Net Income Measurement, Investor Inattention, and Firm Decisions*

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Abstract

This paper studies the interaction between investor inattention and firms' capital allocation decisions by exploiting an accounting rule change that requires publicly traded firms to incorporate changes in unrealized gains and losses (UGL) from public stock investments into net income. We build a model with risk-averse investors who can be attentive or inattentive and managers who maximize firms' stock prices. The model makes two main predictions. First, with inattentive investors, the rule change will cause firms' stock prices to react more strongly to net income fluctuations from changes in UGL on financial assets. Second, under certain conditions, the rule can lead to higher stock price discount because of higher perceived residual uncertainty, and managers respond by cutting financial asset holdings. We use US insurance company data to test these predictions. We find that insurers' stock returns react more strongly to UGL on equity securities after the rule change, and more so for firms with low analyst coverage. Using a difference-in-differences approach, we find that by 2020, publicly traded insurance companies cut investments in public stocks by $23 billion. Our results highlight the impact that investor inattention has on firm's stock price and resource allocation decisions.

JEL Code: G11, G14, G22, G30, M41

Keywords: Net income components, investor inattention, ASU 2016-01, capital allocation decisions

1 Introduction

The literature on investor's limited attention assumes that investors have finite information processing capacity, and as a result, unable to process all relevant information in a timely fashion. There is ample evidence that investor inattention makes stock prices less efficient and unable to incorporate all value-relevant information (Bernard and Thomas, 1989; Cohen and Lou, 2012; Cohen, Malloy, and Nguyen, 2020). However, less work has been done on whether such inattention has further consequences, such as affecting firms' economic decisions (Barberis and Thaler, 2005; Blankespoor, deHaan, and Marinovic, 2020). Furthermore, if more (less) informative summary performance measures, such as net income, can reduce inattentive investors' information processing cost, can it also reduce (exacerbate) the impact that investor inattention has on stock prices and firms' decisions?

In this paper, we shed light on these questions by exploiting a novel change in the information environment of firms that allows us to explore how rational managers' capital allocation decisions respond to fluctuations in stock prices that result from inattentive investors' trading behaviors. The Financial Accounting Standards Board's (FASB) Accounting Standards Update (ASU) 2016-01 requires publicly traded companies to incorporate changes in unrealized gains and losses (UGL) from public stock investments into net income. Prior to the rule change, firms that invest in public stocks already reported such changes in financial asset values in financial statements.[1] Thus, ASU 2016-01 *only* changes the way in which information on equity UGL is presented to investors.

While the new net income measure is a more complete measure of changes in shareholder's wealth in a given period, it mixes the firm's core operating earnings with changes in the value of equity securities, which have different implications for the firm's total value. Under the rational framework where investors are fully rational and perfectly attentive, this change should not have any effect on their trading decisions and, hence, equilibrium stock prices. However, if investors are inattentive and only focus on summary measures, such as net income, then investors may treat these fluctuations in net income as meaningful changes in the companies' prospects and trade on this information. Since managers' compensation packages are often tied to their companies' stock

[1] Prior to ASU 2016-01, holdings of equity securities are reported on the balance sheet at fair value. For equity securities that are classified as available-for-sale, changes in UGL are reported as part of other comprehensive income. For equity securities that are classified as trading securities, changes in UGL are reported as part of net income.

prices, inattentive investors' irrational trading behaviors may also affect firms' decisions to invest in public stocks.

To formalize our economic framework, we begin our analysis of the rule change by constructing a theoretical model with risk averse investors, who can be attentive or inattentive, and fully rational managers. In our model, a firm has two streams of earnings: operating income and financial income. Operating income is from the firm's core business and is more persistent. Financial income comes from changes in the value of the firms' financial assets, which can be measured more accurately, but is less persistent. Attentive investors can process and understand the two streams of earnings and how they impact firm value differently. On the other hand, inattentive investors cannot tell the earnings components apart, and instead value the firm based on the net income measure alone.

In equilibrium, the market price for stocks is jointly determined by inattentive and attentive investors. The model's key results are borne out by comparing equilibrium outcomes between two accounting regimes – exclusive and inclusive. The exclusive regime represents the pre-ASU 2016-01 era where net income *excludes* financial income, which represents changes in equity UGL. The inclusive regime represents the post-ASU 2016-01 era where net income *includes* financial income. Since financial income is more volatile and less persistent, net income numbers mechanically become more volatile and less persistent under the inclusive regime. Investors learn about firm values through observing variation in net income and trade accordingly, which means that the composition of net income affects stock prices. The first key result from the model is that, under the inclusive regime, stock prices react more strongly to the financial income component, i.e., to the changes in the value of financial assets. This result is driven by inattentive investors' inability to distinguish between operating and financial income streams.

The second key result from the model is that, in equilibrium, stock price discounts are larger under the inclusive regime when either (1) the measurement of financial income is noisier, or (2) when financial income is less persistent. Since investors are risk-averse, they assign larger discounts to stocks of companies with higher residual uncertainty in their net income numbers. Inattentive investors assign larger stock price discounts because they cannot distinguish between the two streams of income in the inclusive regime, and perceive net income to be less informative about the firm's total value.

We also model managers' decision on how much financial assets to hold in equilibrium. The manager seeks to maximize stock price and faces a trade-off between higher investment income from holding more financial assets and a larger stock price discount caused by inattentive investors. The final key result from the model is that, compared to the exclusive regime, firms hold less financial assets under the inclusive regime, if financial income is less persistent and/or measured more accurately. This result is borne out by the interaction between the manager's incentive to maximize stock price and the price discount caused by inattentive investors. Due to fluctuations in financial asset values, net income numbers are more volatile than core earnings under the inclusive regime, which induce larger price discounts in equilibrium. In response, managers reduce their firms' holdings of financial assets to attenuate the downward pressure on their firms' stock prices.

The second part of the paper uses hand-collected data on insurance companies' changes in unrealized gains and losses from equity investments to test our model's predictions. We choose to focus our empirical analysis on insurance companies because of two reasons. First, insurance companies make up a large class of institutional investors that allocate a non-trivial amount of capital to publicly traded stocks. Among US publicly traded companies that existed in 2017, insurance companies held 80% of equity securities impacted by the rule change, or approximately $235 billion.[2] This feature of the industry allows us to study the impact that ASU 2016-01 has on firms' capital allocation decisions. Second, all US-based insurance companies disclose detailed investment data to the National Association of Insurance Commissioners (NAIC), which allows us to study the differential impact that ASU 2016-01 has on publicly traded insurers, while using private insurance companies as the control group.

We begin our empirical analysis by documenting basic facts about public insurance companies' earnings before and after the implementation of ASU 2016-01. We show that, after ASU 2016-01 was implemented, earnings volatility increased and earnings persistence significantly decreased. These findings are not surprising, given the volatility of stock prices. However, they provide evidence that changes in UGL from equity securities are a high-volatility and low-persistence component of net income, which is an important assumption that drives our model's results.

Next, we use the event study approach to test whether investors overreact to changes in net income that come from changes in equity UGL that are disclosed on earnings announcement dates.

[2] The percentage falls to 52% once we exclude Berkshire Hathaway. Though banks hold significant amounts of equities, they were largely not impacted by the rule change, because they tended to classify these positions as trading securities before the rule change, which meant that changes in UGL were already included in net income.

We compare the pre-ASU 2016-01 period return responses to changes in UGL on equity securities investments to their post period counterparts. If information from changes in equity UGL were already incorporated into investors' trading decisions, then we should not observe any difference in stock return responses between the two time periods. We find that risk-adjusted stock returns do not respond to changes in equity UGL in the pre period, but do so in the post period, even after controlling for core earnings surprise and other factors. The magnitudes of these return responses are economically large. A one percentage point increase in changes in UGL on equity securities investments induces a 70 to 120 bps increase in risk-adjusted return. This result supports the story that inattentive investors only pay attention to changes in UGL on equity securities when they are included in net income.

These return reactions are persistent. When companies experience relatively positive changes in equity UGL, stock returns jump up and stay high for up to 40 trading days after the earnings announcement date. When companies experience relatively negative changes in equity UGL, stock returns drop and stay low for up to 60 trading days after the earnings announcement date. Most of the return reactions occur within 10 trading days of the earnings announcement date. Furthermore, this pattern does not show up in the pre-ASU 2016-01 period. These return reaction results are consistent with our model's first prediction and suggest that inattentive investors are driving these return patterns.

Our model predicts that inattention causes investors' overreaction to changes in equity UGL. To give credence to the proposed mechanism, we test for differences in stock return reactions between insurance companies that have many analysts covering them and those that have few. Investors face information processing costs (Engelberg, 2008; Blankespoor et al., 2020) and sell-side equity analysts lower this cost by presenting synthesized versions of companies' financial statements that more cleanly capture the companies' current and future performances. With respect to ASU 2016-01, anecdotally, analysts exclude changes in equity UGL from their earnings forecasts, which allows investors to learn about the company's core performance more easily. Therefore, if inattentive investors read analyst reports, they are less likely to overreact to changes in equity UGL. We find that this is indeed the case. Return reactions are relatively muted among companies that have above-median analyst coverage.

To provide additional evidence that stock prices are reacting to the inclusion of changes in equity UGL into net income, we devise a trading strategy that exploits the interaction between pre-announcement aggregate stock market returns and insurers' public stock holdings. This trading strategy only involves stocks of insurance companies that have positive equity investment allocations. For a given quarter, if the CRSP value-weighted index return is positive, then, during the following quarter, buy each insurance company's stock one day before each company's earnings announcement date and hold the stock for 10 trading days after earnings announcement. If the CRSP value-weighted index return is negative, then, during the following quarter, sell short each insurance company's stock one day before each company's earnings announcement and unwind the position 10 trading days after the announcement date. Stocks are weighted according to the companies' equity allocation percentage such that the weights add up to one in each quarter. The weighted average return of this strategy is 2.5% and is statistically different from zero.[3] Furthermore, the mean equity-allocation-weighted return is larger than the mean equal-weighted return, which provides more evidence that stock returns are indeed reacting to changes in equity UGL.

The final key result from our model is that, when inattentive investors perceive post-ASU 2016-01 earnings to be more volatile and less informative about firm value, they assign larger discounts to companies' stock prices and managers respond by reducing capital allocated to publicly traded stocks. We use a difference-in-difference identification strategy to test whether ASU 2016-01 caused publicly traded insurance companies to decrease their equity securities allocation relative to their privately-held counterparts. We find that, after ASU 2016-01 was implemented, insurance subsidiaries of publicly traded companies decreased their allocation to publicly traded stocks by 0.47 percentage points. A back-of-the-envelope calculation shows that, by 2020, insurance subsidiaries of publicly traded companies reduced their holdings of public stocks by approximately $23 billion, which is equivalent to approximately half of their aggregate public stock holdings. Since public stocks tend to yield higher long-run returns than bonds, these results suggest that ASU 2016-01 may have decreased insurance companies' long-run portfolio returns and ability to meet insurance policy payouts. Taken together, the results from this paper show that the behavior of inattentive investors can affect managers' capital allocation decisions through the interaction between stock prices and managers' incentives.

[3]The CAPM and Carhart four-factor model risk-adjusted returns of this trading strategy are also positive and statistically different from zero, which suggest that ASU 2016-01 may have made the stock market less efficient (Fama and French, 1992; Carhart, 1997).

Our paper contributes to several strands of finance and accounting literature. First, this paper contributes to the behavioral corporate finance literature on the interaction between irrational trading behaviors and firms' investment decisions. Stein (1996) predicts that changes in stock prices that stem from irrational trading behavior should not influence firms' investment decisions. This prediction is supported by Morck, Shleifer, Vishny, Shapiro, and Poterba (1990), Blanchard, Rhee, and Summers (1993), and Baker and Wurgler (2002), but refuted by others (Baker, Stein, and Wurgler, 2003; Polk and Sapienza, 2004). Our paper shows that investor inattention distorts firms' capital allocation decisions, which has never been explored before (Roychowdhury, Shroff, and Verdi, 2019; Blankespoor et al., 2020). More importantly, we propose a new mechanism that links investor inattention to changes in firm behaviors, which is the interaction between inattention-induced stock price discounts and managers' incentive to maximize their firms' stock prices. In turn, this paper also contributes to the emerging literature on investor inattention's influence on managers' decisions and the literature on real effects of accounting disclosures (Kempf, Manconi, and Spalt, 2017; Christensen, Floyd, Liu, and Maffett, 2017; Gilje, Gormley, and Levit, 2020; Fich and Xu, 2021; Noh, 2021).

Second, we add to the literature that focuses on the impact of investors' limited attention on asset prices (Bernard and Thomas, 1989; Hirshleifer and Teoh, 2003; Hirshleifer, Lim, and Teoh, 2011; Barber and Odean, 2008; DellaVigna and Pollet, 2009; Cohen and Lou, 2012; Tetlock, 2014; Cohen et al., 2020). Our paper contributes to this strand of literature by showing that changing components of net income, without adding new information to financial statements, induces large stock price responses because of investor inattention. Furthermore, we construct a profitable trading strategy that exploits these predictable return patterns. These results also contribute to the literature on what information investors fail to properly account for (Feldman, Govindaraj, Livnat, and Segal, 2010; Brown and Tucker, 2011; Tetlock, 2011).

Lastly, our paper contributes to the literature that studies insurers' portfolio choices and the impact of insurers' asset holdings on the underlying assets. Previous studies show that operating risks, financial conditions, changes in regulations, and accounting treatments affect insurers' portfolio choices and their investment asset prices (Ellul, Jotikasthira, and Lundblad, 2011; Ellul, Jotikasthira, Lundblad, and Wang, 2015; Becker and Ivashina, 2015; Chen, Sun, Yao, and Yu, 2020; Ge and Weisbach, 2021; Girardi, Hanley, Nikolova, Pelizzon, and Sherman, 2021; Massa and

Zhang, 2021; Becker, Opp, and Saidi, 2021). We extend this literature by investigating whether the placement of information in the insurers' financial statements affects their portfolio decisions. We find that moving changes in equity UGL above the net income line reduces insurers' willingness to invest in equity securities.

2 Institutional Details

Historically, under FAS 115 (1993), stock investments could be classified as either available-for-sale (AFS) or trading securities, depending on the horizon of investment. Securities classified as trading were those purchased and held for the purpose of selling them within a short period of time, and the rest were classified as AFS. Changes in UGL on trading securities were included in net income, while changes in UGL on AFS securities were included in other comprehensive income (OCI), a separate category of income that FASB created to shield net income from certain items.[4] Under both classifications, securities were held at fair value on the balance sheet. When AFS equity securities were sold or experienced other than temporary value impairments, the UGL amount would then be recycled from OCI to net income. Realized gains and losses as well as investment income such as dividends and interests have already been included in net income.

In January 2016, FASB eliminated the AFS classification option for equity securities in its Accounting Standard Update (ASU) 2016-01, effective for fiscal years beginning after December 15, 2017. Thus, changes in UGL on all stock investments must now flow through net income. ASU 2016-01 does not change the accounting treatment for bonds, and so firms continue to have the option to report changes in UGL on debt securities in either net income or OCI.[5] We show examples of income statements in Figure 1 for a property and casualty insurer, Old Republic International, before and after the rule change. We can see that, after the rule change, the company began including changes in UGL on equity securities on its income statement.

[4]Items reported in OCI include foreign currency translation adjustments and changes in pension net assets.
[5]ASU 2016-01 also contains other amendments, but they do not affect the interpretation of our analyses.

3 Data and Sample

This paper uses data from several sources. Our first data source is companies' 10-Q and 10-K filings. We hand collect data on insurance companies' changes in unrealized gains and losses (UGL) on equity securities, which is unavailable in standard databases. We use the data to study differential stock return reactions to changes in equity UGL in the pre and post-ASU 2016-01 periods. We use changes in UGL on insurers' fixed income investments as control variables in our regressions.

Public companies that follow US GAAP report their investments' UGL positions on a quarterly basis. In the pre period, we calculate changes in UGL on equity investments stemming from stock price movements as the quarterly change in equity UGL, adjusted for insurers' trading activities and other than temporary impairments (OTTI). Changes in equity UGL come from three sources: changes in stock prices, insurers' trading activities, and OTTI. The latter two are adjustments made to accounting accounts and are unrelated to fluctuations in the market value of equity investments.[6] Specifically, changes in UGL on equity investments is calculated as the quarterly change in equity UGL, plus any net capital gains and losses resulting from sales of equity securities, less any OTTI recognized on equity securities. In the post period, firms generally report the exact amounts of changes in equity UGL, which we also hand collected from insurers' 10-Q and 10-K filings.[7]

The second data source is SNL Financial, a component of the S&P Global Market Intelligence database. This database contains fundamental accounting data on insurance companies, both at the parent and subsidiary levels. Data on publicly traded parent companies are reported on a quarterly basis in accordance with US GAAP and come from the Securities and Exchange Commission (SEC). Data on insurance subsidiaries are reported on an annual basis and come from National Association of Insurance Commissioners (NAIC) filings. We use parent-level data for our return reactions analysis because we need a one-to-one mapping between firms and stock tickers. We use subsidiary-level data for our equity investment allocation analysis for two reasons. First, the quality of equity investment data is better at the subsidiary-level, which allows us to better able to adjust for M&A activities.[8] Second, with subsidiary-level data, we can examine equity investment

[6]Appendix A.2 provides an example of the adjustments of trading activities and OTTI. Our results are qualitatively and quantitatively similar when we do not make these adjustments.

[7]Note that in the post period, since equity securities are marked-to-market in net income, any capital gains or losses on equities are generally small to non-existent. OTTI is also non-existent as it is replaced by marking-to-market.

[8]For example, in our regressions, we require that insurance subsidiaries do not change public status, and some

allocation across different business lines (e.g., property and casualty, life, and health), which exhibit substantial heterogeneity in investment capital allocation.[9] Lastly, we use analyst forecast data from I/B/E/S to construct our measure of core EPS surprise. Stock returns data are from CRSP.

We construct two samples of insurance companies. The first sample is used to study differences in return reactions to changes in equity UGL before and after ASU 2016-01. This sample consists of company-quarters between 2015Q1 and 2020Q3. The sample ends in 2020Q3 because stock return data associated with announcements of 2020Q4's earnings were unavailable when we constructed the sample. We require companies to (1) list their stocks on a US stock exchange and be headquartered in the US; (2) report equity UGL in the post period; (3) report sufficiently granular data that would allow us to calculate equity UGL in the pre period; (4) be followed by at least one sell-side analyst; (5) have December fiscal year ends; and (6) classify more than 50% of their equity investments as AFS in the pre period.[10] We exclude Berkshire Hathaway from our analyses due to its unique business model. Table 1 presents summary statistics for the first sample. Roughly half of the sample is made up of property and casualty insurance companies. Life and health insurance companies account for approximately a quarter of our sample. The rest are multi-line insurers. Insurers on average allocate 4% of their investment capital to public equities.

The second sample is used to study the impact that ASU 2016-01 has on equity investment allocation. The sample period runs from 2015 to 2020. In this sample, insurance subsidiaries owned by publicly traded insurance parent companies are assigned to the treatment group and insurance subsidiaries owned by privately-held parents are assigned to the control group. We exclude subsidiaries whose parent companies are listed outside of the US. Like before, we exclude companies that classify more than 50% of their equity investments as trading securities, and we also exclude insurance subsidiaries owned by Berkshire Hathaway.[11]

Table 5 presents summary statistics for the second sample. This sample contains slightly fewer

M&A deals involve specific insurance subsidiaries of insurance companies.

[9]For example, the average property and casualty insurance company allocates 10% of its investment portfolio to publicly traded stocks, while the average life insurance company allocates 4%. The businesses are quite different as well. For example, life and health insurers tend to have longer-term liabilities such as annuities, while property and casualty companies tend to have shorter-term liabilities such as auto insurance contracts.

[10]ASU 2016-01 affects the recognition of changes in UGL associated with public stock holdings classified as AFS, but it does not affect the recognition of changes in UGL associated with public stock holdings classified as trading securities. The changes in UGL on trading securities are recognized in net income before and after the implementation of ASU 2016-01. All results are quantitatively similar when we include companies that classify most of their public stock holdings as trading securities.

[11]We also exclude insurance subsidiaries owned by public parents that adopted the rule change after 2018.

than 18,000 subsidiary-year observations. Sixty-one percent of the sample is made up of property and casualty insurance subsidiaries, while the rest are life or health insurance subsidiaries. The average insurance subsidiary allocates 67% of its capital to fixed income securities, 21% to cash and cash-like instruments, 8% to publicly traded stocks, and the rest to real estate, mortgage loans, contract loans, and alternatives, such as hedge funds and private equity funds. These statistics highlight that publicly traded stocks make up a non-trivial part of insurance companies' investment portfolios.

4 Model

In this section, we build a parsimonious model to demonstrate how summary earning measures affect inattentive investors' decision and stock price. We also show that if the firm's manager aims to maximize the firm's stock price, then summary earning measures can ultimately impact the firm's capital allocation decision.

4.1 Setup

There is a continuum of risk-averse investors with mean-variance preferences, where c is the terminal consumption:

$$E^{\phi}(c) - \frac{\tau}{2} Var^{\phi}(c)$$

Investors can be attentive or inattentive. There are two streams of earnings: operating and financial income, which we describe in more detail below. While attentive investors can fully understand and differentiate the persistence and informativeness of the two earnings components, inattentive investors cannot tell the two components apart. Inattentive investors ignore the components and take the summary earnings number as the sole input when updating their estimation of firm value. We also assume that inattentive investors cannot infer from the stock price that their valuation is sub-optimal. We use superscript of $\phi \in \{i, a\}$ to denote the beliefs of inattentive and attentive, respectively.

There can be many reasons for such inattention. For example, investors may lack the necessary training to understand the difference between the two earning streams or lack the time and resources to acquire the necessary information. In addition, the financial media may emphasize only summary earnings measures, leading to investor inattention.

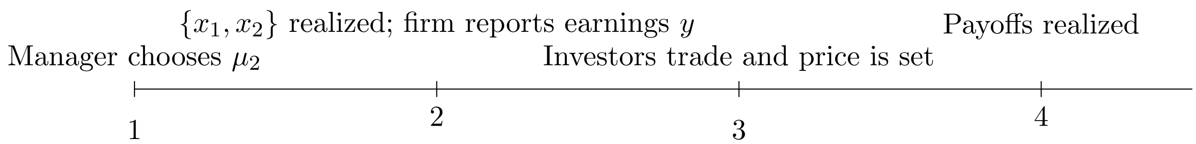
Earnings: The firm has two streams of earnings, $\{e_1, e_2\}$. We can think about them as operating income and financial income, which are independent from each other. They have different persistence and thus are applied with different earnings multiples for valuation. Specifically, operating income has an earnings multiple of ρ_1, and its distribution is $e_1 \sim N(\mu_1, v_1)$. Operating income is measured with noise, i.e., $x_1 = e_1 + \epsilon_1$, with $\epsilon_1 \sim N(0, \sigma_1)$. Financial income, e_2, has a valuation multiple of ρ_2 and follows a normal distribution with mean μ_2 and variance of v_2.[12] Financial income is also measured with noise, i.e., $x_2 = e_2 + \epsilon_2$, with $\epsilon_2 \sim N(0, \sigma_2)$.

Under the regime of excluding financial income, the earnings number is $y_A = x_1$. Under the regime of including financial income, the earnings number is $y_B = x_1 + x_2$. While attentive investors can digest both versions of y and its components x_1 and x_2, inattentive investors can only focus on the summary measure, $y \in \{y_A, y_B\}$, but not its components. For simplicity, we assume that there is no private information. The supply of securities is s, which is normally distributed with mean $\bar{s}$ and variance v_s.

The Manager: The firm's manager chooses how much to invest in the financial asset μ_2. The amount of the operating asset is predetermined and is μ_1. The investment amounts are observable. Because the manager's tenure ends before the final payoff is realized, the manager aims to maximize the interim stock price at $t = 3$. That is, the manager chooses the amount of financial income μ_2. We assume that more investment leads to higher volatility, $\frac{\partial v_2}{\partial \mu_2} > 0$. To ensure an interior solution, we also assume that $\frac{\partial^2 v_2}{\partial \mu_2^2} > 0$.

Timeline: There are three dates. At $t = 1$, the manager chooses μ_2, how much to invest in financial assets. At $t = 2$, public information arrives about the firm's earning and its components. At $t = 3$, investors trade and market price is determined. At $t = 4$, payoffs are realized.

[12] One way to motivate the earnings multiples is that, operating income has persistence of γ_1 and financial income has persistence of γ_2. As a result, the earnings multiple is $\rho_1 = \frac{1}{1-\gamma_1}$ for operating income and $\rho_2 = \frac{1}{1-\gamma_2}$ for financial income. In the case where the financial income has positive, zero, or negative persistence, we would have $\rho_2 > 1$, $\rho_2 = 1$, or $\rho_2 < 1$, respectively.



4.2 Analysis

We use backward induction to solve the model. First, we solve for the market-clearing price at $t = 3$ and characterize how the price discount varies with investor inattention. Then we move to $t = 1$ and solve for the manager's optimal investment amount in financial assets.

4.2.1 Market Price at $t = 3$. Since investors, indexed by j, have mean-variance utility, their demand for the security is:

$$D_j^\phi = \frac{1}{\tau} \frac{E_j^\phi(\theta - p)}{Var_j^\phi(\theta)}$$

where $\theta = \rho_1 e_1 + \rho_2 e_2$. Then the market clearing condition implies that

$$\begin{aligned} s &= \int D_j^\phi dj \\ &= \kappa \times D_j^i + (1 - \kappa) \times D_j^a \\ &= \frac{\kappa}{\tau} \frac{E_j^i(\theta - p)}{Var_j^i(\theta)} + \frac{1 - \kappa}{\tau} \frac{E_j^a(\theta - p)}{Var_j^a(\theta)} \end{aligned}$$

Note that the two kinds of investors value the firm differently. The attentive ones utilize information fully, while the inattentive ones only process the information in the summary earnings number, and cannot distinguish the differences between its components.

Lemma 1. *At $t = 2$, the market price of the stock is*

$$p = wE_j^i(\theta) + (1 - w)E_j^a(\theta) - \xi s$$

where $\xi = \frac{\tau}{\frac{\kappa}{Var^i_j(\theta)} + \frac{1-\kappa}{Var^a_j(\theta)}}$ *and* $w = \frac{\kappa}{Var^i_j(\theta)} / (\frac{\kappa}{Var^i_j(\theta)} + \frac{1-\kappa}{Var^a_j(\theta)})$.

Lemma 1 shows that the equilibrium stock price is a weighted average of the two investor groups' assessment of firm value, minus a discount. The weight, w, is positively related to the proportion of inattentive investors, κ, and negatively related to their residual uncertainty, $Var^i_j(\theta)$. Generally, the more uncertain a group is, the less aggressively they would trade, and thus the smaller their impact on the equilibrium stock price.

Proposition 1. *Suppose that* $\kappa > 0$. *The return response to the financial income component is higher under the regime that includes financial income than under the regime that excludes it.*

While conventional theory holds that rational investors would not be influenced by the inclusion of financial income as long as they are disclosed, inattentive investors do respond to it. Hence, inclusion of financial income would make stock prices more sensitive to changes in financial income.

Stock price discount increases with the risk aversion factor τ and also with both groups' residual uncertainty regarding firm value. This result is intuitive because more risk-averse investors should require a larger price discount for bearing more uncertainty.

Proposition 2. *Holding fixed the investment amount in financial assets, the expected price discount is as follows:*

$$\xi \bar{s} = \frac{\tau}{\frac{\kappa}{Var^i_j(\theta)} + \frac{1-\kappa}{Var^a_j(\theta)}} \bar{s}$$

All else equal, (1) the price discount increases with κ*, the proportion of inattentive investors. (2) The price discount is higher in the regime that includes financial income than in the regime that excludes it, if and only if*

$$\frac{v_1\rho_1}{v_1\rho_1 + v_2\rho_2} > \sqrt{\frac{v_1 + \sigma_1}{v_1 + \sigma_1 + v_2 + \sigma_2}}$$

A stock price discount arises because investors are risk-averse, and larger residual uncertainty leads to larger discounts. Compared to attentive investors who fully digest all information, inattentive investors would increase the price discount because they do not fully utilize information and have larger residual uncertainty. Thus the price discount is higher when the share of inattentive investors (κ) is higher.

The second part of the proposition holds fixed the amount of financial assets and the proportion of inattentive investors, and compares the price discounts under the two regimes ($\xi_{inclusive} - \xi_{exclusive}$). The inclusive regime's price discount is relatively larger if (1) σ_2 is larger and, (2) when $\frac{\rho_2}{\rho_1}$ is smaller. The intuition is as follows. When σ_2 is larger, financial income is measured with more noise. However, it only affects the summary net income number in the inclusive regime. Therefore, to inattentive investors, the inclusive regime provides a noisier summary measure, while the exclusive regime does not. When ρ_2 gets smaller, financial income becomes less persistent and more different from operating income. As a result, inattentive investors mixing up these two streams of incomes end up with a less informative measure for firms' overall value, and thus they would demand higher price discount.

While including financial income into the summary measure gives a more accurate depiction about changes in investors' wealth in that period, this new net income number is not necessarily more informative about firm value. For inattentive investors who cannot tell the income components apart, they end up with a less accurate understanding of the firm's overall value.

4.2.2 Manager's investment at $t = 1$.

The manager's problem is:

$$\max_{\mu_2} E(p|\mu_2) - \xi\bar{s}$$

Ex-ante, the expected firm value gets to $E(E_j(\theta)) = \rho_1\mu_1 + \rho_2\mu_2 - \xi\bar{s}$. The manager's first order condition for optimal investment level in μ_2 equalizes the marginal benefit and cost of investment in financial assets:

$$\rho_2 = \frac{\bar{s}}{\tau}\xi^2\left(\frac{\kappa}{(Var_j^i(\theta))^2}\frac{\partial(Var_j^i(\theta))}{\partial\mu_2}\right) + \frac{\bar{s}}{\tau}\xi^2\left(\frac{1-\kappa}{(Var_j^a(\theta))^2}\frac{\partial(Var_j^a(\theta))}{\partial\mu_2}\right)$$

Proposition 3. *Let v_2^{ex} be the variance in the value of financial assets under the exclusive regime. Assume κ is sufficiently large. Then a sufficient condition for the manager to hold less financial assets under the inclusive regime than under the exclusive regime is as follows:*

$$\frac{\rho_2}{\rho_1} < \frac{v_1}{2v_1 + v_2^{ex} + 2\sigma_1 + 2\sigma_2}$$

We make a simplifying assumption that κ is sufficiently large, which implies that market pricing is mostly determined by inattentive investors. The manager weighs the marginal benefit and cost of investment in financial assets to determine the optimal investment amount. Each unit of additional investment in the financial asset leads to an increase in firm value of ρ_2, and it also leads to a higher price discount by increasing the variance in total firm value ($\frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}\rho_2^2$). The impact on the price discount is mitigated by the informativeness of the summary measure about firm value. The two accounting regimes differ in how effectively the summary measure resolves uncertainty. Under the exclusive regime, inattentive investors never learn about financial income and its related uncertainty is never resolved; however, under the inclusive regime, inattentive investors learn about the sum of the two components, but at the expense of not being able to tell them apart. Thus if the inclusive regime leads to less (more) resolution of residual uncertainty, it would increase the cost of investing in financial assets and as a result, lead to higher (lower) marginal cost for investment. We can compare the two cases as follows. Under the exclusive regime:

$$\rho_2 = \frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}\rho_2^2$$

Under the inclusive regime:

$$\rho_2 = \frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}(\rho_2^2 - \frac{2\rho_2(v_1\rho_1 + v_2\rho_2)(v_1 + \sigma_1 + v_2 + \sigma_2) - (v_1\rho_1 + v_2\rho_2)^2)}{(v_1 + \sigma_1 + v_2 + \sigma_2)^2}$$

Comparing the two regimes, we can see that on the margin, the inclusive regime resolves less residual uncertainty if and only if $2(v_1 + \sigma_1 + \frac{1}{2}v_2^{ex} + \sigma_2)\rho_2 < v_1\rho_1$. This would leads to a lower equilibrium μ_2 under the inclusive regime. This is more likely to be the case if (1) financial income is less persistent (i.e., smaller ρ_2) and/or if (2) financial income is measured more accurately (i.e., lower σ_2). The first condition is quite intuitive, that less persistent financial income makes the inclusive net income number less homogeneous and less informative, prompting the manager to reduce investment in the financial asset. The second part seems counter-intuitive at first glance and needs some explanation. When financial income is much less important than operating income for firm value (i.e., $\rho_1 >> \rho_2$), then the more accurately it is measured, the more the variation in the summary measure comes from financial asset revaluation, and it can become *less* informative about overall firm value. We should emphasize that this would not be the case if investors can look at the components and evaluate them separately; in that case more accuracy for measuring each component is always better. However, since inattentive investors have limited attention and only look at the summary net income, increasing the accuracy of the less important component can make the summary measure less informative.

The above proposition identifies the conditions under which including financial income in net income can lead to less investment in the first place. Applying this to our setting, unrealized gains and losses on equity securities have low persistence relative to operating income, because the equity market is relatively efficient and equity UGL is mostly unpredictable. Also, the market value of equity securities can be measured with high reliability. Thus, the conditions identified in the above proposition are very likely met in our setting, and we predict that under the inclusive regime, public insurance firms will cut back on investment in equity securities.

4.3 Testable Hypotheses

While the model is presented in general terms, it applies well to our study of ASU 2016-01. We can think of insurance companies' net income as the sum of two streams: income from operations, and income from changes in equity UGL. The model gives us the following predictions.

Hypothesis 1. *Insurance companies' earnings become more volatile after the implementation of ASU 2016-01.*

Hypothesis 2. *Insurance companies' earnings become less persistent after the implementation of ASU 2016-01.*

Hypotheses 1 and 2 are mechanical results from the implementation of ASU 2016-01, which forces public companies to incorporate changes in unrealized gains and losses from equity securities investments into net income. Since financial income (i.e., changes in UGL) from the equity portfolio is more volatile and less persistent than operating income, it follows that insurance companies' earnings in the post-ASU 2016-01 era should be more volatile and less persistent. The last two hypotheses follow directly from Propositions 1 and 3, respectively.

Hypothesis 3. *Return responses to unrealized gains and losses on equity securities are higher after the implementation of ASU 2016-01.*

Hypothesis 4. *After the implementation of ASU 2016-01, public insurance companies reduce their holdings of equity securities, relative to private insurance companies.*

Hypothesis 4 follows from the reasoning that publicly traded insurance companies are subject to the FASB's rule change and respond to changes in these rules accordingly. On the other hand, privately-held insurance companies are unaffected by ASU 2016-01.

5 Empirical Strategy

This section describes the empirical strategies that we use to test hypotheses 3 and 4. We postpone the discussion on the empirical tests for hypotheses 1 and 2 to the results section because we use simple descriptive statistics and t-tests to evaluate them.

5.1 Return Response Test

Hypothesis 3 states that return responses to changes in unrealized gains and losses on equity securities are larger after the implementation of ASU 2016-01. We use fixed effects panel regressions to test this hypothesis. Specifically, we run variants of the following regression.

$$\begin{aligned} CAR_{it} = \alpha &+ \beta_1 Equity\,UGL_{it} \\ &+ \beta_2 Equity\,UGL_{it} \times Post_t \\ &+ \beta_3 EPS\,Surprise_{it} \\ &+ \beta_4 EPS\,Surprise_{it} \times Post_t \\ &+ \gamma' \mathbf{x_{it}} + Firm\,FE + YearQuarter\,FE + \epsilon_{it} \end{aligned} \tag{1}$$

i indexes firms and t indexes year-quarters. The dependent variable is firm i's cumulative abnormal return (CAR), with respect to the CAPM or the Carhart four-factor model (Carhart, 1997), calculated over various time frames around the firm's earnings announcement date. $Equity\,UGL_{it}$ is firm i's, per share, inter-quarter change in unrealized gains or losses on its equity investments, adjusted for insurers' trading activities and other than temporary impairments, and scaled by firm i's share price observed at the end of the most recent quarter t.[13] $Post_t$ is an indicator variable, which equals 1 for the time period after ASU 2016-01 was implemented, 2018Q1 onward, and zero otherwise. $EPS\,Surprise_{it}$ is defined as the difference between the actual reported core EPS and analysts' consensus, scaled by firm i's share price observed at the end of the most recent quarter. $\mathbf{x_{it}}$ is a vector of firm-quarter control variables.

In this regression specification, β_1 is the return reaction to changes in equity UGL in the pre ASU 2016-01 period. $\beta_1 + \beta_2$ is the return reaction to changes equity UGL in the post period. β_3 is the return reaction to core EPS surprise in the pre ASU 2016-01 period. $\beta_3 + \beta_4$ is the return reaction to core EPS surprise in the post period. With the identifying assumption that this rule change shock is orthogonal to other shocks that may have impacted both CAR and equity UGL in the same time period, the effect that ASU 2016-01 has on abnormal stock returns is identified by the interaction term $Equity\,UGL_{it} \times Post_t$. Hypothesis 3 predicts that β_2 should be positive and statistically different from zero.

Our model proposes that the return reaction to equity UGL should increase in the post period because of inattentive investors' overreaction to changes in net income that stem from changes in equity UGL. We can provide empirical evidence for this mechanism by examining the differential effects that ASU 2016-01 has on companies with many equity analysts covering them versus those that have few. Since equity analysts help investors process information (Balakrishnan, Billings, Kelly, and Ljungqvist, 2014), the inattention problem should be attenuated when companies have more analysts covering them. Specifically, the change in post period return reaction should be relatively muted for this group of companies. We run variants of the following panel regression to test this conjecture.

[13] The data and sample section describes the calculation in more detail.

$$
\begin{aligned}
CAR_{it} = \alpha &+ \beta_1 Equity\,UGL_{it} \\
&+ \beta_2 Equity\,UGL_{it} \times Post_t \\
&+ \beta_3 High\,Cov_{it} \times Post_t \\
&+ \beta_4 Equity\,UGL_{it} \times High\,Cov_{it} \\
&+ \beta_5 Equity\,UGL_{it} \times High\,Cov_{it} \times Post_t \\
&+ \gamma' \mathbf{x_{it}} + Firm\,FE + YearQuarter\,FE + \epsilon_{it}
\end{aligned} \tag{2}
$$

$High\,Cov_{it}$ is a firm-level indicator variable, which equals 1 if the firm has higher-than-median average number of analysts covering it, where average number of analysts is calculated for each company, using data from 2015 to 2020. The model predicts that β_5 should be negative and statistically different from zero.

5.2 Equity Investment Allocation Test

Hypothesis 4 states that, in response to ASU 2016-01, public insurance companies should reduce their equity investment allocations. We use a difference-in-differences approach to evaluate this hypothesis. The unit of analysis in this section is an insurance subsidiary. We consider insurance subsidiaries owned by publicly traded parent companies as the treatment group because their publicly traded parents are subjected to GAAP accounting standards. We use insurance subsidiaries owned by privately-held parent companies as the control group because they are not subject to ASU 2016-01.

An important assumption in the difference-in-differences framework is that subjects cannot change their treatment status. In other words, members of the treatment group cannot switch to the control group and vice versa. To ensure that this assumption plausibly holds in our analysis, we only include subsidiaries whose parents never change their public/private status during the sample period. Although the decision to go public or be taken private is endogenous, we are making the implicit assumption that these companies did not change their public/private status during our sample period because of some exogenous frictions that are unrelated to our study.

Another important assumption in the difference-in-differences framework is the parallel trend assumption. In this context, the parallel trend assumption is that changes in equity investment allocation across subsidiaries in the treatment and control groups would be the same, in the absence of ASU 2016-01. We provide visual support for this assumption in Figure 2, which plots each group's average percentage of total investment dollars allocated to public stocks. Each line is scaled by its 2017 value. It is clear from the picture that the changes in equity allocation among the treated and control group firms are very similar in the pre ASU 2016-01 period and only begin to diverge in the post period.

Using the difference-in-differences setup, we test hypothesis 4 by running variants of the following regression.

$$EQA_{it} = \alpha + \beta_1 \times US\,Public_i \times Post_t + \gamma' \mathbf{x_{it}} + Sub\,FE + Year\,FE + \epsilon_{it} \tag{3}$$

i indexes subsidiaries and t indexes years. EQA is the subsidiary's equity investment allocation, which is calculated as the total amount of capital invested in publicly traded stocks divided by the total amount of capital in the subsidiary's investment portfolio. $US\,Public_i$ equals 1 for subsidiaries that belong to a US-based insurance parent company that is publicly traded on a US stock market exchange and zero for subsidiaries owned by private companies. $\mathbf{x_{it}}$ is a vector of subsidiary-year control variables, which include log of total assets, ROE, leverage, and RBC ratio. Hypothesis 4 predicts that β_1 should be negative and statistically different from zero.

6 Results

6.1 Earnings Volatility

This subsection provides empirical support for Hypotheses 1. We begin by examining how GAAP EPS and GAAP EPS excluding changes in equity UGL behave before and after ASU 2016-01 was implemented. Figure 3 plots mean GAAP EPS and mean GAAP EPS excluding equity UGL across all public insurers for each quarter between 2011 and 2020. The sample includes all company-quarters with available stock price and total assets data, except for Berkshire Hathaway.[14] The red line plots mean GAAP EPS excluding equity UGL and the blue line plots mean GAAP EPS. These two lines are identical in the pre ASU 2016-01 period. After ASU 2016-01 was implemented,

[14] We also apply similar filters mentioned earlier, such as including only firms with AFS equity securities comprising at least 50% of equity securities before the rule change

mean GAAP EPS became much more volatile because it includes changes in unrealized gains and losses on equity investments.

Next we compare the average standard deviation of quarterly GAAP EPS across the pre and post periods. In the pre period (2015 to 2017), for each insurer, we calculate the standard deviation of its quarterly GAAP EPS and take the average. We repeat the procedure for the post period and for GAAP EPS excluding equity UGL. Figure 4 plots the three averages, along with their 95% confidence intervals. The first dot plots average volatility of GAAP EPS in the pre period, which exclude changes in equity UGL. The second dot plots average volatility of GAAP EPS excluding changes in equity UGL in the post period. The last dot plots average volatility of GAAP EPS including changes in equity UGL in the post period. Qualitatively consistent with what we find in Figure 3, the volatility of GAAP EPS excluding changes in equity UGL is essentially identical across the two time periods, while average GAAP EPS volatility increased markedly after ASU 2016-01 was implemented. A one-tailed t-test shows that the difference between the first and second dots is statistically significant at the 10% level.

6.2 Earnings Persistence

Hypothesis 2 states that earnings persistence should decrease after the implementation of ASU 2016-01. Using the sample of public insurance companies from Figure 4, we test for changes in earnings persistence. We measure each public insurer's earnings persistence by running the following regression.

$$EPS_{q+1} = \alpha + \beta \times EPS_q + \epsilon \tag{4}$$

Next quarter's GAAP EPS is regressed onto current quarter's GAAP EPS and β captures the degree of auto-correlation between the two. We estimate coefficient β for each insurer's GAAP EPS excluding equity UGL and GAAP EPS. We perform this procedure for both the pre and post periods. Then, we calculate mean persistence as the average of these regression coefficients for GAAP EPS in the pre period, GAAP EPS in the post period, and GAAP EPS excluding changes in equity UGL in the post period.

Figure 5 plots the three resulting mean persistence values. The first dot plots mean persistence of GAAP EPS excluding equity UGL in the pre period. The second dot plots mean persistence of GAAP EPS excluding equity UGL in the post period. The last dot plots mean persistence of GAAP EPS including equity UGL in the post period. There are two takeaways. First, persistence in GAAP EPS excluding equity UGL is slightly lower in the post period. Second, persistence in GAAP EPS including equity UGL is significantly lower than both GAAP EPS in the pre period and GAAP EPS excluding equity UGL in the post period. A one-tailed t-test shows that the difference between the first and third dots is statistically significant at the 5% level. These results show that average GAAP EPS persistence decreased substantially after ASU 2016-01 was implemented. The results presented in this section confirm our model's assumption that the summary earnings measure became more volatile and less persistent under the inclusive regime, i.e., post ASU 2016-01, which increased the perceived residual uncertainty for inattentive investors.

6.3 Return Reaction Results

Hypothesis 3 states that return responses to changes in equity UGL should be larger in the post ASU 2016-01 period. To test this hypothesis, we estimate variants of regression Equation 1. Table 2 presents OLS regression results where CAPM cumulative abnormal returns (CAR) over various horizons are regressed onto the interaction term between Equity UGL and a post ASU 2016-01 indicator variable. The first column of Table 2 presents results for short-term ($t-1$ to $t+1$) CAPM CAR around each company's earnings announcement date t. The coefficient on the interaction term is positive and statistically different from zero, which is consistent with Hypothesis 3. The interpretation is that, in the post ASU 2016-01 period, a one percentage point increase in scaled equity UGL increases short-term CAPM CAR by 87 ($1.49 - 0.62$) bps.

Column 2 presents regression results where we add common control variables such as core EPS surprise, log market capitalization, leverage ratio, market to book ratio, and beta. The Equity UGL coefficient is statistically insignificant, while the coefficient on Equity UGL $\times$ Post is statistically significant and quantitatively similar to that in Column 1. This specification suggests that, in the pre period, investors do not react to changes in equity UGL, but they do so in the post period. A one percentage increase in scaled equity UGL per share increases short-term CAPM cumulative abnormal returns by 73 bps. It is worth noting that the economic magnitude of the summed coefficient is large when compared to the coefficient on core EPS surprise, which means that, in the post period, returns react to both components of EPS in the same order of magnitude.

As a placebo test, we include changes in unrealized fixed income gains and losses and this variable's interaction with Post. ASU 2016-01 does not change the way unrealized gains and losses from fixed income investments are presented to investors and so we do not expect investors to react more to changes in these unrealized gains and losses in the post period. In line with this reasoning, the coefficients on both the stand-alone and interaction terms are essentially equal to zero.

Columns 3 to 6 presents results for longer horizons of CAPM CAR. Medium term CAPM CAR is calculated from $t-1$ to $t+10$. Long term CAPM CAR is calculated from $t-1$ to $t+20$. The results are quantitatively and qualitatively similar across all columns, which suggests that return reactions associated with changes in equity UGL, in general, do not correct themselves over longer time horizons. Table 3 presents OLS regression results where we repeat the previous exercise using the Carhart four-factor CAR. We find very similar results, which shows that this empirical pattern is robust to the benchmark model for abnormal returns.

To further study return dynamics around earnings announcement dates, Figures 6 and 7 plot high, medium, and low Equity UGL portfolios' CAPM cumulative average abnormal returns (CAAR) dynamics around earnings announcement dates in the pre and post periods, respectively. To construct the pre period plot, we begin by sorting all company-quarters by their scaled change in equity UGL per share values. Company-quarters in the top tercile of the distribution are allocated to the high change in equity UGL portfolio, the middle tercile company-quarters are allocated to the medium portfolio, and the bottom tercile to the low portfolio. In the last step, we plot each portfolio's CAPM CAAR from $t-30$ to $t+60$. We repeat this procedure to construct the post period plot. Note that these are not plots of CAPM CAAR from a trading strategy. Instead, these are plots of returns dynamics during quarters when the broader stock market returns are positive versus when they are negative.

Figure 6 shows that, in the pre period, there is little visible difference between the high portfolio's CAPM CAAR and the low portfolio's CAPM CAAR, both before and after the earnings announcement date. Using t-tests to evaluate differences in means, we find that the average high minus low CAPM CAAR is never statistically different from zero. This result suggests that there is no difference in returns across equity UGL portfolios in the pre period.

Figure 7 presents CAPM CAAR dynamics around earnings announcement dates in the post period. Similarly to the pre period, graphically, there is little difference in CAPM CAARS between the high and low equity UGL portfolios prior to earnings announcements. However, the average post-earnings announcement difference in CAPM CAAR is large. High change in equity UGL portfolio's CAPM CAAR jumps up at $t = 0$, while low change in equity UGL portfolio's CAPM CAAR falls, suggesting that investors react to the information contained in changes in UGL. From $t-1$ to $t+10$, the difference in CAPM CAAR is 4.55% and is statistically different from zero at the 1% level. As time passes, the gap widens. The difference in CAPM CAAR from $t-1$ to $t+40$ is close to 7%. Note that the upward jump in CAPM abnormal returns for the high change in equity UGL portfolio dissipates at around day $t+40$, but the drop in CAPM abnormal returns associated with the low change in equity UGL portfolio continues to drop until day $t+40$, which sustains the gap between the two return series.[15]

6.4 Analyst Coverage and Return Reaction Results

Our model argues that the return reaction results stem from inattentive investors paying attention to changes in UGL in the post-ASU 2016-01 period. To provide support for this mechanism, we estimate variants of Equation 2. This regression tests for differences in post period return reactions with respect to changes in equity UGL between companies with high and low analyst coverage levels. As discussed earlier, analysts synthesize information for the investment community by reporting each company's core performance and its future prospects. Suppose that it is costly for investors to study financial statements, then analysts lower this cost by presenting only the most essential information to investors. Anecdotally, equity analysts that cover insurance companies often provide estimates of core EPS that exclude changes in unrealized gains and losses from equity securities because they believe that such changes are transitory.[16] Through the lens of our model, we can think of sell-side analysts as a vehicle that helps unpack the summary earnings measure for inattentive investors. This service ultimately helps inattentive investors price the firm's stock correctly, i.e., as if they were attentive. With this line of reasoning, it follows that post period return reactions associated with changes in equity UGL should be smaller for companies with high

[15] The results are similar if we, instead, sort stocks every quarter. See the appendix for charts.

[16] We spoke with several analysts who cover the insurance industry. Core EPS excludes items that analysts deem to be one-time in nature such as investment gains and losses, both realized and unrealized. Furthermore, analysts generally use core EPS when projecting earnings and estimating target prices.

analyst coverage.

Table 4 presents OLS regression results from estimating variants of Equation 2. Columns 1 to 3 present results for short-term, medium-term, and long-term CAPM CARs. Columns 3 to 6 present results for the Carhart four-factor CARs. The coefficient of interest is the one on the triple interaction term between Equity UGL, Post, and High Cov. Our model predicts that this coefficient should be negative and this is the case across all six specifications. Note that for both the CAPM and Carhart four-factor CARs, the coefficient of interest grows more negative at longer time horizons, which suggests that return reactions associated with equity UGL correct themselves more quickly at companies with higher levels of analyst coverage. These results are consistent with the conjecture that investor inattention causes larger return reactions in the post period.

6.5 Trading Strategy Results

The previous sections show that inattentive investors overreact to changes in equity UGL in a systematic way, which means that we can construct a trading strategy that exploits this irrational behavior. This exercise serves to provide additional evidence that return reactions documented in the previous sections are indeed driven by changes in equity UGL. The following trading strategy only involves stocks of insurance companies that have positive equity investment allocations. For a given quarter, if the CRSP value-weighted index return is positive, then, during the following quarter, we buy each insurance company's stock one day before its earnings announcement date and hold the stock for 10 trading days after earnings announcement. If the CRSP value-weighted index return is negative, then, during the following quarter, we sell short each insurance company's stock one day before each company's earnings announcement date and unwind the position 10 trading days after the earnings announcement date.

Figure 8 plots the weighted average quarterly returns of this trading strategy in the pre and post periods. Stocks are weighted according to the companies' equity allocation percentage such that the weights add up to one in each quarter. The bars plot returns collected from the following quarter. For example, the 2018Q1 bar plots the return from trading activity that occurs during 2018Q2, based on earnings announcements related to 2018Q1. Visually, returns in the pre period are inconsistent, while returns in the post period are mostly positive. The average 12-day return, across all company-quarters, is 0.95% in the pre-period. This number is not statistically different from zero. On the other hand, the average 12-day return in the post period is 2.5% and statistically different from zero at the 5% level. The average equal-weighted 12-day return in the post period is 1.41%, which suggests that the returns from this trading strategy are driven by insurance companies that hold relatively large amounts of equity securities.

Since we do not have a sufficiently long time series of the strategy's returns data, we cannot implement the standard asset pricing test for risk-adjusted returns (Fama and French, 1993). In light of this limitation, we calculate the trading strategy's risk-adjusted returns as the weighted average of the 12-day abnormal returns across all stocks that we trade. Using this methodology, we find that the post period average Carhart four-factor abnormal return for this strategy is 2.4% and is statistically different from zero at the 1% level. We do not interpret these results as evidence for a profitable risk-adjusted trading strategy, but, instead, as suggestive evidence that ASU 2016-01 may have caused the market for insurance companies' stocks to become less efficient.

6.6 Equity Investment Allocation Results

This subsection presents and discusses the difference-in-differences equity investment allocation regression results that support Hypotheses 4. Table 6 presents regression results for variants of Equation 3. Column 1 shows estimates of the difference-in-differences regression without control variables and find that, after ASU 2016-01 was implemented, the average insurance subsidiary of publicly traded companies decreased its investment in publicly traded securities by 0.47 percentage points. Given that the average insurance subsidiary allocates 8% of its investment portfolio to public stocks, this effect is approximately equivalent to a 5% reduction in total public stock investment.

Column 2 presents regression results where we include additional control variables. The coefficient on the interaction term is similar to the one shown in Column 1, which suggests that the impact that ASU 2016-01 has on public insurers' investment in equity securities is orthogonal to these firm characteristics. Columns 3 and 4 present regression results by insurer type. Column 3 shows the estimation results for property and casualty insurers and finds that the effect documented in column 2 is concentrated among this type of insurers. This result makes sense because the average P&C insurer allocates more investment capital towards public equities than others. In column 4, the coefficient on US Public $\times$ Post is negative and sizeable, but not statistically different from zero. The result suggests that ASU 2016-01 may have also impacted life and health insurers' investment portfolios, but we lack the statistical power to detect it.

To show that the results above admit a causal interpretation, we run the following regression to check that the relative drop in equity allocation among treated insurance subsidiaries only occurred *after* the implementation of ASU 2016-01.

$$
\begin{aligned}
EQA_{it} = \alpha &+ \beta_1 \times US\,Public_i \times \mathbb{1}(2016)_t \\
&+ \beta_2 \times US\,Public_i \times \mathbb{1}(2017)_t \\
&+ \beta_3 \times US\,Public_i \times \mathbb{1}(2018)_t \\
&+ \beta_4 \times US\,Public_i \times \mathbb{1}(2019)_t \\
&+ \beta_5 \times US\,Public_i \times \mathbb{1}(2020)_t \\
&+ \gamma' \mathbf{x_{it}} + Sub\,FE + Year\,FE + \epsilon_{it}
\end{aligned} \tag{5}
$$

In this specification, US Public is interacted with year indicator variables, using 2015 as the reference year. If the treatment effect occurred *after* the implementation of ASU 2016-01, then β_1 and β_2 should not be statistically different from zero. Figure 9 plots the coefficients on the interaction terms and their respective 95% confidence intervals. It is clear from the plot that the treatment effect was realized in 2019 and 2020.[17] Furthermore, this pattern suggests that the new accounting rule may have had more bite during episodes of high stock market volatility such as the COVID-19 crisis that began in 2020.

A concern that a shrewd reader may have with the results presented in Table 6 is that the systematic differences between insurance subsidiaries owned by publicly traded companies and those owned by privately-held companies may bias the estimates. As a robustness check, we construct a propensity score matched sample where each treated subsidiary is matched with the most similar subsidiary from the control group that belongs to the same insurance sub-industry (e.g., property and casualty, life, or health). We match subsidiaries on the following 2015 characteristics: log assets, ROE, RBC ratio, and leverage.

Table 7 compares average 2015 characteristics between the treated subsidiaries and their control group matches. First, there is no statistical difference between these two groups with regards to the matched variables and investment portfolio size. The key differences arise in each group's

[17] Please refer to column 2 of Table A2 for the accompanying regression results.

investment portfolio allocation. However, the existence of these differences does not necessarily suggest that the difference-in-differences regression estimates from this sample of firms would be biased because these are level differences and not differences in changes. Table 8 presents regression results for variants of equation 3, using the propensity score-matched sample. The overall results are quantitatively and qualitatively similar to those presented in Table 6. One key difference is the coefficient on US Public × Post in column 4 suggests that ASU 2016-01 has no effect on life and health insurance companies' capital allocation decisions.

We interpret these results through the lens of our theoretical model. Managers of insurance companies wish to maximize stock prices. After ASU 2016-01 goes into effect, inattentive investors perceive net income to be more volatile and therefore assign a larger discount to insurance companies' stock prices. With the knowledge of how investors will react, managers choose to decrease investment in publicly traded stocks to lower their companies' earnings volatility.

The plot in Figure 9 shows that treated insurance subsidiaries gradually cut their allocation to publicly traded stocks in 2019 and 2020. In light of this pattern, we use the estimated coefficients from the plot to calculate the partial equilibrium effect that ASU 2016-01 has on publicly traded insurers' aggregate stock allocation.[18] For this calculation, we assume that the estimated effects are applicable to all insurance subsidiaries that are owned by publicly traded parent companies. Like before, we exclude Berkshire Hathaway from the analysis. We find that, relative to the control group, treated insurance subsidiaries cut their equity securities holdings by $23 billion in 2020, which is equivalent to approximately half of the group's total 2020 public stock investment.[19] This exercise suggests that ASU 2016-01 distorts insurers' portfolio allocation decisions and potentially decreased their long-run investment returns.

7 Conclusion

This paper shows that, through the interaction between stock prices and managers' incentives, inattentive investors' actions can distort companies' capital allocation decisions. Using the insur-

[18]Refer to column 2 of Table A2 in the appendix for the accompanying regression results.

[19]Company i's counterfactual equity allocation dollar amount in year t equals its observed equity allocation percentage plus the estimated coefficient for that year times the total dollar amount in its investment portfolio. Annual aggregate numbers are calculated as the sum of the differences between the counterfactual and observed equity allocation dollar amounts across all insurance subsidiaries owned by publicly traded parent companies.

ance industry as a laboratory, we show that inattentive investors' influence on stock prices induces managers to buy less publicly traded stocks, which may lower their companies' long-run investment returns. Lower returns, ultimately, impair insurance companies' ability to underwrite new policies, meet upcoming claims, and help individuals share risks. Since exchange-traded funds (ETFs) are generally classified as equity securities under US GAAP, the result also implies that ASU 2016-01 may have slowed the growth of the ETF industry.

More broadly, the results from this paper suggest that the actions of inattentive investors can have implications for the real economy. Darmouni and Mota (2020) show that publicly traded non-financial firms do invest in public stocks and, to the extent that managers use stock prices as signals about the value of their firms' growth opportunities, stock price distortions caused by inattentive investors can have important implications for firms' investment decisions and the economy's growth prospects (Foucault and Gehrig, 2008).

With respect to setting accounting standards, our paper helps inform the debate over the merits of ASU 2016-01. FASB implemented the rule change based on the belief that changes in unrealized gains and losses from equity securities investments reflect meaningful changes in the companies' underlying economic conditions because companies can realize these gains and losses immediately by liquidating their equity positions (Financial Accounting Standards Board, 2016). On the other hand, investors, such as Warren Buffett (Buffett, 2018), and sell-side analysts believe that this change would make net income numbers less informative. Our paper provides supporting evidence for the latter view by showing that investors overreact to changes in unrealized gains and losses, which implies that investors are potentially confused by the new net income numbers.

Figure 1. Examples of Income Statements After and Before ASU 2016-01

Panel A: Old Republic International Corporation 2018 Earnings Report Excerpt

FINANCIAL HIGHLIGHTS (a)

	Quarters Ended December 31,			Years Ended December 31,		
	2018	2017	Change	2018	2017	Change
SUMMARY INCOME STATEMENTS:						
Revenues:						
Net premiums and fees earned	$ 1,448.4	$ 1,442.4	0.4 %	$ 5,703.9	$ 5,539.7	3.0 %
Net investment income	110.3	103.7	6.3	431.8	409.4	5.5
Other income	30.4	25.9	17.2	121.6	102.2	18.9
Total operating revenues	1,589.1	1,572.1	1.1	6,257.4	6,051.5	3.4
Investment gains (losses):						
Realized from actual transactions	3.3	154.0		58.2	211.6	
Unrealized from changes in fair value of equity securities	(311.6)	—		(293.8)	—	
Total investment gains (losses)	(308.2)	154.0		(235.6)	211.6	
Total revenues	1,280.9	1,726.2		6,021.8	6,263.1	
Operating expenses:						
Claim costs	639.9	534.1	19.8	2,460.7	2,478.8	-0.7
Sales and general expenses	770.6	822.6	-6.3	3,080.6	2,995.7	2.8
Interest and other charges	7.8	14.7	-46.5	42.2	63.0	-33.0
Total operating expenses	1,418.0	1,371.5	3.4 %	5,583.7	5,537.7	0.8 %
Pretax income (loss)	(137.5)	354.7		438.1	725.4	
Income taxes (credits)	(31.0)	55.0		67.5	164.8	
Net income (loss)	$ (106.5)	$ 299.6		$ 370.5	$ 560.5	

Panel B: Old Republic International Corporation 2017 Earnings Report Excerpt

Financial Highlights (a)

	Quarters Ended December 31,			Years Ended December 31,		
	2017	2016	Change	2017	2016	Change
Operating revenues:						
General insurance	$ 904.0	$ 847.6	6.7 %	$ 3,531.6	$ 3,354.7	5.3 %
Title insurance	626.0	628.9	-0.5	2,325.0	2,244.1	3.6
Corporate and other	12.4	12.7	-1.9	50.1	35.4	41.3
Subtotal	1,542.6	1,489.3	3.6	5,906.8	5,634.3	4.8
RFIG run-off business	29.5	44.6	-34.0	144.6	193.2	-25.2
Total	$ 1,572.1	$ 1,533.9	2.5 %	$ 6,051.5	$ 5,827.6	3.8 %
Pretax operating income (loss):						
General insurance	$ 124.1	$ 76.8	61.5 %	$ 340.3	$ 319.9	6.4 %
Title insurance	64.2	85.6	-25.0	237.1	210.2	12.8
Corporate and other	(2.5)	4.1	-162.3	9.9	13.0	-24.1
Subtotal	185.8	166.7	11.5	587.3	543.3	8.1
RFIG run-off business	14.8	9.3	58.9	(73.5)	69.8	-205.4
Total	200.6	176.0	14.0	513.8	613.1	-16.2
Pretax realized investment gains (losses):						
From sales	154.0	14.7	N/M	211.6	77.8	172.0
From impairments	-	-	-	-	(4.9)	100.0
Realized investment gains (losses)	154.0	14.7	N/M	211.6	72.8	190.4
Consolidated pretax income (loss)	354.7	190.7	85.9	725.4	686.0	5.7
Income taxes (credits)	55.0	58.7	-6.3	164.8	219.0	-24.7
Net income (loss)	$ 299.6	$ 131.9	127.0 %	$ 560.5	$ 466.9	20.0 %

Figure 2. Average Equity Allocation Trend Before and After ASU 2016-01 This figure plots average equity allocation for insurance subsidiaries of public and private companies that operate in the US. Each group's average equity allocation level is scaled by its 2017 value. Equity allocation is the percentage of total invest-able assets devoted to equity securities. Insurance subsidiaries are considered to be public if their parent companies are listed on at least one US stock exchange. We exclude companies that are listed on a non-US stock exchange. We require that parent companies never change their public-private status during the sample period.

Figure 3. Mean Quarterly EPS Trend This figure plots US-based publicly traded insurers' mean quarterly EPS, including and excluding changes in unrealized gains and losses from equity investments from 2011 to 2020. The vertical line marks 2018Q1, which was the first quarter after ASU 2016-01 was implemented.

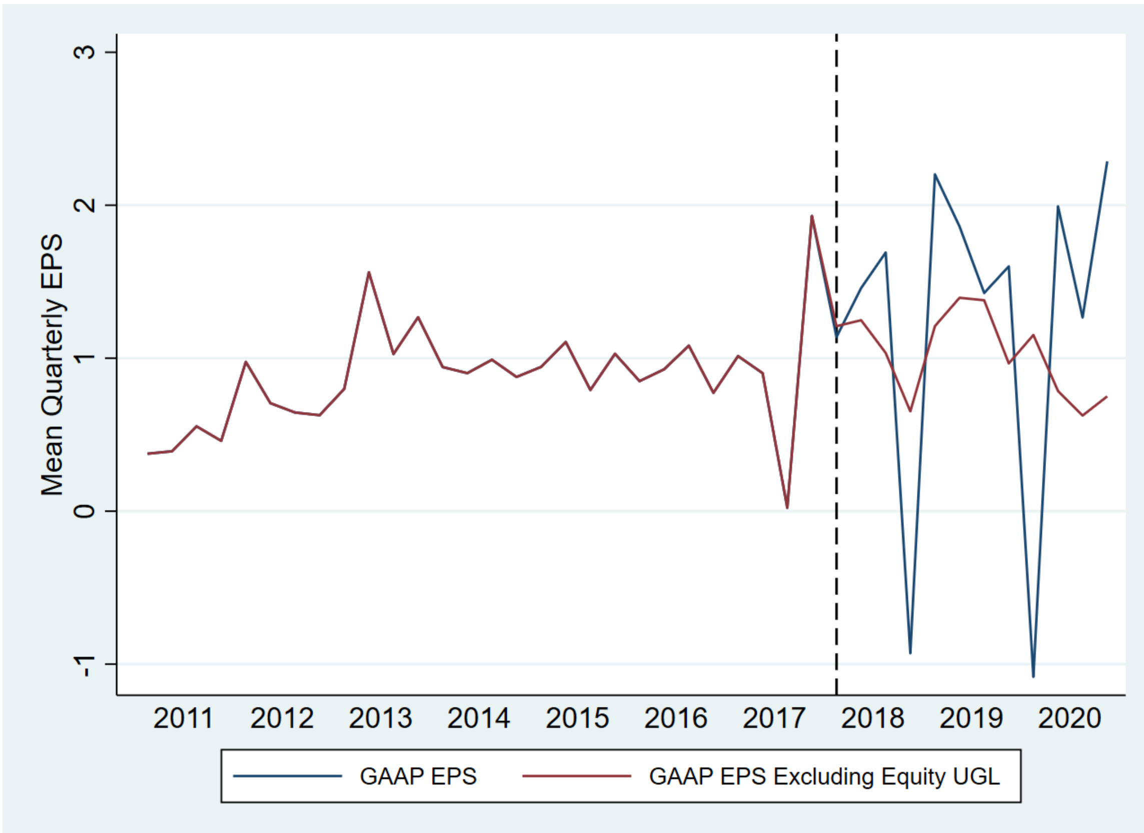


Figure 4. Average Quarterly EPS Volatility Before and After ASU 2016-01 This figure plots average quarterly GAAP earnings per share (EPS) volatility before and after the implementation of ASU 2016-01. Volatility is defined as the standard deviation of each company's quarterly EPS. The first dot plots average GAAP EPS volatility in the pre period, (2015 to 2017). The second dot plots average volatility for GAAP EPS excluding changes in equity UGL, in the post period (2018 to 2020). The third dot plots average volatility for GAAP EPS including changes in equity UGL, in the post period (2018 to 2020). EPS excluding changes in equity UGL is defined as GAAP EPS minus changes in unrealized gains and losses from equity investments. 95% confidence interval bands are shown in green.

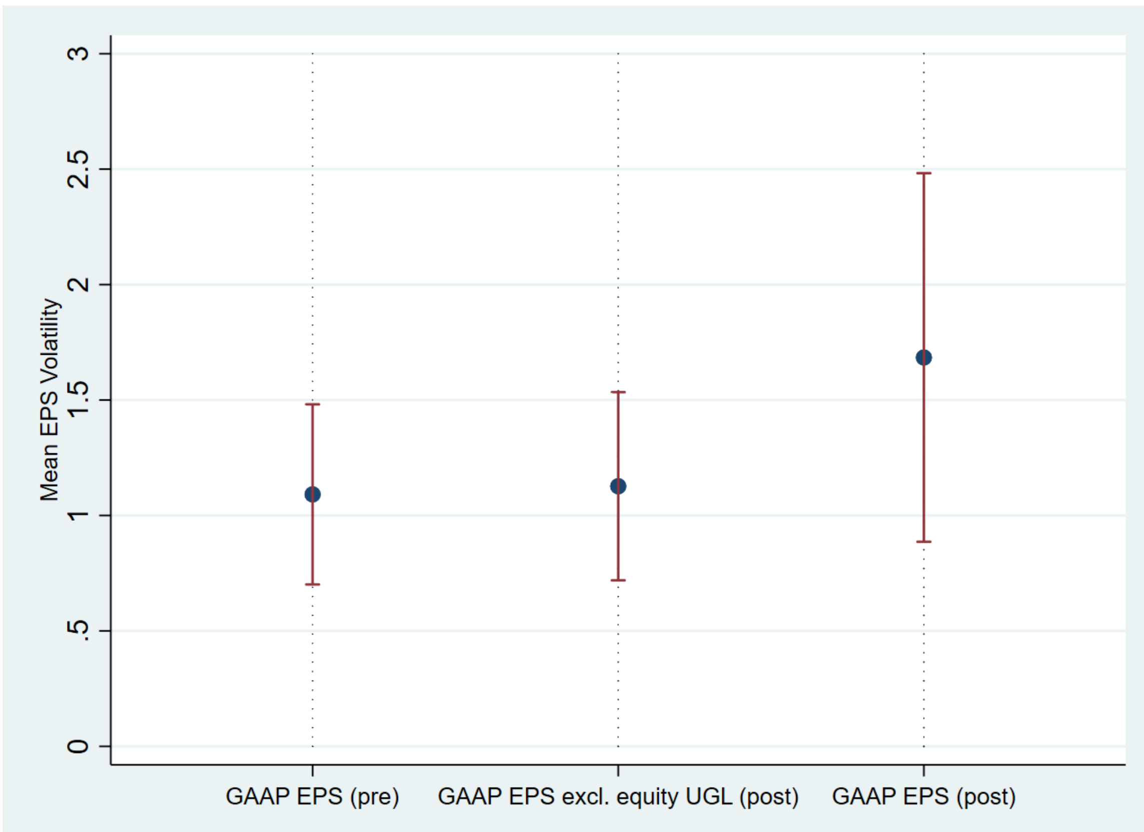


Figure 5. Average Quarterly EPS Persistence Before and After ASU 2016-01 This figure plots average quarterly GAAP earnings per share (EPS) persistence before and after the implementation of ASU 2016-01. Firm-level persistence is defined as the slope coefficient from an OLS regression where next quarter's EPS is regressed onto current quarter's EPS. To be included in the pre or post period sample, each company must have at least ten EPS observations in the sample period. The first dot plots average GAAP EPS persistence in the pre period, (2015 to 2017). The second dot plots average persistence for GAAP EPS excluding changes in equity UGL, in the post period (2018 to 2020). The third dot plots average persistence for GAAP EPS including changes in equity UGL, in the post period (2018 to 2020). EPS excluding changes in equity UGL is defined as GAAP EPS minus changes in unrealized gains and losses from equity investments. 95% confidence interval bands are shown in green.

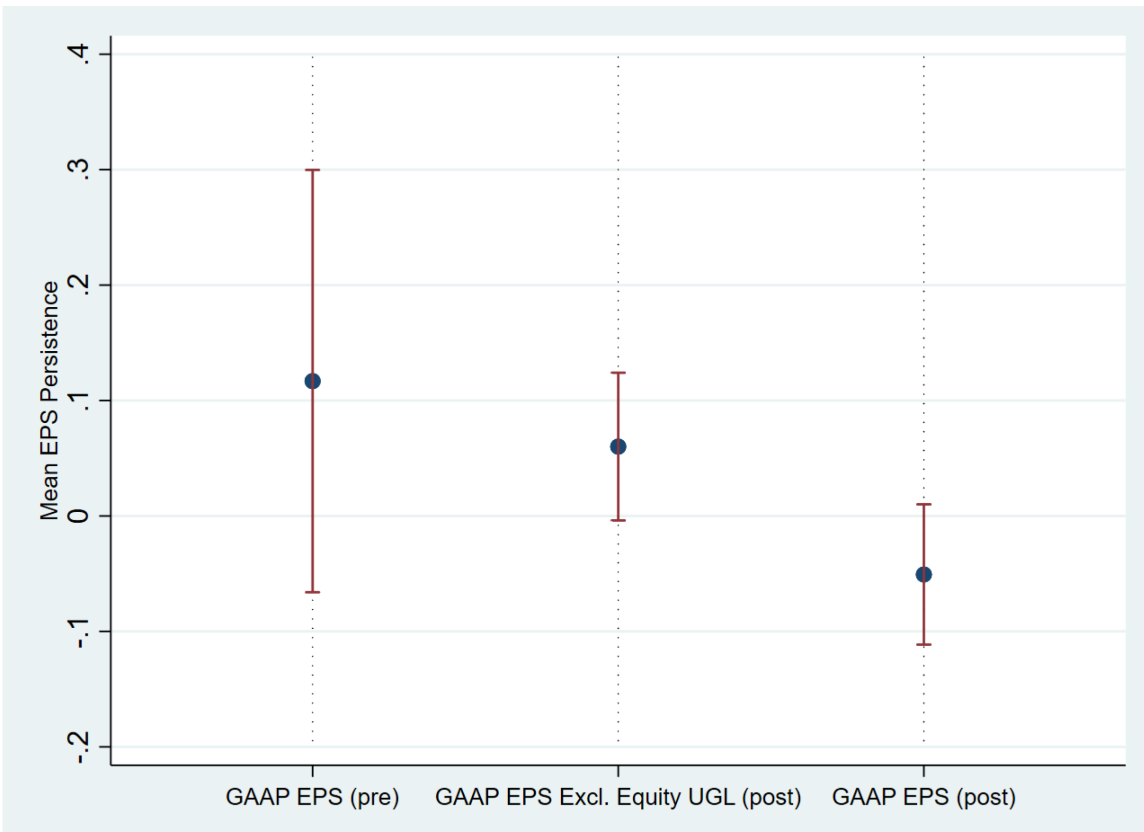


Figure 6. Pre Period High Minus Low Equity UGL Portfolios CAPM CAAR This figure plots the CAPM cumulative average abnormal return (CAAR) over an event window of $t-30$ to $t+60$, where $t=0$ is the earnings announcement date, of three portfolios that are formed based on equity UGL. This plot uses data from the pre period (2015 to 2017). To form portfolios, we begin by ranking equity UGL across all company-quarters. Equity UGL is calculated as the change in unrealized gains and losses from equity investments per share, scaled by share price from the most recent quarter-end. The top third of the sample forms the top tercile portfolio and so on. Each line plots its respective portfolio's CAPM CAAR from $t-30$ to the relative trading day marked on the x-axis.

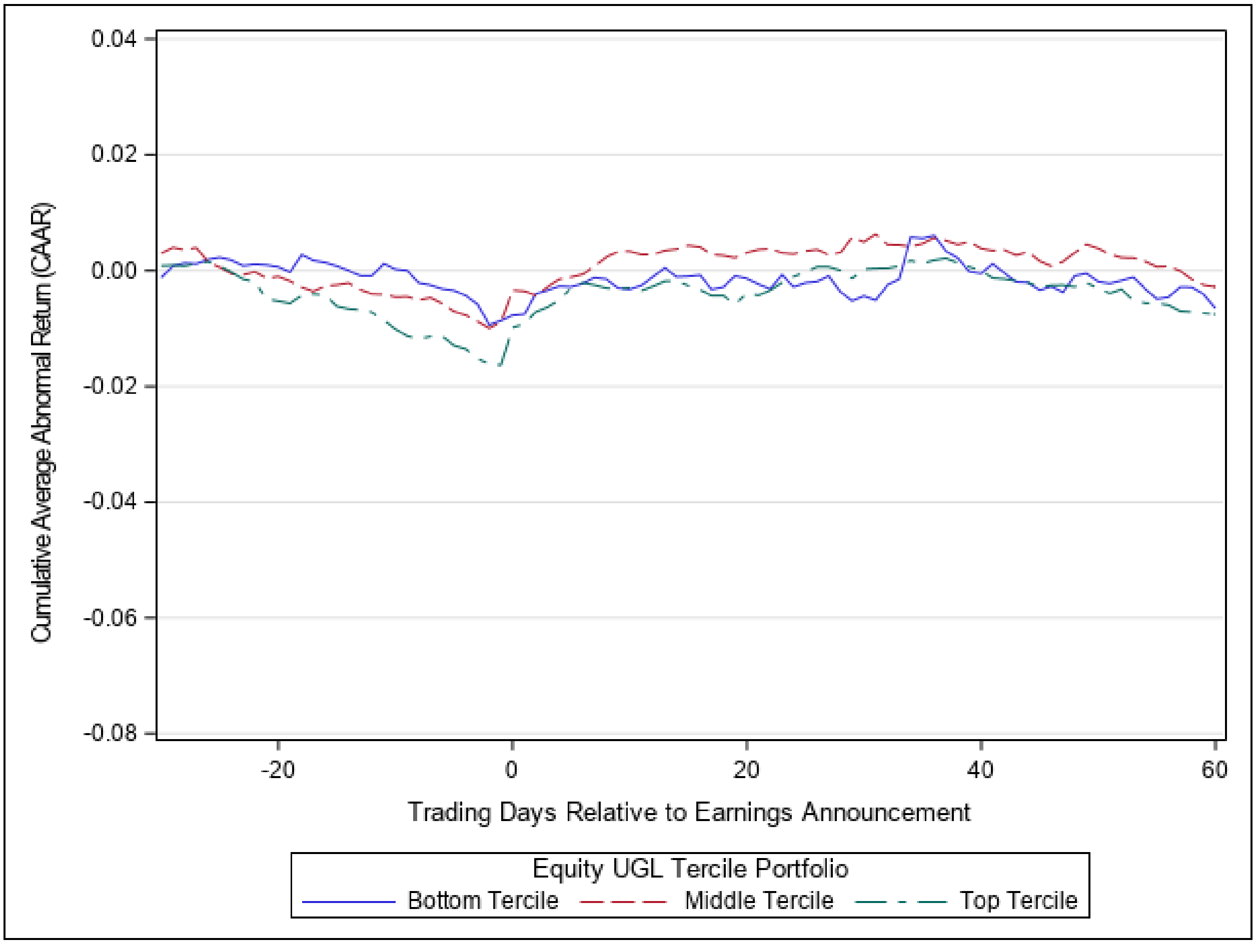


Figure 7. Post Period High Minus Low Equity UGL Portfolios CAPM CAAR This figure plots the CAPM cumulative average abnormal return (CAAR) over an event window of $t-30$ to $t+60$, where $t=0$ is the earnings announcement date, of three portfolios that are formed based on equity UGL. This plot uses data from the post period (2018 to 2020). To form portfolios, we begin by ranking equity UGL across all company-quarters. Equity UGL is calculated as the change in unrealized gains and losses from equity investments per share, scaled by share price from the most recent quarter-end. The top third of the sample forms the top tercile portfolio and so on. Each line plots its respective portfolio's CAPM CAAR from $t-30$ to the relative trading day marked on the x-axis.

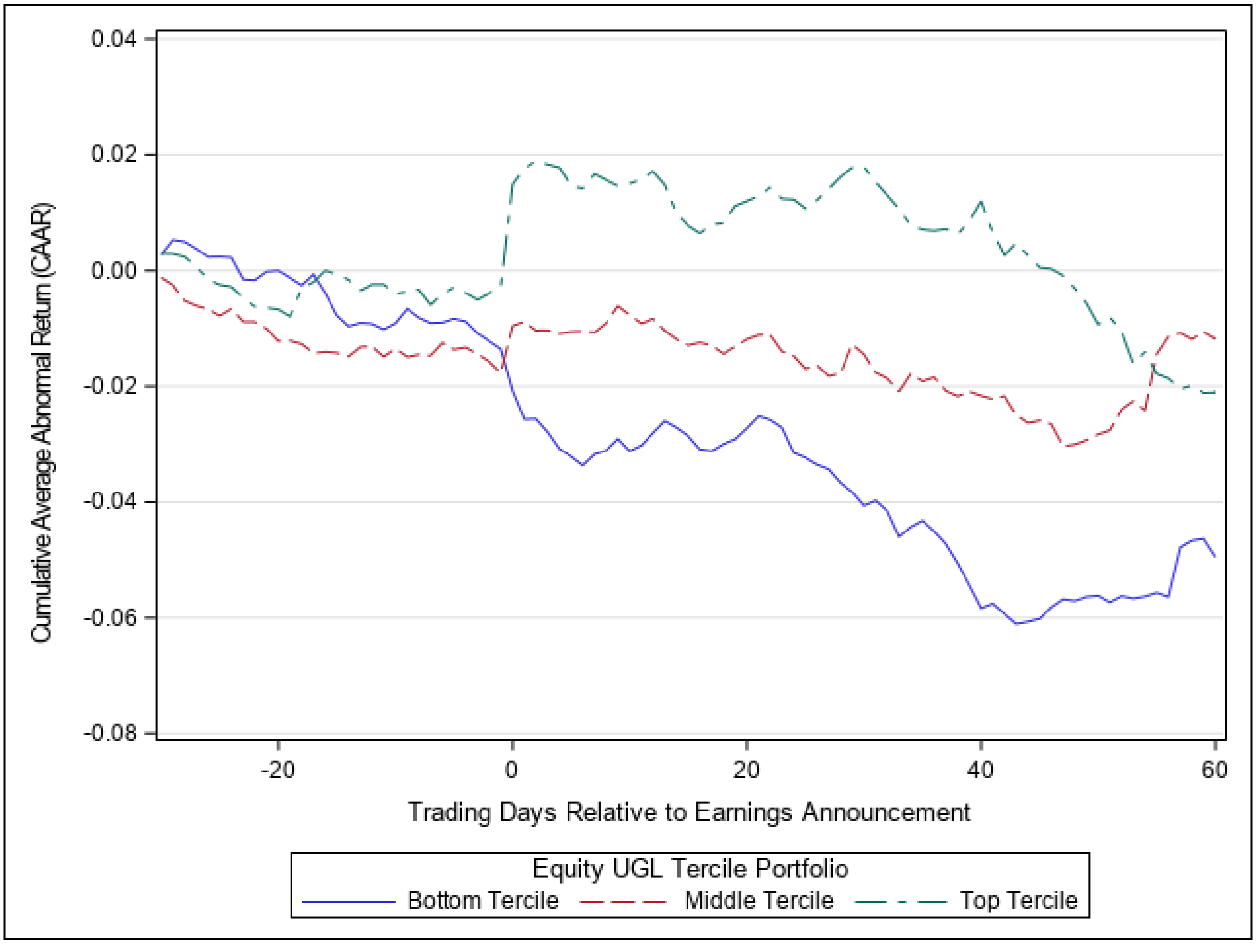


Figure 8. Quarterly Trading Strategy Returns This figure plots quarterly returns from a trading strategy that exploits information on unrealized gains and losses from equity investments. In a given quarter, the trading strategy only includes stocks of US-based public insurance companies with positive equity investments. Consider a certain calendar quarter q. If the CRSP value-weighted return for the quarter is positive, the strategy buys these insurance companies' stocks during the following quarter one day before each company's earnings announcement date and holds them until 10 trading days after the earnings announcement date. If the CRSP value-weighted return for the quarter is negative, the strategy sells short these insurance companies' stocks during the following quarter one day before each company's earnings announcement date and closes out the positions 10 trading days after the earnings announcement date. Stocks are weighted according to each insurance company's allocation to equity securities, which is the dollar amount invested in equities divided by total assets, as of the end of quarter $q-1$, such that the weights add up to one. Quarterly returns are calculated as the weighted-average return of these positions. The bars plot returns collected from the following quarter. For example, the 2018Q1 bar plots the returns from trading activity that occurs in 2018Q2.

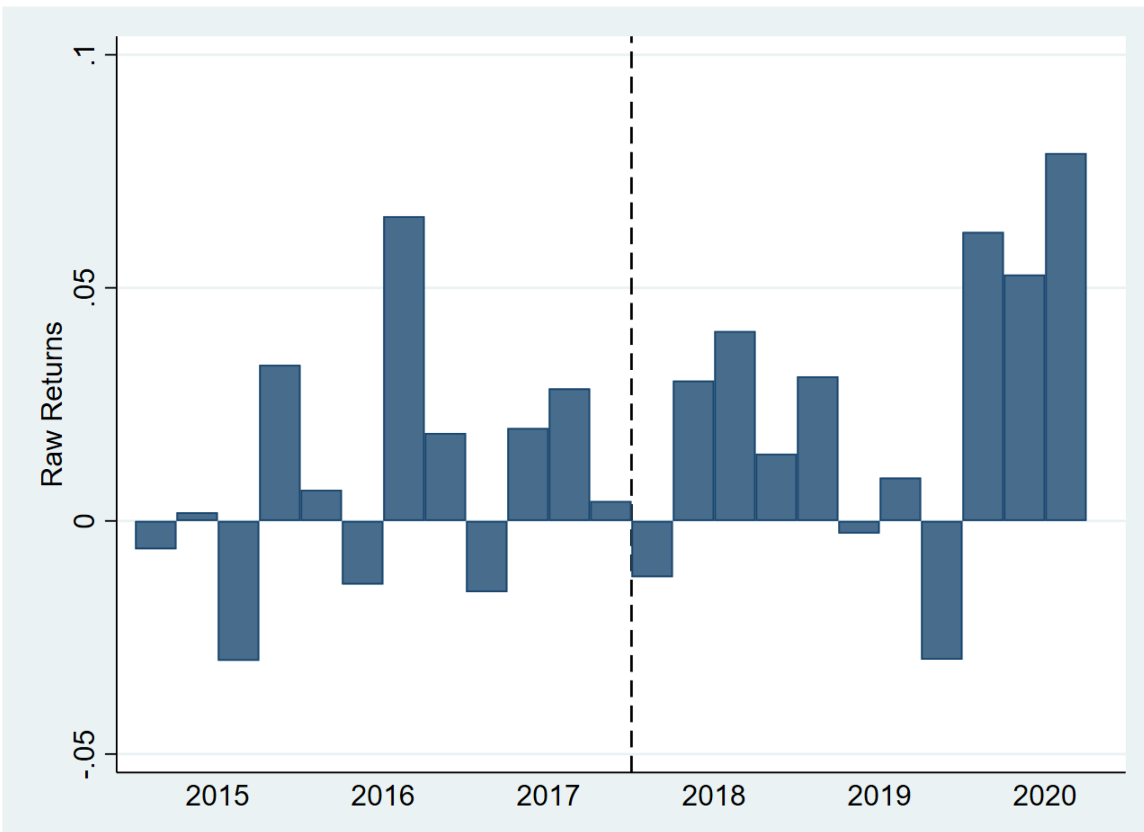


Figure 9. Estimated Impact of ASU 2016-01 on Equity Allocation Before and After 2017 This figure plots OLS regression coefficients from estimating equation 5. The dependent variable is equity investment allocation, which is the percentage of total invest-able assets devoted to equity securities. Using 2015 as the reference year, the line graph plots the coefficients on the interaction terms between US Public and year indicator variables, along with each coefficient's 95% confidence interval. US Public equals 1 for subsidiaries of companies that are trade on at least one US stock exchange. The sample is a balanced panel of insurance subsidiaries of US publicly traded companies and privately-held insurance subsidiaries. We require that parent companies never change their public-private status during the sample period. The accompanying regression table is presented in Table A2.

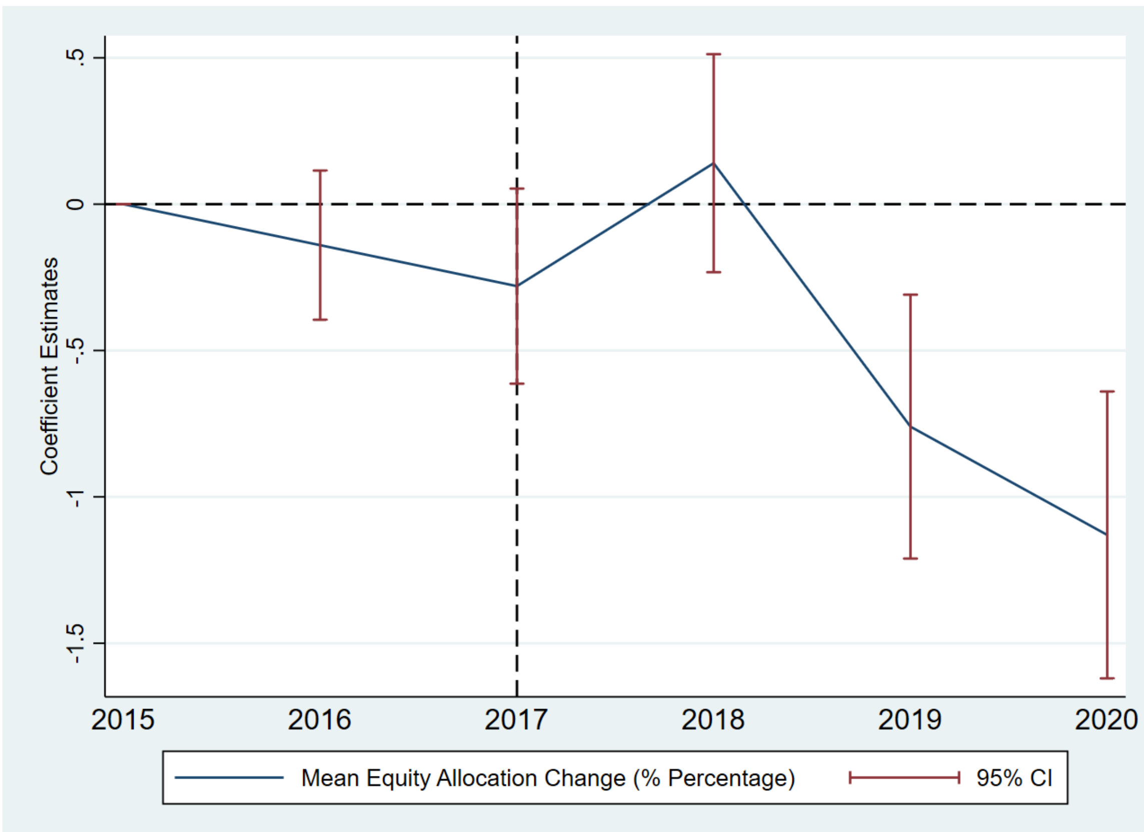


Table 1. Summary Statistics This table presents summary statistics of public insurance companies. Each observation is a company-quarter. UGL stands for unrealized gains and losses. USD values are not inflation-adjusted. Variable definitions are provided in the appendix.

Variable	N	Mean	S.D.	25th	50th	75th
Property and Casualty	1,512	0.52	0.50	0.00	1.00	1.00
Life and Health	1,512	0.27	0.44	0.00	0.00	1.00
Multi-line	1,512	0.22	0.41	0.00	0.00	0.00
Total Assets ($ millions)	1,512	50,429.95	126,747.61	2,010.78	8,796.26	31,511.65
Total Equity Investments ($ millions)	1,512	772.49	1,815.96	5.57	120.27	435.60
Equity Allocation	1,512	0.04	0.05	0.00	0.01	0.06
Leverage	1,512	0.46	1.07	0.16	0.28	0.41
Stock Price ($)	1,512	66.89	124.90	20.81	40.49	72.08
Beta	1,512	0.95	0.35	0.72	0.88	1.13
Market Capitalization ($ millions)	1,512	8,451.98	12,809.02	844.80	3,135.70	9,249.69
Market to Book	1,512	1.61	3.06	0.92	1.32	1.84
Number of Analysts	1,512	8.04	6.07	3.00	6.00	12.00
Core EPS ($)	1,512	0.83	3.01	0.30	0.69	1.21
Equity UGL per share ($)	1,512	0.09	3.71	0.00	0.00	0.07
Fixed Income UGL per share ($)	1,512	0.18	2.57	-0.19	0.01	0.37
Core EPS Surprise, Scaled (%)	1,512	-0.17	3.76	-0.16	0.07	0.31
Equity UGL per Share, Scaled (%)	1,512	0.03	1.33	0.00	0.00	0.19
Fixed Income UGL per Share, Scaled (%)	1,512	0.44	6.49	-0.55	0.02	0.93

Table 2. CAPM Abnormal Return Reaction This table presents company-quarter panel OLS regression results where CAPM cumulative abnormal return (CAR) at different time horizons are regressed onto changes in unrealized gains and losses (UGL) from equity investments in the pre and post periods. ST CAPM CAR is the cumulative CAPM abnormal return on stock i between $t-1$ and $t+1$ with $t=0$ being the earnings announcement date and t is counted using trading days. The time window for MT CAPM CAR is $t-1$ to $t+10$. The time window for LT CAPM CAR is $t-1$ to $t+20$. All the independent variables are measured as of the end of that fiscal quarter. Equity UGL is defined as the per share nominal dollar amount of unrealized gains or losses from equity investments recognized during a quarter, scaled by the company's stock price at the end of that quarter. Post equals 1 for observations from 2018Q1 to 2020Q3. All other variables are defined in the appendix. All regressions include company and year-quarter fixed effects. Standard errors are clustered at the company-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level.

	ST CAPM CAR		MT CAPM CAR		LT CAPM CAR	
	(1)	(2)	(3)	(4)	(5)	(6)
Equity UGL	-0.62*	-0.51	-0.99	-0.80	-1.52	-1.32
	[0.35]	[0.37]	[0.79]	[0.82]	[0.97]	[0.96]
Equity UGL × Post	1.49***	1.24***	2.61***	2.26***	3.02***	2.60**
	[0.35]	[0.37]	[0.83]	[0.84]	[1.04]	[0.99]
EPS Surprise		1.01***		1.03***		0.96**
		[0.37]		[0.39]		[0.39]
EPS Surprise × Post		-0.38		-0.30		-0.34
		[0.37]		[0.36]		[0.34]
Fixed Income UGL		-0.09		-0.03		0.05
		[0.10]		[0.10]		[0.13]
Fixed Income UGL × Post		0.04		-0.00		-0.04
		[0.14]		[0.13]		[0.19]
RGL		0.61		0.59		1.38
		[0.61]		[0.84]		[1.06]
RGL × Post		-0.31		0.09		-0.74
		[0.90]		[1.13]		[1.45]
Size		-0.03***		-0.05***		-0.07***
		[0.01]		[0.01]		[0.02]
Leverage		-0.01		-0.00		-0.00
		[0.01]		[0.01]		[0.01]
Market to Book		-0.01**		-0.01**		-0.02**
		[0.00]		[0.01]		[0.01]
Beta		0.00		0.03**		0.02
		[0.01]		[0.01]		[0.01]
Company FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Observations	1,512	1,512	1,512	1,512	1,512	1,512
R-squared	0.10	0.18	0.12	0.20	0.10	0.18

Table 3. Carhart Four-Factor Abnormal Return Reaction This table presents company-quarter panel OLS regression results where Carhart four-factor (C4) cumulative abnormal return (CAR) at different time horizons are regressed onto unrealized gains and losses (UGL) from equity investments in the pre and post periods. ST C4 CAR is the cumulative C4 abnormal return on stock i between $t-1$ and $t+1$ with $t=0$ being the earnings announcement date and t is counted using trading days. The time window for MT C4 CAR is $t-1$ to $t+10$. The time window for LT C4 CAR is $t-1$ to $t+20$. All the independent variables are measured as of the end of that fiscal quarter. Equity UGL is defined as the per share nominal dollar amount of unrealized gains or losses from equity investments recognized during a quarter, scaled by the company's stock price at the end of that quarter. Post equals 1 for observations from 2018Q1 to 2020Q3. All regressions include company and year-quarter fixed effects. Standard errors are clustered at the company-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level.

	ST C4 CAR		MT C4 CAR		LT C4 CAR	
	(1)	(2)	(3)	(4)	(5)	(6)
Equity UGL	-0.46	-0.37	-0.76	-0.60	-1.37	-1.21
	[0.33]	[0.35]	[0.67]	[0.69]	[0.96]	[0.94]
Equity UGL × Post	1.37***	1.13***	2.43***	2.15***	2.72**	2.42**
	[0.39]	[0.38]	[0.77]	[0.76]	[1.09]	[1.06]
EPS Surprise		1.05***		1.05**		1.07**
		[0.36]		[0.40]		[0.44]
EPS Surprise × Post		-0.43		-0.37		-0.54
		[0.37]		[0.40]		[0.43]
Fixed Income UGL		-0.13		-0.08		-0.03
		[0.10]		[0.10]		[0.13]
Fixed Income UGL × Post		0.05		0.08		0.10
		[0.13]		[0.14]		[0.18]
RGL		0.67		0.70		0.94
		[0.58]		[0.77]		[0.94]
RGL × Post		-0.18		0.25		0.13
		[0.76]		[0.95]		[1.29]
Size		-0.03***		-0.04***		-0.05***
		[0.01]		[0.01]		[0.01]
Leverage		-0.01		-0.00		0.00
		[0.01]		[0.01]		[0.01]
Market to Book		-0.01**		-0.01**		-0.02***
		[0.00]		[0.01]		[0.01]
Beta		0.00		0.02		0.01
		[0.01]		[0.01]		[0.02]
Company FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Observations	1,512	1,512	1,512	1,512	1,512	1,512
R-squared	0.09	0.18	0.10	0.18	0.10	0.17

Table 4. Analyst Coverage and Return Reaction This table presents company-quarter panel OLS regression results where CAPM and Carhart four-factor (C4) cumulative abnormal returns (CAR) calculated over different time horizons are regressed onto unrealized gains and losses from equity investments, Equity UGL. Post equals 1 for 2018Q1 to 2020Q3. High Cov equals 1 for insurance companies that have higher-than-median average number of analysts covering them between 2015 and 2020. Control variables include EPS Surprise, Fixed Income UGL, Log Market Capitalization, Leverage, Market to Book, Beta, and their interaction terms with Post. All regressions include company and year-quarter fixed effects. Standard errors are clustered at the company-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level. Refer to the appendix for the full regression output.

	ST CAPM	MT CAPM	LT CAPM	ST C4	MT C4	LT C4
	(1)	(2)	(3)	(4)	(5)	(6)
Equity UGL	-0.68	-1.14	-1.90*	-0.49	-0.85	-1.58
	[0.43]	[0.91]	[1.02]	[0.42]	[0.77]	[1.01]
Equity UGL × Post	1.37***	2.63***	3.35***	1.27***	2.52***	3.04**
	[0.44]	[0.94]	[1.07]	[0.47]	[0.87]	[1.16]
Post × High Cov	0.01	0.02	0.04**	0.02*	0.02	0.02
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]
Equity UGL × High Cov	1.01	1.34	2.26*	0.69	1.06	1.65
	[0.64]	[0.94]	[1.14]	[0.60]	[0.88]	[1.23]
Equity UGL × Post × High Cov	-0.85	-1.50*	-3.00***	-0.82	-1.77**	-2.88**
	[0.69]	[0.87]	[1.09]	[0.68]	[0.87]	[1.16]
Controls	Y	Y	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y	Y	Y
Company FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Observations	1,512	1,512	1,512	1,512	1,512	1,512
R-squared	0.19	0.22	0.21	0.19	0.20	0.20

Table 5. Insurance Subsidiaries Summary Statistics This table presents summary statistics on the full sample of insurance subsidiaries' characteristics. Each observation is a subsidiary-year pair.

Variables	N	Mean	S.D.	25th	50th	75th
Assets ($ millions)	17,952	2,327.45	16,778.36	21.56	90.79	403.34
Cash and Investments ($ millions)	17,952	1,443.80	10,213.14	15.94	65.87	291.22
ROE	17,952	-0.09	27.09	0.01	0.05	0.11
Leverage	17,952	0.49	0.26	0.31	0.52	0.68
RBC Ratio	17,952	27.16	6.63	2.86	4.90	11.18
Property and Casualty	17,952	0.61	0.49	0.00	1.00	1.00
Life and Health	17,952	0.39	0.49	0.00	0.00	1.00
Equity Allocation	17,952	8.08	14.16	0.00	0.14	11.99
Bond Allocation	17,952	67.38	28.90	53.04	75.97	89.79
Real Estate Allocation	17,952	1.00	3.92	0.00	0.00	0.00
Mortgage Loan Allocation	17,952	0.81	3.70	0.00	0.00	0.00
Alternatives Allocation	17,952	1.60	5.45	0.00	0.00	0.79
Contract Loan Allocation	17,952	0.34	2.44	0.00	0.00	0.00
Cash Allocation	17,952	20.78	27.57	3.02	8.69	26.37

Table 6. Equity Investment Allocation Regression Results – Full Sample This table presents panel OLS regression results for variants of equation 3. The sample is a balanced panel of insurance subsidiaries of publicly traded companies and privately-held insurance subsidiaries. Subsidiaries of parent companies that are listed on a non-US stock exchange are excluded. The dependent variable is equity investment allocation, which is the percentage of the insurer's investment portfolio that is devoted to equity securities times 100. US Public is an indicator variable that equals 1 if the subsidiary belongs to a parent company that is listed on a US stock exchange. Post equals 1 for observations in years 2018, 2019, and 2020. Other covariates are lagged by one year. Columns 1 and 2 present results for all insurance subsidiaries. Columns 3 and 4 present results by insurance business type. P&C stands for property and casualty insurance companies. L&H stands for life and health insurance companies. All regressions include subsidiary and year fixed effects. Standard errors are clustered at the subsidiary-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level. Refer to the appendix for the full regression output and more details on variable definitions.

	(1)	(2)	(3)	(4)
US Public × Post	-0.47***	-0.44***	-0.53**	-0.32
	[0.16]	[0.16]	[0.22]	[0.22]
Log Total Assets		0.41*	0.23	0.60***
		[0.24]	[0.48]	[0.22]
ROE		0.47	0.77	0.40
		[0.29]	[0.57]	[0.35]
Leverage		-2.57***	-3.38***	-1.84**
		[0.67]	[1.02]	[0.89]
RBC		-0.01***	-0.01***	-0.00
		[0.00]	[0.00]	[0.00]
Sample	All	All	P&C	L&H
Subsidiary FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	17,952	17,952	10,974	6,978
R-squared	0.92	0.92	0.93	0.89

Table 7. Propensity Score Matched Sample 2015 Characteristics This table presents average values of insurance subsidiaries' characteristics at the end of 2015. Each insurance subsidiary that is owned by a publicly traded company is matched with a privately-owned insurance subsidiary using the propensity score matching procedure described in Section 6.6. The fourth column reports the mean difference of each variable across the two groups and the last column reports the p-value from difference of means t-tests.

Variables	Public	Private	Difference	p-value
Assets ($ millions)	3,768.13	3,099.97	668.16	0.51
Cash and Investments ($ millions)	2,186.32	2,100.13	86.19	0.89
Leverage	0.51	0.49	0.02	0.13
RBC Ratio	29.25	30.87	-1.61	0.65
ROE	0.30	0.35	-0.05	0.91
Equity Allocation	2.54	9.77	-7.23	$< .01$
Bond Allocation	74.31	67.94	6.37	$< .01$
Real Estate Allocation	0.36	1.42	-1.06	$< .01$
Mortgage Loan Allocation	0.79	0.89	-0.10	0.57
Alternatives Allocation	1.27	1.70	-0.43	0.02
Contract Loan Allocation	0.32	0.47	-0.15	0.29
Cash Allocation	20.41	18.01	2.40	0.08

Table 8. Equity Investment Allocation Regression Results – Propensity Score Matched Sample This table presents panel OLS regression results for variants of equation 3. The sample is a sample of insurance subsidiaries of publicly traded companies and their propensity-matched privately-held insurance subsidiaries. Subsidiaries of parent companies that are listed on a non-US stock exchange are excluded. The dependent variable is equity investment allocation, which is the percentage of the insurer's investment portfolio that is devoted to equity securities times 100. US Public is an indicator variable that equals 1 if the subsidiary belongs to a parent company that is listed on a US stock exchange. Post equals 1 for observations in years 2018, 2019, and 2020. Other covariates are lagged by one year. Columns 1 and 2 present results for all insurance subsidiaries. Columns 3 and 4 present results by insurance business type. P&C stands for property and casualty insurance companies. L&H stands for life and health insurance companies. All regressions include subsidiary and year fixed effects. Standard errors are clustered at the subsidiary-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level. Refer to the appendix for the full regression output and more details on variable definitions.

	(1)	(2)	(3)	(4)
US Public × Post	-0.41**	-0.38*	-0.64**	-0.05
	[0.20]	[0.20]	[0.26]	[0.30]
Log Total Assets		0.60***	0.65**	0.65***
		[0.16]	[0.28]	[0.20]
ROE		0.15	0.50	0.09
		[0.28]	[0.79]	[0.30]
Leverage		-2.18***	-1.97**	-2.38***
		[0.66]	[0.92]	[0.87]
RBC		-0.01***	-0.01***	-0.00
		[0.00]	[0.00]	[0.00]
Sample	All	All	P&C	L&H
Subsidiary FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	9,648	9,648	5,328	4,320
R-squared	0.94	0.94	0.95	0.90

A Appendix

A.1 Variable Definitions

Variable	Definition
Size	Log of market capitalization at the end of a fiscal quarter.
Leverage	Total liabilities divided by total shareholders' equity at the end of a fiscal quarter.
Market to Book Ratio	Market capitalization divided by total shareholders' equity at the end of a fiscal quarter.
Beta	Coefficient from regressing daily stock returns on daily CRSP value-weighted returns, over a period of one year, leading up to the earnings announcement date.
Equity UGL	Changes in unrealized gains and losses that a firm recognizes on its equity securities investments during a fiscal quarter, divided by the firm's total shares outstanding, and scaled by its quarter-end stock price.
Fixed Income UGL	Changes in unrealized gains and losses that a firm recognizes on its fixed income securities investments during a fiscal quarter, divided by the firm's total shares outstanding, and scaled by its quarter-end stock price.
RGL	Realized capital gains and losses that a firm recognized on its investments in securities during a fiscal quarter. This RGL amount is divided by the firm's total shares outstanding and scaled by its quarter-end stock price.
EPS Surprise	Firm's I/B/E/S core EPS minus median analyst estimate of core EPS. The difference is scaled by quarter-end stock price.
High Cov	Equals 1 for firms that have above-median average analyst coverage during the 2015-2020 sample period.
ROE	Net income divided by the sum of year-end total capital and surplus.
RBC Ratio	Risk-based capital ratio equals total adjusted capital divided by two times required risk-based capital at year-end.
Asset Class Allocation	Dollar amount invested in a given asset class divided by total dollar amount in investment portfolio.
Model CAR	Model-adjusted cumulative abnormal returns. Over a certain event window, the difference between stock i's return and its model-predicted return, calculated using Kai Chen's SAS macro for event study. `http://kaichen.work/?p=418`. Factor loadings are estimated using returns data from dates $t-150$ to $t-20$.

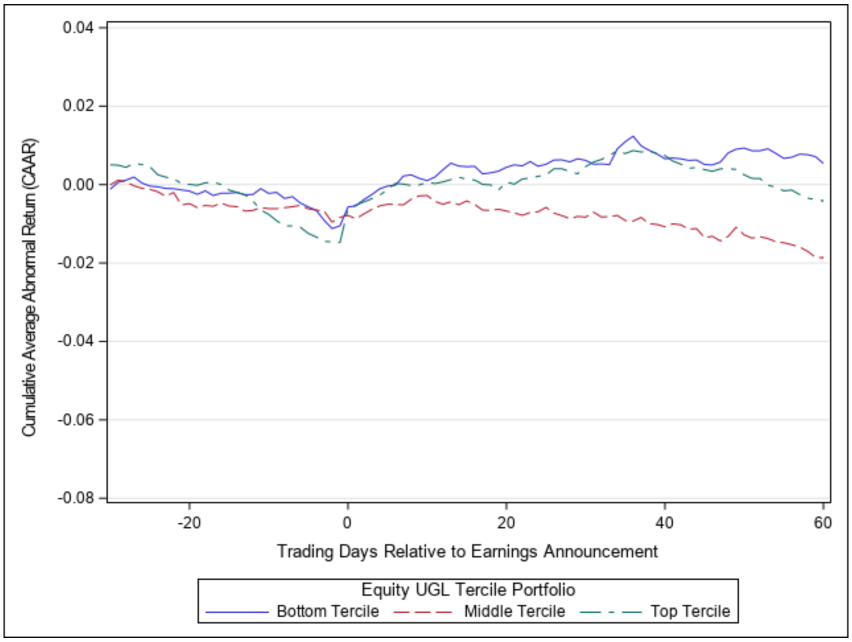
A.2 Equity UGL calculation example

In this section, we explain our calculation of changes in equity UGL in the pre period. The add-back of capital gains and subtraction of OTTI are important because we would like to capture changes in equity UGL that come from fluctuations in stock prices, which is consistent with how changes in equity UGL are reflected in net income in the post-ASU 2016-01 period. Consider the following example. Suppose that at the end of 2014Q4, company i holds two stocks, A and B. Each stock has an equity UGL of \$100 or, in other words, an unrealized gain position of \$100. Between 2014Q4 and 2015Q1, the prices of stocks A and B do not change and, right before the company closes its books for 2015Q1, company i liquidates its position in stock B and realizes a gain of \$100. The raw change in equity UGL would be $\$0 - \$100 = -\$100$, which is incorrect. Adding back realized gains from stock B would make the equity UGL equal to \$0, which reflects the true change in stock prices during 2015Q1. Suppose that, instead, stock B had an unrealized loss position of -\$100 at the beginning of the quarter, and the company recognizes an OTTI on this stock during the quarter, leading to the removal of the unrealized loss position and recognition of an OTTI loss in net income. The raw change in equity UGL in this case would be \$100, which again does not reflect changes in stock prices. To deal with this scenario, we subtract the OTTI value from our calculation.

To provide a real-life example, in its 10-Q for the quarter that ended 3/31/2015, Prudential Financial reported, in their investments section, unrealized gains and losses on equity securities of \$3,227 million and \$66 million, respectively, compared to \$3,023 million and \$83 million as of 12/31/2014. We first take the quarterly change in the net unrealized gain/loss position, which is = (3227-66)-(3023-83) = \$221 million. Then we add back net capital gains on sales of equity securities during the quarter of \$127 million, and also subtract \$6 million of impairments recognized on equity securities that quarter. The resulting \$342 million represents Prudential's change in equity UGL for the quarter ending 3/31/2015, after adjusting for capital gains and OTTI.

Figure A1. High Minus Low Equity UGL Portfolios CAPM CAAR – Quarterly Sort This figure plots CAPM cumulative average abnormal returns (CAAR) of three portfolios, formed each quarter based on equity UGL, over an event window of $t-30$ to $t+60$, where $t=0$ is the earnings announcement date, for the pre and post periods. The top third of the sample forms the top tercile portfolio and so on. Each line plots the respective portfolio's CAPM CAAR from $t-30$ to the relative trading day marked on the x-axis.

Panel A: Pre Period (2015-2017)



Panel B: Post Period (2018-2020)

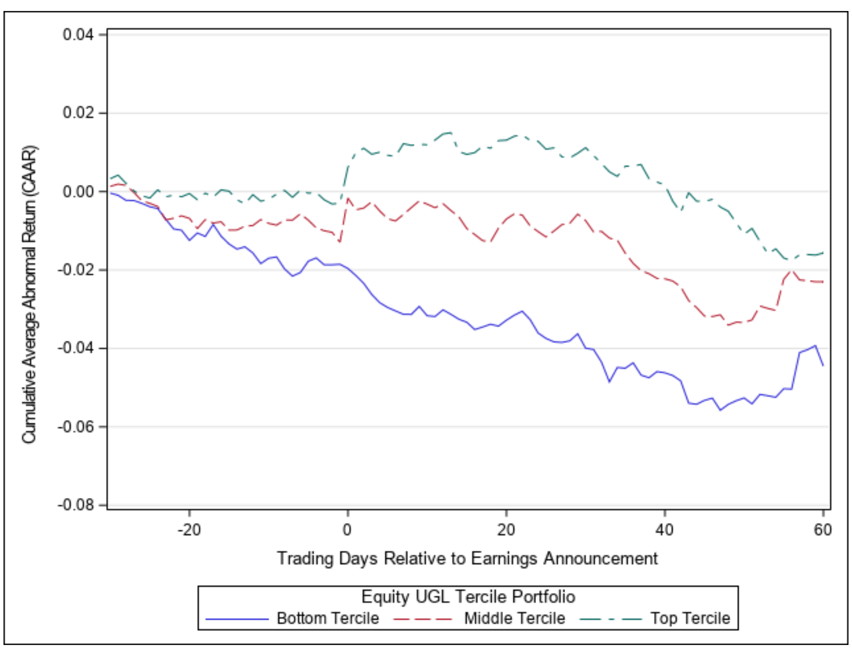


Table A1. Analyst Coverage and Return Reaction – Full Regression Output

	ST CAPM	MT CAPM	LT CAPM	ST C4	MT C4	LT C4
	(1)	(2)	(3)	(4)	(5)	(6)
Equity UGL	-0.68	-1.14	-1.90*	-0.49	-0.85	-1.58
	[0.43]	[0.91]	[1.02]	[0.42]	[0.77]	[1.01]
Equity UGL × Post	1.37***	2.63***	3.35***	1.27***	2.52***	3.04**
	[0.44]	[0.94]	[1.07]	[0.47]	[0.87]	[1.16]
Post × High Cov	0.01	0.02	0.04**	0.02*	0.02	0.02
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]
Equity UGL × High Cov	1.01	1.34	2.26*	0.69	1.06	1.65
	[0.64]	[0.94]	[1.14]	[0.60]	[0.88]	[1.23]
Equity UGL × Post × High Cov	-0.85	-1.50*	-3.00***	-0.82	-1.77**	-2.88**
	[0.69]	[0.87]	[1.09]	[0.68]	[0.87]	[1.16]
EPS Surprise	1.00***	1.05***	0.99***	1.04***	1.05***	1.07**
	[0.35]	[0.37]	[0.36]	[0.35]	[0.38]	[0.42]
EPS Surprise × Post	-0.40	-0.36	-0.42	-0.45	-0.41	-0.58
	[0.36]	[0.35]	[0.34]	[0.37]	[0.40]	[0.44]
Fixed Income UGL	-0.10	-0.03	0.06	-0.13	-0.09	-0.04
	[0.10]	[0.09]	[0.11]	[0.10]	[0.09]	[0.11]
Fixed Income UGL × Post	0.06	0.01	-0.04	0.07	0.11	0.14
	[0.14]	[0.13]	[0.18]	[0.13]	[0.13]	[0.17]
RGL	0.57	0.48	1.20	0.65	0.61	0.84
	[0.55]	[0.72]	[0.89]	[0.53]	[0.66]	[0.79]
RGL × Post	-0.23	0.32	-0.39	-0.13	0.38	0.29
	[0.82]	[0.97]	[1.22]	[0.68]	[0.81]	[1.10]
Log Market Capitalization	-0.04***	-0.06***	-0.09***	-0.04***	-0.06***	-0.07***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Leverage	-0.01	-0.00	-0.00	-0.01	-0.00	0.00
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Market to Book	-0.02**	-0.02***	-0.03***	-0.01**	-0.02***	-0.04***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Beta	0.01	0.02	0.00	0.01	0.02	0.01
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]
Log Market Capitalization × Post	-0.00	-0.01*	-0.01***	-0.00	-0.00	-0.01**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Leverage × Post	-0.00	-0.01	-0.01**	-0.01	-0.01	-0.01
	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.01]
Market to Book × Post	0.01***	0.02***	0.02***	0.01**	0.01***	0.02***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Beta × Post	-0.02	0.00	0.01	-0.02**	-0.02	-0.01
	[0.01]	[0.02]	[0.02]	[0.01]	[0.02]	[0.02]
Company FE	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y
Observations	1,512	1,512	1,512	1,512	1,512	1,512
R-squared	0.19	0.22	0.21	0.19	0.20	0.20

Table A2. Accompanying Regression Results for Figure 9 This table presents panel OLS regression results for variants of equation 5. The sample consists of public and private insurance subsidiaries, described in Section 5.2. The dependent variable is equity investment allocation, which is the percentage of the insurer's investment portfolio that is devoted to equity securities multiplied by 100. US Public is an indicator variable that equals 1 if the subsidiary belongs to a parent company that is listed on a US stock exchange. The reference year is 2015. All regressions include subsidiary and year fixed effects. Standard errors are clustered at the subsidiary-level and reported in brackets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) level. Coefficients in column 2 are used to construct the plot shown in Figure 9.

	(1)	(2)
US Public × $\mathbb{1}(2016)$	-0.12	-0.14
	[0.12]	[0.13]
US Public × $\mathbb{1}(2017)$	-0.28	-0.28*
	[0.17]	[0.17]
US Public × $\mathbb{1}(2018)$	0.12	0.14
	[0.19]	[0.19]
US Public × $\mathbb{1}(2019)$	-0.77***	-0.76***
	[0.22]	[0.23]
US Public × $\mathbb{1}(2020)$	-1.16***	-1.13***
	[0.25]	[0.25]
Log Total Assets		0.41*
		[0.24]
ROE		0.49*
		[0.29]
Leverage		-2.55***
		[0.67]
RBC		-0.01***
		[0.00]
Sample	All	All
Subsidiary FE	Y	Y
Year FE	Y	Y
Observations	17,952	17,952
R-squared	0.92	0.92

A.3 Proofs

Proof. Proof of Proposition 2 (1) Note that inattentive investors have higher residual uncertainty than attentive ones, i.e., $\frac{1}{Var_j^i(\theta)} < \frac{1}{Var_j^a(\theta)}$. Thus

$$\frac{\partial \xi}{\partial \kappa} = -\frac{1}{\tau}\xi^2(\frac{1}{Var_j^i(\theta)} - \frac{1}{Var_j^a(\theta)}) > 0$$

(2) Price discount is higher under the inclusive regime, if and only if

$$\frac{\kappa}{Var^i_{inclusive}(\theta)} + \frac{1-\kappa}{Var^a_{inclusive}(\theta)} \leq \frac{\kappa}{Var^i_{exclusive}(\theta)} + \frac{1-\kappa}{Var^a_{exclusive}(\theta)}$$

That is,

$$Var^a_{inclusive}(\theta) \geq Var^a_{exclusive}(\theta)$$

Equivalently,

$$\frac{(\rho_1 v_1 + \rho_2 v_2)^2}{v_1 + v_2 + \sigma_1 + \sigma_2} \leq \frac{(\rho_1 v_1)^2}{v_1 + \sigma_1}$$

And this gives the condition shown in the proposition.

□

Proof. Proof of Proposition 3 The firm's manager chooses the optimal amount of financial assets by equating the marginal benefit per unit to the marginal cost. The benefit is higher return, while the cost comes from higher residual uncertainty which, demands higher price discounts. The marginal benefit is ρ_2, and the cost

Under the exclusive regime, higher investment in financial assets leads to higher total uncertainty, and the income measure is not informative about it and does not affect the amount of cross learning:

$$\rho_2 = \frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}\rho_2^2$$

Under the inclusive regime, higher investment in financial assets leads to higher total uncertainty, but the inclusive regime's summary income measure also changes the amount of uncertainty that gets resolved, and the marginal impact is:

$$\rho_2 = \frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}(\rho_2^2 - \frac{2\rho_2(v_1\rho_1 + v_2\rho_2)(v_1 + \sigma_1 + v_2 + \sigma_2) - (v_1\rho_1 + v_2\rho_2)^2}{(v_1 + \sigma_1 + v_2 + \sigma_2)^2})$$
$$= \frac{\bar{s}}{\tau}\frac{\partial v_2}{\partial \mu_2}(\rho_2^2 - \frac{(v_1\rho_1 + v_2\rho_2)(\rho_2(2v_1 + 2\sigma_1 + v_2 + 2\sigma_2) - v_1\rho_1)}{(v_1 + \sigma_1 + v_2 + \sigma_2)^2}) \tag{A.1}$$

Thus, we can see that the optimal μ_2 is where the left hand side and the right hand side intersect. If the RHS is higher under the inclusive regime, then the intersection is smaller under it, i.e., the optimal amount of financial asset is smaller. Let μ_2^{ex} be the optimal amount of financial asset under the exclusive regime and μ_2^{in} be the optimal amount of financial asset under the inclusive regime. A sufficient condition for $\mu_2^{ex} > \mu_2^{in}$ is that $\frac{2\rho_2(v_1\rho_1+v_2\rho_2)(v_1+\sigma_1+v_2+\sigma_2)-(v_1\rho_1+v_2\rho_2)^2)}{(v_1+\sigma_1+v_2+\sigma_2)^2} < 0$ for all $\mu_2 < \mu_2^{ex}$. If this condition is true, then the $RHS^{in} > RHS^{ex}$ for any $\mu_2 < \mu_2^{in}$, and they both cross the marginal benefit curve of ρ_2 from below. Thus the optimal amount of financial assets is smaller under the inclusive regime.

□

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