and whether or not market efficiency will be significantly improved.

VI. **Appendix**:

Figure A Model 3 Extension

Model 3: **Matching Principle**

$$\Delta \text{ Stock Price}_{ct} = \beta_0 + \beta_1 \text{ExpenseExclu}_{ct} + \beta_2 \text{ControlVars}_{ct} + \beta_3 \text{Naicssectorname}_{c} + + \delta_t + u_{ct}$$

VARIABLES	(1) avrgdif
EE01	-0.129
	(0.0858)
ExpenseExclu	0.00373***
	(0.000508)
IHS GAAP Earnings	0.0879
	(0.142)
Loss	0.190
	(0.197)
IHS Average of Past Year GAAP Earnings	0.259***
	(0.0670)
IHS Average of Past Year's Quarterly growth	-0.0466**
	(0.0232)
Log Market Cap	0.195***
	(0.0458)
IHS PricetoBook	0.0392**
	(0.0191)
IHS Non-GAAP SURP	0.427***
	(0.0678)
IHS GAAP SURP	0.120***
	(0.0301)
Constant	-3.343***
	(0.926)
R-squared	0.013
Observations	30,839
Number of unit_id	1,315

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure B Robustness Check 8 Quarters Lag

Fixed effects		
2 Years Prior	Positive Stock Changes	Negative Stock Changes
VARIABLES	L8.logposdif	L8.ihs_avrgdifneg
Log ExpenseExclu	-0.000527	-0.00185
	(0.02)	(0.01)
Lagged Log ExpenseExclu	0.0231	-0.0251**
	(0.02)	(0.01)
Lagged IHS GAAP Earnings	-0.0398	-0.0609**
	(0.05)	(0.03)
Lagged Loss	-0.00209	-0.0382
	(0.08)	(0.03)
Lagged IHS Average of Past Year GAAP EPS		
Lagged IHS Average of Past Year's growth		
Lagged Log Market Cap	0.667***	-0.257***
	(0.05)	(0.03)
Lagged IHS PricetoBook	0.0275	0.00511
	(0.02)	(0.01)
Lagged IHS Non-GAAP SURP	0.241***	0.103***
	(0.03)	(0.02)
Lagged IHS GAAP SURP	0.0659**	0.00341
	(0.03)	(0.01)
Constant	-14.99***	4.501***
	(1.22)	(0.57)
Observations	6651	4772
R-squared	0.105	0.128
Number of unit id	861	854

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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