Customer Satisfaction, Stock Price Informativeness, and Corporate Investment

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CERTIFICATE OF ORIGINALITY

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Abstract:

How marketing metrics affect firms' financial performance has been a hot topic to both market participants and scholars. Customer satisfaction is among the most insensitively investigated marketing metrics, and it is documented to affect firms' financial performances including firm valuations, future cash flows, stock prices and returns, cost of capital, analyst forecasts, and management compensation plans. In this study, I contribute to this line of literature by investigating the following two issues: 1) the association between customer satisfaction and stock price informativeness; and 2) the association between customer satisfaction, corporate investment, and investment valuation (investment puzzle).

For the association between customer satisfaction and stock price informativeness, I argue that since higher customer satisfaction will lead to higher, stable future cash flows, investors in stock market will hold similar beliefs about the future fundamentals, and thus lower the percentage of noise trading. As a result, higher customer satisfaction will increase stock price

informativeness. Using a series of stock price informativeness measures, I find robust empirical evidence to support our predictions. I also find that the association is more pronounced when insider/institutional trading intensity is higher. Meanwhile, the association is more pronounced when industry competition is high. This association is also more pronounced when investor/customer sentiment is high.

Literature shows that firms with higher customer satisfaction have larger investment opportunity sets and lower financial constraints. So for the second issue, I expect higher customer satisfaction will lead to higher corporate investment levels. Empirical evidence supports this expectation.

After that, I examine how customer satisfaction affects investment valuation. First I show that investment puzzle (the negative correlation between investment and subsequent performances, well documented by literature) is pervasive in my sample. One possible reason for this investment puzzle is due to agency problem. Meanwhile, I expect higher customer satisfaction could help mitigate agency problem for the following two reasons: firstly, according to the stakeholder theory of corporate governance, customer is one important kind of stakeholders and may have monitoring effect; and secondly, customer

satisfaction is positively related to the stock price informativeness and informativeness is believed to be one kind of effective corporate governance mechanisms. Empirically I show that firms with higher customer satisfaction will have less investment puzzle. Finally, I do additional tests to show that customer satisfaction and demanding board structure may be substitutes to each other in terms of mitigating investment puzzle.

Keyword:

Customer Satisfaction; Stock Price Informativeness; Corporate Investment; Investment Puzzle; Corporate Governance.

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1.1 Motivation

Marketing costs include any costs associated with delivering goods or services to customers. Companies input huge resources in marketing every year. For example, as reported by Andrew Orlowski[1], 'it is estimated that every Windows phone Nokia sold (at the price of $49) in the US has been backed by a $450 slice of AT&T marketing cash'. Due to the huge amount of spending, marketing efficiency catch attentions from both investors and managers. So it is crucial to translate marketing results into financial expressions. Also to justify the huge expenditures in marketing, in recent years, how customer satisfaction influences financial performance has been a hot topic for both marketing and finance scholars.

Among all marketing metrics, customer satisfaction is among the most frequently used measures. It is costly to generate higher customer satisfaction, since this task requires more employees engaged in selling, also higher cost of goods, and higher advertising expenses as additional inputs (Mittal, Anderson, Sayrak, and Tadikamalla, 2005). Customer satisfaction captures the difference between expected (from previous quality, and as well as advertising) and

[1] Andrew Orlowski is a British columnist, investigative journalist and the executive editor of the IT news and opinion website *The Register*. His quoted statement is posted in *Mobile* section for *The Register*, on 16th July 2012 13:53 GMT.

perceived real product quality (Anderson and Sullivan, 1993; Fornell, Johnson, Anderson, Cha, and Bryant, 1996), and it is more quality-driven than value- or price-driven (Fornell, Johnson, Anderson, Cha, and Bryant, 1996). Thus to some extent, customer satisfaction reflects how efficient firms' marketing strategy is. Scholars widely use this marketing efficiency measure to examine the consequences from both marketing and finance perspectives.

For example, marketing scholars investigate the effect of customer satisfaction in the product market. Bearden and Teel (1983), Bolton and Drew (1991) both find clear evidence that higher customer satisfaction is associated with higher customer retention; Fornell (1992) find that higher customer satisfaction is related to better word of mouth; Anderson, Fornell, and Lehmann (1994) document that higher customer satisfaction leads to larger market share; Bolton (1998) find a positive association between customer satisfaction and more cross-selling opportunities; also Bolton and Lemon (1999) show a higher usage due to higher customer satisfaction, and Homburg Koschate, and Hoyer (2005) document that satisfied customer will improve their willingness to pay. Meanwhile, negative behaviors is reduced due to higher customer satisfaction, such as complaints (Fornell 1992), payment defaults (Bolton 1998), and search (Ratchford and Srinivasan 1993).

The changes in customer satisfaction have positive effect on the customers' behaviors as well: an increase in satisfaction may lead to a higher spending growth (Fornell, Rust, and Dekimpe, 2010). Future cash flow associated with higher customer satisfaction tends to show a growing and stable pattern (Anderson, Fornell and Mazvancheryl, 2004; Gruca and Rego, 2005). In general, customer behavior is positively influenced by and higher customer satisfaction and this leads to higher future revenues in a predictable manner (Reichheld and Sasser, 1990). Anderson, Fornell and Lehmann (1994) also document a clear pattern of how higher customer satisfaction is related to higher profitability.

However, the effect of customer satisfaction is less clear in the financial market. Some previous studies have found evidence that higher customer satisfaction improves firms' performance in the financial market, such as higher shareholder value (Anderson, Fornell, and Mazvancheryl, 2004; Gruca, and Rego, 2005; Luo, and Bhattacharya, 2006; Aksoy, Cooil, Groening, Keiningham, Yalcin, 2008); stock prices (Anderson, Fornell, and Mazvancheryl, 2004; Fornell, Mithas, Morgeson III, and Krishnan, 2006), cost of capital (Anderson, and Mansi, 2009), analysts' recommendations (Luo, Homburg, and Wieseke, 2010), and even executives' compensation (O'Connell, and O'Sullivan, 2011; Lee, and

Scott, 2013).

Some supporting studies even provide evidence that the improved financial performances caused by higher customer satisfaction are quantitatively significant. For example, Hart (2007) finds that from 2001 to 2006, the stock price of customer satisfied stock portfolio rise by 144.5%, while the stock price of S&P total portfolio rise only by 38.7%. The supporting evidence does not only exist in the stock market; more recently, Anderson and Mansi (2009) find that in the bond market, improved customer satisfaction also play an important role. They document that higher customer satisfaction has a positive impact on credit ratings, and correspondingly, ACSI's increase by 1 grade leads to a reduction of bond yield spread by around 2 basis points (100 Basis Points = 1%).

Some other studies, nevertheless, only find insignificant or limited association between customer satisfaction and financial market performances. They show that customer satisfaction announcements have no impact on stock prices (Ittner and Larcker, 1998; Fornell et al., 2006). Jacobson and Mizik (2009) find that customer satisfaction does not provide incremental information over accounting measures in predicting equity prices either.

In this dissertation, I examine whether higher customer satisfaction is associated with better performance to justify the necessity of marketing expenses. I aim to provide a new angle to further understand the role of customer satisfaction in financial markets. Instead of testing the association between customer satisfaction and some first order financial performance measures (such as stock prices, returns, or cost of capital, etc.), I turn to second order financial measures, including the information efficiency in stock prices, and also efficiency of corporate decisions.

In the latter part of this dissertation, I turn to investigate how customer satisfaction affects corporate decisions efficiency. I choose to study corporate investment and its efficiency among lots of corporate decisions, first because the magnitude and frequency of corporate investment decisions of US corporations have recently attracted much interest amongst both academics and practitioners alike (Jackson et al. 2009). Apart from the alleged benefits of the investment decisions, such as those affecting a firm's market value (McConnell and Muscarella, 1985), or the long term survival of the firm (Klammer et al. 1991), the magnitude of these investments, by themselves, has been the source of much scrutiny and interest. For example, reports from United States Census Bureau suggest that businesses in the US spend over US$1 trillion annually on capital investments. Jackson (2008) also notes that publicly traded corporations in North America spent an aggregate of US$730 billion on capital investments in 2004 with an average of US$102.4 million per firm. Given the benefits and magnitude of these investments, it is surprising that I know relatively little about the determinants of these capital investments (Jackson, 2008).

Given the benefits and magnitudes of these investments, it is interesting to understand and shed some light on the determinants of these capital investments.

The further motivation that I choose to study investment efficiency is due to the large amount of literature that finds higher investment levels may be not favored by the investors. Recent papers have found that there is a negative correlation between corporate investment and subsequent returns, and this is denoted as 'investment puzzles', 'investment effect', or 'asset growth effect' (Fairfield, Whisenant, and Yohn, 2003; Titman, Wei, and Xie, 2004; Broussard, Michayluk, and Neely, 2005; Anderson and Garcia-Feij´oo, 2006; Lyandres, Sun, and Zhang, 2008; Xing, 2008; Cooper, Gulen, and Schill, 2008; Polk and Sapienza, 2009; and Lipson, Mortal, and Schill, 2011). I am motivated to examine the association between customer satisfaction and investment decisions, and its efficiency, to provide a more comprehensive understanding of customer satisfaction's effects in financial expressions.

1.2 Theoretic Development and Empirical Findings

Firstly I investigate whether customer satisfaction influences the information efficiency in stock prices. I choose to study stock price informativeness because it is an important financial performance metric in the following aspects. Higher stock price informativeness signals market efficiency (Durnev, Morck, Yeung, and Zarowin, 2003). The lack of firm-specific information transparency leads to big problems: it was proved that opaque stocks are also more likely to crash (Jin and Myers, 2006), lead to less economic efficiency of corporate investment (Durnev, Morck, and Yeung, 2004; Chen, Goldstein, and Jiang, 2007). Also high stock price informativeness may be related to high-quality corporate governance mechanisms (Ferreira and Laux, 2007). To conclude, it is believed that the low stock price informativeness problem not only harms the investors, but also leads to market inefficiency.

My arguments that link customer satisfaction with stock price informativeness begin with the notion that firms operating with higher customer satisfaction are less dispersed due to large and/or stable future cash flows, and thus lead to less dispersion in beliefs (Luo, Homburg, and Wieseke, 2010). Since different expectations are motivation for stock trading, for firms enjoying higher customer satisfaction, investors generally hold their stocks, and reduce noise trading, unless they have confidence in their private information sources. This helps the incorporation of information into stock prices.

I use four stock price informativeness measures in main tests, and two more measures in robustness tests to capture the incorporation of firm specific information into stock price. It has been a hot topic in finance research after Roll (1988) found that the asset pricing models with macro factors usually lack explanatory power by producing low R-squares. The lack of explanatory power reflects the extent to which the firm-specific information is contained in stock price. So I choose R-square and the inverse logarithm of non-synchronicity transformation as the first two measures for informativeness. Another measure I use is the probability of stock price crashes. Hutton, Marcus, and Tehranian (2009) use high probability of stock price crashes to measure lower stock price informativeness. And this measure is also theoretically consistent with Jin and Myers (2006)[2]. I also use Peress (2010)'s measure, accumulated excess return around quarterly announcement date to be an adverse stock price informativeness measure.

[2] Jin and Myers (2006) think lack of stock price informativeness will lead to stock price crashes.

And I find consistently with the trading-link arguments. My trading-link hypothesis argues that the association between higher customer satisfaction and improved stock price informativeness is due to convergent beliefs by investors, and consequent decreased noise trading intensity. Thus I predict when informed traders' (including insiders and institutional investors who are more sophisticated in private information collections) is higher, the association between customer satisfaction and stock price informativeness is more pronounced, *i.e.*, informed trading is one essential channel of this association. I also look at the cross-sectional and time series partitions. I find that when firms face more severe competitions in product market, improved customer satisfaction could lead to more informativeness in stock prices. I also find that when sentiment is higher, the association between customer satisfaction and stock price informativeness association is more pronounced.

Empirically I find robust supporting evidence (including Probability of Informed Trading[3] measure and Future Earnings Response Coefficient[4] model) that higher customer satisfaction could enhance the incorporation of information into stock prices.

[3] PIN, hereafter.
[4] FERC, hereafter.

In the second part of this dissertation, I examine the association between customer satisfaction and corporate investment, and its efficiency. Since customer satisfaction will lead to higher opportunity set (for example, in terms of higher Tobin's Q, as documented by Anderson, Fornell, and Mazvancheryl, 2004), and looser financial constraints (for example, in terms of lower cost of debt, as documented by Anderson, and Mansi, 2008), I predict that customer satisfaction will positively affect firms' corporate investment levels, in terms of summarized (factor constructed by) capital expenditure, advertising expenses, and research and development expenses, and in terms of asset growth rate (a more general measure of investment which could largely subsume the explanatory power of other measures, as documented by Lipson, Mortal, and Schill, 2011). Empirically I find supporting evidence for this prediction.

In this dissertation, with limited sample size, I still find the investment puzzle in my sample. Besides raw return and excess returns from stock market, I also include accounting measures of performance to better indicate the effectiveness of the control systems in achieving the organization's goals. I include ROE (return on equity), ROA (return on asset), and Tobin's Q[5]. These accounting

[5] The first two are profitable (unprofitable) measures for investment decisions. They are used in previous studies, such as Hutchinson and Gul (2004). Tobin's Q measure is also frequently employed in R&D (research and development) valuation studies, such as Bebchuk, Cohen and Ferrell (2009); Cheng (2008); Coles, Daniel and Naveen (2008); Faleye (2007); and Gompers, Ishii and Metrick (2003).

measures are less subject to exogenous economic factors, and help to provide a comprehensive evaluation to investment efficiency.

Meanwhile, it is found that manager's empire building due to agency problems is considered as one possible factor that lead to this investment puzzle (Titman, Wei, and Xie, 2004; Cooper, Gulen, and Schill, 2008). Customer satisfaction may solve this agency problem due to two reasons: first is that customers have incentives and power to monitor corporate decision making in terms of external governance mechanisms, according to governance's shareholders model. Thus I argue higher customer satisfaction indicates better monitoring from customers, and further better external governance. Better governance reduces the negative association between future accounting performances and investment opportunity sets (Hutchinson and Gul, 2004). The second reason is that managers make corporate decision with learning from the stock market (Chen, Goldstein, and Jiang, 2007), higher stock price informativeness will lead to higher investment efficiency (Durnev, Morck, and Yeung, 2004; Chen, Goldstein, and Jiang, 2007). Thus I predict in firms with higher customer satisfaction, the investment puzzle will be less pronounced.

I also check the association between customer satisfaction and demanding board characteristics, such as board size, board independence, and CEO non-duality, to further support the argument that customer satisfaction serves as one mechanism of corporate governance. Ferreira, Ferreira, and Raposo (2011) find that higher stock price informativeness improves information environment in stock market, and this is substitute for demanding board characteristics, such as board independence. Similarly, I find that customer satisfaction and demanding board characteristics are substitutes for each other.

1.3 Contributions

My findings contribute to the literature firstly in the way that I broaden the literature of how customer satisfaction improves financial performances. Stock price informativeness in many aspects is important: it signals stock market efficiency, make stock prices less likely to crash, and lead to more economic efficiency of corporate investment, and also better corporate governance. My findings suggest marketing efficiency in product market leads to financial market information efficiency and corporate decision efficiency.

Secondly, this dissertation has comprehensive sets of robust measures for stock price informativeness. Although there are some studies questioning about whether the R-square or the non-synchronicity measures capture information or noise, I give a setting with a series of robust informativeness measures, and to support that the R-square and non-synchronicity measures in my study is proper measures of information. In similar manners, I employ robust measures for corporate investment, investment efficiency, demanding board, and other partition variables, and may contribute to each line of literature as well.

Furthermore, I provide evidence with interaction between customer satisfaction and governance theories. I not only provide supportive empirical evidence for stakeholder theory of corporate governance; but also my evidence strengthens the contingent governance theory. At the end of this dissertation, evidence indicates that demanding board characteristics may be not the optimal structure for all firms. I provide some insight to explain logically why intangible assets, such as customer satisfaction, modify the adoption of corporate governance mechanism.

1.4 Thesis Structure

This thesis proceeds as follows. Chapter 2 investigates the association between customer satisfaction and stock price informativeness. In Chapter 2, I first review the background and develop hypotheses about why and how customer satisfaction should be associated with stock price informativeness. Then I describe the methodology, data collection, and variable definitions for the investigation. After that I present the empirical results, followed by a series of robustness tests and discussions. Chapter 3 investigates the association between customer satisfaction and corporate investment levels, and also the effect of customer satisfaction on investment puzzle. I firstly review the background and develops hypotheses about why and how customer satisfaction should be associated with stock price informativeness. Then I describe the methodology, data collection, and variable definitions for this investigation, followed by the empirical results and robustness checks. The last chapter, Chapter 4, is to conclude the whole study, and point out the limitation of this study and the direction for future study.

Chapter 2: Customer Satisfaction and Stock Price Informativeness

In this chapter I first review literature on customer satisfaction, and stock price informativeness in Section 2.1. Also in this section, I develop hypotheses. Then in Section 2.2, I describe the data and methodology employed for investigation on the hypotheses. Finally in Section 2.3, I present empirical results.

2.1 Background and Hypotheses

In this section I first review literature on customer satisfaction, and stock price informativeness. I begin with an introduction to the marketing/finance interface background of this inter-disciplinary research in Section 2.1.1. I then focus on theoretical development of customer satisfaction, and outline the empirical findings on the consequences of improved customer satisfaction. Then in Section 2.1.2, I first discuss the theoretic development and several empirical simulations that underlie the informativenss of stock prices. I then discuss the current application of stock price informativeness in corporate finance research. Lastly, in Section 2.1.3, I discuss why customer satisfaction and stock price informativeness should be related, and also argues why there should be variations in this association due to heterogeneity of investors, industry competition, and sentiment.

2.1.1 Customer Satisfaction

Limited attention on the marketing/finance interface

Although disciplines of marketing and finance are both rooted in economics, (Zinkhan and Verbrugge, 2000), academically and practically they are separated and investigated as isolated fields. Marketing executives are being urged to speak in the language of finance to gain support for huge marketing spending.

The assets of a firm are made up of two parts; tangible assets which are recorded and are measured as part of the total assets of the firm; and intangible assets which largely go unrecorded and do not appear in the accounts as part of total assets (Toivanen et al, 2002).

Marketing spending leads cash flow out of the company, and the process and outcomes is opaque. Its effects may be risky, and also may require longer horizon to be realized. Meanwhile, marketing spending is more like to build up intangible assets, such as customer satisfaction, and brand equities. Thus marketing needs experience and specific knowledge to understand its value (Barker, and Mueller, 2002). Even for top management, CEO with significant career experience in marketing and those who own a science-related degree really matters in determine the R&D levels (Barker, and Mueller, 2002). For the outsider investors, it may be hard for them to fully understand the meaning of marketing practice and spending.

Also investors do not fully trust managements due to agency problem arising from the separation of management and control. Marketing spending is more likely to be related to discretional usage of firms' capital. Marketing spending is usually viewed as costs, instead of investments in income statements. Sometimes, management could discretionally adjust costs and investments to meet their personal interests, such as short-term earnings goals and salary (Bushee, 1998; Cheng 2004). Cutting marketing expenses will immediately results in an increase in profitability. Generally speaking, marketing activities are easily to be doubted about their real values.

Meanwhile, marketing strategy is crucial in firms' operation in long run. It is related to firms' information management. As to generate and spread information about the product and services provided by the firms, it affects stakeholder's behavior. For example, if a firm cuts its advertising budget, the direct result may be the decline of market share. And without marketing spending, it is hard, and slowly to gain the market share back.

One real example is that in short run, tobacco companies had better numbers of earnings and profitability after the U.S. government's requirement of reduction in advertising expenditures in 1970. However, in the long term, tobacco companies face a recession in consumption. This dilemma even aggravated due to the government's propaganda against smoking. So it is crucial to maintain the levels of marketing expenses.

As a conclusion, marketing spending could affect firm and industry future performances. And since they are opaque, it is in need to analyze the necessity of such spending. Several marketing metrics, including customer satisfaction, is becoming a hot topic among scholars.

Customer Satisfaction

Customer Satisfaction measures customers' perceptions of how products and services supplied by a company meet or surpass their expectations. Following a large amount of marketing literature[6], I adopt *American Customer Satisfaction Index* (*ACSI*, hereafter) to measure customer satisfaction. This index is firstly developed by University of Michigan in 1994. Every year more than 80,000

[6] In the literature, tons of paper employs ACSI as main testing variable. The following studies are part of the examples: Ittner and Larcker, 1998; Fornell and Mazvanc, Anderson, Fornell, and Mazvancheryl, 2004; Homburg and Hoyer, 2005; Gruca and Rego, 2005; Fornell, Mithas, Morgeson III, and Krishnan, 2006; Fornell et al, 2006; Hart, 2007; Luo and Homburg, 2008; Luo and Nguyen, 2008; Villanueva et al., 2008; Aksoy et al., 2008; Anderson and Mansi, 2009; Jacobson, 2009; Fornell, Rust, and Dekimpe, 2010; Luo, Homburg, and Wieseke, 2010; O'Connell, V., and O'Sullivan, 2011; and Lee and Scott, 2013.

American citizens are interviewed about their satisfaction with the goods and services they have consumed. A wide-range of goods and services are included as the object investigated by the interviews, including durable goods, services, non-durable goods, local government services, and some federal government services. Results for the past year, in terms of a score ranged from 0 to 100 for each brand name, are released to the public at the end of each quarter. Usually data for different industries will be released in different quarter ends. In a survey of nearly 200 senior marketing managers, 71 percent responded that they found a customer satisfaction metric very useful in managing and monitoring their businesses (Farris, Bendle, Pfeifer, and Reibstein, 2010).

The effect of customer satisfaction is clear in the product market. Bearden and Teel (1983), Bolton and Drew (1991) both find clear evidence that higher customer satisfaction is associated with higher customer retention; Fornell (1992) find that higher customer satisfaction is related to better word of mouth; Anderson, Fornell, and Lehmann (1994) document that higher customer satisfaction leads to larger market share; Bolton (1998) find a positive association between customer satisfaction and more cross-selling opportunities; also Bolton and Lemon (1999) show a higher usage due to higher customer satisfaction, and Homburg Koschate, and Hoyer (2005) document that satisfied customer will improve their willingness to pay. Meanwhile, negative behaviors is reduced due to higher customer satisfaction, such as complaints (Fornell 1992), payment defaults (Bolton 1998), and search (Ratchford and Srinivasan 1993). Meanwhile, the improvement in customer satisfaction have positive effect on the customers' behaviors as well: an increase in satisfaction may lead to a higher spending growth (Fornell, Rust, and Dekimpe, 2010). Future cash flow associated with higher customer satisfaction tends to show a growing and stable pattern (Anderson, Fornell and Mazvancheryl, 2004; Gruca and Rego, 2005). In general, customer behavior is positively influenced by higher customer satisfaction and this leads to higher future revenues in a predictable manner (Reichheld and Sasser, 1990). Anderson, Fornell and Lehmann (1994) also document a clear pattern of how higher customer satisfaction is related to a higher profit.

However, the effect of customer satisfaction is largely unclear in the financial market. Some previous studies have found evidence that higher customer satisfaction improves firms' performance in the financial market, such as higher shareholder value (Anderson, Fornell, Mazvancheryl, 2004); or positive excess returns with lower risks (Fornell, Mithas, Morgeson III, and Krishnan, 2006). As pointed by Hart (2007), from 2001 to 2006, the stock price of customer satisfied stock portfolio rise by 144.5%, while the stock price of S&P total portfolio rise only by 38.7%. The supporting evidence does not only exist in the stock market; more recently, Anderson and Mansi (2009) find that in the bond market, customer satisfaction also play an important role. They document that higher customer satisfaction has a positive impact on credit ratings, and correspondingly, reduces cost of debt financing.

Some other studies, nevertheless, only find insignificant or limited association between customer satisfaction and financial market behavior. They show that customer satisfaction announcements have no impact on stock prices (Ittner and Larcker, 1998; Fornell et al., 2006). Jacobson and Mizik (2009) find that customer satisfaction does not provide incremental information over accounting measures in predicting equity prices either.

Other Metrics

Other marketing metrics include brand equity. The proportion of intangible assets to shareholder value at Fortune 500 companies has steadily risen, from about 50 per cent in 1980 to 70 per cent today (Financial Times, 24/7/2007). Consequently, as the developed economies switch from manufacturing to services and tangible to intangible products, brands make up a growing proportion of financial value (Financial Times, 24/4/2007).

Financial World offers measures of brand equity. Brand equity leads to brand loyalty, and customers' willingness to purchase. Since brand names represent both an asset and a source of future earnings and cash flow, existing studies document positive associations between brand equity and firm's financial performance in stock market. For example, brand equity is positively related to accounting profitability measures (Ohnemus and Jenster, 2007); stock prices (Barth, Clement, Foster and Kasznik, 1998); stock returns (Aaker and Jacobson, 1994; Lane and Jacobson, 1995); shareholders' value (Kerin and Sethuraman, 1998; Rao, Agarwal, and Dahlhoff, 2004; Morgan and Rego, 2009). Also brand equity provides incremental information content to accounting performance measures in explaining stock return (Mizik and Jacobson, 2008); improves valuation accuracy by incorporating information about the properties of the firm's brand asset directly into a valuation framework. Bahadir, Bharadwaj, and Srivastava (2008) note that in mergers and acquisitions (M&As), brands account for significant but heterogeneous proportions of overall transaction values.

Another metrics widely used by marketing scholar is advertising. It can affect brand equity through brand associations, perceived quality and use experience. Advertising that provides information about verifiable attributes, such as price and physical characteristics, will influence brand associations (Stigler 1961, as cited in Simon and Sullivan, 1993). Different types of advertising campaigns affect differently consumers' perceptions. Advertising can also influence the way consumers learn about products. Hoch and Ha (1986) provide experimental evidence that advertising influences consumers' perceptions of the products when they experience it. Finally, advertising can make positive brand evaluations and attitudes readily accessible in memory (Farquhar, 1989; Simon and Sullivan, 1993).

Teo and Liu (2007) find that trust is improved by increasing the perceived reputation through advertising and publicity. In a meta-analysis of determinants of financial performance, by Capon, Farley, and Hoenig (1990), in 68 studies, for 614 times, scholars find a significant positive relationship between advertising and firm values, and for 86 times, there are negative associations.

Joshi and Hanssens (2009) study how advertising affects investors. Joshi and Hanssens (2010) investigate long-term positive relationship between advertising spending and market capitalization. McAlister, Srinivasan, and Kim

(2007) examine the impact of a firm's advertising and its research and development (R&D) on its systematic risk (measured as CAPM-β), a key metric for publicly listed firms. Furthermore, companies with higher advertising intensity experience higher risk-reduction than companies with lower levels of advertising (Luo and Bhattacharya, 2009). Scholars in finance discipline also documented some interesting findings on marketing/finance interface as well. For example, Grullon, Kanatas, and Weston (2004) show supporting evidence that advertising increases stock liquidity (measured by bid-ask spreads and quoted depth). Another finance paper by Chemmanur and Yan (2009), which finds that advertising and IPO underpricing are signals for the quality of firm's future projects and firms use them as substitutes for each other.

There are also literature examing the relationship between other marketing metrics and financial performances, such as corporate social performance (Luo and Bhattacharya, 2009), product quality (Aaker and Jacobson, 1994; Srinivasan et al., 2009; Tellis and Johnson; 2007), word of mouth (Fang, Palmatier, and Steenkamp, 2008), marketing spendings (Luo, 2008; Seog and Hyun, 2009), marketing capability (Krasnikov and Jayachandran, 2008), merger and acquisition (Swaminathan, Murshed, and Hulland, 2008), promotions (Pauwels et al., 2004), distribution channel (Geyskens et al., 2002), New Products (Chaney et al., 1991; Sorescu and Spanjol, 2008; Pauwels et al., 2004; Srinivasan et al., 2009; Srinivasan et al., 2009; Sood and Tellis, 2009). Such effects are less related to the core content of this study, and due to the page limitation, the literature review of these metrics are not contained in this dissertation.

Reasons of Examining Customer Satisfaction

'The customer's mind is still closed to us; it is a 'black box' that remains sealed. I can observe inputs to the box and the decisions made as a result, but I can never know the act of processing inputs truly happens' (Bateson, 1992). Marketing spending such as R&D, advertising and other costs are less directly related to customers purchase behavior. The literature focusing on spending only could test the joint hypothesis: 1) such costs are effective to generate high willingness to pay, and 2) customers' willingness to pay is valuable.

However, using customer satisfaction data avoids the above arguments. The scores of customer satisfaction *ACSI* are from interviews about 80,000 Americans annually and asking about their satisfaction with the goods and services they have consumed. Random-digit dial method of sampling is employed to identify potential respondents. It guarantees the representation of the U.S. consumers. This concept and data have been used by academic researchers, corporations, government agencies, market analysts and investors, industry trade associations, and consumers. Moreover, with the exogenous simulations after careful econometric modeling, *ACSI* could be relatively a clean measure of marketing efficiency.

2.1.2 Stock Price Informativeness

In this section I describe the theory that underlies stock price informativeness developed in prior literature. I first define the theoretical root and development of stock price informativeness. Previous literature shows that stock price informativeness is important as it captures the relative degree of firm-specific information impounded in prices. I will also review some studies which discuss the theoretical and empirical factors that may be related to stock price informativeness, and the consequence of stock price informativeness.

The Concept of Stock Price Informativeness

Stock price informativeness has been a hot topic in finance research after Roll (1988) finds that the asset pricing models usually lack explanatory power by producing low R-squares. Roll (1988) points low R-squares of U.S. firms imply either private information or occasional frenzy. By his calculation, in the asset pricing models only macro data are used to predict individual returns, so the lack of explanatory power may reflect the extent to which the firm-specific information is contained in the stock price, or noises.

Many scholars hold the opinion that the lack of explanatory power in asset pricing models indicates higher firm specific information in stock prices. For example, Morck, Yeung and Yu (2000) provide evidence that this lack of explanatory power consists of noise trader risk in their international study, and this lack of explanatory power indicates more firm-specific information.

Durnev, Morck, Yeung and Zarowin (2003) hold similar attitude toward the same low R-square measures. They show that lower R-squares indicate higher stock price informativeness, and they provide supporting evidence that firms with lower R-squares in current stock returns contain more information about future earnings.

Consistent with Durnev et al. (2003), Piotroski and Roulstone (2004) define stock return synchronicity as "the extent to which market and industry returns explain variation in firm-level stock returns" (pp. 1120). And thus stock price informativeness should be defined as "the extent to which firm-specific information explain variation in firm-level stock returns".

They note: "as Roll (1988) makes clear, the extent to which stocks move together depends on the relative amounts of firm-level and market-level information capitalized into stock prices" (pg 216). I use Piotroski and Roulstone's definition and note that the explanatory power of market and industry indexes captures the relative amount of market, industry and firm-specific information impounded into prices.

Jin and Myers (2006) also hold the information based belief of stock price informativeness and they address the reason of synchronical stock price moves in emerging economies as lack of information transparency.

Ferreira and Laux (2007) examine the effect of anti-takeover policies on stock price informativeness. They argue that firms with more anti-takeover policies will block firm private information flows and thus the stock price informativeness will be lower. They empirically use G-index (Gompers et al. 2003) as proxy for anti-takeover proxies, and find that firms with better corporate governance mechanisms (those who have smaller G-index and thus less anti-takeover policies) will enhance the information content of stock prices.

Fernandes and Ferreira (2008) investigate whether cross-listing in the U.S. affects the information environment for non-U.S. stocks. They argue that consistent with the bonding hypothesis for cross-listing (Coffee, 2002)., cross-listed firms moving from a poorer quality legal environment to an environment have increased enforcement, enhanced disclosure, and moderated litigation procedures. Empirically they find that Non-US firms from developed market and cross-listing in US improve stock price informativeness. For firms from emerging markets and cross-listing in US, however, cross-listing decreases price informativeness. They claim that the added analyst coverage associated with cross-listing likely explains the findings in emerging markets, consistent with the finding by Chan and Hameed (2006) that in emerging economies, analyst coverage fosters the production of marketwide information, rather than firm-specific information.

There are also scholars who think the low R-squares in asset pricing models reflect noises in stock prices.[7] I try to eliminate this concern by including other

[7] For example, Black (1986) describes when traders use unrelated causal elements to explain what happens to stocks, they causes stock prices to stray from theoretical values. West (1988) also argues that rapid information incorporation reduces idiosyncratic volatility; thereby R-squares are higher. Kelly (2005) finds low market model R-squares are indicative of a poor information environment with greater impediments to informed trade. Ashbaugh-Skaife, Gassen and Lafond's work (2006) also provides little support for using stock price synchronicity as a measure of firm-specific information internationally. Mashruwala, Rajgopal and Shevlin (2006) find that accrual anomaly documented by Sloan (1996) is concentrated in firms with high idiosyncratic stock return volatility, which suggests idiosyncratic stock return volatility is risk measures and higher firm-specific risks stop risk-averse arbitrageurs to trade stocks based on the accruals information. Teoh, Yang, and Zhang (2009) use accruals, net operating assets, post-

stock price informativeness as robust measures for the R-square and relevant measures. I will discuss about the other informativeness measures later.

The Role of Informed Participants in Financial Market

There is evidence that investor heterogeneity affects investors' trading behavior and consequently different investors has different impacts on stock prices. Among all types of financial market participants, insiders and institutional investors are more sophisticated at information collections.

As addressed by the insider trading laws (1934) in the United States, "insiders" are as officers, directors, and large shareholders of more than ten percent of any equity class of securities of the issuing company. Insiders usually are informed with their firms' risks and opportunities. The US Securities and Exchange Act (1934) prohibit the purchase or sale of a security of any issuer based on any material nonpublic information. Insiders with material nonpublic information should either disclose this information or abstain from trading. Also the Securities and Exchange Commission (SEC) required report of all transactions made by insiders. Recently, the Sarbanex-Oxley Act of 2002 (SOX) also has

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earnings announcement drift, and V/P anomalies to test whether low R-Square indicate information or noise, and reject the high-information resolution interpretation. Han, Lin, and Wei (2009) find that accounting restatements drive down price synchronicity, and this phenomenon is driven by the increased firm-level noise/uncertainty rather than firm-level information. Rajgopal and Venkatachalam (2011) also believe higher firm idiosyncratic return volatility contains more noises.

had a significant impact on disclosures of insider trading.

Academically, tons of studies reveals that insiders are able to predict the direction of the future movements of their firms' stock prices (Lorie and Niederhoffer, 1968), outperform the market (Finnerty, 1976); have superior information (Baesel and Stein, 1979); more profitability (Seyhun, 1986); the aggregate trading activity by insiders predicts returns in subsequent months (Seyhun, 1988; 1992). More recently, Piotroski and Roulstone (2004) investigate the extent to which the trading and trade-generating activities of three informed market participants-financial analysts, institutional investors, and insiders-influence the relative amount of firm-specific, industry-level, and market-level information impounded into stock prices. Consistent with Chan and Hameed (2006), they find that analysts enhance the incorporation of industry-level information into stock prices, thus decrease stock price informativeness. They also find that for both insiders and institutional investors, their transactions conveying firm-specific information to stock market.

Also mentioned by Piotroski and Roulstone (2004), institutional investors are another kind of informed investors in the stock market. Institutions investors belong to organizations with large sums of money and they are professional to invest those sums in securities, real property and other investment assets. Such organizations may include banks, insurance companies, funds, invest companies and advisors, pensions, and university endowments.

Institutional investors have superior power in identifying investment opportunities in stock market. For example, they may exploit individual investors' underreaction (Cohen, Gompers and Vuolteenaho, 2002), or exploit post-earnings announcement drift (Ke and Ramalingegowda, 2005) to make money. Besides, institutional investors may cause fluctuation in stock prices. Bennett et al. (2003) find evidence that firm-specific volatility is positively related to lag changes in institutional ownership. Brunnermeier and Nagel (2004) further find that hedge funds are important cause of the technology bubble. Dennis and Strickland (2004) show that firm-level volatility is positively related to increased institutional ownership both cross-sectionally and time-serially.

Among all types of institutional investors, banks, insurance companies, and retirement or pension funds are relatively passive investors, and their needs and abilities to pursue profits are weak. For the other types of institutional investors, they are more likely to be profit-driven and more active in collecting information (Almazan, Hartzell, and Starks, 2005). And only these profit-driven institutional investors are my interests in this study.

2.1.3 Customer Satisfaction and Stock Price Informativeness

I first argue why customer satisfaction should affect stock price informativeness. My starting point is customer satisfaction is that an indicator of customers' future purchasing behavior and will affect the level, timing, and risk of future cash flows, which has positive economical returns (Reichheld and Sasser, 1990; Anderson et al., 1994; Anderson et al., 2004; Gruca and Rego, 2005; Fornell et al., 2008). In the stock market, these improved economical performances may also lead to positive excess returns with lower risks (Fornell et al., 2006; Hart, 2007). Higher customer satisfied firms usually have lower cost of future transactions (Reichheld and Sasser 1990) as well. In terms of information spread in financial market, analysts' earnings forecasts about firms with higher customer satisfaction are less dispersed due to large and/or stable future cash flows (Luo, Homburg, and Wieseke, 2010). It indicated differences in opinions become less dispersed among market participants. Different expectations are usually motivation for trading in stock market. As a result, for firms enjoying higher customer satisfaction, investors generally hold their stocks, and reduce trading, unless they have confidence in their private information sources. Then they trade, and incorporate this information into stock prices. Thus my first hypothesis is:

H1: Customer satisfaction and stock price informativeness are positively associated.

As I discussed in the previous literature, there are noise and sophisticated traders in the stock market at the same time. Due to the limitation of knowledge, capital, and time, sophisticated traders play a more significant role in the information transferring process in the stock market. So I propose that, the informed participants in the stock market may be able to capture this arbitrage opportunity with higher customer satisfied stocks. According to Piotroski and Roulstone (2004), institutional investors, and insiders, may influence the relative amount of firm-specific information impounded into stock prices. There is also empirical finding that marketing activities, such as advertising, could help to attract more institutional investors (Grullon, Kanatas and Weston, 2004). Thus trading in higher customer satisfied firms are more likely to be generated by informed investors, and they are the core resources for private information spread. Based on the argument that 1) only informed traders obtain private information; 2) they are profit-driven and could not let the opportunities of arbitrage go away; firms with higher customer satisfaction should also have more informed trading by insiders and institutional investors, and then the improvements in stock price informativeness is a consequence. Thus my second hypothesis is:

H2: The enhancement in stock price informativeness due to customer satisfaction is more pronounced when informed trading is more intensive.

Previous literature also point out that customer expectations play a greater role in sectors in which variance in production and consumption is relatively low (Fornell, Johnson, Anderson, Cha, and Bryant, 1996). Thus I could also expect the positive association between customer satisfaction and stock price informativeness when firm facing more industry competition.

Some other macro variables may also be linked to the effect of customer satisfaction. I take sentiment indices as an example to check the time-series variation of the association between customer satisfaction and stock price informativeness. For investor sentiment, literature has found that trading, especially noise trading, appear to be more active in periods of high investor sentiment, and cause less informative stock prices (Kurov, 2008). Since I argued that the association exists because directly customer satisfaction reduces noise trading, I expect the association should be stronger when there is more possibility of noise trading. Another sentiment index I employed is consumer sentiment (consumer confidence index). By definition, when consumer confidence is low, consumers' willingness to purchase goods is lower, and thus I expect a smaller association between customer satisfaction and its improved outcomes, including stock price informativeness.

2.2 Data and Methodology

In this section, I describe sample collection procedures, data sources, variable definitions, and the empirical models I used to investigate the association between customer satisfaction and stock price informativeness.

2.2.1 ACSI Sample Collection

Sample for this study is collected based on the availability of customer satisfaction measure. I employ *American Customer Satisfaction Index* (*ACSI*) as my testing variable. In 1994, *American Customer Satisfaction Index* (*ACSI* for short) database[8] began to release annual assessments of customer satisfaction

[8] *American Customer Satisfaction Index* database started in 1994 by researchers at the *National Quality Research Center*, a research unit within the *University of Michigan*, and now (from 2009) is available from the website of *American Customer Satisfaction Index*, a private company. (Available at http://www.theacsi.org/acsi-results/benchmarks-by-company-popup-all)

on more than 340 brands in the US market based on surveys to domestic customers. *ACSI* reports scores on a 0-100 scale at these brands in more than 250 companies for 47 industries. Since then, data from this database has become widely employed in customer satisfaction research (Ittner and Larcker, 1998; Anderson et al., 2004; Fornell et al., 2006; Luo and Homburg, 2008; Luo and Nguyen, 2008; Villanueva et al., 2008; Aksoy et al., 2008; Anderson and Mansi, 2009; Jacobson, 2009).

I begin with annual *ACSI* scores for 345 brands in the US market from 1994 to 2010. Because the *ACSI* database does not provide any firm identifiers (such as *PERMNO*, *GVKEY*, *CUSIP* or *TICKER*) to these brands, but only brand names, I hand-collect the brand owners' information and match these brands to the listed companies in the US stock market. After that I lost 45 brands, which belongs to private firms (such as *Burger King*, a brand name owned by the global chain of hamburger fast food restaurants which has the same name), governance agencies (such as *Exchange*, formly named *AAFES* or *Army & Air Force Exchange Service*, a brand name owned by the agency of the *United States Department of Defense*), non-profit charitable organizations (such as *Wikipedia.org*, a brand name of website owned by the non-profit *Wikimedia Foundation*), or foreign firms which is not cross-listed in US (such as *Acer*, a brand name owned by *Acer Incorporated*, a Taiwan company, listed in *LSE:ACID* and *TWSE:2353*). I use firm list from *CRSP* database as the matching list, and get brand information mainly from *Google* and *Wikipedia* websites.

Then starting with these 300 brands with firm identifier, I summarize the firm-level ACSI scores for each available firm identifier (*PERMNO*). The reason of doing this is that 1) there are firms in this list may have multiple brands initially, or after mergers and acquisitions in the sample period (such as for the former case, brands of *Dodge*, *Jeep*, *Chrysler*, all owned by *Chrysler Group LLC*; and for the latter case, *Compaq*, a computer brand name owned by *Compaq* computer corporation and in year 2002 the corporation was acquired for US$25 billion by *Hewlett-Packard Company*;); and 2) a brand name may belongs to two or more companies in the sample period (such as *NBC Television Network*, a brand name of network which is currently owned by the media company *NBCUniversal*, a joint venture of *Comcast* and *General Electric*). After summarizing, I get 251 firms' average annual *ACSI*.

2.2.2 Other Data Sources

To test my hypotheses, I need other data, including the measures of stock price informativeness, insider and institutional trading, corporate investments, industry competition, macro sentiment, future performance, board characters, and firms' characteristics related to the above variables. So besides the *American Customer Satisfaction Index* database, I also use some other *WRDS* databases in this study: 1) the daily *CRSP* database which contains the information of first appearance, stock prices, returns, trading volumes, numbers of shares outstanding; 2) the quarterly *Thomson-Reuters* database which contains insider and institutional transaction data; 3) the quarterly *CRSP-COMPUSTAT Merged* database which contains accounting numbers, and 4) the *COMPUSTAT Segment* database which contains annual business segment information. I stop sample period in calendar year 2010. And because *ACSI* is released at the end of each quarter and databases 2) and 3) are quarterly data, all observations in this study take the frequency of quarterly, unless otherwise specified.

I need a series of other data from several scholars' websites to complete my analyses. First, I need the daily *Fama-French Factors* data, including risk free rate, market risk free rate, *SMB* factor return, *HML* factor return. I downloaded them from *Kenneth French*'s data library website.[9] Second, I need investor

[9] *Kenneth French*'s data library website is available at:
http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

sentiment data. I downloaded monthly investor sentiment from *Jeffrey Wurgler*'s website.[10] Third, I need consumer confidence data from *The Conference Board*. I also downloaded relevant monthly data from a website.[11] The consumer confidence data are benchmarked with value 100 in the year 1985.

Then I merge the 251 firms with annual *ACSI* with quarterly stock price informativeness measures and other control variables, and I lost 24 firms due to data availability. So from the initial 345 brands, I get the final sample of 227 firms, or 7,296 firm-quarters as my final sample for the main testing. For some future performance analyses, sample sizes are a bit smaller. I summarize the sample collection procedures in Table 1.

[Insert Table 1]

2.2.3 Variable Definitions

Customer Satisfaction

As mentioned in the previous section, *ACSI* is a 0-100 scale scores for each

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[10] Baker and Wurgler's investor sentiment data are available at: http://people.stern.nyu.edu/jwurgler/.

[11] *The Conference Board website* offers monthly consumer confidence data at: http://www.conference-board.org/data/consumerconfidence.cfm.

brand. I calculated annual *ACSI* score for firm i in year p as:

$$ACSI_{i,p} = \frac{1}{n} * \sum_{j=1}^{n} ACSI_{j,p} \ ,$$

where j is brand-level *ACSI* Scores, n is the number of brands owned by firm i in year t. The average annual *ACSI* summarize the customer satisfaction towards all brands owned by one firm. The annual *ACSI* scores for all brands are released in different quarters, and thus we do our analyses in quarterly frequency. Each *ACSI* announcement reveals customer satisfaction levels for the specific brand in the previous four quarters ending in the announcement quarter.

Information Content of Stock Prices

I have four proxies for information content of stock prices in the main tests of this study, namely *RSQ*, *NSYN*, *CRASH*, and *AER*. I will explain the rationale and calculations for the above mentioned variables.

RSQ is the R-square from asset pricing models. In the main test of this study, I use R-square from quarterly three-factor (*MKTRF*, *SMB*, *HML*) model for each individual company. Using daily data (d as subscript) from *CRSP* and *Fama-French Factor* databases, I run the *Three Factor Model* for each firm i in each quarter t, and the regression model is:

$r_{i,d,t}$-$rf_{d,t}$= $\alpha_{i,t}$+$(\beta_m)_{i,t}$*$mktrf_{d,t}$+$(\beta_s)_{i,t}$*$smb_{d,t}$+$(\beta_h)_{i,t}$*$hml_{d,t}$+ε,

And in the above model, each variables has the following definitions: $r_{i,d,t}$ is the daily stock return for stock *i* in quarter *t*, $rf_{d,t}$ is the daily risk-free rate in quarter *t*, $mktrf_{d,t}$ is the daily market rate in excess of the daily risk-free rate in quarter *t*, $smb_{d,t}$ is the daily *Small-Minus-Big* factor rate in quarter *t*, $hml_{d,t}$ is the daily *High-Minus-Low* factor rate in quarter *t*. $(\beta_m)_{i,t}$, $(\beta_s)_{i,t}$, $(\beta_h)_{i,t}$ is the firm-quarterly loadings on each factor. R-square (denoted as *RSQ*) from the above model is a firm-quarterly measure of how much of the variation of the individual excess return could be explained by the variation of *Fama-French* three factors, and it measures how much that individual stock returns co-move closely with the macro (market and other levels captured by the common factors) information. I require each company in each quarter to have at least 60 daily return data to run each regression. It measures how much of the variation of the individual excess return could be explained by the variation of *Fama-French* three factors. A higher value in *RSQ* means lower stock price informativeness.

NSYN is a non-linear transformation of *RSQ* as follows:

$$NSYN_{i,t} = \ln\left(\frac{1 - R_{i,t}^{\ 2}}{R_{i,t}^{\ 2}}\right),$$

where $R_{i,t}^{\ 2}$ is obtained from the three factor model mentioned in RSQ measure.

It measures the stock price non-synchronicity. The logarithm transformation extends the data range from (0, 1) to (-∝, +∝) to make the regressions with this variable as dependent variable more statistically meaningful. A higher value of *NSYN* indicates higher information content in stock prices. The first two measures are largely used in all kinds of stock price informativeness studies (Roll, 1988; Morck, Yeung, and Yu 2000; Durnev, Morck, Yeung, and Zarowin, 2003; Durnev, Morck, and Yeung, 2004; Piotroski, and Roulstone, 2004; Chan, and Hameed, 2006; Jin, and Myers, 2006; Skaife, Gassen, and LaFond, 2006; Chen, Goldstein, and Jiang, 2007; Ferreira, and Laux, 2007; Fernandes, and Ferreira, 2009; Dasgupta, Gan, and Gao, 2010; Gul, Kim, and Qiu, 2010; Ferreira, Ferreira, and Raposo, 2011; Cheng, Gul, and Srinidhi, 2012; Frésard, 2012).

CRASH is the likelihood of stock price crashes based on the occurence of the firm-specific daily return exceeding 3.09 standard deviations below sample mean value, with 3.09 chosen to generate a frequency of 0.1% in the normal distribution. An indicator variable, *CRASH*, is set equal to 1 for a firm-quarter if the firm experiences one or more firm-specific daily returns falling 3.09 standard deviations below the mean daily firm-specific returns in the special quarter; otherwise, *CRASH* is equal to 0. Daily return data are from *CRSP*, and factor return data are from *Kenneth French*'s data library website. A higher value of *CRASH* indicates lower information content in stock prices. This concept to measure stock price informativeness using probability of stock price crashes comes from Jin, and Myers (2006), and recently this measure is employed in several studies (Haggard, Martin, Pereira, 2008; Hutton, Marcus, and Tehranian, 2009; Kim, Li, and Zhang, 2011; An, and Zhang, 2013).

AER is short for announcement excess return. When quarterly earnings announcements are released to public, I mark the dates as day 0. Then I use daily stock return and factor return data to run three factor model for each stock in the trading day window [-60, -5] to get the loadings for each factor. Then I use the estimated loadings and factor returns in window [-2, +2] to calculate the expected returns for each day in the window. I subtract the expected returns from the real daily returns and summarize them together for the five days around announcement dates. Then the absolute value of the summary is my announcement excess return measure. Announcement date data are from COMPUSTAT Fundamental Quarterly database. Daily return data are from CRSP, and factor return data are from Kenneth French's data library website. I construct this measure largely following (2010). Peress (2010) also calculates residual returns from the Fama-French three-factor model. Differently, his estimation window extends from t=-250 to t=-5 relative to the earnings announcement day 0. I estimate the residuals over the same event window ranging from t=-2 to t=+2. Then, I sum their absolute value on each day of the event window to measure the stock price reaction to the announcement. As Peress (2010) argues, a lower AER indicate the incorporation of information into prices is faster after earnings announcement, or before announcement investors in stock market already knows enough information about the company. In both ways, it means the stock price is more informative.

Informed Trading: INSIDE and INST

INSIDE is insider trading ratio, and I estimate quarterly insider trading measure using quarterly insider trading data from the *Thomson-Reuters* database, and trading volume data from *CRSP* database. Following Piotroski and Roulstone (2004), and Ferreira and Laux (2007), my *INSIDE* measure is quarterly absolute differences in the number of shares sold and purchased by insiders, as a fraction of quarterly total trading volume.

I estimate quarterly institutional trading *INST* using quarterly institutional trading data from the *Thomson-Reuters* database and quarterly summarized trading volume data from *CRSP* database. Following Piotroski and Roulstone

(2004), and Ferreira and Laux (2007), I measure *INST* as quarterly absolute changes in the number of shares held by institutions, deflated by quarterly trading volume.

Control Variables

I have the following control variables during my whole analyses: *LOGMV*, *MB*, *ROE*, *VROE*, *LEV*, *DD*, *AGE*, and *SEG*. *LOGMV* is the logarithm of market capitalization (the product of stock price and shares outstanding) at the end of each quarter. Both stock price and shares outstanding data are from *CRSP* database. *MB* is calculated as the ratio of market capitalization (the product of stock price and shares outstanding) to the firm's book equity at the end of each quarter. Both stock price and shares outstanding data are from *CRSP* database. Firm's book equity data are from *COMPUSTAT Fundamental Quarterly* database. *ROE* is calculated as the quarterly earnings before extraordinary items divided by the book value of equity. Both earnings before extraordinary items and book equity data are from *COMPUSTAT Fundamental Quarterly* database. *VROE* is the standard deviation of *ROE* for the past 4 quarters. *ROE* is calculated from earnings before extraordinary items and book equity data from *COMPUSTAT Fundamental Quarterly* database. *LEV* is short for leverage, which is calculated as long-term debt to asset ratio at the end of quarter. Both long-term debt and total asset data are from *COMPUSTAT Fundamental Quarterly* database. *DD* is short for dividend payout. It is a dummy variable which equals to 1 if in the current quarter the firm pays dividend and 0 otherwise. Original dividend data are from *COMPUSTAT Fundamental Quarterly* database. *AGE* is the age for each firm at the end of each quarter. It is calculated as the logarithm of numbers of months included in *CRSP* database. I use quarter end date from *COMPUSTAT Fundamental Quarterly* database and firms' first appearance dates from *CRSP* database to calculate the differences. *SEG* is the logarithm of numbers of business segment reported at the end of each year. Segment data are obtained from *COMPUSTAT Legacy Segments FTP* database**.** I assign the annual data to each quarter in that year.

Partition Variables: Competition and Sentiment

I measure industry competition using two different variables. The first one is industry-quarter level *Herfindhal-Index* (*H-index* for short). I form industries according to 2-digit SIC code and then calculate the summary of industry quarterly sales (sales from *CRSP-COMPUSTAT MERGED* database). Then I get a market share measure by dividing individual firm's sale by its industry sale in that quarter and then take its square. After that I summarize again this square term within one industry for each quarter, and the final number is the industry-quarterly level of *H-index*. A lower *H-index* indicates a more widely-spread market shares within this industry, and the industry competition is higher. Thus my high competition dummy variable (partition variable, namely *HCOMPE*) is equal to 1 if the observation belongs to the industry which tends to have lower than median *H-index*. Otherwise *HCOMPE* dummy is set to be 0.

Another measure I used is price–cost margin (*PCM* for short). *PCM* is computed as operating profits (before depreciation, interest, special items, and taxes) over sales. Operating profits are obtained by subtracting from sales the cost of goods sold and general and administrative expenses. If data are missing, I use operating income (all from *CRSP-COMPUSTAT MERGED* database). It is used in Peress (2010) to capture the market power. Firms with higher *PCM* tend to have more market power, and face less within industry competition. I set the second measure of high competition dummy *HCOMPE* to be 1 if the observation has a lower than median *PCM*. Otherwise the dummy *HCOMPE* equals 0.

I provide time-series partitions to my main testing based on the macro sentiment. The first sentiment measure I used is the investor sentiment *ISENT*. According to Mian and Sankaraguruswamy (2008), market-wide investors react more positively to good earnings news during high sentiment periods, and they react more negatively to bad earnings news during low sentiment periods. Investor overreaction covers the real information when sentiment is extremely higher or lower, and information efficiency in the market level tends to be smaller. I download monthly sentiment data from *J. Wurgler's* website and calculate the quarterly mean value.

The second measure I used is the consumer sentiment/consumer confidence *CSENT*. *Consumer Confidence Index* is produced by the non-profit business group *The Conference Board* (1985=100), and it is an economic indicator which measures the degree of optimism that consumers feel about the overall state of the economy and their personal financial situation. Monthly consumer confidence index data are available from *The Conference Board* website. I use monthly data to calculate quarterly average. When consumer confidence is lower, US citizens tend to spend less on purchase goods in near future. So in my partition design, I set *CSENT* equal to 1 if quarter consumer confidence is above its median value and 0 otherwise.

2.2.4 Models

Main Model

To test my Hypothesis 1, I first conduct univariate test to check whether customer satisfaction and stock price informativeness are positively correlated. After that, I run multiple regressions to see whether customer satisfaction still has a significant positive effect on stock price informativeness after control for a series of firms' characteristics. Following Ferreira and Laux (2007), my main testing model is written as follows:

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 LOGMV_{i,t-1}+\alpha_3 MB_{i,t-1}+\alpha_4 ROE_{i,t-1}+\alpha_5 VROE_{i,t-1}$$
$$+\alpha_6 LEV_{i,t-1}+\alpha_7 DD_{i,t-1}+\alpha_9 AGE_{i,t-1}+\alpha_{10} SEG_{i,t-1}+\varepsilon,$$

with all independent variables lagged to control for the possible endogenous problem. With this model specialization, I expect α_1, the coefficient on *ACSI*, is significantly positive to support Hypothesis 1 when dependent variable is *NSYN* measure, and α_1 to be significantly negative when dependent variable is *RSQ*, *CRASH*, or *AER*. Because I use panel data, and the residuals may be correlated across firms or across time, *OLS* standard errors can be inconsistent. So I including year and industry fixed effect in regressions, and also adopt Petersen's (2008) 2-way clustering standard errors for all t-values.

Trading-Link Hypothesis: the Role of Inform Trading

I would like to see whether the institutional trading activity is the underlying channel of this positive association between a higher satisfaction score and a more informativess stock price. The positive association between informed trading and the information content of stock prices is well established in literature (Piotroski and Roulstone, 2004; Ferreira and Laux, 2007). Based on this understanding, I aim to provide two pieces of evidence to show that informed trading is the channel. Firstly, I investigate whether higher customer satisfaction will lead to higher informed trading as a fraction of total trading volume. Secondly, I aim to show that the positive association between customer satisfaction and stock price informativeness is higher when the intensity of informed trading is higher. I use *RSQ*, *NSYN*, *CRASH*, *AER* as dependent variables, and *INSIDE* and *INST* as informed trading measures. The regression models are:

$$TRADING_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 LOGMV_{i,t-1}+\alpha_3 MB_{i,t-1}+\alpha_4 ROE_{i,t-1}+\alpha_5 VROE_{i,t-1} +\alpha_6 LEV_{i,t-1}+\alpha_7 DD_{i,t-1}+\alpha_9 AGE_{i,t-1}+\alpha_{10} SEG_{i,t-1}+\varepsilon,$$

and

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 TRADING_{i,t}+\alpha_3 TRADING_{i,t}*ACSI_{i,t-1}+\alpha_4 LOGMV_{i,t-1} +\alpha_5 MB_{i,t-1}+\alpha_6 ROE_{i,t-1}+\alpha_7 VROE_{i,t-1}+\alpha_8 LEV_{i,t-1}+\alpha_9 DD_{i,t-1}+\alpha_{10} AGE_{i,t-1} +\alpha_{11} SEG_{i,t-1}+\varepsilon.$$

I expect α_1 in the first regression model to be positive. I also expect α_3 in the second regression model to be positive when *DV* is *NSYN*, and α_3 to be negative when *DV* is *RSQ*, *CRASH*, and *AER*.

Partitions Based on other Heterogeneity: Competition and Sentiment

By adding *HCOMPE* (high competition dummy) and *SENT* (high market sentiment dummy) and their interactions with *ACSI* in regression models, and I examine how competition and sentiment moderate the association between customer satisfaction and stock price informativeness. Models are modified as:

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 HCOMPE_{i,t}+\alpha_3 HCOMPE_{i,t}*ACSI_{i,t-1}+\alpha_4 LOGMV_{i,t-1} +\alpha_5 MB_{i,t-1}+\alpha_6 ROE_{i,t-1}+\alpha_7 VROE_{i,t-1}+\alpha_8 LEV_{i,t-1}+\alpha_9 DD_{i,t-1}+\alpha_{10} AGE_{i,t-1} +\alpha_{11} SEG_{i,t-1}+\varepsilon,$$

and

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 HSENT_{i,t}+\alpha_3 HSENT_{i,t}*ACSI_{i,t-1}+\alpha_4 LOGMV_{i,t\text{-}}1 +\alpha 5MB_{i,t-1}+\alpha_6 ROE_{i,t-1}+\alpha_7 VROE_{i,t-1}+\alpha_8 LEV_{i,t-1}+\alpha_9 DD_{i,t-1}+\alpha_{10} AGE_{i,t-1} +\alpha_{11} SEG_{i,t-1}+\varepsilon.$$

I expect α_3 in both models to be positive when *DV* is *NSYN*, and α_3 in both models to be negative when *DV* is *RSQ*, *CRASH*, and *AER*.

2.2.5 Robustness

I use annual *PIN* measure to as *DV* in the following model:

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 PV_{i,t}+\alpha_3 PV_{i,t}*ACSI_{i,t-1}+\alpha_4 LOGMV_{i,t-1}+\alpha_5 MB_{i,t-1}$$
$$+\alpha_6 ROE_{i,t-1}+\alpha_7 VROE_{i,t-1}+\alpha_8 LEV_{i,t-1}+\alpha_9 DD_{i,t-1}+\alpha_{10} AGE_{i,t-1}$$
$$+\alpha_{11} SEG_{i,t-1}+\varepsilon.$$

$PV_{i,t}$ denotes *INSIDE*, *HCOMPE*, and *HSENT*, respectively. I run regressions with and without $PV_{i,t}$ and $PV_{i,t}*ACSI_{i,t-1}$. I expect α_3 to be significant positive.

The annual probability of information trading (*PIN*) index (Easley, Hvidkjaer, and O'Hara, 2002) is another commonly used measure of informed stock price. It is estimated from a structural market microstructure model by detecting the probability of a trade that comes from an informed investor. When firms have higher *PIN*, they have higher stock price informativeness. In robustness tests I use annual *PIN* measure as dependent variable to test hypotheses.[12] I do not include it in main test because it is only available in yearly frequency, and it does not match the data frequency of other variables.

I also run the following *FERC* regressions:

$$R_t = a + b_0\Delta E3_t + b_1 ACSI*\Delta E3_t + c_0 R3_t + c_1 ACSI*R3_t + b_0\Delta E_t$$

[12] I thank Dr. Bohui Zhang from Australian School of Business, the University of New South Wales for sharing his calculated PIN measures with me.

$+d*CTRLS_t+\varepsilon$,

where R_t is current quarterly stock return, ΔE_t is change in earnings from the beginning to the end of the current quarter. $\Delta E3_t$ is the averaged change in earnings in the future 3 years and $R3_t$ is the averaged return in the future 3 years. I expect the interaction item $ACSI*\Delta E3_t$ always has significant positive coefficient (b_1>0).

It is widely believed that more informed current stock prices should reflect more information related to the future changes in the fundamentals. So I use the above model to further justify for the measurement of information incorporated into stock price.

This *FERC* (future earnings response coefficient) measure is first raised by Collins, Kothari, Shanken, and Sloan (1994). And its calculation is from a *FERC* model, written as:

$$R_t = a + b_0\Delta E_t + \sum_\tau b_\tau \Delta E_{t+\tau} + \sum_\tau c_\tau R_{t+\tau} + u_t ,$$

where the independent variable R_t is the current return and the independent variables; ΔE_t is changes in current earnings; $\Delta E_{t+\tau}$ and $R_{t+\tau}$ are changes in earnings in the future τ years (ΔE_{t+1}, ΔE_{t+2}, …, $\Delta E_{t+\tau}$), and returns in the future τ years (R_{t+1}, R_{t+2} , …, $R_{t+\tau}$). *FERC* is defined as $FERC = \sum_{\tau} b_{\tau}$, the sum of the coefficients on changes in future earnings.

Later, Lundholm and Myers (2002), Wang, Wei and Zhang (2008) use the averages of changes in earnings for the future 3 years to mitigate the noises in changes in future earnings. So the modified *FERC* model becomes

$$R_t = a + b_0 \Delta E_t + b_1 \Delta E3_t + c_0 R3_t + u_t ,$$,

where R_t , ΔE_t are defined in the same way, but the averaged changes in earnings in the future 3 years $\Delta E3_t$ and the average returns in the future 3 years $R3_t$ are used. Then *FERC* equals b_1 under this model. To investigate whether higher customer satisfaction could enhance the predictable power of current stock price on changes in the future earnings, I put in interaction item of *ACSI* and $\Delta E3_t$ as an additional independent variable in model (3), and expect to see the coefficient of this interaction item is significantly positive. The empirical model I actually used becomes model:

$$R_t = a + b_0 \Delta E3_t + b_1 ACSI * \Delta E3_t + c_0 R3_t + c_1 ACSI * R3_t + b_0 \Delta E_t + d * CTRLS_t .$$

I expect the interaction item $ACSI * \Delta E3_t$ shows the *FERC* coefficient. And according to our hypothesis, the estimated coefficient should be positive.

I also include industry and industry-adjusted models as robust checks. Firstly I use the industry *ACSI* score (directly released by the *American Customer Satisfaction Index* database) and calculate the industry average value for all other variables. Secondly, for every variable, including *ACSI*, I calculate the industry-adjusted values by subtracting the industry median, and re-run the main model.

I further use changes in *RSQ*, *NSYN*, *CRASH*, and *AER* as dependent variable, and changes in *ACSI* as independent variable. Three pairs of changes are used, and they are calculated from values in current year and previous one year (denoted by "1 Year"), from values in current year and previous three year (denoted by "3 Years"), and from values in current year and previous five year (denoted by "5 Years"). Using the following model,

$$\Delta DV_{i,t} = \alpha_0 + \alpha_1 \Delta ACSI_{i,t-1} + Control\ Variables_{i,t-1} + \varepsilon,$$

I expect α_1 to be significant positive when *DV* is *NSYN*, and α_1 to be significant negative when *DV* is *RSQ*, *CRASH*, and *AER*.

2.3 Empirical Results

In this section, I present the empirical results for my hypotheses in Section 2.1. I present descriptive statistics, correlations, and regression results from main model and also robustness checks.

2.3.1 Descriptive Statistics

From Table 2 I could see the distributions of variables used in this study.

[INSERT TABLE 2]

Panel A of this table reports the statistics of my testing variable *ACSI*. From the table I could see that on average the score is about 76, and the minimum score is 53 while the highest is 89.

Panel B reports the distribution of several stock informativeness measure: *RSQ*, *NSYN*, *CRASH*, *AER* and *PIN*. From the panel I could see that the mean value of *RSQ* is 0.316, which means on average the variations of fama-french three factors could explain 31.6% of the stock return variations. This is consistent with the previous findings that market model could explain 20% of the stock return variations. I could also see that the minimum *RSQ* is 0.003, which means the stock nearly does not co-move with the macro pricing factors. The highest *RSQ* is 0.877, which means nearly 90% of this stock is driven by three factors, and it does not contain much firm-specific information. The non-synchronicity measure is with mean and median values around 0.940, which is smaller than the whole market average (for example, this measure is with mean and median values from 2.261 to 2.731 in Ferreira and Laux, 2007). This may be because my sample firms are larger (16.229, larger than 13.749 in Ferreira and Laux, 2007) and older firms (5.795, larger than 3.143 in Ferreira and Laux, 2007), and such firms with such characters take more weight when I measure market returns, *i.e.* they are more related to the whole market. My probability of stock price crash measure shows that due to my definition of this variable, most firms do not have crashes during the whole sample period. The pattern of *AER* measure shows that my sample firms have on average 7.3-9.2% abnormal returns around earning announcement. The average *PIN* of my sample firms is 9.2%.

Panel C reports the distribution of insider trading and institutional trading ratios, and on average among total trading volumes of my sample firms, 0.2% and 20% trading volumes are contributed by informed traders, and the maximum ratio is over 60%.

In my sample, *MB* ratio (Panel D) is quite high, compared to previous literature. Given the fact that *MB* ratio also measures the intangible ratio, it is consistent with the fact that customer satisfaction could be viewed as intangible assets and will improve firm valuation.

I have investor/consumer sentiment data for the whole period (192 months). The highest investor sentiment is in Feb 2001 (2.497) and lowest is in May 2003 (0.164). The highest consumer sentiment is in Jan 2000 and May 2000 (both at the highest of 144.70) and lowest is in Feb 2009 (28.385).

2.3.2 Correlations

First I compute correlation metrics to check the univariate relation between stock price informativeness and *ACSI*. In Table 3, I present the Pearson correlations between *ACSI*, several stock price informativeness measures and informed trading variables.

[INSERT TABLE 3]

I could see that: 1) the stock price informativeness measures are robust to each other. *RSQ*, *CRASH*, and *AER* are generally positively correlated to each other, and they are all negatively related to *NSYN*; 2) customer satisfaction are positively related to *NSYN* and negatively related to the rest non informative measures; 3) *INSIDE* and *INST* are robust to each other, they are positively related to customer satisfaction, and *NSYN*, and they are negatively related to the rest non-informative measures.

For example, the correlation between *NSYN* and *ACSI* is significantly positive: 0.096, with a p-value less than 0.0001. The correlation with *ACSI* and *CRASH* is -0.055, with a p-value less than 0.0001. And the correlation between *ACSI* and *AER* is -0.101, with a p-value less than 0.0001.[13] Univariate results show that higher *ACSI* scores are associated with lower asset pricing R-squares, higher relative firm specific volatilities, lower frequency of stock price crashes, lower stock price reactions to earnings announcements (news about fundamentals should be already absorbed by stock prices before announcements if stock prices are more informed), and higher probability of informed trading, as I predicted.

2.3.3 Regression Results

From Table 4, I report several multiple regressions results to support my argument in Section 2.1. First I could like to show whether the associations between customer satisfaction and stock price informativeness measures still

[13] Untabulated result shows that the correlation between PIN and ACSI is 0.054, with a p-value of 0.0085. I do not report it here because PIN measure is in yearly frequency.

hold after I control for a series of firms' characteristics. The regression results, controlling for industry and year fixed effect, are provided in Table 4. I present parameter estimates, and together with Petersen (2009) two-way clustered t-values.

[Insert Table 4]

The R-sq is from 7.72% to 25.11%[14], which means above 7% of the variance of stock price informativeness could be explained by the variances of independent variables. The most important estimate in this table is the coefficient estimate of ACSI on the dependent variables. As is predicted, customer satisfaction will lower asset price R-squares (coefficient is -0.002, significant at 5% level), increase stock price non-synchronicity (coefficient is 0.012, significant at 5% level), lower the probability of stock price crashes (coefficient is -0.002, significant at 5% level), and reduce the abnormal return around quarterly earnings announcements (coefficient is -0.002, significant at 1% level).

Informed Trading and Stock Price Informativeness

In Table 5, I examine how informed trading by insiders or institutional investors affects stock price informativeness. To address this issue, I use informed trading

[14] If industry and year fixed effects are not controlled, R-squares are from 6.43% to 11.29%.

activities as testing variable, and use *ACSI* and control variables as independent variables, control for industry and year fixed effect, and present Petersen (2009) two-way clustered t-values. This is to replicate the established association between informed trading and information content of stock prices (Piotroski and Roulstone, 2004; Ferreira and Laux, 2007), but in my small sample.

[Insert Table 5]

Empirical results support the existing literature: for insider trading, it will lower asset price r-squares (coefficient is -0.105, significant at 5% level), increase stock price non-synchronicity (coefficient is 0.548, significant at 5% level), lower the probability of stock price crashes (coefficient is -0.083, significant at 5% level), and reduce the abnormal return around quarterly earnings announcements (coefficient is -0.082, significant at 1% level).

For institutional trading, it will lower asset price r-squares (coefficient is -0.110, significant at 1% level), increase stock price non-synchronicity (coefficient is 0.598, significant at 1% level), lower the probability of stock price crashes (coefficient is -0.077, significant at 5% level), and reduce the abnormal return around quarterly earnings announcements (coefficient is -0.091, significant at

1% level).

Customer Satisfaction and Informed Trading

Table 6 presents how customer satisfaction will affect informed trading intensities. Column '*INSIDE'* is with dependent variable insider trading intensities and Column '*INST'* is with dependent variable institutional trading intensity. I could see that *ACSI* is positively related to insider trading (coefficient is 0.001, significant at 5% level), and also positively associated with institutional trading (coefficient is 0.001, significant at 5% level).

[Insert Table 6]

Joint Effect of Customer Satisfaction and Informed Trading on Stock Price Informativeness

In Table 7, my focus is on the estimated coefficient of *TRADING**ACSI*. I could see that for higher insider trading, *ACSI* will further lower *RSQ* (coefficient is -0.005, significant at 1% level), improve *NSYN* (coefficient is 0.062, significant at 1% level), lower *CRASH* (coefficient is -0.001, significant at 5% level) and *AER* (coefficient is -0.001, significant at 1% level).

[Insert Table 7]

For higher institutional trading, *ACSI* will further lower *RSQ* (coefficient is -0.002, significant at 5% level), improve *NSYN* (coefficient is 0.008, significant at 5% level), lower *CRASH* (coefficient is -0.001, significant at 10% level) and *AER* (coefficient is -0.002, significant at 1% level).

Although informed trading is one channel of my association, it does not mean informed trading is the only channel. Another finding from Table 7 is that even if there is no informed trading (*INSIDE*=0 or *INST*=0), customer satisfaction generally still plays a predicted role (lower *RSQ*, *CRASH*, *AER* and improved *NSYN*).

The Moderate Role of Product Market Competitions

I aim to investigate the effect of competition in the product market on the association between customer satisfaction-stock price informativeness. I use *H-index* and *PCM* to assign observations into high competition group (*HCOMPE*=1) and low competition group (*HCOMPE* =0). I focus on the interaction between *ACSI* and *HCOMPE*, and expect to have a positive signed coefficient on the interaction.

[Insert Table 8]

Table 8 present empirical results with additional variable *ACSI*HCOMPE*. I could see that for *H-index* measure, if the firm belongs to high competition group, *ACSI* will further lower *RSQ* (coefficient is -0.003, significant at 5% level), improve *NSYN* (coefficient is 0.014, significant at 10% level), lower *CRASH* (coefficient is -0.068, significant at 5% level) and *AER* (coefficient is -0.059, significant at 1% level).

I could see that for price-cost margin (*PCM*) measure, if the firm belongs to high competition group, *ACSI* will further lower *RSQ* (coefficient is -0.004, significant at 5% level), improve *NSYN* (coefficient is 0.016, significant at 10% level), lower *CRASH* (coefficient is -0.052, significant at 1% level) and *AER* (coefficient is -0.118, significant at 1% level). In conclusion, when firms face more severe competition in the product market, the role of customer satisfaction on improving stock price informativeness is more pronounced.

The Moderate Role of Sentiment

I aim to investigate the effect of sentiment on the association between customer satisfaction-stock price informativeness. I use investor sentiment by Baker and

Wurgler (2002) and Consumer Confidence from the Conference Board to assign observations into high sentiment group (*HSENT*=1) and low sentiment group (*HSENT*=0). I focus on the interaction between *ACSI* and *HSENT*, and expect to have a positive signed coefficient on the interaction.

[Insert Table 9]

Table 9 present empirical results with additional variable *ACSI***HSENT*. I could see that for investor sentiment measure, if the firm belongs to high sentiment group, *ACSI* will further lower *RSQ* (coefficient is -0.001, significant at 1% level), improve *NSYN* (coefficient is 0.005, significant at 1% level), lower *CRASH* (coefficient is -0.001, significant at 5% level) and *AER* (coefficient is -0.004, significant at 5% level).

I could see that for consumer confidence measure, if the firm belongs to high sentiment group, *ACSI* will further lower *RSQ* (coefficient is -0.003, significant at 5% level), improve *NSYN* (coefficient is 0.002, significant at 5% level), lower *CRASH* (coefficient is -0.002, significant at 1% level) and *AER* (coefficient is -0.002, t-value -1.56 and not significant). In conclusion, when market are optimism (in terms of trading stocks or purchasing goods), the role of customer satisfaction on improving stock price informativeness is more pronounced.

2.3.4 Robustness

First in Table 10 I present the above results with annual *PIN* measure as dependent variable. From this table I could see that *ACSI* is positively associated with *PIN* measure (coefficient is 0.001, significant at 5% level), and the association is more pronounced when there is higher informed trading intensity (the coefficient for the interaction *TRADING**ACSI* is 0.003, significant at 5% level), the association is more pronounced when product market competition is high (the coefficient for the interaction *HCOMPE**ACSI* is 0.001, significant at 1% level), and the association is more pronounced when sentiment is high (the coefficient for the interaction *HSENT**ACSI* is 0.001, significant at 1% level). For each partition variable, I using the factor analyzed measures, instead of the original two variables. For example, for *HCOMPE*, in this table, it is the factor constructed by *H-index* and *PCM*.

[Insert Table 10]

I use future earnings response coefficient (*FERC*) model as the last tabulated robustness checks for my main result. Results are presents in Table 11. In this model, I expect to see the coefficient of this interaction item $ACSI*\Delta E_3$ to have a significant positive coefficient. From this panel I could see that an increase in *ACSI* by 1 unit will lead to an increase by 5.6% in the *FERC* coefficient at a 10% significant manner (t=1.72), which is consistent with what I predict.

[Insert Table 11]

There are several untabulated robustness checks, including using different variable frequencies to run my main model again. Empirical results still hold when I use yearly and monthly models. Results do not change when I use industry and industry-adjusted *ACSI* as the testing variable to further control for the industry variation of the effects of customer satisfaction on the stock piece informativeness. I also use several different asset pricing models to calculate the stock price informativeness, including market model (*CAPM*), industry model, and *Carhart Four-Factor* model. My results are not sensitive to which asset price model is used.

[Insert Table 12]

In Table 12, I present the results using changes in *RSQ*, *NSYN*, *CRASH*, and

AER as dependent variable, and changes in *ACSI* as testing variable. Results generally lose significance, except for the changes in *ACSI* from current and previous one year is negatively related to changes in *RSQ* (coefficient is -0.002, significant at 10% level), and the changes in *ACSI* from current and previous five years is negatively related to changes in *AER* (coefficient is -0.001, significant at 1% level).

Also some untabulated results also shows the industry-level and industry-adjusted level results are consistent with our predictions.[15] As a conclusion, my empirical results generally support the prediction that higher customer satisfaction improves the incorporation of firms' specific information into stock price. And informed trading is one channel for this association. Meanwhile, this association is more pronounced when firm face more severe competition in product market; this association is less pronounced when sentiment is lower. To conclude the empirical results, it is generally consistent with the predictions.

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[15] Within the sample period, the 48 industries (assigned originally by *ACSI* database) have an average score of 76. If I calculate the industry average, the three industries with highest ACSI are Soft Drinks (84.18), Personal Care and Cleaning Products (83.12), and Pet Food (82.71). The three industries with lowest ACSI are Subscription Television Service (62.60), Airlines (65.53), and Newspapers (66.35). And the industry score does not fluctuate dramatically. The average industry standard deviation of ACSI is 2.17. And additionally, the firm level ACSI score does not fluctuate dramatically either. The average industry standard deviation of ACSI is 2.31. Compared to the mean value, I conclude the score is quite stable. When I run regression with NSYN measure as dependent variable, and industry level ACSI as independent variable, the estimated coefficient is 0.014, with a t-value of 1.90. And when I run regression with NSYN measure as dependent variable, and industry-adjusted ACSI as independent variable, the estimated coefficient is 0.017, with a t-value of 2.03. So it is consistent with the main results.

Chapter 3: Customer Satisfaction, Corporate Investment, and Investment Puzzle

In this chapter I first review literature on corporate investment, and investment puzzle in Section 3.1. Also in this section, I discuss why customer satisfaction will affect firms' investment decisions; why customer satisfaction will increase firms' investment decisions valuations and mitigate the "investment puzzle"; and why customer satisfaction could be related to demanding board characteristics. Then in Section 3.2, I describe the data and methodology employed for investigation on the above hypotheses. Finally in Section 3.3, I present empirical results.

3.1 Background and Hypotheses

In this section I first review literature on corporate investment, and investment puzzle in Section 3.1.1. Since customer satisfaction is already reviewed in previous chapters, it is mitted in this chapter. In Section 3.1.2, I discuss why customer satisfaction will affect firms' investment decisions. In Section 3.1.3, I discuss why customer satisfaction will increase firms' investment decisions valuations and mitigate the "investment puzzle". I will also discuss why customer satisfaction could be related to demanding board characteristics in Section 3.1.4.

3.1.1 Corporate investment and investment puzzle

Corporate Investment

The magnitude and frequency of corporate investment decisions of US corporations has recently attracted much interest amongst both academics and practitioners alike (Jackson et al. 2009). Apart from the alleged benefits of the investment decisions, such as those affecting a firm's market value (McConnell and Muscarella, 1985), or the long term survival of the firm (Klammer et al. 1991), the magnitude of these investments, by themselves, has been the source of much scrutiny and interest. For example, reports from United States Census Bureau suggest that businesses in the US spend over US$1 trillion annually on capital investments. Jackson (2008) also notes that publicly traded corporations in North America spent an aggregate of US$730 billion on capital investments in 2004 with an average of US$102.4 million per firm. Given the benefits and magnitude of these investments, it is surprising that I know relatively little about the determinants of these capital investments (Jackson, 2008).

Given the benefits and magnitudes of these investments, it is interesting to understand and shed some light on the determinants of these capital investments. In theory, investment decisions should be determined by the firms' investment opportunities, and firms do not need to consider how to finance the investment projects because the external capital market, armed with information about the potential of each firm, is likely to provide capital to firms with a fair charge to cover their internal capital shortfalls. The irrelevance of investments theory, however, has been challenged by financial economists over the past decades. At the heart of why these theories are irrelevant in understanding corporate investment decisions in the information asymmetry as a result of agency problems (Myers and Majluff, 1984). Apart from information asymmetry problem, debt overhang problem caused by firms' financial status also lead managers to throw positive NPV projects (Myers, 1977; Myers and Majluf, 1984). Thus, it is likely that agency problems and financial frictions are two important factors which are likely to affect firms' investment decisions.

While these frictions and corporate investment decisions may be related, it remains less clear how they are related. Thus scholars have been interested in identifying empirical channels through which these frictions affect investment decisions. For instance, Jackson (2008) finds that firms' choice of depreciation methods may affect corporate investments. In firms using straight-line depreciation methods, book values of new replacement assets depreciate faster in the earlier years than in firms using accelerated depreciation methods. This difference will lead to different earning levels in the earlier years, and the pressure of lower earnings may push firms using straight-line depreciation methods to underinvest in new replacement assets. Chava and Roberts (2008), show that capital expenditures decline in response to a covenant violation. Their paper provides a direct evidence of the effect of overhang problem on corporate investment.

Capital expenditures are one format of corporate investment. Capital expenditures aim to create future benefits. A capital expenditure is incurred when a business spends money either to buy fixed assets or to add to the value of an existing fixed asset with a useful life that extends beyond the taxable year. Capital expenditures are used by a company to acquire or upgrade physical assets such as equipment, property, or industrial buildings. In accounting, a capital expenditure is added to an asset account ("capitalized"), thus increasing the asset's basis (the cost or value of an asset as adjusted for tax purposes).

Research and development costs, according to the Organization for Economic Co-operation and Development, refers to "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". In accounting rules, R&D and advertising expenses can neither be linked with sales nor a specific accounting period and as a result, they are always not ‘capitalized’, due to its discretionary use.

Investment Puzzle

A growing part of literature focuses on the negative association between higher investment levels and subsequent returns, and this is denoted as ‘investment puzzles’, ‘investment effect’, or ‘asset growth effect’ (Fairfield, Whisenant, and Yohn, 2003; Titman, Wei, and Xie, 2004; Broussard, Michayluk, and Neely, 2005; Anderson and Garcia-Feij´oo, 2006; Lyandres, Sun, and Zhang, 2008; Xing, 2008; Cooper, Gulen, and Schill, 2008; and Polk and Sapienza, 2009; Lipson, Mortal, and Schill, 2011). In this study, I also find this investment puzzle.

Fairfield, Whisenant, and Yohn (2003) find that both accruals and growth in long-term net operating assets have negative associations with one-year-ahead return on assets. Titman, Wei, and Xie (2004) find that when there is an abnormal growth in capital expenditures, subsequent stock market returns decline. And this phenomenon is weaker when hostile takeovers is intensive, signaling a agency problem explanation for the puzzle. Broussard, Michayluk, and Neely (2005) also document that stocks with a high valuation compared to fundamental values imply a high growth rate, yet these stocks have typically under-performed in subsequent years, due to investors' naïve extrapolations of past growth. Anderson and Garcia-Feij´oo (2006) link expected returns to corporate investment and related changes in valuation and they argue that the relative importance of assets-in-place and growth options changes over time in response to optimal investment decisions, thereby changing the risk exposure of the firm's equity. Lyandres, Sun, and Zhang (2008) find that an investment factor, long in low investment stocks and short in high investment stocks, helps explain the new issues puzzle. Xing (2008) find that the investment growth factor, contains information similar to the Fama and French (1993) value factor (*HML*), and can explain the value effect about as well as *HML*. And the results are consistent with the predictions of a standard Q-theory model with a stochastic discount factor. Cooper, Gulen, and Schill (2008) find that using asset growth as proxy for investment, the constructed high investment portfolios significantly underperform in stock returns, and it is due to overinvestment. Polk and Sapienza (2009) have a catering story for this investment puzzle: they find that firms with high abnormal investment subsequently have low stock returns; and that the larger the relative price premium, the stronger the abnormal return predictability. Lipson, Mortal, and Schill (2011) find evidence for mispricing explanation for this investment effect.

3.1.2 Customer Satisfaction and Corporate Investment

Customer satisfaction is associated with higher and stable future cash flows and also lower external financing costs. As customer satisfaction is associated with lower financial constraints, I predict that firm with higher customer satisfaction should have higher investments. Since customer satisfaction will lead to higher opportunity set (for example, in terms of higher Tobin's Q, as documented by Anderson, Fornell, and Mazvancheryl, 2004), and Tobin's Q is positively related with investment levels, I predict that customer satisfaction will positively affect firms' corporate investment levels.

H3: Firms with higher customer satisfaction have higher investment ratios.

3.1.3 Customer Satisfaction and Investment Puzzle

Titman, Wei, and Xie (2004) find that the negative abnormal capital investment/return relation is shown to be stronger for firms that have greater investment discretion, *i.e.*, firms with higher cash flows and lower debt ratios, and is shown to be significant only in time periods when hostile takeovers were less prevalent.

Cooper, Gulen and Schill (2008) also show that the asset growth effect is weaker in times of increased corporate oversight, consistent with the idea that the asset growth effect arises in part from managerial overinvestment and related investor underappreciation of managerial empire building.

So I conclude that the investment puzzle should be small when firms' agency problems are smaller, or in other words, firms are with good corporate governance. Customer satisfaction may be linked to good governance due to two reasons: first, stake holder theory for corporate governance stresses the dependency of many different groups on the firm's management. This approach to corporate governance strongly suggests that corporations are run by loosely defined groups of people, each seeking something different from the organization. This theory can show who benefits from a firm, as well as who, in fact, controls its corporate policy. Thus customer satisfaction is related to the customers' monitoring role toward firms' policies. Secondly, in previous argument, I have established the association between customer satisfaction and stock price informativeness. Meanwhile, managers make corporate decision with learning from the stock market (Chen, Goldstein, and Jiang, 2007), higher stock price informativeness will lead to higher investment efficiency (Durnev, Morck, and Yeung, 2004; Chen, Goldstein, and Jiang, 2007), because when stock market informativeness is higher, disciplining takeover is more likely to take places, and there are less agency problems (Ferreira, Ferreira, and Raposo, 2011). Thus I have the following prediction:

H4: The negative association between investment and future performances is less pronounced when firms have higher customer satisfaction.

3.1.4 Customer Satisfaction and Demanding Board Characteristics

To further address the linkage between customer satisfaction and corporate governance, I aim to explore whether some demanding board characteristics are related to customer satisfactions. I choose board size, board independence, and CEO non-duality to see whether they and customer satisfaction are substitutes to each other in terms of reducing agency problems. Hutchinson and Gul (2004) find that larger, independent board will mitigate the negative effect of investment opportunity set and accounting performance. Another study finds that decisions of larger boards are less extreme, leading to less variable corporate performance by increasing coordination cost (Chen 2008). En and Hsu (2009) find that firms with high family ownership may encourage R&D investment when governance is good in terms of the CEO-chair roles are separated or when more independent outsiders are included in the board. Since Ferreira, Ferreira, and Raposo (2011) find that stock price informativeness and demanding board characteristics are substitutes for each other in governance roles, my last hypothesis is:

H5: Customer satisfaction and demanding board characteristics are substitutes for each other.

3.2 Data and Methodology

In this section, I describe sample collection procedures, data sources, variable definitions, and the empirical models I used to investigate the association between customer satisfaction and investment issues. Firstly, data sources are omitted here since we use the same databases described in Section 2.2. So in Section 3.2.1, we will directly introduce the variable definitions, followed by model description in Section 3.2.2. Section 3.2.3 discusses robustness checks.

3.2.1 Variable Definitions

Corporate Investments

I analyze the effect of *ACSI* scores on three measures of corporate investments: *ASSET GR*, *SUM*, and *FACTOR*.

ASSET GR is asset growth, which is my third measure of corporate investment.

Since I further investigate the investment puzzle (the negative association between investment and future returns), and asset growth largely subsumes the explanatory power of other measures (Lipson et al. 2011), I employ this measure as my main investment variable. Asset growth is calculated as total asset at the end of the current quarter, minus the total asset at the beginning of this quarter, and deflated by the total asset at the beginning of this quarter. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.

SUM is the summarized investment. This is my first measure of corporate investment, which is calculated as the sum of quarterly capital expenditure, advertising expenses, and research and development expenses, and divided by total asset at the beginning of this quarter. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.

FACTOR summarizes the variability of the above three investment component: capital expenditure, advertising expenses, and research and development expenses using factor analysis. I calculate this variable using factor analysis toward the above three component. I construct the factor using the specified loadings from factor analysis. Relevant accounting data are obtained from

COMPUSTAT Fundamental Quarterly database. This measure should be highly correlated with *SUM* by construction.

Future Performances

I have five measures for future performances, namely *FROE*, *FROA*, *Tobin's Q*, *R_RET*, and *E_RET*. Among them, three are accounting measures, and two are stock return measures. In different analyses, I examine the effect of investment/ the joint effect of customer satisfaction and investment on future 1-12 quarters. For analyses under title *QTR N*, *FROE* is the *ROE* in *t+N* quarters ahead when investment is measured in quarter t.

The first one is *FROE* (future *ROE*). I calculate *ROE* as quarterly earnings before extraordinary items divided by the book value of equity. Both earnings before extraordinary items and book equity data are from *COMPUSTAT Fundamental Quarterly* database.

The second one is *FROA* (future *ROA*). I calculate *ROA* as quarterly earnings before extraordinary items divided by total asset. Both earnings before extraordinary items and total asset data are from *COMPUSTAT Fundamental Quarterly* database.

The third one is *Tobin's Q* in future quarters. I calculate approximate *Tobin's Q* as the summary of market capitalization (the product of stock prices and shares outstanding), market value of preferred stock and market value of debt (short-term liabilities net of short-term asset, plus the book value of firms' long-term debt), divided by total asset (see Chung and Pruitt, 1994). The variation of this approximate measure captures at least 96.6% variation of real *Tobin's Q* (Chung and Pruitt, 1994). Relevant accounting data are from *COMPUSTAT Fundamental Quarterly* database. Stock prices and shares outstanding data are from *CRSP* database.

The fourth measure is quarterly raw return *R_RET* in stock market. I summarize daily returns from *CRSP* to quarterly data.

The last one *E_RET* is based on the fourth measure. *E_RET* is future excess returns. First I run firm-quarterly market model to calculate excess returns. *E_RET* is calculated as the quarterly cumulated excess returns. Daily stock returns from *CRSP* database. Market risk-free rate are from *Kenneth French*'s data library website.

Board Structures

BSIZE is short for board size, which is logarithm of numbers of directors in each firm. The yearly data is from *RiskMetrics Directors Data* database. The larger board size is considered as more monitoring.

INDEP is the ratio of independent director ratio, which is the number of independent directors, deflated by board size. The yearly data is from *RiskMetrics Directors Data* database. Higher ratios of independent directors are more capable to control agency problems.

NOND is short for *Non-CEO-Duality*. It is a dummy variable which equals to 1 if firms' CEOs are not board chair at the same time, and 0 otherwise. The yearly data is from *RiskMetrics Directors Data* database.

Boards' demanding characteristics include larger board size, more independent director ratios, and/or CEO not being chairman at the same time.

3.2.2 Models

Main Model

I estimate the following models for the three investments dependent variables

ASSET GR, *SUM*, and *FACTOR*:

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 LOGMV_{i,t-1}+\alpha_3 MB_{i,t-1}+\alpha_4 ROE_{i,t-1}+\alpha_5 VROE_{i,t-1}$$
$$+\alpha_6 LEV_{i,t-1}+\alpha_7 DD_{i,t-1}+\alpha_8 AGE_{i,t-1}+\alpha_9 SEG_{i,t-1}+\varepsilon.$$

I expect in the above models, α_1 should be positive.

Investment Valuation Models

Firstly, I use the following models to valuate firm's investments.

$$DV_{i,t+n}=\alpha_0+\alpha_1 ASSET\ GR_{i,t}+\alpha_2 ACSI_{i,t}+\alpha_3 ACSI_{i,t}*ASSET\ GR_{i,t}$$
$$+Control\ Variables_{i,t}+\varepsilon.$$

And I expect α_3 to be positive to indicate improved investment valuation. I examine n=1 to n=4, *i.e.*, investment valuation in the next four quarters.

Secondly, I focus on the longer window: 12 quarters. To make the comparison more intuitive, I assign firms into high *ACSI* group (with above median *ACSI* scores in each year), and low *ACSI* group. I run the following regressions in high and low ACSI groups, and track α_1 in the two groups for the future 12 quarters.

$$DV_{i,t+n}=\alpha_0+\alpha_1 ASSET\ GR_{i,t}+Control\ Variables_{i,t}+\varepsilon.$$

I aim to show that for the next 12 quarters, investments tend to be valued at a less negative manner when firms belong to high *ACSI* group.

Customer Satisfaction and Demanding Board

As I discussed in the last chapter, I expect there is a substitute effect between customer satisfaction and demanding board, since they may be both linked to good corporate governance. I use the following two regression models to demonstrate my predictions:

$$DV_{i,t}=\alpha_0+\alpha_1 ACSI_{i,t-1}+\alpha_2 LOGMV_{i,t-1}+\alpha_3 MB_{i,t-1}+\alpha_4 ROE_{i,t-1}+\alpha_5 VROE_{i,t-1}$$
$$+\alpha_6 LEV_{i,t-1}+\alpha_7 DD_{i,t-1}+\alpha_9 AGE_{i,t-1}+\alpha_{10} SEG_{i,t-1}+\varepsilon,$$

and

$$DV_{i,t+1}=\alpha_0+\alpha_1 ASSET\ GR_{i,t}+\alpha_2 ACSI_{i,t}*ASSET\ GR_{i,t}+\alpha_3 BC_{i,t}*ASSET\ GR_{i,t}$$
$$+\alpha_4 ACSI_{i,t}*BC_{i,t}*ASSET\ GR_{i,t}+\alpha_5 ACSI_{i,t}+\alpha_6 BC_{i,t-1}+\alpha_7 ACSI_{i,t}*BC_{i,t}$$
$$+Control\ Variables_{i,t}+\varepsilon.$$

I expect in the first regression, α_1 is significant negative, and in the second regression, α_4 is significant negative, to show that customer satisfaction and demanding board characteristics are substitute for each other.

3.2.3 Robustness

For the association between customer satisfaction and corporate investment, I use change models as robustness checks.

$$\Delta DV_{i,t} = \alpha_0 + \alpha_1 \Delta ACSI_{i,t-1} + Control\ Variables_{i,t-1} + \varepsilon.$$

I also use changes in *ASSET GR*, *SUM*, and *FACTOR* as dependent variable, and changes in *ACSI* as independent variable. Three pairs of changes are used, and they are calculated from values in current year and previous one year (denoted by "1 Year"), from values in current year and previous three year (denoted by "3 Years"), and from values in current year and previous five year (denoted by "5 Years"). I expect α_1 to be significant positive to support my predictions.

For investment valuations, I also use 30% and 70% as breakpoint to investigate whether customer satisfaction will mitigate the investment puzzle. And for the association between customer satisfaction and demanding board characteristics, I also use change model in the similar way. Please refer to the following chapters for a more detailed description.

3.3 Empirical Results

In this section, I present the empirical results for my hypotheses in Section 3.1. I present descriptive statistics, correlations, and regression results from main model and also robustness checks.

3.3.1 Descriptive Statistics

In Table 13, I only include the distributions of investment measures, future performance measures, and demanding Board Characteristics. Please refer to Table 2 for the distributions of other variables.

[INSERT TABLE 13]

For investment measures in Panel A, in my sample companies spend on average 6.2% of total assets in corporate investments. And their asset growth rate is 5.4% on average.

In Panel B, the five future performance measures are presented. I could see that *FROE* has a more widely distribution than *FROA*. After extracting the factor returns from raw returns, my measure of quarterly excess returns (with intercept) range from 0.2% to 0.8%.

For my sample firms, the average board size is 2.453 (11.6 directors), and the independence ratios is 71%, and 16.1% of CEOs are chairman at the same time (Panel C).

3.3.2 Correlations

Customer Satisfaction, Investment and Valuations

To investigate the effects of customer satisfaction on corporate investment and investment puzzle (investment negative valuations), first I analyze the correlation metrics between *ACSI*, investment and future performance variables. Results are in Panel A, Table 14.

[Insert Table 14]

I could see that *ACSI* is positively correlated with corporate investment measure: *ASSET GR*, *SUM*, and *FACTOR*, all at <0.0001 levels. The three investment measures are robust to each other. *ACSI* is also positively related to future performances, except for excess return (*E_RET*, not significant at 10%). The correlations between investment variables and future performance measures are either negative (5 out of 15 pairs[16]), or not significant (10 out of 15 pairs). Future performances are generally positively correlated, except for the correlation between *FROE* and *R_RET* (correlation is -0.021, significant at 10% level).

[16] 15 pairs is due to 3 investment measures * 5 performance measures.

Customer Satisfaction and Board Characteristics

To investigate the effects of customer satisfaction on board characteristics, first I analyze the correlation metrics between *ACSI*, and board characteristics. Results are in Panel B, Table 14.

I could see that *ACSI* is negatively correlated with board size, board independence, and CEO non-duality, all at <0.0001 levels. Board size is positively related to independence, and CEO non-duality. Board independence is also positively related to CEO non-duality.

3.3.3 Regressions Results and Robustness

Customer Satisfaction and Investments

In Table 15, I empirically investigate the associations between customer satisfaction and firms' corporate investments. Generally speaking, higher customer satisfaction results in next period higher asset growth rate (coefficient is 0.252, significant at 1% level), and higher summarized (factor analyzed) capital expenditure, advertising expenses, and research and development expenses (coefficient for summarized is 0.005, significant at 5% level, and coefficient for fact analyzed is 0.002, also significant at 5% level), and This is consistent with my argument that firms with higher customer satisfaction will have less financial constraints and larger set of investment opportunities, and thus will have a higher investment level.

[Insert Table 15]

[Insert Table 16]

In Table 16, I present the results using changes in *ASSET GR*, *SUM*, and *FACTOR* as dependent variable, and changes in *ACSI* as testing variable. Changes in *ACSI* from current and previous three years are significant positively related to changes in all investment measures (coefficient from 0.001 to 0.079, all significant at 1% level). The other change regressions do not provide significant changes in *ACSI*.

Customer Satisfaction and Investments Puzzles: 4 Quarters

Panel A to E in Table 17 are the analyzed results for investment puzzles, and the effect of customer satisfaction on the investment puzzles. I expand the investigation of investment puzzle by including accounting measures *FROE* (Panel A), *FROA* (Panel B) and *Tobin's Q* (Panel C) as dependent variables, besides raw return (*R_RET*, Panel D) and excess return (*E_RET*, Panel E) analyses. Since asset growth measure largely subsumes the explanatory power of other measures (Lipson et al., 2011), I only use *ASSET GR* as proxy for investment in this table. I present the investment puzzles (in first column under each quarter), and then add *ACSI* and its interaction with asset growth.

[Insert Table 17]

In Panel A, I will see that asset growth will be negatively related with future four quarters' *FROE*s. The coefficients are from -0.029 to -0.046, with at least 1% significances. In the second columns under each quarter, I find that customer satisfaction improves future *ROE* (coefficients from 0.001 to 0.002, with three quarters at least 10% significances, and one quarter not significant). I also find that the interaction between *ACSI* and *ASS* is positively related with future *ROE* (coefficients 0.001, with at least 5% significances).

Panel B has the similar results. Asset growth (*ASSET GR*) will be negatively related to future four quarters' *FROA*s. The coefficients are from -0.029 to -0.675, with at least 5% significances. In the second columns under each quarter, I find that sometimes customer satisfaction improve future *ROA* (coefficients from 0.001 to 0.002, with at least 10% significances in two quarters and not significant in the other two quarters). I also find that the interaction between

ACSI and *ASSET GR* is positively related to future *ROA* (coefficients 0.002 to 0.008, with at least 5% significances). The results are slightly stronger because the deflator of *ROA* is total asset, and growth in total asset naturally leads to a declined *ROA*. So this result may be more biased when being compared to other future performance measures.

Panel C also has the consistent results with Panel A and Panel B. Asset growth (*ASSET GR*) is negatively related with future four quarters' *Tobin's Q*. The coefficients are from -0.402 to -0.727, with at least 10% level of significances. In the second column under each quarter, I find that customer satisfaction improves future *Tobin's Q* (coefficients from 0.027 to 0.435 with at least 5% level of significance). I also find that the interaction between *ACSI* and *ASSET GR* is positively related to future *Tobin's Q* (coefficients 0.058 to 0.105, with at least 5% level of significance). The results are economically stronger because the mean, standard deviation and other distribution characteristics of *Tobin's Q* is larger than other measures (See Panel B, Table 2).

Besides accounting measures, stock return measures also show similar evidence. I did not use sorting approach to address the investment puzzle due to my limited sample size. So in Panel D and Panel E, I still present regression results without/with *ACSI* interaction. In Panel D, I find that asset growth (*ASSET GR*) is negatively related to future four quarters' raw returns. The coefficients are from -0.036 to -0.045, with at least 5% significances. In the second column under each quarter, I do not find that customer satisfaction improves future raw returns. I only find that the interaction between *ACSI* and *ASSET GR* is sometimes positively related to future raw returns (coefficients 0.002 to 0.008, with at least 5% level of significance in two quarters, but not significant in the other two quarters). These results are consistent with the unclear findings between customer satisfaction and stock returns, but it does not reject my predictions.

Panel E generally has the consistent, but weaker results with Panel D. Asset growth (*ASSET GR*) is negatively related to future four quarters' excess returns (intercept from asset pricing models included). The coefficients are from -0.008 to -0.021, with future three quarters at least 10% level. In the second column under each quarter, I do not find that customer satisfaction improves future excess returns (coefficients from 0.001, but not significances). I also find that the interaction between *ACSI* and *ASSET GR* is generally positively related to future excess returns (coefficients 0.001 to 0.005, with at least 5% level of significance). The results are consistent with my predictions.

Customer Satisfaction and Investments Puzzles: 12 Quarters

In Table 18, I present the regression coefficients for *ASSET GR*, *SUM*, and *FAC* on future performance measures in above median *ACSI* group and below median *ACSI* group, respectively. For each quarter, I calculate the difference between the coefficients of investment on performances in high-*ACSI* group and low-*ACSI* group. On average, high-*ACSI* group has a higher future *ROE* valuation to investment. When I regress future *ROE* on investment, I get the coefficient, and for the next 12 quarters, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.027, and is significant at 1% level. For *ROA* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.008, and is significant at 10% level. For *Tobin's Q* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.011, and is significant at 5% level. For *R_RET* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.192, and is significant at 5% level. For *E_RET* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.275, and is significant at 1% level. Also the results are consistent with those in Table 17.

[Insert Table 18]

[Insert Table 19]

Table 19 provides robustness checks for Table 18. I divide high-*ACSI* group and low-*ACSI* groups use 30% and 70% as breakpoints. In this table, when I regress future *ROE* on investment, I get the coefficient, and for the next 12 quarters, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.038, and is significant at 1% level. For *ROA* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.009, and is significant at 10% level. For *Tobin's Q* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.028, and is significant at 1% level. For *R_RET* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.445, and is significant at 5% level. For *E_RET* performance, the mean value of differences between high-*ACSI* group and low-*ACSI* group is 0.334, and is significant at 1% level. Also the results are consistent with those in Table 17 and Table 18.

Customer Satisfaction and Board Characteristics

In Table 20, I report the regression results using board characteristics as dependent variables. From this table I could see that firms with higher customer satisfaction have less demanding for larger board (coefficient is -0.003, significant at 5% level), have less demanding for independent board (coefficient is -0.003, significant at 10% level), and have less demanding for CEO non-duality (coefficient is -0.016, significant at 10% level).

[Insert Table 20]

[Insert Table 21]

As robustness, in Table 21, I present the results using changes in *BSIZE*, *INDEP*, and *NOND* as dependent variable, and changes in *ACSI* as testing variable. Results are not significant. It may be due to board characteristics are relatively stable and they rare change.

Joint Effect of Customer Satisfaction and Board Characteristics on Investment Puzzle

In Table 22, I report the regression results including the joint effect of customer satisfaction and board characteristics on investment puzzle. My focuses are the interactions: *ACSI**ASSET GR, BC*ASSET GR, and ACSI*BC*ASSET GR*. I expect the first two are positive, and the last one is negative. Empirical evidence generally supports my predictions. *ACSI**ASSET GR* is with coefficient from 0.001 to 0.589, and among the 15 coefficients[17], 3 coefficients are with 1% significances, 5 coefficients are with 1% to 5% significances, 3 coefficients are with 5% to 10% significances, and 4 not significant.

[17] 15 coefficients are due to 3 board character measures * 5 performance measures.

[Insert Table 22]

*BC*ASSET GR* is with coefficient from 0.033 to 4.883, and among the 15 coefficients, 3 coefficients are with 1% significances, 5 coefficients are with 1% to 5% significances, 4 coefficients are with 5% to 10% significances, and 3 not significant.

Most importantly, I pay attention to the coefficients of *ACSI***BC***ASSET GR*. The coefficients are from -0.001 to -0.063, and among the 15 coefficients, 4 coefficients are with 1% significances, 7 coefficients are with 1% to 5% significances, 3 coefficients are with 5% to 10% significances, and one coefficient not significant (with t value of -1.62). From this and the previous tables, I find some evidence that customer satisfaction and demanding board characteristics are substitute for each other. To conclude the empirical results, it is generally consistent with the predictions.

Chapter 4: Conclusion

This chapter concludes the findings and contributions for this dissertation. At last I also pointed out the limitations and possible future research directions.

4.1 Findings and Contributions

In this study, I first argued and empirically investigate whether customer satisfaction affects stock price informativeness. I argue that firms with higher customer satisfaction have large and/or stable future cash flows and investors tend to hold similar beliefs about firms' future fundamentals. Different expectations are usually motivation for trading in stock market. As a result, for firms enjoying higher customer satisfaction, investors generally hold their stocks, and reduce noise trading. Thus, unless they have confidence in their private information sources they trade, and this improves the incorporation of information into stock prices.

Empirically I find robust supporting evidence that higher customer satisfaction could enhance the incorporation of information into stock prices. I also find that informed trading is one essential channel of the 'customer satisfaction-stock price informativeness' association. After looking at the cross-sectional and time series partitions, I find that when firms face more severe competitions in product market, higher customer satisfaction is more meaningful and could improve more informativeness levels. I also find that when market is with high sentiments, the association between customer satisfaction and stock price informativeness more pronounced. I provide various robustness checks, and my empirical findings remain unchanged.

In the rest part of this thesis, I investigate whether customer satisfaction affect firms' corporate investment decisions and its valuation (investment puzzle). I argue that higher customer satisfaction leads to looser financial constraints, and meanwhile a larger investment opportunity set. In response to the above two merits of customer satisfaction, firm will have larger investments. Empirically, I find supporting evidence, that firms with higher ACSI are followed by a higher corporate investment levels, in terms of the summary (or factor) of capital expenditure, advertising expenses, and research and development expenses, and in terms of higher asset growth rate.

I then analyze the effect of customer satisfaction on investment puzzle (the negative association between investment and future performance). Using both accounting and stock return measures, I find that in my sample, firms with higher investment suffer from lower future performances. Further I find that customer satisfaction mitigate the negative associations.

Next I argue that customer satisfaction has such effect on investment valuation may be because customer satisfaction is also one kind of good corporate governance mechanism. Due to stakeholder model for corporate governance, customers also have monitoring roles, and higher satisfaction indicates good governance level. Thus firms with higher customer satisfaction may have less demanding board structures, *i.e.* customer satisfaction and demanding board structures are substitutes for each other.

I find empirical evidence which shows the substitute association between customer satisfaction and demanding board structures. I find that firms with higher customer satisfaction have smaller boards, lower independent director ratios, and lower CEO non-duality probabilities. The second piece of finding is about the investment puzzle. I find that in terms of reducing the negative association between investment and future performances, customer satisfaction and demanding board structures are substitutes for each other as well.

My findings contribute to the literature in the way that I broaden the literature of how customer satisfaction improves financial performances. As stock price informativeness in many aspects is important: it signals stock market efficiency, make stock prices likely to crash, and lead to less economic efficiency of corporate investment, and also better corporate governance mechanisms. My findings suggest marketing to financial market and corporate decision efficiencies.

4.2 Limitations and Future Research

I still do not touch the black box of how customer satisfaction is formed. As Mittal, Anderson, Sayrak and Tadikamalla (2005) mention, the input of generate higher customer satisfaction including inputs into employees, cost of goods sold, advertising expenses, and others such as selling expenses. To better assess marketing metrics' effect on financial markets, I need to differentiate firms with high efficiency to turn inputs (marketing spendings) into outputs (customer satisfaction).

I also do not differentiate different types of products. For example, customer satisfaction literature has examined the difference between services vs. goods industries.[18] Other possibilities include checking the difference between durable and non-durable goods industries, or the difference between firms with high and

[18] Goods industries, such as Soft Drinks, Personal Care and Cleaning Products, and Pet Food have average highest ACSI scores, compared to service industries.

low labor-intensive inputs.

Another problem for this study is due to limited sample size. Although in terms of total market capitalization, my sample includes around 40% of the public traded firms, the numbers of observations (more than 200 firms) is still problematic. In further studies, if I could document relevant factors related to customer satisfaction and construct a widely-spread customer satisfaction measures, the study will be more powerful.

Also there may be endogeneity problems in this study. Some unobserved variables may lead to higher customer satisfaction and higher stock price informativeness at the same time. Usually instrument variables could be used to construct more exogenous testing variables. However, in this study, I fail to recognize such instruments. So in the future I will try to improve the methodology.

Another interesting angle to further extend my study is to investigate the efficiency of other corporate decisions, such as reporting efficiencies. For example, (discretionary) accruals and conservatism may also be affected by customer satisfaction.

Furthermore, there are lots of other marketing metrics for my further investigation, such as brand equity. Besides the efficiency of marketing metrics, the relationship between companies and their other stakeholders (suppliers, or employees) may also catch investors' and managers' attention. For example, the efficient of supply chain may affect stock market reactions. And also there is literature studying the association between employees and equity prices (Edmans, 2011). In conclusion, real business decisions are with complexity and how to evaluate the efficiency is my responsibility and I still have a long way to go.

Reference

Aaker, D. A., and R. Jacobson, 1994. The financial information content of perceived quality. *Journal of marketing research* 31(2): 191-201.

Aaker, D. A., and J. G. Shansby 1982. Positioning Your Product. *Business Horizons* 25(3): 56-62.

Aksoy, L., B. Cooil, C. Groening, T. L. Keiningham, and A. Yalcin, 2008. The long term stock market valuation of customer satisfaction. *Journal of Marketing* 72(4): 105-122.

Almazan, A., J. C. Hartzell, and L. T. Starks, 2005. Active institutional shareholders and costs of monitoring: Evidence from executive compensation. *Financial Management* 34(4): 5-34.

Anderson, C. W., and L. Garcia-Feijóo, 2006. Empirical Evidence on Capital Investment, Growth Options, and Security Returns. *The Journal of Finance* 61(1): 171-194.

Anderson, E. W., and S. A. Mansi, 2009. Does customer satisfaction matter to investors? Findings from the bond market. *Journal of Marketing Research* 46(5): 703-714.

Anderson, E. W., C. Fornell and S. K. Mazvancheryl, 2004. Customer satisfaction and shareholder value. *Journal of marketing* 68(4): 172-185.

Anderson, E. W., C. Fornell, and D. R. Lehmann, 1994. Customer satisfaction, market share, and profitability: findings from Sweden. *Journal of marketing* 58(3): 53-66.

Ashbaugh-Skaife, H. A., J. Gassen, and R. Lafond, 2006. Does stock price synchronicity represent firm-specific information? The international evidence. *MIT Sloan Research Paper* No. 4551-05, available at SSRN: http://ssrn.com/abstract=768024.

Baesel, J. B., and G. R. Stein, 1979. The value of information: Inferences from the profitability of insider trading. *Journal of Financial and Quantitative Analysis* 14(3): 553-571.

Bahadir, S. C., S. G. Bharadwaj, and R. K. Srivastava, 2008. Financial value of brands in mergers and acquisitions: is value in the eye of the beholder? *Journal of Marketing* 72(6): 49-64.

Ball, R., and P. Brown, 1968. An empirical evaluation of accounting income numbers. *Journal of accounting research* 6(2): 159-178.

Barker, V. L., and G. C. Mueller, 2002. CEO characteristics and firm R&D spending. *Management Science* 48(6): 782–801.

Barth, M. E., M. B. Clement, G. Foster, and R. Kasznik, 1998. Brand values and capital market valuation. *Review of Accounting Studies* 3(1/2): 41-68.

Bateson, J. E. G., 1992. Managing Services Marketing. *Houghton Mifflin Harcourt (HMH)*.

Bearden, W. O., and J. E. Teel, 1983. Selected determinants of consumer satisfaction and complaint reports. *Journal of Marketing Research* 20(1): 21-28.

Beaver, W. H., 1968. The information content of annual earnings announcements. *Journal of Accounting Research* 6: 67-92.

Bebchuk, L., A. Cohen, and A. Ferrell, 2009. What matters in corporate governance? *Review of Financial Studies* 22(2): 783-827.

Bennett, J. A., R. W. Sias, and L. T. Starks, 2003. Greener pastures and the impact of dynamic institutional preferences. *Review of Financial Studies* 16 (4): 1203-1238.

Black, F., 1986. Noise. The Journal of Finance 41(3): 529-543.

Boehmer, E., and E. K. Kelly, 2009. Institutional investors and the informational efficiency of prices. *Review of Financial Studies* 22(9): 3564-3594.

Bolton, R. N., 1998. A dynamic model of the duration of the customer's relationship with a continuous service provider: the role of satisfaction, *Marketing Science* 17 (1): 45-65.

Bolton, R. N., and J. H. Drew, 1991. A multistage model of customers' assessments of service quality and value. *Journal of Consumer Research* 17(4):

375-384.

Bolton, R. N., and and K. N. Lemon, 1999. A dynamic model of customers' usage of services: Usage as an antecedent and consequence of satisfaction. *Journal of marketing research* 36(2): 171-186.

Broussard J. P., D. Michayluk, and W. P. Neely, 2005. The Role of Growth in Long Term Investment Returns. *Journal of Applied Business Research* 21(1): 93-104.

Brunnermeier, M. K., and S. Nagel, 2004. Hedge funds and the technology bubble. *The Journal of Finance* 59(5):2013-2040.

Bushee, B. J., 1998. The influence of institutional investors on myopic R&D investment behavior. *The Accounting review* 73(3): 305-333.

Capon, N., J. U. Farley, and S. Hoenig, 1990. Determinants of financial performance: a meta-analysis. *Management Science* 36(10): 1143-1159.

Chan, K., and A. Hameed, 2006. Stock price synchronicity and analyst coverage in emerging markets. *Journal of Financial Economics* 80(1): 115–147.

Chaney, P. K., T. M. Devinney, and R. S. Winer, 1991. The impact of new product introductions on the market value of firms. *The Journal of Business* 64(4): 573-610.

Chava, S., and M. R. Roberts, 2008. How does financing impact investment? The role of debt covenants. *The Journal of Finance* 63(5): 2085–2121.

Chemmanur, T., and A. Yan, 2009. Product market advertising and new equity issues. *Journal of Financial Economics* 92(1): 40-65.

Chen, S., 2008. Board size and the variability of corporate performance. *Journal of Financial Economics* 87(1): 157-176.

Chen, H. L., and W. T. Hsu, 2009. Family ownership, board independence, and R&D investment. *Family Business Review* 22(4): 347-362.

Chen, Q., I. Goldstein, and W. Jiang, 2007. Price informativeness and investment sensitivity to stock price. *Review of Financial. Studies* 20 (3): 619-

650.

Cheng, S., 2004. R&D expenditures and CEO compensation. *The Accounting Review 79*(2): 305-328.

Cheng, S., 2008. Board size and the variability of corporate performance. *Journal of Financial Economics* 87(1): 157-176.
Coffee, J., 2002. Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance. *Columbia Law Review* 102: 1757-1831.

Cohen, R. B., P. A. Gompers, and T. Vuolteenaho, 2002. Who underreacts to cash-flow news? Evidence from trading between individuals and institutions. *Journal of Financial Economics* 66(2/3): 409-462.

Coles, J. L., N. D. Daniel, and L. Naveen, 2008. Boards: does one size fit all? *Journal of Financial Economics* 87(2): 329-356.

Collins, D. W., S. P. Kothari, J. Shanken, and R. G. Sloan; 1994. Lack of timeliness and noise as explanations for the low contemporaneuos return-earnings association. *Journal of Accounting and Economics* 18(3): 289-324.

Cooper, Gulen, and Schill, 2008. Asset Growth and the Cross‐Section of Stock Returns. *The Journal of Finance* 63(4): 1609-1651.

Dennis, P., and D. Strickland, 2004. The determinants of idiosyncratic volatility. *Working Paper, University of Virginia*, available at:
http://www.terry.uga.edu/finance/docs/strickland.pdf.

Durnev, A., R. Morck, and B. Yeung, 2004. Value‐Enhancing Capital Budgeting and Firm‐specific Stock Return Variation. *The Journal of Finance* 59(1): 65-105.

Durnev, A., R. Morck, B. Yeung, and P. Zarowin, 2003. Does Greater Firm‐Specific Return Variation Mean More or Less Informed Stock Pricing? *Journal of Accounting Research* 41(5): 797-836.

Easley, D., S. Hvidkjaer, and M. O'Hara, 2002. Is information risk a determinant of asset returns? *The Journal of Finance* 57(5): 2285-2221.

Fairfield, P. M., J. S. Whisenant, and T. L. Yohn, 2003, Accrued earnings and growth: Implications for future profitability and market mispricing. *The Accounting Review* 78(1): 353-371.

Faleye, O., 2007. Classified boards, firm value, and managerial entrenchment. *Journal of Financial Economics* 83(2): 501-529.

Fama, E., 1970. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance* 25(2): 383-417.

Fama, E., 1991. Efficient Capital Markets: II. *The Journal of Finance* 46(5): 1575-1617.

Fama, E., L. Fisher, M. Jensen, R. Roll, 1969. The adjustment of stock prices to new information. *International Economic Review* 10(1): 1-21.

Fang, E., R. W. Palmatier, and J. B. E. M. Steenkamp, 2008. Effect of service transition strategies on firm value. *Journal of Marketing* 72(5): 1-14.

Farquhar, P. H., 1989. Managing brand equity. *Marketing Research* 1(3): 24-33.

Farris, P. W., N. T. Bendle, P. E. Pfeifer, and D. J. Reibstein, 2010. Marketing Metrics: The Definitive Guide to Measuring Marketing Performance. *Upper Saddle River, New Jersey: Pearson Education, Inc.*

Fernandes, N., and M. A. Ferreira, 2008. Does international cross-listing improve the information environment. *Journal of Financial Economics* 88(2): 216-244.

Ferreira, D., M. A. Ferreira, and C. C. Raposo, 2011. Board structure and price informativeness. *Journal of Financial Economics* 99(3): 523-545.

Ferreira, M. A., and P. A. Laux, 2007. Corporate governance, idiosyncratic risk, and information flow. *The Journal of Finance* 62(2): 951-989.

Finnerty, J. E., 1976. Insiders and market efficiency. *The Journal of Finance* 31(4): 1141-1148.

Fornell, C., 1992. A national customer satisfaction barometer: the Swedish experience. *Journal of Marketing* 56(1): 6-21.

Fornell, C., M. D. Johnson, A. W. Anderson, J. Cha, and B. E. Bryant, 1996. The American customer satisfaction index: nature, purpose, and findings. *Journal of Marketing* 60 (4): 7-18.

Fornell, C., S. Mithas, F. V. Morgeson III, and M. S. Krishnan, 2006. Customer satisfaction and stock prices: High returns, low risk. *Journal of Marketing* 70(1): 3-14.

Fornell, C., R. T. Rust, and M. G. Dekimpe, 2010. The effect of customer satisfaction on consumer spending growth. *Journal of Marketing Research* 47(1): 28-35.

Frazzini, A., 2006. The disposition effect and underreaction to news. *The Journal of Finance* 61(4): 2017-2046.

Geyskens, I., K. Gielens, and M. G. Dekimpe, 2002. The market valuation of internet channel additions. *Journal of Marketing* 66(2): 102-119.

Glosten, L. R., and P. R. Milgrom, 1985. Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of financial economics* 14(1): 71-100.

Gompers, P., J. Ishii, and A. Metrick, 2003. Corporate governance and equity prices. *Quarterly Journal of Economics* 118 (1): 107-156.

Gruca, T. S., and L. L. Rego, 2005. Customer satisfaction, cash flow, and shareholder value. *Journal of Marketing* 69(3): 115-130.

Grullon, G., G. Kanatas, and J. Weston, 2004. Advertising, breadth of ownership, and liquidity. *Review of Financial Studies* 17 (2): 439-461.

Han, L., Z. Lin, and S. X. Wei, 2009. Noise or Information: When Stock Price Synchronicity Meets Accounting Restatements. *Working Paper, The Hong Kong Polytechnic University*, available at: http://efmaefm.org/0EFMSYMPOSIUM/China-2010/papers/draft_EFM2010.pdf

Hanssens, D. M., L. J. Parsons, and R. L. Schultz, 2001. Market Response Models, 2nd ed. *Boston, Mass: Kluwer Academic Publishers*.

Hart, C. W., 2007. Beating the market with customer satisfaction. *Harvard Business Review* 85(3): 30-32.

Hoch, S. J., and Y. W. Ha, 1986. Consumer learning: Advertising and the ambiguity of product experience. *Journal of Consumer Research* 13(2): 221-233.

Homburg, C., N. Koschate, and W. D. Hoyer, 2005. Do satisfied customers really pay more? A study of the relationship between customer satisfaction and willingness to pay. *Journal of Marketing* 69(2): 84-96.

Hutchinson, M., and F. A. Gul, 2004. Investment opportunity set, corporate governance practices and firm performance. *Journal of Corporate Finance* 10(4): 595-614.

Hutton, A. P., A. J. Marcus, and H. Tehranian, 2009. Opaque financial reports, R2, and crash risk. *Journal of Financial Economics* 94(1):67-86.

Ittner, C. D., and D. Larcker, 1998. Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research* 36: 1-35.

Jackson, S. B., 2008. The effect of firms' depreciation method choice on managers' capital investment decisions. *The Accounting Review* 83(2): 351-376.

Jackson, S. B., X. Liu, and M. Cecchini, 2009. Economic consequences of firms' depreciation method choice: Evidence from capital investments. *Journal of Accounting and Economics* 48(1): 54-68.

Jacobson, R., and N. Mizik, 2009. The financial markets and customer satisfaction: Reexamining possible financial market mispricing of customer satisfaction. *Marketing Science* 28(5): 810-819.

Jin, L., and S. C. Myers, 2006. *R*2 around the world: New theory and new tests. *Journal of Financial Economics* 79(2): 257-292.

Joshi, A., and D. M. Hanssens, 2010. The direct and indirect effects of advertising spending on firm value. *Journal of Marketing* 74(1): 20-33.

Ke, B., and S. Ramalingegowda, 2005. Do institutional investors exploit the post-earnings announcement drift? *Journal of Accounting and Economics* 39(1): 25-53.

Kelly, P., 2005. Information Efficiency and Firm-Specific Return Variation. *Working Paper, New Economic School, Moscow.*

Kerin, R. A., and R. Sethuraman, 1998. Exploring the brand value-shareholder value nexus for consumer goods companies. *Journal of the Academy of Marketing Science* 26(4): 260-273.

Klammer, T., B. Koch, and N. Wilner, 1991. Capital budgeting practices: a survey of corporate use. *Journal of Management Accounting Research* 3(1): 113-130.

Krasnikov, A., and S. Jayachandran, 2008. The relative impact of marketing, research-and-development, and operations capabilities on firm performance. *Journal of Marketing* 72(4): 1-11.

Kurov, A., 2008. Investor sentiment, trading behavior and informational efficiency in index futures markets. *Financial Review* 43(1): 107-127.

Kyle, A. S., 1985. Continuous auctions and insider trading. Econometrica: *Journal of the Econometric Society* 53(6): 1315-1335.

Lakonishok, J., and I. Lee, 2001. Are insider trades informative? *Review of financial studies 14* (1): 79-111.

Lane, V., and R. Jacobson, 1995. Stock market reactions to brand extension announcements: the effects of brand attitude and familiarity. *The Journal of Marketing* 59(1): 63-77.

Lee, H., and C. J. Scott, 2013. The Impact of Customer Satisfaction On Chief Marketing Officer's Compensation. *Journal of Applied Business Research* 29(1): 35-44.

Lipson, M. L., S. Mortal, and M. J. Schill, 2011. On the scope and drivers of the asset growth effect. *Journal of Financial and Quantitative Analysis* 46(6): 1651-1682.

Lorie, J. H., and V. Niederhoffer, 1968. Predictive and statistical properties of insider trading. *Journal of Law and Economics* 11(1): 35-53.

Lundholm, R., and L. A. Myers, 2002. Bringing the Future Forward: The Effect of Disclosure on thE_RETurns - Earnings Relation. *Journal of Accounting Research* 40(3): 809-839.

Luo, X., 2008. When Marketing Strategy First Meets Wall Street: Marketing Spendings and Firms' Initial Public Offerings (IPOs). *Journal of Marketing* 72(5): 98-109.

Luo, X., and C. B. Bhattacharya, 2006. Corporate Social Responsibility, Customer Satisfaction, and Market Value. *Journal of Marketing* 70(4): 1-18.

Luo, X., and C. B. Bhattacharya, 2009. The debate over doing good: corporate social performance, strategic marketing levers, and firm-idiosyncratic risk. *Journal of Marketing* 73(6): 198-213.

Luo, X., C. Homburg, and J. Wieseke, 2010. Customer satisfaction, analyst stock recommendations, and firm value. *Journal of Marketing Research* 47(6):1041-1058.

Lyandres, E., L. Sun, and L. Zhang, 2008. The New Issues Puzzle: Testing the Investment-Based Explanation. *Review of Financial Studies* 21(6): 2825-2855.

Mashruwala, C., S. Rajgopal, and T. Shevlin, 2006. Why Is the Accrual Anomaly Not Arbitraged Away? The Role of Idiosyncratic Risk and Transaction Costs. *Journal of Accounting and Economics* 42(1/2): 3-33.

McAlister, L., R. Srinivasan, and M. C. Kim, 2007. Advertising, Research and Development, and Systematic Risk of the Firm. *Journal of Marketing* 71(1): 35-48.

McConnell, J. J., and C. J. Muscarella, 1985. Corporate capital expenditure decisions and the market value of the firm. *Journal of Financial Economics* 14(3): 399-422.

Mian, G. M., and S. Sankaraguruswamy, 2008. Investor Sentiment and Stock Market Response to Corporate News. *Working Paper, The Hong Kong Polytechnic University*, available at SSRN: http://ssrn.com/abstract=1107619.

Milgrom, P., and J. Roberts, 1986. Price and advertising signals of product quality. *Journal of Political Economy* 94(4): 796-821.

Mittal, V., E. W. Anderson, A. Sayrak, and Tadikamalla, 2005. Dual emphasis and the long-term financial impact of customer satisfaction. *Marketing Science* 24(4): 544-555.

Mizik, N., and R. Jacobson, 2008. The financial value impact of perceptual brand attributes. *Journal of Marketing Research* 45(1): 15-32.

Mizik, N., and R. Jacobson, 2009. Valuing branded businesses. *Journal of Marketing* 73(6): 137-153.

Morck, R., B. Yeung, and W. Yu, 2000. The information content of stock markets: why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58(1/2): 215-260.

Morgan, N. A., and L. L. Rego, 2009. Brand portfolio strategy and firm performance. *Journal of Marketing* 73(1): 59-74.

Myers, S. C., and M. S. Majluff, 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13(2): 187-221.

Myers, S. C., 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5(2): 144-175.

Nelson, P., 1974. Advertising as information. *Journal of Political Economy* 82(4): 729-754.

O'Connell, V., and O'Sullivan, D., 2011. The impact of customer satisfaction on CEO bonuses. *Journal of the Academy of Marketing Science* 39(6): 828-845.

Ohnemus, L., and P. V. Jenster, 2007. Corporate brand thrust and financial performance: An examination of strategic brand investments. *International Studies of Management and Organization* 37(4): 84-107.

Pauwels, K., J. Silva-Risso, S. Srinivasan, and D. M. Hanssens, 2004. New products, sales promotions, and firm value: The case of the automobile industry. *Journal of Marketing* 68(4): 142-156.

Peress, J., 2010. Product market competition, insider trading, and stock market efficiency. *The Journal of Finance* 65(1): 1-43.

Piotroski, J. D., and D. T. Roulstone, 2004. The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices. *The Accounting Review* 79(4): 1119-1151.

Polk, C., and P. Sapienza, 2009. The stock market and corporate investment: A test of catering theory. *Review of Financial Studies* 22 (1): 187-217.

Rajgopal, S., and M. Venkatachalam, 2011. Financial reporting quality and idiosyncratic return volatility. *Journal of Accounting and Economics* 51(1/2): 1-20.

Rao, V. R., M. K. Agarwal, and D. Dahlhoff (2004. How is manifest branding strategy related to the intangible value of a corporation? *Journal of Marketing* 68(4): 126-141.

Ratchford, B. T., and N. Srinivasan 1993. An empirical investigation of returns to search. *Marketing Science* 12(1): 73-87.

Reichheld, F. F., and W. E. Sasser Jr, 1990. Zero defections: quality comes to services. *Harvard Business Review* 68(5): 105-111.

Roll, R., 1988. R2. *The Journal of Finance* 43(3): 541-566.

Seog, S. H., and Y. J. Hyun, 2009. Financing as a Marketing Strategy. *Marketing Science* 28(3): 526-540.

Seyhun, H. N., 1986. Insiders' profits, costs of trading, and market efficiency. *Journal of Financial Economics* 16(2): 189-212.

Seyhun, H. N., 1988. The information content of aggregate insider trading. *The Journal of Business* 61(1): 1-24.

Seyhun, 1992. Why Does Aggregate Insider Trading Predict Future Stock Returns. *Quarterly Journal of Economics* 107(4): 1303-1331.

Simon, C. J., and M. W. Sullivan, 1993. The measurement and determinants of brand equity: a financial approach. *Marketing Science* 12(1): 28-52.

Sloan, R., 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71(3): 289-315.

Sood, A., and G. J. Tellis, 2009. Do innovations really pay off? Total stock market returns to innovation. *Marketing Science* 28(3): 442-456.

Sorescu, A., and J. Spanjol, 2008. Innovation's effect on firm value and risk: Insights from consumer packaged goods. *Journal of Marketing* 72(2): 114-132.

Srinivasan, S., K. Pauwels, J. Silva-Risso, and D. M. Hanssens, 2009. Product innovations, advertising and stock returns. *Journal of Marketing* 73(1): 24-43.

Stigler, G. J., 1961. The economics of information. *The Journal of Political Economy* 69(3): 213-225.

Swaminathan, V., F. Murshed, and J. Hulland, 2008. Value creation following merger and acquisition announcements: The role of strategic emphasis alignment. *Journal of Marketing Research* 45(1): 33-47.

Tellis, G. J., and J. Johnson, 2007. The value of quality. *Marketing Science* 26(6): 758-773.

Teoh, S. H., Y. G. Yang, and Y. Zhang, 2009. R-square and market efficiency. Working paper, available at SSRN:
http://ssrn.com/abstract=926948.

Teo, T. S. H., and J. Liu, 2007. Consumer trust in e-commerce in the United States, Singapore and China. *Omega* 35(1): 22-38.

Titman, S. K. C., J. Wei, and F. Xie, 2004. Capital Investments and Stock Returns. *Journal of Financial and Quantitative Analysis* 39(4): 677-700.

Toivanen, O., P. Stoneman, and D. L. Bosworth, 2002. Innovation and the market value of UK firms, 1989-1995. *Oxford Bulletin of Economics and Statistics* 64(1): 39-61.

Wang, J., Wei, S. X., and B. Zhang, 2008. Short Sales Constraints and Price Informativeness. *Working Paper, The Hong Kong Polytechnic University,*

available at:
http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2009-milan/430.pdf

West, K. D., 1988. Dividend Innovations and Stock Price Volatility. *Econometrica* 56(1): 37-61.

Xing, Y., 2008. Interpreting the value effect through the Q-theory: An empirical investigation. *Review of Financial Studies* 21(4): 1767-1795.

Zinkhan, G. M., and J. A. Verbrugge, 2000. The marketing/finance interface: two divergent and complementary views of the firm. *Journal of Business Research* 50(2): 143-148.

Appendix Variable Definition

Variable Name	Definition
ACSI	The *American Customer Satisfaction Index* (*ACSI*) measures the satisfaction of consumers (scores 0 to 100) across the U.S. economy towards famous brands. It is constructed from survey data and released quarterly. It started in 1994 by researchers at the *National Quality Research Center*, a research unit within the *University of Michigan*, and now (from 2009) is available from the website of *American Customer Satisfaction Index*, a private company. (http://www.theacsi.org/acsi-results/benchmarks-by-company-popup-all)
RSQ	*RSQ* is the R-square from asset pricing models. In this study, I mainly use R-square from quarterly three-factor (*MKTRF*, *SMB*, *HML*) model for each individual company. I require each company in each quarter to have at least 60 daily return data to run each regression. It measures how much of the variation of the individual excess return could be explained by the variation of *Fama-French* three factors. Daily return data are from *CRSP*, and factor return data are from *Kenneth French*'s data library website. (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
NSYN	*NSYN* is short for non-synchronicity measure, which is the is calculated as log[(1-*RSQ*)/*RSQ*]. *RSQ* is the R-square from asset pricing models. In this study, I mainly use R-square from quarterly three-factor (*MKTRF*, *SMB*, *HML*) model for each individual company. I require each company in each quarter to have at least 60 daily return data to run each regression. Date range is enlarged from (0, 1) for *RSQ* to (-∝, +∝) for NSYN after I do this logarithm transformation. It is widely used tock price informativeness research. Daily return data are from *CRSP*, and factor return data are from *Kenneth French*'s data library website. (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
CRASH	*CRASH* is the likelihood of stock price crashes based on the occurrence of the firm-specific daily return exceeding 3.09 standard deviations below sample mean value, with 3.09 chosen to generate a frequency of 0.1% in the normal distribution. An indicator variable, *CRASH*, is set equal to 1 for a firm-quarter if the firm experiences one or more firm-specific daily returns falling 3.09 standard deviations below the mean daily firm-specific returns in the special quarter; otherwise, *CRASH* is equal to 0. Daily return data are from *CRSP*, and factor return data are from *Kenneth French's* data library website. *(http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)*
AER	*AER is short for* announcement excess return. When quarterly earnings announcements are released to public, I mark the dates as day 0. Then I use daily stock return and factor return data to run three factor model for each stock in the trading day window [-60, -5] to get the loadings for each factor. Then I use the estimated loadings and factor returns in window [-2, +2] to calculate the expected returns for each day in the window. I subtract the expected returns from the real daily returns and summarize them together for the five days around announcement dates. Then the absolute value of the summary is my announcement excess return measure. *Announcement date data are from COMPUSTAT Fundamental Quarterly database. Daily return data are from CRSP, and factor return data are from Kenneth French's data library website. (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)*

Appendix Cont'd

Variable Name	Definition
PIN	*PIN* measure is the annual probability of information-based trading data. I use it in robustness test. It is estimated from a structural market microstructure model by detecting the probability of a trade that comes from an informed investor. I thank for Dr. Bohui Zhang from Australian School of Business, the University of New South Wales for sharing his calculated *PIN* measures with me.
INSIDE	*INSIDE* is quarterly stock trading volumes by insiders, divided by quarterly total trading volumes. Each insider stock trading data in every quarter are available from *THOMSON REUTERS Insiders Data* (Table 1. Stock Transactions) database. Only data with high confidence (with *CLEANSE* indicator 'R' or 'H') are used in this study. I summarize the quarterly stock sales and purchases by insiders and the absolute value of the difference between sales and purchases are the quarterly stock trading volumes by insiders. I summarize the quarterly stock from daily stock trading volume from *CRSP* database as quarterly total trading volumes.
INST	*INST* is quarterly stock trading volumes by institutional investors, divided by quarterly total trading volumes. Quarterly institutional investors stock trading data are available from *THOMSON REUTERS Institutional* (*13f*) *Holdings* (Type 4: Change in Holdings) database. Only data from investment companies, their managers and investment advisors are used (with *TYPECODE* indicator '3' or '4'). I consider other institutions such as bank (with *TYPECODE* indicator '1'), insurance companies (with *TYPECODE* indicator '2'), pension funds, university endowments, and foundations (with *TYPECODE* indicator '5') are considered as passive information collectors and are less sophiscated. I use the absolute value of quarterly changes in institutional holding data. I summarize the quarterly stock from daily stock trading volume from *CRSP* database as quarterly total trading volumes.
LOGMV	*LOGMV* is the logarithm of market capitalization (the product of stock price and shares outstanding) at the end of each quarter. Both stock price and shares outstanding data are from *CRSP* database.
MB	*MB* is calculated as the ratio of market capitalization (the product of stock price and shares outstanding) to the firm's book equity at the end of each quarter. Both stock price and shares outstanding data are from *CRSP* database. Firm's book equity data are from *COMPUSTAT Fundamental Quarterly* database.
ROE	*ROE* is calculated as the quarterly earnings before extraordinary items divided by the book value of equity. Both earnings before extraordinary items and book equity data are from *COMPUSTAT Fundamental Quarterly* database.
STDROE	*STDROE* is the standard deviation of *ROE* for the past 4 quarters. *ROE* is calculated from earnings before extraordinary items and book equity data from *COMPUSTAT Fundamental Quarterly* database.
LEV	*LEV* is short for leverage, which is calculated from long-term debt to asset ratio at the end of quarter. Both long-term debt and total asset data are from *COMPUSTAT Fundamental Quarterly* database.
DD	*DD* is short for dividend payout. It is a dummy variable which equals to 1 if in the current quarter the firm pays dividend and 0 otherwise. Original dividend data are

Appendix Cont'd

Variable Name	Definition
DD (Cont'd)	from *COMPUSTAT Fundamental Quarterly* database.
AGE	*AGE* is the age for each firm at the end of each quarter. It is calculated as the logarithm of numbers of months included in *CRSP* database. I use quarter end date from *COMPUSTAT Fundamental Quarterly* database and firms' first appearance dates from *CRSP* database to calculate the differences.
SEG	*SEG* is the logarithm of numbers of business segment reported at the end of each year. Segment data are obtained from *COMPUSTAT_Legacy Segments FTP* database. I assign the annual data to each quarter in that year.
HINDEX	*HINDEX* is short for *Herfindhal Index*. The index is calculated uniquely for each 2-digit SIC coded industries in each quarter. I first calculate the market share (sales divided by industry total sales) for each firm, and then summarize the market-share-weighted market share in each industry ∑[(sales/ industry total sales)*(sales/ industry total sales)]. Higher *Herfindhal Index* indicates lower market competition. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.
PCM	*PCM* is short for *Price Cost Margin*. *Price Cost Margin* is defined as operating profits (before depreciation, interest, special items, and taxes) over sales. Operating profits are obtained by subtracting from sales the cost of goods sold and general and administrative expenses. If data are missing, I use operating income. Higher *PCM* indicate higher market power and lower competition. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.
ISENT	*ISENT* is short for investor sentiment. Annual and monthly investor sentiment data are available from *Jeffrey Wurgler*'s website. I use month data to calculate quarterly average. (http://people.stern.nyu.edu/jwurgler/)
CSENT	*CSENT* is short for consumer sentiment, measured as *Consumer Confidence Index*. *Consumer Confidence Index* is produced by the non-profit business group *The Conference Board* (1985=100), and it is an economic indicator which measures the degree of optimism that consumers feel about the overall state of the economy and their personal financial situation. Monthly consumer confidence index data are available from *The Conference Board* website. I use month data to calculate quarterly average. (http://www.conference-board.org/data/consumerconfidence.cfm)
ASSET GR	*ASSET GR* is short for asset growth. This is my third and main measure of corporate investment. Asset growth is calculated as total asset at the end of the current quarter, minus the total asset at the beginning of this quarter, and deflated by the total asset at the beginning of this quarter. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.
SUM	*SUM* is short for summarized investment. This is my first measure of corporate investment, which is calculated as the summary of quarterly capital expenditure, advertising expenses, and research and development expenses, and divided by total asset at the beginning of this quarter. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.

Appendix Cont'd

Variable Name	Definition
FACTOR	*FACTOR* is short for factor analyzed investment. This is my second measure of corporate investment. First toward the three component of corporate investment: capital expenditure, advertising expenses, and research and development expenses ratios, I do a factor analysis and construct the relevant factor using the specified loadings. Relevant accounting data are obtained from *COMPUSTAT Fundamental Quarterly* database.
FROE	*FROE* is short for future *ROE*. It is my first measure of future performances. The calculation is the same as *ROE*, but within different time period. For analyses under title *QTR N*, *FROE* is the *ROE* in *t+N* quarters ahead when investment is measured in quarter t.
FROA	*FROE* is short for future *ROA*. It is my second measure of future performances. *ROA* is calculated as the quarterly earnings before extraordinary items divided by the total asset from *COMPUSTAT Fundamental Quarterly* database. For analyses under title *QTR N*, *FROA* is the *ROA* in *t+N* quarters ahead when investment is measured in quarter t.
Q	*Q* is short for future *Tobin's Q*. It is my third measure of future performances. *Tobin's Q* is simulated as the summary of market capitalization (the product of stock prices and shares outstanding), market value of preferred stock and market value of debt (short-term liabilities net of short-term asset, plus the book value of firms' long-term debt), divided by total asset. Relevant accounting data are from *COMPUSTAT Fundamental Quarterly* database. Stock prices and shares outstanding data are from *CRSP* database. For analyses under title *QTR N*, *Q* is the *Tobin's Q* in *t+N* quarters ahead when investment is measured in quarter t.
R_RET	*R_RET* is short for future raw returns. It is my forth measure of future performances. *R_RET* is calculated as the quarterly cumulated returns, from daily stock returns from *CRSP* database. For analyses under title *QTR N*, *R_RET* is the raw returns in *t+N* quarters ahead when investment is measured in quarter t.
E_RET	*E_RET* is short for future excess returns. It is my fifth measure of future performances. First I run firm-quarterly market model to calculate excess returns. *E_RET* is calculated as the quarterly cumulated excess returns. For analyses under title *QTR N*, *E_RET* is the excess returns in *t+N* quarters ahead when investment is measured in quarter t. Daily stock returns from *CRSP* database. Market risk-free rate are from *Kenneth French*'s data library website. (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
BSIZE	*BSIZE* is short for board size, which is logarithm of numbers of directors in each firm. The yearly data is from *RiskMetrics Directors Data* database.
INDEP	*INDEP* is short for independent director ratio, which is the number of independent directors, deflated by board size. The yearly data is from *RiskMetrics Directors Data* database.
NOND	*NOND* is short for *Non-CEO-Duality*. It is a dummy variable which equals to 1 if firms' CEOs are not board chair at the same time, and 0 otherwise. The yearly data is from *RiskMetrics Directors Data* database.

Table 1 Sample Collection

		Sample Size
Numbers of American Customer Satisfactory Index in the period 1994-2010		345 Brand Names
Less: Brands that Belongs to Private Firms, Government Agencies, Non-profit Charitable Organization, and Foreign Firms (which is not listed in US exchanges)	45Brand Names	
No. of valid observations		300 Brand Names or 251 Firms
Less: Observations without quarterly stock price informativeness data and other control variables	24 Firms	
No. of valid observations		227 Firms or 7,296 Firm-Quarters

Table 2 Descriptive Statistics

	N	Mean	Std Dev	Min	1st Pctl	25th Pctl	Median	75th Pctl	99th Pctl	Max
<u>Panel A Customer Satisfaction</u>										
ACSI	7,296	75.967	6.137	53.000	60.500	72.000	76.000	81.000	87.000	89.000
<u>Panel B Measures of Stock Price Informativeness</u>										
RSQ	7,296	0.316	0.177	0.003	0.023	0.177	0.298	0.439	0.749	0.877
NSYN	7,296	0.940	1.002	-1.961	-1.091	0.244	0.858	1.539	3.743	5.763
CRASH	7,296	0.030	0.172	0.000	0.000	0.000	0.000	0.000	1.000	1.000
AER	7,296	0.092	0.071	0.009	0.017	0.047	0.073	0.115	0.359	0.959
PIN	616	0.092	0.066	0.000	0.000	0.063	0.092	0.117	0.419	0.502
<u>Panel C Measures of Informed Trading</u>										
INSIDE	7,296	0.002	0.017	0.000	0.000	0.000	0.000	0.001	0.040	0.778
INST	7,296	0.020	0.033	0.000	0.000	0.002	0.008	0.021	0.146	0.677
<u>Panel D Control Variables</u>										
LOGMV	7,296	16.229	1.507	9.856	12.367	15.303	16.291	17.217	19.352	20.163
MB	7,296	3.910	6.121	0.001	0.027	1.407	2.332	4.146	26.792	143.303
ROE	7,296	0.047	0.153	-1.554	-0.204	0.021	0.038	0.059	0.416	6.744
STDROE	7,296	0.039	0.126	0.001	0.001	0.008	0.015	0.028	0.426	3.592
LEV	7,296	0.228	0.135	0.000	0.000	0.121	0.235	0.326	0.559	0.799
DD	7,296	0.325	0.468	0.000	0.000	0.000	0.000	1.000	1.000	1.000
AGE	7,296	5.795	1.003	0.000	2.303	5.373	6.012	6.560	6.892	6.916
SEG	7,296	0.743	0.792	0.000	0.000	0.000	0.693	1.386	2.303	2.833
<u>Panel E Interaction Variables</u>										
HINDEX	1,612	0.141	0.147	0.011	0.016	0.048	0.091	0.177	0.810	0.953
PCM	7,296	0.120	0.126	0.000	0.000	0.017	0.090	0.176	0.484	2.697
ISENT	192	0.164	0.578	-0.902	-0.831	-0.140	0.034	0.322	2.229	2.497
CSENT	192	98.814	28.385	25.300	26.900	84.900	102.900	118.500	144.700	144.700

Table 2 Cont'd

Note:
This table reports the numbers of observations, mean, standard deviation, minimum, lowest 1 percentile, 25 percentile, 50 percentile (median), 75 percentile, 99 percentile, and maximum value for variables used in the investigation of customer satisfaction and stock price informativeness. Please refer to Appendix 1 for variable definitions. The sample period is from January 1995 to December 2010. Sample sizes are largely consistent at 7,296, except for 1) PIN measure, which is annual firm specific, and with sample size 616; 2) investor sentiment and consumer sentiment data, which are monthly data, and with sample size 192. All variables are winsorized at the bottom and top 1% levels, except for dummy variables.

Table 3 Pearson Correlation: Customer Satisfaction and Stock Price Informativeness

	ACSI	RSQ	NSYN	CRASH	AER	INSIDE	INST
ACSI	1.000	-0.089***	0.096***	-0.055***	-0.101***	0.073***	0.015
		<.0001	<.0001	<.0001	<.0001	<.0001	0.2244
RSQ		1.000	-0.964***	0.011	0.051***	-0.044***	-0.060***
			<.0001	0.3436	<.0001	0.0003	<.0001
NSYN			1.000	-0.005	-0.039**	0.042***	0.057***
				0.706	0.0012	0.0004	<.0001
CRASH				1.000	0.341***	-0.008	-0.043***
					<.0001	0.4913	0.0003
AER					1.000	-0.017	-0.128***
						0.1642	<.0001
INSIDE						1.000	0.195***
							<.0001
INST							1.000

Note:
This table reports the Pearson correlation coefficients and p-values among customer satisfaction measure, stock price informativeness measures, and informed trading measures. Refer to Appendix 1 for detailed variable definitions. The sample period is from January 1995 to December 2010. Sample sizes are 7,296. All variables are winsorized at the bottom and top 1% levels, except for dummy variable CRASH. Correlation significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 4 Effect of Customer Satisfaction on Stock Price Informativeness

	RSQ	**NSYN**	**CRASH**	**AER**
INTERCEPT	0.036	2.786***	0.483***	0.381***
	(0.41)	(5.17)	(3.63)	(6.12)
ACSI	-0.002**	0.012**	-0.002**	-0.002***
	(-2.01)	(2.18)	(-2.22)	(-4.06)
LOGMV	0.027***	-0.166***	-0.022***	-0.009***
	(5.29)	(-4.97)	(-3.70)	(-3.57)
MB	-0.002**	0.010**	0.000	0.001***
	(-2.17)	(2.09)	(0.44)	(2.78)
ROE	-0.013	0.070	-0.078**	-0.036***
	(-0.59)	(0.58)	(-2.53)	(-4.72)
VROE	0.115***	-0.618***	0.189***	0.082***
	(3.61)	(-3.42)	(3.61)	(6.58)
LEV	-0.098**	0.430*	-0.091***	-0.047***
	(-2.02)	(1.68)	(-3.22)	(-3.26)
DD	-0.001	0.003	-0.001	-0.007
	(-0.09)	(0.04)	(-0.11)	(-1.32)
AGE	0.002	-0.015	0.004	-0.003*
	(0.25)	(-0.42)	(1.25)	(-1.76)
SEG	0.004	-0.029	-0.005	-0.004*
	(0.64)	(-0.81)	(-1.40)	(-1.88)
Control for Year	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES
No. of Obs.	7,296	7,296	7,296	7,296
R-sq / Pseudo R-sq	18.41%	18.88%	7.72%	25.11%

Note:
This table reports estimates of coefficients of the following regression:

$$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 LOGMV_{i,t-1} + \alpha_3 MB_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 VROE_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 DD_{i,t-1} + \alpha_9 AGE_{i,t-1} + \alpha_{10} SEG_{i,t-1} + \varepsilon.$$

In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *RSQ* is R-sq from quarterly three factor model. *NSYN* is the logistic transformed relative idiosyncratic volatility. *CRASH* is the probability of stock price crashes. *AER* is the absolute excess return surrounding quarterly earnings announcements. *ACSI* is the quarterly-released annual American Customer Satisfaction Index. *LOGMV* is the logistic transformed market value. *MB* is market to book ratio. *ROE* is profitability measure, return on equity (book equity). *VROE* is profits volatility. *LEV* is long-term debt ratio. *DD* is dividend-payer dummy. *AGE* is logistic transformed numbers of months between the current month and firms' first appearance in *CRSP* database. *SEG* is logistic transformed numbers of business segments. Refer to Appendix 1 for detailed variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 5 Effect of Informed Trading on Stock Price Informativeness

	RSQ		NSYN		CRASH		AER	
	INSIDE	**INST**	**INSIDE**	**INST**	**INSIDE**	**INST**	**INSIDE**	**INST**
INTERCEPT	-0.285***	-0.280***	4.563***	4.533***	0.424***	0.332***	0.247***	0.295***
	(-3.47)	(-3.49)	(8.37)	(8.54)	(3.52)	(3.40)	(5.03)	(4.57)
TRADING	-0.105**	-0.110***	0.548**	0.598***	-0.083**	-0.077**	-0.082***	-0.091***
	(-2.47)	(-3.26)	(2.40)	(4.28)	(-2.09)	(-2.13)	(-2.71)	(-3.69)
LOGMV	0.025***	0.026***	-0.158***	-0.158***	-0.024***	-0.020***	-0.008***	-0.009***
	(5.03)	(5.31)	(-4.64)	(-4.86)	(-4.22)	(-3.17)	(-3.32)	(-3.35)
MB	-0.001	-0.001	0.005	0.005	0.000	0.000	0.001**	0.000
	(-1.49)	(-1.53)	(1.31)	(1.35)	(0.82)	(0.29)	(2.51)	(1.39)
ROE	-0.014	-0.013	0.071	0.068	-0.009	-0.076***	-0.039***	-0.032***
	(-0.64)	(-0.63)	(0.60)	(0.58)	(-1.04)	(-3.05)	(-4.86)	(-5.00)
VROE	0.121***	0.119***	-0.657***	-0.643***	0.002	0.182***	0.089***	0.075***
	(3.64)	(3.64)	(-3.26)	(-3.24)	(0.82)	(3.08)	(5.99)	(5.60)
LEV	-0.035	-0.035	0.165	0.163	-0.067***	-0.077***	-0.043***	-0.032**
	(-0.79)	(-0.76)	(0.66)	(0.64)	(-3.22)	(-3.19)	(-3.08)	(-2.45)
DD	-0.018	-0.018	0.094	0.092	-0.010	0.003	-0.006	-0.005
	(-1.24)	(-1.23)	(1.22)	(1.20)	(-1.13)	(0.30)	(-1.21)	(-1.12)
AGE	0.010**	0.010*	-0.057**	-0.057**	-0.000	0.002	-0.004**	-0.005***
	(2.04)	(1.97)	(-2.08)	(-2.04)	(-0.14)	(0.76)	(-2.44)	(-2.54)
SEG	0.004	0.005	-0.030	-0.031	0.001	-0.003	-0.003	-0.003
	(0.75)	(0.79)	(-0.93)	(-0.95)	(0.16)	(-0.76)	(-1.48)	(-1.42)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	7,296	7,296	7,296	7,296	7,296	7,296	7,296	7,296
R-sq / Pseudo R-sq	23.58%	23.93%	23.33%	23.65%	7.47%	7.00%	21.72%	23.90%

Table 5 Cont'd

Note:
This table reports estimates of coefficients of the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 TRADING_{i,t-1} + \alpha_2 LOGMV_{i,t-1} + \alpha_3 MB_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 VROE_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 DD_{i,t-1} + \alpha_9 AGE_{i,t-1} + \alpha_{10} SEG_{i,t-1} + \varepsilon$.
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *RSQ* is R-sq from quarterly three factor model. *NSYN* is the logistic transformed relative idiosyncratic volatility. *CRASH* is the probability of stock price crashes. *AER* is the absolute abnormal return surrounding quarterly earnings announcements. *TRADING* is the quarterly informed trading data. In '*INSIDE'* columns, *TRADING* is calculated as the ratio of insiders' trading over total quarterly trading volume. In '*INST'* columns, *TRADING* is calculated as the ratio of institutional trading over total quarterly trading volume. *LOGMV* is the logistic transformed market value. *MB* is market to book ratio. *ROE* is profitability measure, return on equity (book equity). *VROE* is profits volatility. *LEV* is long-term debt ratio. *DD* is dividend-payer dummy. *AGE* is logistic transformed numbers of months between the current month and firms' first appearance in *CRSP* database. *SEG* is logistic transformed numbers of business segments. Refer to Appendix 1 for detailed variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 6 Effect of Customer Satisfaction on Informed Trading

	INSIDE	**INST**
INTERCEPT	-0.135	-0.023
	(-1.14)	(-0.25)
ACSI	0.001**	0.001**
	(2.10)	(2.33)
LOGMV	0.003	0.001
	(1.10)	(0.07)
MB	-0.000	-0.000
	(-1.21)	(-0.73)
ROE	0.014	0.011
	(1.00)	(1.46)
VROE	-0.024	-0.033***
	(-1.11)	(-2.86)
LEV	0.008	0.013
	(0.77)	(0.58)
DD	0.004	0.004
	(0.84)	(0.85)
AGE	-0.004	-0.002
	(-1.27)	(-0.37)
SEG	0.001	0.003
	(0.83)	(1.29)
No. of Obs.	7,296	7,296
R-sq	0.93%	1.25%

Note:
This table reports estimates of coefficients for the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 LOGMV_{i,t-1} + \alpha_3 MB_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 VROE_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 DD_{i,t-1} + \alpha_9 AGE_{i,t-1} + \alpha_{10} SEG_{i,t-1} + \varepsilon.$
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *INSIDE* is quarterly relative insider trading volume. *INST* is quarterly relative institutional trading volume. *LOGMV* is the logistic transformed market value. *MB* is market to book ratio. *ROE* is profitability measure, return on equity (book equity). *VROE* is profits volatility. *LEV* is long-term debt ratio. *DD* is dividend-payer dummy. *AGE* is logistic transformed numbers of months between the current month and firms' first appearance in *CRSP* database. *SEG* is logistic transformed numbers of business segments. Refer to Appendix 1 for detailed variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 7 Joint Effect of Customer Satisfaction and Informed Trading on Stock price informativeness

	RSQ		NSYN		CRASH		AER	
	INSIDE	INST	INSIDE	INST	INSIDE	INST	INSIDE	INST
INTERCEPT	-0.402	-0.371***	5.153***	5.003***	0.531***	0.381***	0.382***	0.421***
	(-0.26)	(-4.06)	(10.69)	(9.27)	(3.76)	(3.48)	(6.02)	(4.87)
ACSI	-0.002**	-0.002**	0.008**	0.008**	-0.001	-0.001*	-0.001**	-0.002***
	(-2.23)	(-2.10)	(2.11)	(2.04)	(-1.57)	(-1.80)	(-2.49)	(-4.01)
TRADING	0.945**	0.306*	-3.898**	-1.274	-0.001	-0.001	0.092***	0.063*
	(2.13)	(1.72)	(-1.97)	(-1.56)	(-0.99)	(1.42)	(2.67)	(2.35)
TRADING *ACSI	-0.005***	-0.002**	0.062***	0.008**	-0.001**	-0.001**	-0.001***	-0.001**
	(-3.14)	(-2.43)	(2.99)	(2.25)	(-2.22)	(-2.19)	(-2.68)	(-2.17)
LOGMV	0.026***	0.025***	-0.162***	-0.158***	-0.024***	-0.021***	-0.009***	-0.010***
	(5.60)	(5.58)	(-5.05)	(-5.08)	(-4.25)	(-3.41)	(-3.55)	(-3.54)
MB	-0.001	-0.001	0.006	0.006	0.000	0.000	0.001***	0.001**
	(-1.58)	(-1.64)	(1.40)	(1.47)	(1.02)	(0.85)	(2.80)	(1.99)
ROE	-0.017	-0.014	0.086	0.073	-0.010	-0.010	-0.036***	-0.031***
	(-0.78)	(-0.68)	(0.71)	(0.61)	(-1.23)	(-1.36)	(-4.68)	(-4.68)
VROE	0.130***	0.127***	-0.702***	-0.685***	0.002	0.002	0.081***	0.069***
	(3.81)	(3.76)	(-3.42)	(-3.35)	(0.77)	(0.62)	(6.48)	(5.30)
LEV	-0.030	-0.031	0.139	0.143	-0.071***	-0.085***	-0.046***	-0.038***
	(-0.69)	(-0.70)	(0.56)	(0.57)	(-3.22)	(-2.82)	(-3.25)	(-2.90)
DD	-0.017	-0.017	0.092	0.087	-0.010	-0.002	-0.007	-0.006
	(-1.20)	(-1.15)	(1.17)	(-1.13)	(-1.21)	(-0.20)	(-1.32)	(-1.28)
AGE	0.009*	0.008*	-0.051*	-0.049*	0.001	0.002	-0.003*	-0.003*
	(1.77)	(1.69)	(-1.81)	(-1.73)	(0.20)	(0.61)	(-1.82)	(-1.90)
SEG	0.005	0.005	-0.034	-0.033	-0.004	-0.005	-0.004*	-0.004*
	(0.91)	(0.87)	(-1.08)	(-1.04)	(-0.09)	(-0.33)	(-1.89)	(-1.81)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	7,296	7,296	7,296	7,296	7,296	7,296	7,296	7,296
R-sq / Pseudo R-sq	23.78%	24.18%	23.49%	23.92%	17.62%	17.39%	22.91%	23.96%

Table 7 Cont'd

Note:
This table reports estimates of coefficients for the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 TRADING_{i,t} + \alpha_3 TRADING_{i,t}{*}ACSI_{i,t-1} + \alpha_4 LOGMV_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 ROE_{i,t-1} + \alpha_7 VROE_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 DD_{i,t-1} + \alpha_{10} AGE_{i,t-1} + \alpha_{11} SEG_{i,t-1} + \varepsilon$.
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *TRADING* is the quarterly informed trading data. In '*INSIDE'* columns, *TRADING* is calculated as the ratio of insider trading over total quarterly trading volume. In '*INST'* columns, *TRADING* is calculated as the ratio of institutional trading over total quarterly trading volume. Refer to Appendix 1 for detailed variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 8 Joint Effect of Customer Satisfaction and Industry Competition on Stock price informativeness

	RSQ		NSYN		CRASH		AER	
	HINDEX	PCM	HINDEX	PCM	HINDEX	PCM	HINDEX	PCM
INTERCEPT	-0.077	-0.088	3.195***	3.413***	0.563***	0.655***	0.372***	0.383***
	(-0.65)	(-0.78)	(4.67)	(5.07)	(3.69)	(3.07)	(6.11)	(5.16)
ACSI	0.000	0.000	0.002	-0.002	-0.018	-0.03	-0.002***	-0.001***
	(0.23)	(0.31)	(0.25)	(0.27)	(-0.48)	(-0.59)	(-3.53)	(-2.78)
HCOMPE	0.238**	0.276**	-0.108***	-0.153***	4.464***	3.491*	0.001*	0.001**
	(2.16)	(1.97)	(-2.71)	(-3.46)	(2.65)	(1.75)	(1.94)	(2.24)
HCOMPE*ACSI	-0.003**	-0.004**	0.014*	0.016*	-0.068***	-0.052***	-0.059**	-0.118***
	(-2.14)	(-1.98)	(1.69)	(1.71)	(-2.61)	(-2.76)	(-2.46)	(-3.84)
LOGMV	0.022***	0.023***	-0.135***	-0.107***	-0.632***	-0.666***	-0.010***	-0.010***
	(4.28)	(-4.13)	(-4.12)	(-3.58)	(-8.33)	(-8.94)	(-3.90)	(-3.94)
MB	-0.001	-0.002*	0.003	0.003	-0.004	-0.001	0.001***	0.001***
	(-1.05)	(-1.71)	(0.79)	(0.63)	(-0.21)	(-0.03)	(3.01)	(3.00)
ROE	-0.005	-0.004	0.020	0.027	-0.596**	-0.618***	-0.034***	-0.032***
	(-0.30)	(-0.17)	(0.21)	(0.22)	(-2.39)	(-2.64)	(-4.03)	(-3.56)
VROE	0.075***	0.070**	-0.376***	-0.145	1.231***	1.301***	0.075***	0.077***
	(3.14)	(2.30)	(-2.76)	(-0.78)	(2.80)	(3.00)	(5.04)	(4.85)
LEV	-0.135***	-0.125***	0.635***	0.275	-1.927**	-2.108***	-0.060***	-0.061***
	(-3.44)	(-2.77)	(3.03)	(1.13)	(-2.36)	(-2.73)	(-3.83)	(-2.64)
DD	0.030***	0.030*	-0.173***	-0.155***	-0.029	-0.071	-0.006*	-0.007**
	(2.98)	(1.80)	(-3.23)	(-3.50)	(-0.16)	(-0.32)	(-1.88)	(-2.24)
AGE	0.001	0.001	-0.010	-0.010	0.003	0.003	-0.003	-0.005
	(0.20)	(0.12)	(-0.33)	(-0.21)	(1.07)	(0.87)	(-1.47)	(-0.87)
SEG	-0.001	-0.003	0.007	0.007	-0.005	-0.004	-0.004***	-0.006***
	(-0.12)	(-0.39)	(0.17)	(0.43)	(-0.97)	(-1.03)	(-2.75)	(-2.82)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	7,296	7,296	7,296	7,296	7,296	7,296	7,296	7,296
R-sq / Pseudo R-sq	29.79%	28.46%	28.35%	26.94%	8.53%	8.21%	24.02%	24.37%

Table 8 Cont'd

Note:
This table reports estimates of coefficients for the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 HCOMPE_{i,t} + \alpha_3 HCOMPE_{i,t}{*}ACSI_{i,t-1} + \alpha_4 LOGMV_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 ROE_{i,t-1} + \alpha_7 VROE_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 DD_{i,t-1} + \alpha_{10} AGE_{i,t-1} + \alpha_{11} SEG_{i,t-1} + \varepsilon$.
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *TRADING* is the quarterly informed trading data. *HCOMPE* is a dummy variable which equals to 1 if competition is high. Competition is measured by Herfindhal Index in Column '*HINDEX'*, and is also measured by price-cost margin in Column '*PCM'*, respectively. Lower than median values of Herfindhal Index and price-cost margin indicate higher competition (*HCOMPE*=1). Refer to Appendix 1 for detailed variable calculations. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 9 Joint Effect of Customer Satisfaction and Sentiment on Stock price informativeness

	RSQ		NSYN		CRASH		AER	
	ISENT	**CSENT**	**ISENT**	**CSENT**	**ISENT**	**CSENT**	**ISENT**	**CSENT**
INTERCEPT	-0.365***	-0.225***	4.921***	4.236***	0.479***	0.588***	0.341***	0.398***
	(-4.28)	(-2.78)	(10.37)	(9.08)	(3.26)	(3.46)	(5.16)	(5.13)
ACSI	-0.001	-0.001*	0.004	0.006*	-0.002	-0.003**	-0.001***	-0.002***
	(-1.63)	(-1.95)	(1.50)	(1.90)	(-1.61)	(-2.26)	(-3.02)	(-3.44)
HSENT	0.089*	0.086**	-0.558*	-0.424**	0.008	0.009*	0.051*	0.026
	(1.86)	(2.07)	(-1.91)	(-1.96)	(1.10)	(1.81)	(1.75)	(1.58)
HSENT*ACSI	-0.001**	-0.003**	0.005**	0.002**	-0.001***	-0.002***	-0.004**	-0.002
	(-2.49)	(-2.36)	(2.56)	(2.40)	(-2.08)	(-2.71)	(-2.35)	(-1.56)
LOGMV	0.026***	0.024***	-0.161***	-0.149***	-0.022***	-0.022***	-0.009***	-0.009***
	(5.49)	(5.57)	(-4.98)	(-5.05)	(-3.68)	(-3.72)	(-3.45)	(-3.47)
MB	-0.001	-0.000	0.005	0.001	0.000	0.000	0.001**	0.001***
	(-1.50)	(-1.58)	(1.33)	(1.32)	(0.42)	(0.63)	(2.56)	(2.99)
ROE	-0.012	-0.009	0.062	0.043	-0.078**	-0.076**	-0.039***	-0.036***
	(-0.62)	(-0.47)	(0.56)	(0.42)	(-2.52)	(-2.47)	(-5.43)	(-4.49)
VROE	0.124***	0.093***	-0.669***	-0.505***	0.189***	0.180***	0.085***	0.080***
	(3.98)	(3.43)	(-3.52)	(-3.11)	(3.58)	(3.40)	(7.36)	(5.69)
LEV	-0.038	-0.040	0.178	0.190	-0.090***	-0.093***	-0.043***	-0.047***
	(-0.89)	(-1.09)	(0.74)	(0.91)	(-3.16)	(-3.23)	(-3.00)	(-3.28)
DD	-0.014	0.003	0.074	-0.015	-0.001	0.003	-0.008*	-0.006
	(-0.89)	(0.24)	(0.85)	(-0.25)	(-0.15)	(0.41)	(-1.69)	(-1.39)
AGE	0.008*	0.008*	-0.052*	-0.048*	0.004	-0.006	-0.003*	-0.003*
	(1.79)	(1.73)	(-1.83)	(-1.78)	(1.25)	(1.53)	(-1.76)	(-1.78)
SEG	0.004	0.004	-0.030	-0.025	-0.005	-0.005	-0.003	-0.004*
	(0.83)	(0.76)	(-0.99)	(-0.95)	(-1.38)	(-1.54)	(-1.64)	(-1.88)
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	7,296	7,296	7,296	7,296	7,296	7,296	7,296	7,296
R-sq / Pseudo R-sq	14.65%	23.66%	14.23%	22.15%	6.73%	7.09%	14.27%	13.04%

Table 9 Cont'd

Note:
This table reports estimates of coefficients for the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 HSENT_{i,t} + \alpha_3 HSENT_{i,t} * ACSI_{i,t-1} + \alpha_4 LOGMV_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 ROE_{i,t-1} + \alpha_7 VROE_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 DD_{i,t-1} + \alpha_{10} AGE_{i,t-1} + \alpha_{11} SEG_{i,t-1} + \varepsilon$.
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *SENT* is a dummy variable which equals to 1 if sentiment is higher than sample median. Sentiment is measured by investor sentiment in Column '*ISENT'*, and is also measured by consumer confidence in Column '*CSENT*, respectively. Refer to Appendix 1 for detailed variable calculations. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 10 Robustness: PIN Measure

INTERCEPT	0.103**	0.255***	0.105**	0.154**
	(2.03)	(2.86)	(2.03)	(1.99)
ACSI	0.001**	0.001	0.001	0.001
	(2.00)	(1.51)	(1.30)	(0.90)
TRADING		-0.180***		
		(-2.56)		
TRADING*ACSI		0.003**		
		(2.35)		
HCOMPE			-0.080*	
			(-1.67)	
HCOMPE*ACSI			0.001**	
			(2.53)	
HSENT				-0.120***
				(-3.13)
HSENT*ACSI				0.001***
				(2.98)
Control Variables	YES	YES	YES	YES
Control for Year	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES
No. of Obs.	616	616	616	616
R-sq / Psedo R-sq	19.64%	21.70%	22.54%	21.04%

Note:
This table reports estimates of coefficients for the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 PV_{i,t} + \alpha_3 PV_{i,t} * ACSI_{i,t-1} + \alpha_4 LOGMV_{i,t-1} + \alpha_5 MB_{i,t-1} + \alpha_6 ROE_{i,t-1}$
$+ \alpha_7 VROE_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 DD_{i,t-1} + \alpha_{10} AGE_{i,t-1} + \alpha_{11} SEG_{i,t-1} + \varepsilon.$
Variables are with yearly frequency. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 11 Robustness: FERC Model

INTERCEPT	-1.039	(-0.68)
ΔE3	-4.687*	(-1.75)
ACSI*ΔE3	0.056*	(1.72)
R3	3.200	(0.92)
ACSI*R3	-0.030	(-0.80)
ΔE0	0.100	(0.65)
ACSI	0.035	(0.99)
Control Variables	YES	
Control for Year	YES	
Control for Industry	YES	
No. of Obs.	7,296	
R--sq	25.32%	

Note:
This table reports estimates of coefficients for the following regression:
$R_{i,t} = \alpha_0 + \alpha_1 \Delta E3_{i,t} + \alpha_2 ACSI_{i,t-1} * \Delta E3_{i,t} + \alpha_3 R3_{i,t} + \alpha_4 ACSI_{i,t-1} * R3_{i,t} + \alpha_5 \Delta E_{\ i,t} + \alpha_6 ACSI_{i,t-1} + \alpha_7 LOGMV_{i,t-1} + \alpha_7 MB_{i,t-1} + \alpha_8 LEV_{i,t-1} + \alpha_9 DD_{i,t-1} + \alpha_{10} AGE_{i,t-1} + \alpha_{11} SEG_{i,t-1} + \varepsilon.$
R_t is cumulated stock returns for the current quarter, $\Delta E3_t$ is average changes in earnings in the future 3 quarters, $R3_t$ is cumulated stock returns in the future 3 quarters, ΔE_t is average changes in earnings in current quarter. Refer to Appendix 1 for other variable calculations. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 12 Robustness: Changes in ACSI and Changes in Stock Price Informativeness Measures

	ΔRSQ			**ΔINFORM**			**ΔCRASH**			**ΔAER**		
	1 Year	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**
ΔACSI	-0.002*	-0.001	-0.001	0.010	0.001	-0.006	-0.000	-0.002	-0.002	-0.001	-0.001	-0.001***
	(-1.73)	(-0.59)	(-0.74)	(1.38)	(0.37)	(0.63)	(-0.35)	(-1.28)	(-1.09)	(-1.34)	(-0.94)	(-2.73)
Intercept	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6,601	5,020	3,762	6,601	5,020	3,762	6,601	5,020	3,762	6,601	5,020	3,762
R-sq / Psedo R-sq	10.18%	16.81%	7.55%	9.36%	15.13%	6.62%	7.42%	4.25%	5.06%	12.49%	19.77%	23.64%

Note:
This table reports estimates of coefficients of the following regression:
$\Delta DV_{i,t} = \alpha_0 + \alpha_1 \Delta ACSI_{i,t-1} + Control\ Variables_{i,t-1} + \varepsilon.$
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *RSQ* is R-sq from quarterly three factor model. *NSYN* is the logistic transformed relative idiosyncratic volatility. *CRASH* is the probability of stock price crashes. *AER* is the absolute excess return surrounding quarterly earnings announcements. *ACSI* is the quarterly-released annual American Customer Satisfaction Index. Refer to Appendix 1 for detailed variable definitions. In columns '1 Year', changes in variables are calculated from the current year and previous one year. In columns '3 Years', changes in variables are calculated from the current year and previous three year. In columns '5 Year', changes in variables are calculated from the current year and previous five year. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 13 Descriptive Statistics

	N	Mean	Std Dev	Min	1st Pctl	25th Pctl	Median	75th Pctl	99th Pctl	Max
Panel A Investment Variables										
ASSET GR	7,296	0.054	1.257	-0.237	-0.111	-0.009	0.007	0.033	0.275	43.883
SUM	7,296	0.062	0.989	0.000	0.000	0.003	0.012	0.023	0.091	54.042
FACTOR	7,296	0.025	0.040	0.000	0.000	0.001	0.004	0.009	0.033	21.597
Panel B Valuation Variables										
FROE	6,519	0.044	0.137	-1.669	-0.286	0.020	0.037	0.059	0.399	4.418
FROA	6,519	0.012	0.020	-0.411	-0.042	0.005	0.011	0.021	0.054	0.172
Q	6,519	2.112	1.085	0.000	0.012	0.534	1.845	3.418	5.896	13.157
R_RET	6,519	0.031	0.143	-0.732	-0.392	-0.042	0.040	0.114	0.374	0.633
E_RET	6,519	0.002	0.119	-0.662	-0.307	-0.051	0.008	0.070	0.277	0.399
Panel C Governance Variables										
BSIZE	7,296	2.453	0.217	1.792	1.946	2.303	2.485	2.565	2.996	3.367
INDEP	7,296	0.710	0.165	0.000	0.250	0.615	0.750	0.833	0.929	1.000
NOND	7,296	0.839	0.368	0.000	0.000	1.000	1.000	1.000	1.000	1.000

Note:
This table reports the numbers of observations, mean, standard deviation, minimum, lowest 1 percentile, 25 percentile, 50 percentile (median), 75 percentile, 99 percentile, and maximum value for variables used in the investigation of customer satisfaction, investment and board characteristics. Please refer to Appendix 1 for variable definitions. For Panel B, future performance measures, I only report the descriptive statistics for the future 1 quarter. The sample period is from January 1995 to December 2010. Investment measures, board characteristics and other variables (not tabulated here, please refer to Table 2) sample sizes are largely consistent at 7,296, except for 1-quarter ahead future performance measures, which are 6,519. All variables are winsorized at the bottom and top 1% levels, except for dummy variables.

Table 14 Pearson Correlation
Panel A: Customer Satisfaction, Corporate Investment Measures and Performances

	ACSI	ASSET GR	SUM	FACTOR	FROE	FROA	Q	R_RET	E_RET
ACSI	1.000	0.073***	0.048***	0.048***	0.050***	0.162***	0.219***	0.027**	0.020
		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0343	0.1012
ASSET GR		1.000	0.706***	0.524***	-0.033**	-0.005	-0.018	-0.004	-0.004
			<.0001	<.0001	0.0055	0.6950	0.1720	0.7093	0.7464
SUM			1.000	0.869***	-0.001	-0.001	-0.047***	-0.017	-0.023*
				<.0001	0.6923	0.7779	0.0002	0.1658	0.0562
FAC				1.000	-0.001	-0.002	-0.048***	-0.017	-0.024*
					0.4941	0.5089	0.0002	0.1502	0.0631
FROE					1.000	0.143***	0.326***	-0.021*	-0.019
						<.0001	<.0001	0.0976	0.1382
FROA						1.000	0.044***	0.124***	0.135***
							0.0007	<.0001	<.0001
Q							1.000	-0.013	-0.007
								0.3217	0.5663
R_RET								1.000	0.497***
									<.0001
E_RET									1.000

Panel B: Customer Satisfaction and Board Character

	ACSI	BSIZE	INDEP	NOND
ACSI	1.000	-0.101***	-0.117***	-0.079***
		<.0001	<.0001	<.0001
BSIZE		1.000	0.064***	0.065***
			<.0001	<.0001
INDEPEND			1.000	0.309***
				<.0001
NONDUAL				1.000

Table 14 Cont'd

Note:
Panel A of this table reports the Pearson correlation coefficients and p-values among customer satisfaction, corporate investment and future performances. Panel B of this table reports the Pearson correlation coefficients and p-values among customer satisfaction, and board characters. Refer to Appendix 1 for detailed variable definitions. The sample period is from January 1995 to December 2010. Sample sizes are 6,519. All variables are winsorized at the bottom and top 1% levels. Correlation significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 15 Effect of Customer Satisfaction on Corporate Investment

	ASSET GR	SUM (CAPX, RD, AD)	FACTOR (CAPX, RD, AD)
INTERCEPT	62.729**	1.081**	0.433**
	(2.29)	(2.10)	(2.09)
ACSI	0.252***	0.005**	0.002**
	(2.63)	(2.51)	(2.42)
LOGMV	-4.341**	-0.077**	-0.031**
	(-2.46)	(-1.97)	(-1.97)
MB	0.138	0.002	0.001
	(1.58)	(0.86)	(0.88)
ROE	8.886	0.061	0.025
	(1.58)	(1.25)	(1.25)
VROE	-11.801**	-0.132*	-0.054*
	(-2.07)	(-1.66)	(-1.70)
LEV	-7.080	-0.072	-0.028
	(-1.30)	(-0.71)	(-0.70)
DD	-1.777	-0.048	-0.020
	(-0.99)	(-1.44)	(-1.45)
AGE	-0.499	0.004	0.002
	(-0.54)	(0.24)	(0.25)
SEG	0.058	0.014	0.006
	(0.05)	(0.66)	(0.68)
Control for Year	YES	YES	YES
Control for Industry	YES	YES	YES
No. of Obs.	7,296	7,296	7,296
R-sq	6.21%	3.39%	3.38%

Table 15 Cont'd

Note:
This table reports estimates of coefficients of the following regression:
$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 LOGMV_{i,t-1} + \alpha_3 MB_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 VROE_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 DD_{i,t-1} + \alpha_8 AGE_{i,t-1} + \alpha_9 SEG_{i,t-1} + \varepsilon.$
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *SUM* is the summary of capital expenditure, advertising expenses, and research and development expenses, and divided by total assets. *FAC* is the factor constructed from the above three ratios. *ASS* is the asset growth rate, calculated as the difference between total assets at the end and at the beginning of the current quarter, and deflated by total asset at the beginning of the current quarter. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 16 Robustness: Changes in Customer Satisfaction and Changes in Corporate Investment

	ΔASSET GR			ΔSUM (CAPX, RD, AD)			ΔFACTOR (CAPX, RD, AD)		
	1 Year	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**
ΔACSI	0.028	0.079***	0.021	0.005	0.004***	-0.002	0.002	0.001***	-0.001
	(1.24)	(2.95)	(0.31)	(1.57)	(6.31)	(-0.65)	(1.57)	(5.63)	(-0.65)
Intercept	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control Variable	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6,546	4,961	3,537	6,546	4,961	3,537	6,546	4,961	3,537
R-sq	0.57%	1.64%	4.55%	0.53%	0.55%	1.00%	0.53%	0.55%	1.00%

Note:
This table reports estimates of coefficients of the following regression:
$\Delta DV_{i,t} = \alpha_0 + \alpha_1 \Delta ACSI_{i,t-1} + Control\ Variables_{i,t-1} + \varepsilon$.
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *ASS* is the asset growth rate, calculated as the difference between total assets at the end and at the beginning of the current quarter, and deflated by total asset at the beginning of the current quarter. *SUM* is the summary of capital expenditure, advertising expenses, and research and development expenses, and divided by total assets. *FAC* is the factor constructed from the above three ratios. Refer to Appendix 1 for other variable definitions. In columns '1 Year', changes in variables are calculated from the current year and previous one year. In columns '3 Years', changes in variables are calculated from the current year and previous three year. In columns '5 Year', changes in variables are calculated from the current year and previous five year. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 17 Corporate Investment Puzzle: Future 4 Qtrs Performance

Panel A ROE as performance measure

	Qtr 1		Qtr 2		Qtr3		Qtr4	
INTERCEPT	-0.056 (-1.13)	-0.013** (-2.54)	-0.043 (-1.16)	-0.012 (-1.24)	-0.038 (-1.12)	-0.014 (-0.27)	-0.034 (-1.04)	-0.012 (-0.99)
ASSET GR	-0.035*** (-3.28)	-0.067** (-2.31)	-0.029*** (-4.42)	-0.072*** (-2.96)	-0.035*** (-4.31)	-0.068* (-1.76)	-0.046*** (-5.34)	-0.107** (-2.21)
ACSI		0.001*** (3.24)		0.001*** (2.79)		0.001 (1.44)		0.002* (1.81)
ACSI * ASSET GR		0.001** (2.12)		0.001** (2.04)		0.001** (2.26)		0.001** (2.15)
LOGMV	0.006** (2.30)	0.006** (2.34)	0.006** (2.34)	0.005** (2.16)	0.005** (2.40)	0.005** (2.29)	0.005** (-2.31)	0.004*** (2.92)
MB	0.008*** (7.60)	0.008*** (7.56)	0.006*** (6.77)	0.008*** (7.46)	0.007*** (6.68)	0.008*** (7.48)	0.007*** (-5.22)	0.010*** (8.34)
LEV	0.042** (2.22)	0.044** (2.37)	0.041*** (-2.87)	0.043*** (-2.88)	0.036** (2.52)	0.040*** (2.63)	0.039*** (-2.88)	0.045*** (3.07)
DD	-0.001 (-0.36)	-0.001 (-0.34)	-0.001 (-0.33)	-0.001 (-0.26)	-0.002 (-0.40)	-0.001 (-0.31)	-0.001 (-0.54)	-0.001 (-0.59)
AGE	0.002 (0.62)	0.001 (0.44)	0.002 (0.16)	0.001 (0.07)	0.002 (0.13)	0.001 (0.05)	0.002 (0.14)	0.001 (0.06)
SEG	-0.001 (-0.58)	-0.001 (-0.29)	-0.002 (-0.16)	-0.000 (-0.23)	-0.001 (-0.10)	-0.001 (-0.09)	-0.000 (-0.14)	-0.000 (-0.02)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6519	6519	6368	6368	6060	6060	5895	5895
R-Sq	28.52%	28.65%	28.70%	28.66%	26.21%	26.21%	24.25%	25.38%

Table 17 Cont'd

Panel B ROA as performance measure

	Qtr 1		**Qtr 2**		**Qtr3**		**Qtr4**	
INTERCEPT	-0.090*** (-4.91)	-0.109*** (-3.65)	-0.020*** (-3.60)	-0.014*** (-2.83)	-0.014** (-2.49)	-0.019* (-1.94)	-0.006 (-1.47)	-0.004 (-1.25)
ASSET GR	-0.029** (-2.27)	-0.321*** (-2.66)	-0.030*** (-3.03)	-0.131*** (-3.06)	-0.160*** (-2.96)	-0.648*** (-4.29)	-0.207*** (-2.56)	-0.675*** (-3.97)
ACSI		0.002** (2.25)		0.001* (1.84)		0.001 (1.04)		0.001 (1.04)
ACSI * ASSET GR		0.004** (2.17)		0.002*** (2.78)		0.008*** (4.21)		0.007*** (4.01)
LOGMV	0.003*** (3.31)	0.003*** (3.47)	0.001** (2.26)	0.002** (2.53)	0.001* (1.82)	0.003** (2.17)	0.001 (0.98)	0.001 (0.65)
MB	0.002*** (4.11)	0.002*** (4.29)	0.002*** (5.92)	0.001*** (5.27)	0.002*** (6.81)	0.002*** (6.45)	0.002*** (5.99)	0.001*** (6.10)
LEV	-0.027*** (-4.02)	-0.027*** (-4.97)	-0.031*** (-7.75)	-0.027*** (-6.43)	-0.038*** (-8.66)	-0.033*** (-7.45)	-0.031*** (-8.45)	-0.027*** (-7.33)
DD	0.001 (0.54)	0.001 (0.52)	-0.001 (-0.14)	-0.000 (-0.22)	-0.002 (-0.38)	-0.000 (-0.20)	-0.002 (-0.38)	-0.001 (-0.18)
AGE	-0.001 (-0.72)	-0.001 (-0.83)	-0.001 (-0.57)	-0.001 (-0.65)	-0.001 (-0.77)	-0.000 (-0.49)	-0.001 (-0.87)	-0.001 (-0.57)
SEG	-0.003** (-2.22)	-0.002** (-2.07)	-0.001* (-1.85)	-0.002*** (-2.79)	-0.001 (-1.58)	-0.002** (-2.38)	-0.001 (-1.06)	-0.001 (-1.10)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6519	6519	6368	6368	6060	6060	5895	5895
R-Sq	4.21%	4.27%	4.71%	4.64%	5.32%	5.69%	6.20%	6.34%

Table 17 Cont'd

Panel C Tobin's Q as performance measure

	Qtr 1		Qtr 2		Qtr3		Qtr4	
INTERCEPT	-7.623**	-14.012**	-4.739*	-7.704*	-4.675*	-21.803***	-8.522***	-16.2502**
	(-2.01)	(-2.50)	(-1.82)	(-1.73)	(-1.75)	(-2.72)	(-3.19)	(-2.08)
ASSET GR	-0.402**	-3.657***	-0.464**	-4.812***	-0.727**	-5.615***	-0.506*	-5.012***
	(-1.98)	(-2.62)	(-2.34)	(-4.37)	(-2.12)	(-3.50)	(-1.76)	(-3.12)
ACSI		0.037**		0.027***		0.205***		0.435***
		(2.55)		(2.89)		(2.82)		(3.99)
ACSI * ASSET GR		0.076**		0.100***		0.058***		0.105***
		(2.23)		(8.56)		(3.38)		(6.12)
LOGMV	0.498***	0.541***	0.540***	0.341**	0.405**	0.496***	0.560***	0.608***
	(3.08)	(3.30)	(-4.29)	(1.97)	(2.49)	(2.71)	(3.44)	(3.32)
MB	0.352***	0.347***	0.625***	0.633***	0.382***	0.349***	0.312***	0.302***
	(3.01)	(3.00)	(4.93)	(4.99)	(3.24)	(3.11)	(2.65)	(2.69)
LEV	4.360	4.605*	3.171*	3.378**	3.408	3.74	4.434*	4.723**
	(1.60)	(1.68)	(1.86)	(2.03)	(1.45)	(1.57)	(1.89)	(1.98)
DD	-0.921	-0.901	-0.588	-0.602	-0.792	-0.664	-0.942	-0.916
	(-1.10)	(-1.10)	(-1.42)	(-1.48)	(-1.04)	(-0.95)	(-1.24)	(-1.31)
AGE	-0.252	-0.166	-0.588	-0.332	-0.030	-0.030	-0.756	-0.498
	(-1.14)	(-0.83)	(-1.34)	(-1.14)	(-0.53)	(-0.53)	(-1.36)	(0.89)
SEG	-0.909**	-0.870**	-0.876***	-0.846**	-0.169**	-0.169**	-0.830***	-0.795**
	(-2.05)	(-2.01)	(-3.07)	(-2.38)	(-2.56)	(-2.56)	(-2.58)	(-2.37)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6519	6519	6368	6368	6060	6060	5895	5895
R-Sq	20.45%	20.67%	18.92%	19.73%	18.54%	18.61%	20.84%	20.91%

Table 17 Cont'd

Panel D Raw Return as performance measure

	Qtr 1		Qtr 2		Qtr3		Qtr4	
INTERCEPT	0.084**	0.101*	0.068*	0.080**	0.069***	0.071*	0.048*	0.041*
	(2.31)	(1.87)	(1.76)	(2.04)	(-2.83)	(-1.92)	(1.73)	(-1.78)
ASSET GR	-0.045***	-0.405***	-0.044***	-0.233**	-0.036***	-0.171**	-0.033**	-0.203*
	(-3.45)	(-3.92)	(-2.91)	(-1.99)	(-3.78)	(-2.53)	(-2.48)	(-1.89)
ACSI		0.001		0.001		0.001		0.001
		(0.58)		(0.69)		(1.28)		(0.77)
ACSI * ASSET GR		0.005***		0.003**		0.002		0.003
		(3.83)		(2.54)		(1.62)		(1.53)
LOGMV	-0.002**	-0.002*	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001
	(-2.10)	(-1.71)	(-0.62)	(-0.59)	(-1.20)	(-1.15)	(-0.63)	(-0.37)
MB	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.12)	(-1.30)	(-0.71)	(-0.81)	(-0.22)	(-0.49)	(-0.27)	(-0.33)
LEV	0.001	0.002	0.001	0.002	0.002	0.003	0.002	0.004
	(1.08)	(1.14)	(0.13)	(0.23)	(0.15)	(0.26)	(0.21)	(0.34)
DD	-0.003	-0.003	-0.001	-0.001	-0.002	-0.002	-0.001	-0.001
	(-0.86)	(-0.84)	(-0.14)	(-0.18)	(-0.46)	(-0.41)	(-0.14)	(-0.05)
AGE	-0.005**	-0.005**	-0.005**	-0.005*	-0.007*	-0.005*	-0.007	-0.004
	(-2.36)	(-2.46)	(-2.20)	(-1.74)	(-1.78)	(-1.75)	(-0.67)	(-0.75)
SEG	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
	(1.06)	(1.06)	(1.40)	(1.43)	(0.40)	(0.63)	(0.30)	(0.63)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6519	6519	6368	6368	6060	6060	5895	5895
R-Sq	14.93%	15.05%	14.18%	14.45%	13.17%	13.28%	12.38%	13.07%

Table 17 Cont'd

Panel E Excess Return as performance measure

	Qtr 1		**Qtr 2**		**Qtr3**		**Qtr4**	
INTERCEPT	0.064* (1.89)	0.033 (0.73)	0.042** (2.23)	0.025 (0.78)	0.033* (1.68)	0.007 (0.19)	0.045** (2.31)	0.049 (1.52)
ASSET GR	-0.021** (-2.23)	-0.420*** (-7.27)	-0.018* (-1.93)	-0.212*** (-3.90)	-0.015*** (-2.75)	-0.182*** (-4.27)	-0.008** (-2.35)	-0.095* (-2.46)
ACSI		0.001 (0.26)		0.001 (0.36)		0.001 (0.53)		0.001 (0.15)
ACSI * ASSET GR		0.005*** (7.31)		0.004** (2.09)		0.001*** (3.64)		0.001** (2.15)
LOGMV	-0.001 (-0.12)	-0.000 (-0.02)	-0.001 (-0.49)	-0.000 (-0.32)	-0.001 (-0.35)	-0.000 (-0.21)	-0.001 (-0.58)	-0.000 (-0.25)
MB	-0.001 (-0.02)	-0.001 (-0.25)	-0.001 (-0.21)	-0.001 (-0.61)	-0.001 (-0.24)	-0.001 (-0.36)	-0.001 (-0.70)	-0.001 (-0.37)
LEV	0.005 (0.36)	0.006 (0.48)	0.003 (0.21)	0.003 (0.24)	0.009 (0.60)	0.054 (0.78)	-0.010 (0.68)	-0.078 (0.42)
DD	0.002 (0.75)	0.002 (0.75)	0.001 (0.40)	0.001 (0.44)	0.001 (0.38)	0.001 (0.42)	0.001 (0.19)	0.001 (0.21)
AGE	-0.003* (-1.95)	-0.004** (-2.02)	-0.003* (-1.69)	-0.003 (-1.46)	-0.003* (-1.75)	-0.003* (-1.73)	-0.002 (-1.39)	-0.003 (-1.20)
SEG	0.003 (1.49)	0.003 (1.53)	0.002 (0.99)	0.002 (0.94)	0.002 (0.93)	0.002 (0.95)	0.003 (0.72)	0.003 (0.34)
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6519	6519	6368	6368	6060	6060	5895	5895
R-Sq	11.16%	11.38%	9.91%	10.03%	10.71%	10.43%	9.66%	9.82%

Table 17 Cont'd

Note:
The above tables report estimates of coefficients of the following regressions:
$DV_{i,t+n} = \alpha_0 + \alpha_1 ASSET\ GR_{i,t} + Control\ Variables_{i,t} + \varepsilon$, and $DV_{i,t+n} = \alpha_0 + \alpha_1 ASSET\ GR_{i,t} + \alpha_1 ACSI_{i,t} + \alpha_3 ACSI_{i,t}{*}ASSET\ GR_{i,t} + Control\ Variables_{i,t} + \varepsilon$.
From Panel A to Panel E, dependent variables are FROE, FROA, Tobin's Q, R_RET and E_RET, respectively. Qtr N denotes the dependent variables are from the future N quarters. I include future 4 quarters in the above tables. Control variables are the same as in previous tables. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 18 Effect of Customer Satisfaction on the association between Investment and Performances: Future 12 Quarters Trend (Median ACSI as Breakpoints)

		qtr1	qtr2	qtr3	qtr4	qtr5	qtr6	qtr7	qtr8	qtr9	qtr10	qtr11	qtr12	1yr	2yr	3yr	Mean
	<=50%	-0.037	-0.045	-0.086	-0.057	-0.06	-0.074	-0.038	-0.077	-0.089	-0.088	-0.059	-0.084	-0.056	-0.062	-0.080	-0.066
ROE	>=50%	-0.058	-0.057	-0.037	-0.023	-0.028	-0.083	-0.05	-0.039	0.001	-0.047	-0.011	-0.035	-0.044	-0.050	-0.023	-0.039
	Diff	0.021	0.012	-0.049	-0.034	-0.032	0.009	0.012	-0.038	-0.09	-0.041	-0.048	-0.049	-0.013	-0.012	-0.057	-0.027***
	<=50%	-0.021	-0.028	-0.027	-0.014	-0.025	-0.052	-0.01	-0.029	0.008	-0.022	-0.024	0.008	-0.023	-0.029	-0.008	-0.020
ROA	>=50%	-0.022	-0.003	-0.016	-0.023	0.008	0.011	-0.011	-0.022	-0.013	-0.023	-0.016	-0.011	-0.016	-0.004	-0.016	-0.012
	Diff	0.001	-0.025	-0.011	0.009	-0.033	-0.063	0.001	-0.007	0.021	0.001	-0.008	0.019	-0.007	-0.026	0.008	-0.008*
	<=50%	-0.026	-0.01	-0.032	-0.029	-0.042	-0.016	-0.024	-0.043	-0.043	-0.046	-0.032	-0.034	-0.024	-0.031	-0.039	-0.031
Q	>=50%	-0.031	-0.031	-0.007	-0.038	0.01	-0.026	-0.031	-0.031	-0.013	-0.03	-0.008	-0.012	-0.027	-0.020	-0.016	-0.021
	Diff	0.005	0.021	-0.025	0.009	-0.052	0.01	0.007	-0.012	-0.03	-0.016	-0.024	-0.022	0.003	-0.012	-0.023	-0.011**
	<=50%	0.232	-0.007	-0.36	-0.273	-0.277	-0.084	-0.19	0.067	-0.316	0.18	0.121	0.545	-0.102	-0.121	0.133	-0.030
R_RET	>=50%	0.358	0.544	0.36	0.125	0.103	-0.013	-0.044	0.09	0.077	0.249	0.075	0.023	0.347	0.034	0.106	0.162
	Diff	-0.126	-0.551	-0.72	-0.398	-0.38	-0.071	-0.146	-0.023	-0.393	-0.069	0.046	0.522	-0.449	-0.155	0.027	-0.192**
	<=50%	-0.092	-0.135	-0.154	-0.658	0.041	-0.011	-0.21	0.135	-0.295	-0.023	-0.006	-0.12	-0.260	-0.011	-0.111	-0.127
E_RET	>=50%	0.337	0.187	0.157	0.113	0.199	0.068	0.272	0.205	0.118	-0.114	0.099	0.127	0.199	0.186	0.058	0.147
	Diff	-0.429	-0.322	-0.311	-0.771	-0.158	-0.079	-0.482	-0.07	-0.413	0.091	-0.105	-0.247	-0.458	-0.197	-0.169	-0.275***

Note:
The above tables report estimates of coefficient $\alpha_1$of the following regression in high and low ACSI subgroups:
$DV_{i,t+n} = \alpha_0 + \alpha_1 ASSET\ GR_{i,t} + Control\ Variables_{i,t} + \varepsilon$.
In each row, dependent variables are FROE, FROA, Tobin's Q, R_RET and E_RET, respectively. I use median of ACSI and subgroup breakpoints, and report α_1 for each regression. Qtr N denotes the dependent variables are from the future N quarters, and future 12 quarters are examined. Control variables are the same as in previous tables. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. I also present 0-1 year, 1-2 year, 2-3 year, and 1-3 year averaged α_1 in last several columns in above tables. For each quarter, I calculate the difference (Diff) between α_1 in high ACSI group and in low ACSI group, and did a t-test toward 1-3 year averaged α_1 between high and low ACSI groups. Difference significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 19 Robustness: Effect of Customer Satisfaction on the association between Investment and Performances: Future 12 Quarters Trend: 30% and 70% ACSI as Breakpoints

		qtr1	qtr2	qtr3	qtr4	qtr5	qtr6	qtr7	qtr8	qtr9	qtr10	qtr11	qtr12	1yr	2yr	3yr	Mean
ROE	<=30%	-0.066	-0.072	-0.057	-0.077	-0.078	-0.053	-0.042	-0.077	-0.080	-0.083	-0.056	-0.088	-0.068	-0.063	-0.077	-0.069
	30%-70%	-0.042	-0.038	-0.042	-0.051	-0.004	-0.003	-0.075	-0.025	-0.029	-0.058	-0.045	-0.060	-0.043	-0.027	-0.048	-0.039
	>=70%	-0.032	-0.061	-0.026	-0.016	-0.014	-0.047	-0.068	-0.001	-0.021	-0.027	-0.038	-0.021	-0.034	-0.032	-0.027	-0.031
	Diff	0.034	0.010	0.031	0.061	0.064	0.006	-0.026	0.076	0.059	0.056	0.017	0.067	0.034	0.030	0.050	0.038***
ROA	<=30%	-0.010	-0.013	-0.018	-0.022	-0.036	-0.009	-0.008	-0.005	0.002	-0.016	-0.023	-0.021	-0.016	-0.015	-0.015	-0.015
	30%-70%	-0.036	-0.033	-0.015	-0.027	0.011	-0.031	-0.031	0.006	-0.035	-0.012	-0.009	-0.022	-0.028	-0.011	-0.020	-0.019
	>=70%	0.013	0.016	-0.013	-0.020	-0.020	-0.008	0.001	0.015	-0.019	0.013	-0.023	-0.021	-0.001	-0.003	-0.013	-0.006
	Diff	0.023	0.028	0.005	0.002	0.016	0.001	0.010	0.020	-0.021	0.029	0.000	0.000	0.014	0.011	0.002	0.009*
Q	<=30%	-0.046	-0.028	-0.040	-0.053	-0.039	-0.009	-0.047	-0.032	-0.023	-0.054	-0.044	-0.031	-0.042	-0.032	-0.038	-0.037
	30%-70%	-0.005	-0.041	-0.015	-0.004	-0.033	-0.045	-0.039	-0.030	-0.007	0.003	-0.043	-0.039	-0.016	-0.037	-0.022	-0.025
	>=70%	0.003	0.001	-0.002	-0.005	-0.001	-0.031	0.012	-0.019	-0.024	-0.005	-0.030	-0.012	-0.001	-0.010	-0.018	-0.009
	Diff	0.049	0.029	0.038	0.048	0.038	-0.022	0.060	0.013	0.000	0.048	0.013	0.018	0.041	0.022	0.020	0.028***
R_RET	<=30%	0.211	-0.142	-0.389	-1.147	-0.868	-0.878	-0.362	0.077	-0.296	0.247	0.079	0.547	-0.367	-0.508	0.144	-0.243
	30%-70%	-0.081	0.120	-0.060	-0.257	-0.288	-0.083	-0.164	0.791	0.083	0.154	0.137	-0.047	-0.069	0.064	0.082	0.026
	>=70%	0.280	0.437	0.015	0.106	0.090	0.028	-0.031	0.080	0.107	0.332	0.597	0.380	0.210	0.042	0.354	0.202
	Diff	0.069	0.579	0.405	1.253	0.958	0.906	0.331	0.003	0.403	0.085	0.518	-0.168	0.577	0.549	0.210	0.445***
E_RET	<=30%	-0.351	-0.588	-0.434	-0.435	-0.160	-0.125	-0.033	0.127	-0.259	0.054	-0.039	-0.119	-0.452	-0.048	-0.091	-0.197
	30%-70%	-0.013	0.133	-0.145	-0.250	-0.002	-0.044	0.143	0.015	0.104	0.006	0.059	0.158	-0.069	0.028	0.082	0.014
	>=70%	0.028	0.200	0.158	0.204	0.127	0.085	0.085	0.208	0.097	0.108	0.076	0.269	0.147	0.126	0.137	0.137
	Diff	0.379	0.788	0.592	0.639	0.287	0.210	0.117	0.082	0.356	0.054	0.115	0.388	0.600	0.174	0.228	0.334***

Note:
The above tables report estimates of coefficient α_1 of the following regression in high and low ACSI subgroups:
$DV_{i,t+n} = \alpha_0 + \alpha_1 ASSET\ GR_{i,t} + Control\ Variables_{i,t} + \varepsilon$.
In each row, dependent variable is FROE, FROA, Tobin's Q, R_RET and E_RET, respectively. I use 30% and 70% of ACSI as subgroups breakpoints, and report α_1 for each regression. Qtr N denotes the dependent variables are from the future N quarters, and future 12 quarters are examined. Control variables are the same as in previous tables. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. I also present 0-1 year, 1-2 year, 2-3 year, and 1-3 year averaged α_1 in last several columns in above tables. For each quarter, I calculate the difference (Diff) between α_1 in high ACSI group and in low ACSI group, and did a t-test toward 1-3 year averaged α_1 between high and low ACSI groups. Difference significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 20 The Effect of Customer Satisfaction on Board Structure

	BSIZE	INDEP	NOND
INTERCEPT	1.939***	-0.069	0.561**
	(6.70)	(-0.25)	(2.45)
ACSI	-0.003**	-0.003*	-0.016*
	(-2.53)	(-1.83)	(-1.72)
LOGMV	0.045***	0.022**	0.035
	(5.08)	(2.20)	(1.48)
MB	-0.002***	0.000	-0.001
	(-6.99)	(0.98)	(-0.29)
ROE	0.021***	0.002	0.092
	(10.69)	(1.26)	(0.79)
VROE	0.012***	0.003	0.258*
	(3.97)	(0.65)	(1.84)
LEV	0.335***	0.116	0.035
	(3.43)	(1.57)	(0.63)
DD	0.046	0.001	0.019
	(1.53)	(0.13)	(1.13)
AGE	0.034**	0.035**	0.020
	(2.33)	(2.15)	(1.03)
SEG	-0.010	0.005	0.012
	(-0.99)	(0.79)	(1.15)
Control for Year	YES	YES	YES
Control for Industry	YES	YES	YES
No. of Obs.	7,296	7,296	7,296
R-sq / Pseudo R-sq	28.94%	26.91%	68.59%

Note:
This table reports estimates of coefficients of the following regression:

$$DV_{i,t} = \alpha_0 + \alpha_1 ACSI_{i,t-1} + \alpha_2 LOGMV_{i,t-1} + \alpha_3 MB_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 VROE_{i,t-1} + \alpha_6 LEV_{i,t-1} + \alpha_7 DD_{i,t-1} + \alpha_9 AGE_{i,t-1} + \alpha_{10} SEG_{i,t-1} + \varepsilon.$$

In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *BSIZE* is the logged board size. *INDEP* is the ratio of independent directors. *NOND* is a dummy variable which equals to 1 if firms' CEOs are not board chair at the same time, and 0 otherwise. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 21 Robustness: Changes in Customer Satisfaction and Changes in Board Structure

	ΔBSIZE			ΔINDEP			ΔNOND		
	1 Year	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**	**1 Year**	**3 Years**	**5 Years**
ΔACSI	-0.001	-0.001	-0.001	-0.001	0.001	0.001	-0.002	-0.001	0.003
	(-0.68)	(-0.49)	(-0.48)	(-0.27)	(0.63)	(0.58)	(-0.87)	(-0.60)	(1.45)
Intercept	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control Variable	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	6,600	4,988	3,665	6,600	4,988	3,665	6,600	4,988	3,665
R-sq	3.63%	5.69%	12.26%	4.00%	4.79%	8.59%	26.77%	64.96%	67.41%

Note:
This table reports estimates of coefficients of the following regression:
$\Delta DV_{i,t} = \alpha_0 + \alpha_1 \Delta ACSI_{i,t-1} + Control\ Variable_{i,t-1} + \varepsilon.$
In the table, labels in the first row denote dependent variables (*DV*) for each regression in each column. *BSIZE* is the logged board size. *INDEP* is the ratio of independent directors. *NOND* is a dummy variable which equals to 1 if firms' CEOs are not board chair at the same time, and 0 otherwise. Refer to Appendix 1 for other variable definitions. In columns '1 Year', changes in variables are calculated from the current year and previous one year. In columns '3 Years', changes in variables are calculated from the current year and previous three year. In columns '5 Year', changes in variables are calculated from the current year and previous five year. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.

Table 22 Joint Effect of Customer Satisfaction and Board Structure on Investment Puzzle

		FROE			FROA			Q			R_RET			E_RET	
	BS	IN	NO	BS	IN	NO	BS	IN	NO	BS	IN	NO	BS	IN	NO
ASS	-1.310	-1.204	-0.955	-0.805**	-0.842**	-0.280	-3.671*	-3.490**	-4.617***	-0.561**	-0.511***	-0.137***	-0.550**	-0.289**	-0.094*
	(-1.25)	(-1.42)	(1.43)	(-2.21)	(-2.44)	(-0.59)	(-1.77)	(-1.98)	(-2.17)	(-2.22)	(-3.68)	(-3.22)	(-2.47)	(-2.01)	(-1.89)
ACSI * ASSET GR	0.024	0.021	0.011	0.010**	0.012**	0.002	0.497***	0.476***	0.589***	0.005**	0.007*	0.004**	0.007**	0.003*	0.001*
	(1.44)	(1.51)	(1.33)	(2.39)	(2.51)	(1.24)	(3.55)	(2.87)	(3.24)	(2.12)	(1.89)	(2.39)	(1.99)	(1.79)	(1.88)
BC * ASSET GR	0.123	0.151	1.203	0.058***	0.093**	0.379***	3.055**	4.390***	4.883**	0.037*	0.065*	0.121*	0.033**	0.038*	0.116**
	(1.40)	(1.65)	(1.59)	(2.76)	(2.45)	(2.66)	(2.48)	(2.78)	(2.06)	(1.69)	(1.67)	(1.89)	(2.01)	(1.91)	(1.98)
ACSI * BC * ASSET GR	-0.004**	-0.005**	-0.013*	-0.001***	-0.001**	-0.003*	-0.044*	-0.060**	-0.063***	-0.002***	-0.002***	-0.005**	-0.003**	-0.001**	-0.010
	(-2.23)	(-2.13)	(-1.73)	(-2.72)	(-2.53)	(-1.82)	(-1.80)	(-2.30)	(-2.97)	(-3.51)	(-3.50)	(-2.38)	(-2.16)	(-2.02)	(-1.62)
ACSI	-0.004	-0.023	0.135	-0.013*	-0.020	0.042	-0.632	-1.133	-0.562	0.000	-0.008	0.016	-0.001	-0.007	0.143*
	(-0.08)	(-0.88)	(1.18)	(-1.89)	(-1.55)	(1.34)	(-0.49)	(-1.22)	(-0.38)	(0.55)	(-0.19)	(1.05)	(-0.90)	(-0.69)	(1.82)
BC	0.002	0.002	0.001*	-0.001	-0.003	0.002*	0.036	0.016	0.065	0.000	0.002	-0.001	-0.002	-0.001	0.000
	(0.25)	(0.33)	(1.89)	(-1.28)	(-1.19)	(1.68)	(0.18)	(0.26)	(1.62)	(0.52)	(0.61)	(-0.85)	(-0.33)	(-0.05)	(0.76)
ACSI*BC	0.001	0.002	0.001	0.001	-0.001**	-0.001*	0.010*	0.017*	0.086***	0.001	-0.001	-0.002	0.002	0.000	-0.003
	(0.70)	(0.96)	(1.40)	(1.59)	(-2.19)	(-1.95)	(1.76)	(1.88)	(3.68)	(-0.37)	(-0.55)	(-0.36)	(0.37)	(0.64)	(-0.59)
Intercept	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. of Obs.	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198	4198
R-Sq	29.20%	28.77%	28.92%	4.82%	4.42%	4.53%	21.64%	21.35%	21.80%	15.73%	15.36%	15.68%	11.57%	10.53%	11.65%

Note:
The above tables report estimates of coefficients of the following regression:

$$DV_{i,t+1} = \alpha_0 + \alpha_1 ASSET\ GR_{i,t} + \alpha_2 ACSI_{i,t} * ASSET\ GR_{i,t} + \alpha_3 BC_{i,t} * ASSET\ GR_{i,t} + \alpha_4 ACSI_{i,t} * BC_{i,t} * ASSET\ GR_{i,t} + \alpha_5 ACSI_{i,t} + \alpha_6 BC_{i,t-1} + \alpha_7 ACSI_{i,t} * BC_{i,t} + Control\ Variables_{i,t} + \varepsilon.$$

Dependent variables are average *FROE*, *FROA*, *Tobin's Q*, *R_RET* and *E_RET*, respectively. Control variables are the same as in previous tables. Refer to Appendix 1 for other variable definitions. I control for industry (1-digit SIC coded) and year fixed effect, and use 2-dimension (firm, and year-qtr) estimated clustered standard errors to calculate t-values (in parentheses). The sample period is from January 1995 to December 2010. All variables are winsorized at the bottom and top 1% levels, except for dummy variables. Coefficients significant at the 1%, 5%, and 10% levels are marked with *, **, and ***, respectively.