Demand for Stocks and Accounting Information

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Abstract

We use equity portfolio allocation decisions to study the relevance of accounting information for different investors' demand for stocks (demand relevance). We document significant heterogeneity across investors in the demand relevance of profitability measures and income statement components. While we find that operating profit dominates gross profit and net income in explaining the aggregate demand, this does not hold across investor-specific demands. We show that demand relevance varies as a function of investors' objectives. Active investors have a higher demand sensitivity to reported profits. Our counterfactual analysis reveals that investors' preferences have meaningful effects on the equilibrium relation between stock prices and accounting variables.

Keywords: Demand relevance, portfolio decisions, accruals, earnings, demand for stocks, investor heterogeneity.
JEL Classification: G10, G18, M40, M41, M44, M45

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1 Introduction

The primary objective of financial statements is to provide useful information to external decision-makers (FASB, 2010). Since the seminal contributions of Ball and Brown (1968) and Beaver (1968), extensive literature in accounting makes inferences about the decision-usefulness of accounting information through the lens of stock prices and stock returns.[1] However, the focus on equity prices, which are outcomes of the market equilibrium, masks the rich heterogeneity in investment decisions and, consequently, in the demand for accounting information. This leaves many interesting questions unanswered. What information do investors find relevant when making investment decisions? Does the demand for information depend on the investment objective? What effect do investor preferences have on the association between stock prices and accounting numbers?

We approach these questions through the lens of portfolio allocation decisions. Instead of focusing on stock prices or stock returns, we study investors' revealed preferences for whether and to what extent different accounting metrics are relevant for their equity portfolio decisions. We term this focus as the demand-relevance of accounting information, which we define as the association between an accounting amount and the quantity of stocks demanded by equity investors.[2] This demand-centric perspective allows us to study how the relevance of accounting information differs across investor types and how they jointly determine the aggregate demand as a function of information reflected by the accounting numbers.

To examine the demand-relevance of accounting information, we capitalize on the recent work in finance that uses investor portfolio holdings and the market-clearing condition to estimate a characteristic-based asset-demand system (Koijen and Yogo, 2019, 2020; Koijen, Richmond, and Yogo, 2021). The model features heterogeneous investors who

[1]See Barth, Beaver, and Landsman (2001); Kothari (2001); Holthausen and Watts (2001) for reviews.

[2]This definition parallels the definition of value relevance, which is based on the association with stock prices.

individually solve their portfolio-choice problems assuming that returns follow a factor structure. Expected returns and risk-factor exposure depend on firm characteristics, such as the book value of equity and profitability, in line with extant empirical asset-pricing models (e.g., Fama and French, 1993, 1996). A central result in these studies is that the demand for assets can be tractably expressed as a function of a firm's characteristics and stock prices. Because many of the characteristics are accounting-based, the asset-demand model presents a valuable opportunity to study the relevance of accounting information from a specific investor's perspective.

We use asset-holdings and the identification strategy in Koijen and Yogo (2019) to estimate demand schedules for each investor in a given quarter and, subsequently, compute the aggregate demand for stocks in that quarter. We first study investors' revealed preferences for profit measures by focusing on three levels of accounting profitability: gross profit (GP), operating profit (OP), and income before extraordinary items (for simplicity, we refer to the latter as "bottom line" earnings). We distinguish between institutional and non-institutional (i.e., household) investors, who are known to behave very differently (e.g., Gompers and Metrick, 2001; Koijen and Yogo, 2019), and examine investment differences across various types of institutions, such as banks, pension funds, and investment managers.

We document substantial heterogeneity in the demand relevance of profitability measures across investor types. Within institutional investors, banks and insurance companies are the most sensitive to accounting profitability, whereas pension and mutual funds are the least. When we simultaneously use different profitability measures to explain investor demand, we observe that their incremental relevance varies substantially across institutional investors. Some investors put greater weight on operating profits and others focus more on the "bottom line" numbers. Our evidence is consistent with certain institutional investors, with higher fiduciary standards that restrict their portfolios to companies deemed more prudent (e.g., banks), preferring firms with higher profit (Del Guercio, 1996;

Bushee, 2001).

We also find that the sensitivities of institutional investors' demand consistently exceed the sensitivity of household demand. In fact, the latter exhibits a weakly negative association with the profit metrics, consistent with household investors largely disregarding information about earnings (Ayers, Li, and Yeung, 2011; Blankespoor, Dehaan, Wertz, and Zhu, 2019). At the aggregate level, however, we find that operating profit largely subsumes "bottom line" earnings and gross profit. Although this finding implies that operating profit is, on average, the most relevant number, our results also highlight that making inferences based on the aggregate numbers masks important differences in the demand for different profit measures across investors.

The presence of demand heterogeneity among investors implies that the demand relevance perspective of accounting profitability is not equivalent to the classic value relevance perspective. Although the two perspectives reconcile via the market clearing condition, demand heterogeneity implies that each firm has a unique relation between its earnings and stock price that depends on its investor base. We find strong support for this prediction empirically despite the value relevance literature often assuming that the price-earnings relation is constant, irrespective of who owns the stock.

We next examine the sources of documented heterogeneity in the demand relevance of accounting information. In theory, the uses of information vary across investors depending on their decision problems. To test this relation, we perform two sets of analyses. First, we examine a primary investor characteristic, namely, whether the investment objective has an active or a passive focus. We expect that active investors put more weight on current operating performance. In line with this conjecture, we find that investors with active investment objectives exhibit higher sensitivity to accounting profits, suggesting profit is more relevant for their decisions. Second, we use changes in the S&P 500 membership as a source of plausibly exogenous variation in the collective objectives of a company's investor base. Specifically, when a firm's stock is added to an index, its investor base shifts and is more likely to be represented by passive investors, who are expected to have lower demands for accounting information. Indeed, when a firm is added to the index, its average investors' sensitivities to profit decline significantly. This further supports the link between investor objectives and the relevance of accounting information.

What does investors' heterogeneity imply about the relevance of accounting information for stock prices? A long tradition of value relevance studies establishes the positive association between earnings and stock prices (e.g., Miller and Modigliani, 1966; Barth et al., 2001). However, common criticisms against these associations are their indirect nature and a lack of theory (Holthausen and Watts, 2001). Investors' demand system provides a micro-foundation linking investor preferences to the observed aggregate price-earnings relation as the equilibrium prices must clear investors' demand. A direct implication is that the prior focus on prices masks the heterogeneous contributions of investors to the price-earnings relation.

To evaluate the link between investors' preferences and the price-earnings relation, we perform three counterfactual analyses. Each analysis involves changing an assumption about investors' preferences, computing new equilibrium prices, and evaluating changes in the relation between stock prices and accounting profits.

First, we change the elasticity of each investor's demand with respect to price. Under the traditional view, where stock price equals the sum of discounted expected cash flows, demand for stocks is perfectly elastic. Setting the price slightly above (below) the present value of expected cash flows leads to infinite (zero) demand. Hence, the heterogeneity of objectives does not play a role in setting the equilibrium price. We show that increasing each investor's elasticity by 10% results in nearly an 18% reduction in the strength of the price-earnings association. This change happens because increasing the sensitivity of investors to prices makes them less willing to purchase high-profit stocks and attenuates the positive effect of earnings on prices in equilibrium.

Second, we quantify the effect of investment objectives, namely, a shift from active to passive investing, on the equilibrium price-earnings relation. This question is relevant given the concern that the rise of indexation has led to greater market mispricing (e.g., Wurgler, 2010; Israeli, Lee, and Sridharan, 2017). The effect of a shift to passive investing is unclear ex ante since the active investors are more sensitive to earnings but also have more elastic demand. We find that eliminating relatively more active investors and redistributing their wealth to more passive investors results in approximately a 13% reduction in the price-earnings relation. This effect is sizable but not a dramatic change, suggesting that concerns about indexation may be overstated.

Finally, we increase (decrease) investors' sensitivities to accounting profits and observe only a one-quarter increase (decrease) in price-earnings relation. Only a fraction of the change in sensitivity to profit manifests itself in the price-earnings relation because, in addition to profits, the demand is also sensitive to prices. Hence, an increase in earnings creates negative price pressure from heightened demand. This finding suggests that the strength of the price-earnings relation is a misleading proxy for accounting information quality as it largely conceals the actual changes in investors' response to earnings.

Having shown the importance of investor preferences, we return to our revealed preference approach to study earnings components and their relative weights across investors. We focus on revenue and four primary expense items: cost of goods sold (COGS); selling, general and administrative (SG&A); research and development (R&D); and depreciation and amortization (D&A). We find that the demand sensitivities are positive for revenue and negative for expenses except for R&D. Importantly, while the sensitivities vary across investors, their relative magnitudes within investors do not: a 1% increase in revenue has approximately the same impact on demand as a 1% reduction in COGS or SG&A. This result holds for individual demands of institutional investors and for the aggregate demand, implying that investors perceive a "match" between revenues and these expenses.[3] The results differ for the D&A and R&D expenses, however. Most notably, the aggregate-

[3] In other words, little information is lost by aggregating these three components.

demand sensitivity to R&D expense is significantly positive, suggesting the market treats it as an asset (Lev and Sougiannis, 1996; Barth, Li, and McClure, 2022). In fact, R&D is the primary and most significant income-statement determinant of household demand. Households effectively view R&D as an asset. In contrast, institutional investors are more skeptical about the future benefits of R&D. Overall, we observe substantial heterogeneity in the demand-relevance of earnings components.

Our last set of tests focuses on the demand relevance of cash flows versus accrual-based profitability measures, which continue to be the subject of debate (AICPA, 1973; Dechow, 1994; Nallareddy, Sethuraman, and Venkatachalam, 2020; Ball and Nikolaev, 2021). Because investors are ultimately interested in future cash flows, they may base their decisions on cash flows rather than earnings. At the same time, the FASB encourages the use of earnings (FASB, 2010), and earnings are found to have a stronger association with stock price (Dechow, 1994). Unlike the prior studies, we approach this question from the preferences revealed by actual investors' decisions. We find that each institutional investor type is consistently more sensitive to accrual-based measures than cash-based measures. This also holds for the aggregate demand. Importantly, for the aggregate demand, although both types of measures are highly significant on a standalone basis, accrual-based measures largely subsume cash flows both statistically and economically, in line with Ball and Nikolaev (2021). Nevertheless, cash flows are incrementally important, albeit with lower relevance for specific institutional investor types, with the exception of banks and (to a lesser extent) pension funds. The evidence supports the FASB's position and prior research (e.g., Barth, Beaver, Hand, and Landsman, 1999) that accrual-based performance measures dominate cash-based measures, while also highlighting the relevance of cash flows for a number of investors.

We make several contributions to the literature. First, we are the first study to analyze the demand-relevance of accounting information for investment decisions. This focus on investor demand and revealed preferences complements the extensive value-relevance literature (e.g., Barth et al., 2001, 2022) that indirectly infers the relevance of accounting numbers from stock prices. Second, we establish there is significant heterogeneity in the relevance of accounting information across investors and show that the relevance of accounting numbers depends on investment objectives and preferences. The evidence supports FASB's position that investors do not focus on a single profit metric because different earnings measures can satisfy different information needs (FASB, 2010). Third, we show that the demand schedules of investor groups and their preferences have economically important effects on the relation between stock prices and accounting numbers. Fourth, we document revealed preferences for different accounting profitability metrics. Despite their heterogeneity, investors consistently prefer accrual-based measures and generally favor operating profits. Finally, we contribute to the asset-pricing literature by analyzing heterogeneity performance measures relevant from an asset-pricing perspective (Novy-Marx, 2012; Ball, Gerakos, Linnainmaa, and Nikolaev, 2015; Fama and French, 2016). We find that investors' revealed preferences provide a foundation for the recent focus on operating profits in the asset pricing literature.

2 Methodology

Our model and estimation follows Koijen and Yogo (2019) and in this section, we outline their methodology. Briefly, this approach assumes heterogeneous investors, who individually solve for their optimal portfolio holdings, subject to short-sale constraints. Returns are explained by a single factor, exposure to which is a function of firm characteristics determined, in part, by accounting information. As Koijen and Yogo (2019) show, an investor's demand schedule is a non-linear regression model that is a function of firm characteristics and the investor's latent demand. Below, we provide a more detailed description of the model set-up and estimation.

2.1 Model set-up

The model assumes a pure-exchange economy with financial assets indexed by $n = 1, ..., N$, and an outside asset (referred to as the $0th$ asset) that encompasses all the wealth outside the N assets. $P_t(n)$, $D_t(n)$, and $S_t(n)$ are the price, dividends, and number of shares for asset n in period t. Accordingly, a stock's market equity and stock return in period t are defined as $ME_t(n) = P_t(n)S_t(n)$ and $R_t(n) = (P_t(n) + D_t(n))/P_{t-1}(n)$. Uppercase variables denote raw amounts, and lowercase variables (e.g., $p_t(n)$) denote amounts in natural logarithms. Each asset has K endowed characteristics observable to the econometrician, indexed by $k = 1, ..., K$. The vector $\mathbf{x}_t(n)$ includes these observable characteristics, such as the book value of equity and accounting profits for asset n in period t, with the Kth characteristic set to 1.

Investors, indexed by $i = \{1, ..., I\}$, are each endowed with wealth $A_{i,t}$ at date t allocated across assets in i's investment universe $\mathcal{N}_{i,t} \subseteq \{1, ..., N\}$ and the outside asset. $\mathbf{w}_{i,t}$ denotes the $\mathcal{N}_{i,t}$-dimensional vector of portfolio weights chosen to maximize expected log utility:

$$\max_{\mathbf{w}_{i,t}} \mathbb{E}_{i,t}[\log(A_{i,T})], \tag{1}$$

subject to the intertemporal budget constraint,

$$A_{i,t+1} = A_{i,t}(R_{t+1}(0) + \mathbf{w}'_{i,t}(\mathbf{R}_{t+1} - R_{t+1}(0)\mathbf{1})), \tag{2}$$

and the short-sale constraints $\mathbf{w}_{i,t} \geq 0$ and $\mathbf{1}'\mathbf{w}_{i,t} < 1$.

Investors have heterogeneous beliefs about the expected returns of assets, and thus follow different strategies. Investor i determines her investment decision for asset n based on the information set $\hat{\mathbf{x}}_{i,t}(n)$, which is the vector of relevant characteristics. The vector $\hat{\mathbf{x}}_{i,t}(n)$ includes the market value of equity ($me_{i,t}(n)$), observable characteristics ($\mathbf{x}_{i,t}(n)$), and the latent demand, which represents characteristics that are unobservable to the econometrician ($\log(\epsilon_{i,t}(n))$):

$$\hat{\mathbf{x}}_{i,t}(n) = \left[me_{i,t}(n), \mathbf{x}_{i,t}(n), \log(\epsilon_{i,t}(n))\right]'. \tag{3}$$

Market value of equity differs from the other observable characteristics (i.e., those contained in $\mathbf{x}_{i,t}(n)$) in that it is determined in equilibrium based on the market-clearing condition. Because investors, especially larger ones, can have a non-trivial impact on a firm's price when choosing portfolios, the model is not identified without an instrumental variable. We discuss our instrument for market equity in section 4.

Koijen and Yogo (2019) further augment the space spanned by firm characteristics by considering all Mth-order polynomial interactions where $M \rightarrow \infty$, which permits characteristics to interact, such that

$$\hat{\mathbf{y}}_{i,t}(n) = \left[\hat{\mathbf{x}}_{i,t}(n), \text{vec}(\hat{\mathbf{x}}_{i,t}(n)\hat{\mathbf{x}}_{i,t}(n)'), \ldots\right]' \tag{4}$$

where vec(.) is a vectorization operator.

2.2 Characteristics-based Demand

In line with empirical asset-pricing models, excess returns have a factor structure and factor loadings are assumed to be a function of a relatively small number of firm characteristics. Specifically, the expected excess returns, $\mu_{i,t}$, is a function of a single factor and factor loadings, $\Gamma_{i,t}$, are parameterized as follows:

$$\mu_{i,t}(n) = \mathbf{y}_{i,t}(n)'\Phi_{i,t} + \phi_{i,t} \tag{5}$$

$$\Gamma_{i,t}(n) = \mathbf{y}_{i,t}(n)'\Psi_{i,t} + \psi_{i,t}, \tag{6}$$

where $\Phi_{i,t}$ and $\Psi_{i,t}$ are vectors and $\phi_{i,t}$ and $\psi_{i,t}$ are scalars that remain constant across stocks. Accordingly, the covariance of log excess returns is $\Sigma_{i,t} = \Gamma_{i,t}\Gamma'_{i,t} + \gamma_{i,t}\mathbf{I}$, where $\gamma_{i,t}$

is idiosyncratic variance. The subscript i indicates investors have heterogeneous beliefs about how firm characteristics relate to the factor exposure. Thus, the model explicitly accommodates heterogeneity of investors' preferences and investment philosophies.

Under these assumptions, Koijen and Yogo (2019) show the optimal portfolio weight for asset n relative to the outside good can be expressed as

$$\frac{w_{i,t}(n)}{w_{i,t}(0)} = \delta_{i,t}(n) = \exp\left\{\beta_{0,i,t} me_t(n) + \sum_{k=1}^{K-1} \beta_{k,i,t} x_{k,t}(n) + \beta_{K,i,t}\right\} \epsilon_{i,t}(n), \tag{7}$$

where $\epsilon_{i,t} \geq 0$ to ensure portfolio weights are non-negative but permits zero holding. This equation implies the weight for an inside asset n is[4]

$$w_{i,t}(n) = \frac{\delta_{i,t}(n)}{1 + \sum_{m \in \mathcal{N}_{i,t}} \delta_{i,t}(m)}. \tag{8}$$

Equation (7) represents the characteristics-based demand schedule for investor i as it relates firm characteristics to the amount of funds invested by the investor in stock n. By estimating the parameters in this non-linear equation for each investor-quarter, we can quantify the extent to which firm-level information can explain an investor's demand for stocks at a particular point in time. For example, a larger parameter value on characteristic k (i.e., β_k) indicates an investor's demand is more sensitive to this characteristic because a small perturbation in the characteristic leads to a substantial change in an investor's holdings. By comparing parameter values, we can determine the relative sensitivity of an investor's demand to potentially competing information and provide insights into which accounting amounts are important for investors' portfolio decisions.

[4]For the outside asset, $w_{i,t}(0) = 1/(1 + \sum_{m \in \mathcal{N}_{i,t}} \delta_{i,t}(m))$.

3 Data and descriptive statistics

We rely on data from Compustat, CRSP, and Thomson Reuters. Firm-level data come from Compustat's Annual and Quarterly files and cover the period 1980-2017. We merge Compustat with CRSP's monthly return file and lag fundamental data by six months to ensure they are publicly available. We keep only common equity securities (i.e., share codes 10 and 11) and restrict our sample to firms listed on the NYSE, NASDAQ, or Amex. We exclude financial firms (SIC code starting with 6) and observations with missing current or lagged total assets, negative book equity, and stock price below $1. Finally, we remove the effect of outliers by truncating observations in the 1% and 99% percentiles of each characteristic. Holdings not satisfying these filtering criteria are classified as the "outside asset" and include foreign stocks and real estate investment trusts, and have missing share codes or missing (or truncated) characteristics. After these filters, our sample comprises $12,205$ unique firms and $385,311$ firm-quarter observations. However, the number of observations varies somewhat across the analyses depending on data availability. Table 1 Panel A presents firm-level summary statistics; variable definitions are reported in Appendix A.

The institutional holdings data are from Thomson Reuters Institutional Holdings Database. These data come from 13F filings, which contain equity holdings data for institutional investors with at least $100 million in total assets under management (AUM). We classify shares as held by households when those shares outstanding are held by (1) investors not covered by the Thomson Reuters database (i.e., not subject to 13F filings), (2) institutions with less than $10 million in AUM held in common equity, and (3) institutions that hold either only the outside asset or only the inside assets.[5] We classify the

[5]We classify investors with less than $10 million in AUM held as common equity as part of households because the majority of these investors' holdings are non-equity. Our study focuses on the demand for common shares, and these investors likely only own common equity to complement their non-equity investment focus, such as for hedging purposes. Our third criterion, which requires investors to hold both the inside and outside assets, is needed because equation (7) is an investor's demand for a stock relative to the outside asset. If an investor does not hold any inside assets or does not hold the outside asset, we cannot

institutional investors into one of six categories: banks, insurance companies, investment advisors, mutual funds, pension funds, and other institutions.[6] Throughout our analysis, we estimate the effect on each institutional investor type, aggregate their demand into institutional demand and compare it to household demand, and finally aggregate across all investors.[7]

Because institutional holdings are reported quarterly, we compound the monthly returns into quarterly returns. To compute a fund's portfolio weight for a particular stock, we calculate the dollar holdings ratio to the fund's AUM based on Thomson Reuters data.

Because the 13F filings data only includes information about investors' long-only equity holdings, our model does not consider the role of non-equity holdings or other hedging strategies. However, this equity-centric focus is consistent with much of the empirical asset-pricing literature (e.g., Fama and French, 1992). The quarterly reporting frequency of 13F filings means we cannot observe investors' immediate reactions to new information. Instead, our analysis focuses on investors' long-run investment strategies, which corresponds with the model setup.

Panel B of Table 1 presents summary statistics for aggregate demand and by investor type. We report AUM and average firm characteristics across all firms held by investors of a particular type. Mutual funds have the largest AUM levels, followed by banks and then investment advisors.

4 Estimation

We separately estimate equation (7) for each investor i by quarter t using GMM. GMM offers several advantages over regression or likelihood-based methods. First, it allows us

estimate this equation.

[6]We use Koijen and Yogo (2019)'s classification of institutional investors instead of Thomson Reuters' because the latter contains classification errors.

[7]We do not report the results from other institutional funds, which represent a very small fraction of the sample, because these investors are hard to categorize, which makes interpreting these findings difficult. These results are available upon request.

to restrict the latent demand, $\epsilon_{i,t}$, to be non-negative and thus implements short-selling constraints often observed in practice. Second, GMM does not require distributional assumptions for $\epsilon_{i,t}$. Thus, it can allow for a mass at $\epsilon_{i,t}$, which relates to instances where the investor chooses not to hold the stock.

As discussed earlier, one complication in our estimation is that some investors, especially larger ones, can have a non-trivial impact on a firm's stock price when they adjust their portfolio. Therefore, investor demand endogenously determines the stock price and cannot be added directly to our estimating equations. To address the endogeneity of prices, Koijen and Yogo (2019) construct the following instrument, computed separately for each investor i:

$$\hat{me}_i(n) = \log\left(\sum_{j \neq i} A_j \frac{\mathbb{I}_j(n)}{1 + \sum_{m=1}^{N} \mathbb{I}_j(m)}\right), \tag{9}$$

where $\mathbb{I}_j(n)$ is an indicator variable indicating whether a stock n is in investor j's universe. This instrument is the market-clearing price if all investors other than i held equal-weighted portfolios of their investment universe.

This identification strategy relies on the assumption that some stocks are outside an investor's investment universe and hence an investor's zero investment into these stocks is a predetermined variable. This assumption appears reasonable because most funds are known to have investment mandates that prohibit investment managers from considering investments in certain stocks. Unfortunately, these mandates are rarely disclosed, so we follow Koijen and Yogo (2019) and define the investment universe for a given investor as those stocks that the investor held in the current quarter or in the previous 11 quarters.

We estimate equation (7) using the above instrument for the market value of equity based on the following moment condition:

$$\mathbb{E}\left[\epsilon_i(n) | \hat{me}(n), \mathbf{x}(n)\right] = 1. \tag{10}$$

Another complication that arises is that some investors, especially smaller ones, have concentrated portfolio holdings, which can make estimating equation (7) challenging. We thus follow Koijen and Yogo (2019) and pool investors with fewer than 1,000 holdings in a given quarter. Specifically, we group these concentrated investors by type (e.g., banks) and, within each type, combine them into bins based on AUM. We set the number of bins in each quarter so that the average number of non-zero holdings per bin is 2,000 to ensure we have a sufficient number of holdings to adequately estimate the demand-characteristics coefficients.

For both the dispersed investors (i.e., those with more than 1,000 holdings) and the binned investors, we estimate equation (7) each quarter. We then aggregate the estimated demand parameters by first calculating the AUM-weighted averages of the slope coefficients by investor type within each quarter and subsequently averaging the quarterly investor-type estimates over time. To make inferences, we account for the autocorrelation in the error term by reporting Newey-West standard errors. We correct for 12 quarters, which corresponds to our window for a fund's investment universe.

5 Results

We conduct a series of tests to analyze the demand-relevance of information reflected in the accounting numbers. We start by analyzing revealed preferences for accounting profitability measures across different investor types and at the aggregate. We then perform several counterfactual tests to assess investors' contributions to the aggregate price-earnings relation. We subsequently move to analyze the income statement components and their associations with asset demand. Finally, we decompose earnings into cash flow and accrual components to study investors' revealed preferences for accrual-based versus cash-based measures.

Although our focus is on profitability, we include five additional firm characteristics in all specifications based on the asset pricing literature: the log of market capitalization (instrumented based on equation (9)), the log of book equity, market beta, dividend yield, and investment.[8] All variables are defined in the Appendix A. We include dividend yield because it is closely linked to several valuation methods, like the dividend discount model (e.g., Fama and French, 2007; Damodaran et al., 2007). We include market capitalization, book equity, and market beta because they form the basis for Fama and French (1993)'s three-factor model. Finally, we include asset growth because Fama and French (2015) and Hou, Xue, and Zhang (2015) show investment measures are incrementally informative at explaining returns beyond three-factor models. To preserve space, we do not report these estimates.[9]

These characteristics, along with the latent demand, determine how an investor allocates her wealth across stocks *within* her investment universe, which is the set of stocks held in the current or the previous eleven quarters. Stocks not in this set are not considered by the investor. Thus, the model allows for investors to have different investment mandates, even though the firm characteristics we include do not explicitly account for these differences.

We scale all profitability measures by average total assets, which, when combined with the exponential form of equation (7), implies the estimated coefficients can be interpreted as the percent change in an investor's demand from a percent change in return on assets (i.e., a profit metric scaled by assets).

5.1 Demand for stocks and profitability measures

Our first set of tests focuses on the demand relevance of three common profitability measures: gross profit (GP), operating profit (OP), and income before extraordinary items

[8]We do not include momentum but rather assume it is a part of latent demand because we do not view it as a fundamental characteristic. Given the model's focus on profitability, which has a long-run effect on returns, and momentum's well-documented short-term nature (e.g., Lee and Swaminathan, 2000), it is unlikely to interfere with our findings.

[9]The results are available upon request.

("bottom line" earnings). Despite these measures' ubiquitous presence in academic research, there is an ongoing debate about what profit measure is most useful for investors (Rouen, So, and Wang, 2021). "Bottom line" earnings measure changes in the value of shareholder claims and thus should be of ultimate interest to equity investors. Empirically, however, "bottom line" earnings exhibit a weak association with stock returns (e.g., Fama and French, 2008). Novy-Marx (2013) argues that net income is a noisy measure of profitability due to the presence of transitory components. He instead advocates measuring profitability with gross profit. However, gross profit excludes many relevant expenses, and Ball et al. (2015) contends it is dominated by operating profit. Unlike these prior studies, we directly investigate the relevance of each of these measures to equity investors by examining their revealed preferences.

Table 2 presents the weighted-average estimates for the coefficients of these three profit measures from equation (7). We start by analyzing institutional investors' demand (columns 1–6), non-institutional "household" demand (column 7), and aggregate demand (column 8). We report six model specifications that examine the profitability measures either individually (Models 1–3) or jointly (Models 4–6).

Models 1–3 show that institutional investors are sensitive to each of the three profit measures when used on a standalone basis. However, the coefficients on gross profit across investors are about one-quarter in size compared to the corresponding coefficients on operating profit and "bottom" line earnings, suggesting these investors are less sensitive to variation in gross profit. More importantly, comparing the coefficients for Models 1–3 across investor types reveals significant heterogeneity in the demand sensitivity and hence in the relevance of accounting information. Banks and insurance companies are the most sensitive to profitability measures, consistent with these investors having a greater fiduciary responsibility that can tilt portfolios towards investments deemed to be more prudent, such as those with higher profit (Del Guercio, 1996; Bushee, 2001). By contrast, mutual funds and pension funds are the least sensitive. For example, compared to banks, mutual funds are about half as sensitive to profit measures, highlighting the variation in investor preferences and suggesting that different investment strategies can affect the relevance of profitability information.

When we aggregate institutional demand and compare it to household demand, we observe two distinct patterns. Unsurprisingly, institutional demand is positive and highly significant for all three profitability measures in Models 1–3. By contrast and in line with the findings in Koijen and Yogo (2019) that the household sector behaves very differently, the household demand shows an economically small negative association with each profitability metric. This observation is consistent with household investors either disregarding earnings or preferring characteristics other than near-term profit (Ayers et al., 2011; Blankespoor et al., 2019).[10] This suggests institutional investors rely more heavily on firm fundamentals when forming portfolios as compared to the household sector.

Column 8 aggregates both institutional and household investors and shows all three profit measures are positive and statistically significant. As columns 6 and 7 suggest, this relation is driven by the demand from institutional investors. Although the magnitudes of the total demand sensitivities are about half the size of the institutional demand sensitivities, the relative sensitivity for each measure remains similar. Specifically, the sensitivity to gross profit is about one quarter in size compared to operating profit or "bottom line" earnings and the relevance of the latter two metrics is comparable. This result is interesting because even though net income is of ultimate interest to equity investors, it does not dominate operating profit empirically.

Models 4–6 of Table 2 jointly include profitability measures to examine whether in-

[10]Several papers use high-frequency retail trading data and find retail investors can interpret earnings information. For example, Kaniel, Liu, Saar, and Titman (2012) finds retail investors appear to respond negatively to earnings news because they are unwinding profitable positions that predicted the positive earnings news. Our results are consistent with this finding because we associate holdings data with accounting information after the information has been released. Relatedly, Kelley and Tetlock (2013) finds market orders from retail investors can predict future earnings surprises, whereas limit orders do not. Without retail trading data, we do not know whether household holdings are more indicative of limit orders or market orders. Furthermore, as described in Section 3, our "households" are not strictly retail investors. This assortment of different investors makes it difficult to relate directly to the retail-trading literature.

vestors' portfolio decisions reveal a dominant metric. Within different institutional investors (columns 1–5), the coefficient on gross profit is smaller than that of the other two metrics and is often insignificant. In contrast, the relative sensitivity between operating profit and "bottom line" earnings varies considerably by the type of investor. Some investors put more weight on operating profit (e.g., banks), whereas others act as if they give preference to earnings (e.g., pension funds). Such findings can be explained by differences in investment strategies and mandates across institutions that can give greater weight to one profit metric over another. For example, net income is more likely a part of investment mandates for more passive investors through the use of simple valuation metrics such as price-to-earnings ratios (Bushee and Noe, 2000), whereas operating income is likely a focus of investors following fundamentals-based strategies because they can exclude transitory items.

Aggregating institutional investor demand (column 6) reveals that gross profit loses horseraces to the other two profit measures. Despite being marginally statistically significant, its economic magnitude is an order of magnitude lower compared to operating profit (see model 4). In contrast, both operating profit and "bottom line" earnings are incrementally useful in explaining investment decisions. This reflects the prior result that some institutional investors 'prefer' operating profit and others – "bottom line" earnings.

Finally, column 8 shows that for aggregate demand, operating profit comfortably dominates both gross profit and "bottom line" earnings. Despite including other profit measures, the slope coefficient on operating profit remains similar in magnitude (and statistical significance) to Model 2, where this metric is considered on a standalone basis. At the same time, the coefficients on gross profit and "bottom line" earnings fall in value and, in the case of "bottom line" earnings, become statistically insignificant. For example, in Model 6, the coefficients on gross profit and "bottom line" earnings are 0.039 and 0.024, which contrasts sharply with the corresponding standalone counterparts of 0.104 and 0.463 in Models 1 and 3, respectively. Generally, the aggregate-demand results in Table 2 bolster the findings in Ball et al. (2015) that operating profit is the most informative of the three measures at the aggregate demand level.

In sum, institutional investors do not favor a single measure of profitability and have different informational demands than households. This heterogeneity supports the FASB's position that "analysis aimed at objectives such as predicting amounts, timing and uncertainty of future cash flows requires financial information segregated into reasonably homogeneous groups. ... the Board believes it is important to avoid focusing attention on the 'bottom line'." (FASB, 1984, paras. 20-22). Meanwhile, operating profitability is the most relevant number at the aggregate-demand level from a portfolio-decision standpoint.

5.2 Demand- vs. value-relevance perspectives

How does the demand-relevance of accounting information reconcile with its value relevance? The latter is based on the associations between stock prices and accounting measures, whereas the former is based on asset demand. Although the two are not equivalent, the two perspectives can be reconciled via the market clearing condition. However, this condition, combined with investor heterogeneity, implies that the relation between stock prices and accounting profitability varies depending on the (aggregated) preferences of investors holding the stock. This prediction does not follow from the value-relevance literature, which assumes a constant relation between stock prices and earnings irrespective of investor type.[11]

To appreciate this more explicitly, we show in Appendix B that the market clearing

[11]Some papers include interactions between accounting information and firm characteristics, such as industry, to offer a more nuanced relation between accounting and price (e.g., Balachandran and Mohanram, 2011). However, despite efforts to ex-ante identify how the relation can vary across firms, Holthausen and Watts (2001) notes these are likely incomplete as the relation varies along many dimensions, some of which may have been omitted.

condition can be approximately written as:

$$p_t(n) + s_t(n) \approx \sum_{k=1}^{K} \bar{\beta}_{k,t}(n) x_{k,t}(n) + \bar{\varepsilon}_t(n), \tag{11}$$

where

$$\bar{\beta}_{k,t}(n) = \frac{\sum_{i=1}^{I} \theta_{i,t}(n)\beta_{k,i,t}}{1 - \sum_{i=1}^{I} \theta_{i,t}(n)\beta_{0,i,t}} \tag{12}$$

This equation implies that the relation between market valuation and accounting characteristics, $\bar{\beta}_{k,t}(n)$, is the share-weighted average of investors' sensitivities, scaled by the share-weighted average of investors' price elasticities (i.e., $1 - \beta_{0,i,t}$). Because different investors hold different stocks, this share-weighted average implies the relation is unique to each firm.

To test whether investor heterogeneity is important, we split $\bar{\beta}_{k,t}(n)$ into the average across all firms in time t and the investor-specific component. Doing so augments the typical value-relevance regression with the interaction between the characteristics and share-weighted average of investor sensitivities:

$$me_t(n) = \sum_{k=1}^{K} \left(x_{k,t}(n)\gamma_{k,t}^{(1)} + \gamma_{k,t}^{(2)} \bar{\beta}_{k,t}(n) \times x_{k,t}(n) \right) + \upsilon_{i,t}(n). \tag{13}$$

In this equation, $me_t(n)$ is the log of market equity (i.e., $p_t(n) + s_t(n)$), $x_{k,t}(n)$ are firm characteristics, and $\bar{\beta}_{k,t}(n) \times x_{k,t}(n)$ is the interaction of investor sensitivities and firm characteristics.[12] If the differences in the demand for accounting information across firms are important, then the coefficient on the share-weighted average of sensitivities, $\gamma_{k,t}^{(2)}$, will be significant.

Table 3 reports estimates from this regression for the three definitions of profit (Mod-

[12]Because we estimate Equation (7) for each investor-quarter, we include quarter fixed effects.

els 1 – 3 in Table 2).[13] As expected, columns 1 – 3, which assume a fixed relation across firms, show each profit definition has a positive association with price. More interesting is that columns 4 – 6 show that for all three profit definitions, the coefficients for the share-weighted averages interacted with characteristics are positive and highly significant. In fact, the coefficients on the interactions are larger in magnitude and of greater statistical significance compared to the main effects, suggesting heterogeneous investor demand is an important determinant for the price-earnings relation. This result highlights the importance of investor heterogeneity in understanding the link between prices and accounting information.

5.3 Demand-relevance and investment objectives

To shed light on the source of the documented heterogeneity in demand relevance, we analyze how accounting information's demand relevance links to investment objectives. In theory, differences in the objective functions lead to different informational needs and hence lead to heterogeneity in the relevance of accounting numbers. Because the objective functions of investors are not directly observable, we focus on the key dimension that differentiates investors (within their types), namely, the degree to which an investor has an active focus.

5.3.1 Cross-sectional variation in active focus

To measure the extent to which a fund follows an active strategy, we construct two proxies. First, we use share turnover as an indicator of active investing (Del Guercio and Hawkins, 1999). For each investor i, we calculate the sum of absolute changes in portfolio

[13] In all columns, we include the additional characteristics but for parsimony do not report them. Similarly, we do not report the interactions of the share-weighted averages and other characteristics for columns 4 – 6.

weights for each stock n in her portfolio between quarters $t-2$ and $t-1$:[14]

$$Turnover_{i,t-1} = \sum_n |w(n)_{i,t-1} - w(n)_{i,t-2}|. \tag{14}$$

Our second proxy follows Koijen et al. (2021) and is an investor's deviation from the value-weighted holdings of her investment universe. Specifically, we compute the active weight ($Active\ Weight_{i,t}$) as:

$$Active\ Weight_{i,t} = \frac{1}{2} \sum_{n \subseteq \mathcal{N}_{i,t}} |w_{i,t}(n) - w^m_{i,t}(n)| \tag{15}$$

where $w_{i,t}(n)$ is the investor i's actual weight on stock n and $w^m_{i,t}(n)$ is the weight the investor would place on stock n if she held the value-weighted portfolio of her investment universe.[15]

In addition to an investor's propensity to have an active strategy, we also examine the role of size on profit sensitivity. Large investors are likely less sensitive to profit because they are well diversified, usually manage several index funds (e.g., Vanguard or Fidelity), and are unable to easily shift their holdings (e.g., Coffee Jr, 1991; Carleton, Nelson, and Weisbach, 1998).

With these proxies, we estimate the following regression of the determinants of sensitivity to profit measures:

$$\begin{aligned} \hat{\beta}_{j,t} = \alpha_0 + \alpha_1 log(AUM)_{j,t-1} + \alpha_2 Active_{j,t-1} \\ + \sum \gamma_j Investor\ Type\ Indicators_j + u_{j,t}, \end{aligned} \tag{16}$$

where $\hat{\beta}_{j,t}$ is the profitability coefficient for investor j in period t estimated from equation (7) and $Active_{j,t-1}$ is one of our two proxies for active management, $Turnover_{j,t-1}$ or

[14]To ensure price changes do not artificially inflate turnover, we compute portfolio weights in periods $t-1$ and $t-2$ based on $t-2$ price.

[15]We divide the sum by one-half to avoid double-counting deviations.

$Active\ Weight_{j,t-1}$.

The results are reported in Table 4. In line with the idea that larger funds are more passive, we observe a negative association between *log(AUM)* and demand sensitivity to profit measures, while controlling investor types. Further, consistent with our prediction, we observe positive and statistically significant coefficients on our two proxies for active focus, *Turnover* and *Active Weight*. The sign on these coefficients implies that investors with active strategy objectives exhibit greater demand sensitivities to accounting information. This result supports our conjecture that the relevance of accounting information to investors varies with the objective that they pursue.

5.3.2 Changes in S&P 500 membership as shocks to investor-base objectives

We supplement our cross-sectional analysis of investment objectives by exploiting a plausibly exogenous shift in relative investors' preferences for a given stock caused by its addition to and exclusion from the S&P 500 index. Once a stock is a part of the index, passive investors are more likely to hold it in their portfolio per their investment mandates despite no meaningful change in a firm's economics. Because passive investors are expected to be less sensitive to accounting information (e.g., Appel, Gormley, and Keim, 2016; Atkinson, 2020), a firm's overall demand sensitivity to profitability should decline.[16] A change in index membership thus leads to a shift in the collective objectives of a company's investor base in a way that reduces a firm's aggregate demand sensitivity to earnings.

We test this prediction using a difference-in-differences design that regresses firm-level demand sensitivity to accounting profits (coefficients from models 1 through 3 in Table 2) on an S&P 500 indicator, firm fixed effects, and time fixed effects:

$$\hat{\beta}_{n,t} = \alpha_1 S\&P\ 500\ Member_{n,t} + \nu_n + \tau_t + u_{n,t}, \tag{17}$$

[16]For example, investors that track indices, such as exchange-traded funds, are not sensitive to profit because their mandate is to match the returns of the index, irrespective of the constituents' profits.

where $\hat{\beta}_{n,t}$ is firm n's share-weighted average of its investors' sensitivity to profit and *S&P 500 Member* is an indicator for whether the firm is in the S&P 500. We include firm fixed effects to remove time-invariant shocks and quarter fixed effects to remove time-variant shocks. We also restrict the sample to the largest 1,000 firms in each quarter to achieve a relatively balanced and comparable control group. The coefficient of interest, α_1, is identified by firms who change S&P 500 membership and hence can be interpreted as a differences-in-differences estimate.

Table 5 reports the results. Column 1 indicates an insignificant shift in the demand sensitivity to gross profits upon inclusion into the index. In contrast, Columns 2 and 3 indicate a significant decline in the sensitivity to operating profit, and “bottom line" earnings. The effects are also significant economically, adding up roughly to a 20% change in the sensitivity as compared to the aggregate sensitivities in Table 2. These results are consistent with our prediction and further support the notion that investment objectives and constraints imposed by investment mandates influence the relevance of accounting information.

5.4 Counterfactual analysis of Price-Earnings Relation

The demand-based perspective allows us to address several questions related to the link between investors' preferences and the relevance of accounting information for stock prices. In this section, we explore three such questions by performing counterfactual analyses, which quantify the effect of a change in preferences on the relation between earnings and stock prices. First, does a shift in investors' demand elasticities affect the relation between earnings and stock prices? Second, does a shift in investment objectives, namely, a move from active to passive investment, influence the equilibrium price-earnings relation? Finally, how much does a change in investors' demand sensitivities to profit manifest itself in the price-earnings relation?

Each counterfactual analysis makes a specific change to investor preferences while holding latent demand and all other preferences fixed. Under this assumption, we recompute market-clearing prices and re-estimate the price-earnings relation.[17] We measure the price-earnings relation based on a value-relevance regression of book equity and operating profit on stock price, which Ohlson (1995) theoretically supports.[18]

$$P_t^{CF}(n) - P_t(n) = \alpha_1 BE_t(n) + \alpha_2 OP(n)_t + \gamma_t + \nu_t(n). \tag{18}$$

We include quarter fixed effects to account for any time-varying differences and deflate all amounts by shares to mitigate the role of scale effects (Barth and Clinch, 2009).[19] Unlike the standard value-relevance regressions, the dependent variable is the difference between the counterfactual price and the observed price, $P_t^{CF}(n) - P_t(n)$. This deviation eases interpretation because its coefficient indicates a *change* relative to our baseline regression of observed prices on earnings and book equity. In all of our counterfactuals, we use operating profit (OP) as a measure of profit (i.e., Model 2 of Table 2), in line with our findings above that this is the primary metric of collective interest to investors.

5.4.1 Demand price-elasticity and price-earnings relation

The traditional value-relevance perspective equates stock price to the present value of discounted expected cash flows. This view implicitly assumes that the demand for stocks is perfectly elastic—a slight reduction (increase) in price, holding other characteristics fixed, generates an infinite increase (reduction) in demand because the price does not match the present values of expected cash flows. Under this view, earnings influence prices only because they affect expected cash flows (and systematic risk), and differences in investment objectives or preferences are largely irrelevant to determining stock prices. Empirically, however, there is mounting evidence that the demand for stocks is relatively

[17]To converge to a new price, we follow Koijen and Yogo (2019) counterfactual algorithm outlined in their Appendix C.

[18]Prior value relevance research uses similar specifications. See, for instance, Collins, Maydew, and Weiss (1997) and Barth, Beaver, and Landsman (1998).

[19]Results are qualitatively similar if we scale results by book equity instead of shares.

inelastic.[20] Thus, investors' preferences, such as the demand elasticities, can have a direct effect on stock prices and therefore influence the price-earnings relation.

We investigate the role of elasticities on the price-earnings relation by altering investors' elasticities and recomputing the equilibrium prices. We consider two shifts in investors' demand elasticities: an increase of 10% and a decrease of 10%. The elasticity of (unscaled) investor's demand is $1-\beta_{i,ME}$, where $\beta_{i,ME} < 1$ and as $\beta_{ME,i} \rightarrow 1$, it implies investors' have more inelastic demand.[21] For each shift in the elasticities, we compute market-clearing prices and evaluate changes to the price-earnings relation.

Table 6 presents the results for this analysis. Column 1 reports the baseline estimates. The coefficient on operating profitability β_{OP} is 3.319, implying that a 1% increase in OP corresponds to a 3.319% increase in price. Column 2 indicates that this coefficient would decline by 0.590 if investors' demand elasticities were 10% greater. This change constitutes a 17.8% decline in the price-earnings relation. It occurs because when investors become more sensitive to price, they must be more conservative in purchasing high-profit firms (which they prefer), so that the counterfactual price for high-profit firms is lower than the observed prices, resulting in a muted price-earnings relation. Conversely, column 3 shows that when investors become 10% less elastic (i.e., more inelastic), the price-earnings relation increases by 0.561, corresponding to a 16.9% increase. The increase occurs because investors become less sensitive to price and invest more aggressively in high-profit firms. These results indicate that investors' preferences, in particular, price elasticities, have an economically important effect on the relationship between accounting information and stock prices.

[20] See, for instance, Chang, Hong, and Liskovich (2015); Pavlova and Sikorskaya (2021); Gabaix and Koijen (2021).

[21] To shift elasticities by ±10%, we set the counterfactual coefficient on price, $\beta^{CF}_{i,ME}$, to be $1-\eta+\eta\beta_{i,ME}$, where η is the desired change in elasticity (i.e., $\eta = 0.9$ for a 10% decrease and $\eta = 1.1$ for a 10% increase).

5.4.2 Heterogeneity in investors' objectives and price-earnings relation

We next examine how the differences in investment objectives, namely, active versus passive focus, affect the relevance of accounting information for stock prices. The increasing size of the passive investment base for many companies has led to a significant debate about its effect on the price discovery process (e.g., Stambaugh, 2014; Ben-David, Franzoni, and Moussawi, 2017) and the extent to which accounting information gets impounded into price (Israeli et al., 2017). In light of this debate, we study how a shift from active to passive investment objectives and vice versa affects the price-earnings relation. Specifically, our counterfactual analysis removes either active or passive investors and reallocates their wealth to the remaining institutional investors. As previously, we use the market clearing to determine the new equilibrium prices based on these changes, and re-estimate the price-earnings relation in equation (18). In this analysis, we define active investors as those institutions whose value of $\textit{Active Weight}_{i,t}$ is above the median for that quarter; conversely, passive investors are those institutions with $\textit{Active Weight}_{i,t}$ below the median.

Intuitively, one would expect the counterfactual with only active (passive) investors, who we have shown are more (less) sensitive to accounting information, would exhibit a greater (lower) price-earnings relation than what we observe empirically. However, this intuition is incomplete as it does not take into account differences in price elasticities across the two investor groups. In particular, active investors also happen to have more elastic demand.[22] Therefore, removing passive investors will have two offsetting effects on the price-earnings relation. On the one hand, the price-earnings relation will be amplified by the increased sensitivity of active investors to profits. On the other hand, it will be counteracted by an increase in investors' price elasticities. The relative size of these two effects is also a function of investor sizes. As a result, the magnitude of the net effect in

[22]Table IA.2 of the Internet Appendix reports the AUM-weighted average elasticities for active and passive institutional investors. Passive investors have more inelastic demand, which likely reflects a large proportion of index-based investors who are mandated to hold certain stocks, regardless of their price.

these counterfactuals is not obvious.

Table 7 reports the results from these counterfactual analyses. Column 1 shows the baseline model where we regress the observed price on book equity and operating profit. As before, we observe a positive and significant coefficient on *OP*.[23] Column 2 shows the counterfactual where we liquidate active investors and allocate their AUM to passive investors. We find that the price-earnings relation declines, and in terms of economic magnitudes, we estimate a decline of 0.421, which reduces the price-earnings relation by 12.9% (= 0.421/3.276).[24] In contrast, column 3 indicates that when we remove passive investors, the price-earnings relation increases by 0.698, which corresponds to a 20.6% (= 0.698/3.276) increase. The asymmetry in the relative effect size in these counterfactuals is noteworthy and arises from the interplay of differences in investor size, price elasticities, and profit sensitivity. Because the counterfactual where only passive investors remain has a smaller magnitude, our findings imply that the observed shift to passive investors has a significant but relatively muted effect on the price-earnings relation.

In sum, we find that heterogeneity in the investors' demand for accounting information, dictated by the differences in investment objectives, has a considerable effect on the relationship between stock prices and accounting information. In other words, the value-relevance documented in prior studies is a function of the investor base, which is largely at odds the view that prices are merely a function of future expected cash flows.

5.4.3 Changing the sensitivity to profitability

In this section, we explore how the price-earnings relation changes when investors' sensitivities to profit change. An increase in the sensitivity to profits can occur, for example, if the quality of information improves so that investors place greater weight on profits when making portfolio allocation decisions. Although an increase in sensitivity encourages

[23]The sample reported in Table 7 differs slightly from Table 6 because we truncate counterfactual prices at 1% and 99% and drop firm-quarters with missing counterfactual prices.

[24]Recall that the dependent variable for the counterfactual analysis in columns 2 and 3 is the difference between the counterfactual price and the actual price (i.e., $P_t^{CF}(n) - P_t(n)$).

investors to invest in high-profit firms, the price pressure from the corresponding increase in demand for profitable firms makes their stocks less attractive and reduces demand from elastic investors. This countervailing force makes it unclear how much an improvement in information quality, i.e., increased demand sensitivity to profits, will affect a stock price's relation to earnings.[25]

To quantify this effect, we vary all investors' sensitivities to operating profit, β_{OP}, by ±10% relative to the as-estimated amounts and evaluate the changes in the equilibrium price-earnings relation.

Table 8 reports the results. Column 1 reports our baseline estimates based on actual data, column 2 is the counterfactual with a 10% increase in sensitivity, and column 3 is the counterfactual with a 10% decrease in sensitivity. As one would expect, an increase (reduction) in the sensitivity increases (reduces) the price-earnings relation relative to the baseline. More interesting is the relative magnitudes of the coefficients. A 10% increase in the sensitivity translates to only a 0.078 or 2.3% (relative to the baseline coefficient of 3.409) increase in the association between earnings and prices. Similarly, a 10% reduction in the sensitivity translates into a 0.082 or, equivalently 2.4%, decrease in the price-earnings relation.

Figure 1 provides another perspective on these results. It plots the average percent change in stock prices across operating-profit quartiles (sorted by quarter). Panels A and B consider the cases when investors' sensitivities to profits increase and decrease, respectively, by 10%. Panel A indicates that firms in the highest quartile of operating profit only experience a 0.7% increase in price. Panel B shows a similar-sized effect but in the opposite direction. We also observe a non-linear pattern from these counterfactuals, where the lowest (highest) quartile of operating profit firms in Panel A (B) have a smaller decline in prices compared to the adjacent quartile. This non-monotonic effect likely arises

[25]This analysis only considers one aspect of accounting quality on markets—the impact on a firm's price level. Other benefits, like the short-run reactions to earnings announcements, are outside the scope of this paper.

from households and their persistent demand for low-profit stocks. Overall, the observed effects are attenuated because the equilibrium changes in the demand largely dissipate the effect of changing sensitivities.

In sum, we conclude a systematic change in the earnings sensitivities across investors only causes a muted change in the equilibrium price-earnings relation. This implies that even if accounting quality improved by a substantial margin, i.e., 10%, only a modest increase of 2.3% in the price-earnings relation would be expected. In other words, the strength of the association between accounting earnings and stock prices can be a misleading proxy for the quality of accounting information.

5.5 Earnings disaggregation and investor demand

Our next set of tests focuses on the heterogeneity in the demand relevance of earnings components. Because transitory items are not relevant to investors interested in predicting future cash flows, and given that operating profit is the most demand-relevant metric, we focus on the five primary components that jointly constitute operating profit: sales revenue (Sales); cost of goods sold (COGS); selling, general, and administrative expense, less research and development expense (SG&A, net R&D); research and development expense (R&D); and depreciation and amortization expense (D&A).[26]

Table 9 presents the results for this decomposition. As in Table 2, columns 1–5 show the sensitivities for different types of institutional investors. These columns reveal that, across investors, the demand sensitivity to Sales is significantly positive, whereas the sensitivity to the expense items is generally negative. Interestingly, within every investor type, the demand sensitivities for Sales, COGS, and SG&A (net of R&D), in absolute

[26]We include sales because it is the ultimate driver of profitability, particularly relevant for younger or unprofitable firms (Callen, Robb, and Segal, 2008), and is often more persistent than operating expenses (Ertimur, Livnat, and Martikainen, 2003). COGS measures the product costs, whereas SG&A expense captures operating expenses unrelated to production, such as non-production-related employee compensation and overhead costs, and a portion of SG&A (net of R&D) can also be viewed as an investment into internally generated intangible assets (e.g., Peters and Taylor, 2017). Finally, depreciation and amortization expenses measure the cost of tangible and externally acquired intangible assets consumed in a given period.

value, are remarkably similar. This is also largely the case D&A expense, except for investment advisors. In other words, each investor's demand is almost equally sensitive to a percent increase in revenue or a percent decrease in COGS, SG&A (before R&D), and D&A, even though different investor types have different sensitivities to income statement amounts. Although such a pattern is not obvious initially, investors' preferences reveal a tight "match" between revenue and these expenses. Furthermore, the almost identical absolute magnitudes of Sales and COGS imply investors do not demand disaggregated information about gross profit.

Most of the heterogeneity among institutional investors relates to R&D. The extent to which investors perceive R&D as an expense varies considerably, with the R&D sensitivity being significantly negative for investment advisors (−0.584) but insignificant for the other investor types. The insignificant sensitivity for most institutional investors suggests that many do not view R&D wholly as an expense, nor do they view it wholly as a measure for internally generated intangible assets (e.g., Eisfeldt and Papanikolaou, 2014; Peters and Taylor, 2017).

Column 6 aggregates institutional investor demand, which we compare to household demand (column 7). Unsurprisingly, we find the aggregate institutional demand closely matches Sales, COGS, and SG&A. Interestingly, household demand does not exhibit statistically or economically significant associations with these three components, which lines up with our findings in Table 2. Furthermore, R&D expense also behaves very differently across the two investor classes. Institutional demand exhibits a statistically insignificant negative coefficient on R&D expense, whereas household demand shows a positive sensitivity, which is both statistically and economically significant. This result for households suggests they view R&D activities as an investment rather than a current-period expense (e.g., Lev and Sougiannis, 1996). Combined with the findings that households are not responsive to sales or other expenses, this suggests that household demand is not driven by current economic performance but rather by the sentiment related to a firm's future prospects (Barber and Odean, 2013).

Finally, Column 8 aggregates all investors and shows similar magnitudes for Sales, COGS, and SG&A, which reflects the matching with institutional investors.[27] We observe a positive and statistically significant coefficient on R&D, which arises from households having a positive sensitivity to R&D expense and can explain why studies that focus on the aggregate measures, like stock price, find that investors seem to capitalize R&D (e.g., Lev and Sougiannis, 1996; Barth et al., 2022).

In sum, this analysis reveals a substantial heterogeneity in the demand relevance for the income-statement components. Sales, COGS, and SG&A's sensitivities indicate a close match among these line items in terms of their demand relevance and also exhibit moderate heterogeneity across institutional investors. By contrast, there are significant differences across investors in the demand relevance of R&D.

5.6 Demand relevance of accrual- and cash-based measures

Having shown there is meaningful heterogeneity in investors' preferences for information about accounting profits and their components, we revisit a long-standing debate about whether accrual- or cash-flow-based measures of profitability are more informative for investors.[28] Prior studies perform two types of tests to address this question: (1) comparing the correlation of stock returns and earnings with stock returns and cash flows (e.g., Ball and Brown, 1968; Dechow, 1994), and (2) comparing the ability of earnings with the ability of cash flows at predicting future cash flows (e.g., Bowen, Burgstahler, and Daley, 1986; Finger, 1994). Neither approach, however, examines investors' actual decisions to determine whether they prefer an accrual- or cash-flow-based measure.

We re-estimate equation (7) including cash- and accrual-based profit measures both individually and jointly. The results of this analysis are in Table 10, where Panel A focuses

[27]The sensitivity to D&A is approximately 50% higher compared to Sales, COGS, or SG&A. This appears to be driven by household demand.

[28]See, for instance, Dechow, Kothari, and Watts (1998); FASB (1978); Barth, Clinch, and Israeli (2016); Nallareddy et al. (2020); Ball and Nikolaev (2021).

on operating cash flow, and Panel B examines free cash flow. For each type of cash flow, we select an equivalent variable measured on an accrual basis. We follow Ball and Nikolaev (2021) and compare operating cash flows to *Operating Earnings* (DD OP), as defined in Dechow and Dichev (2002). Like operating cash flow, operating earnings in Dechow and Dichev (2002) does not include costs associated with fixed assets (i.e., capital expenditures and the depreciation and amortization expense). In contrast, we compare free cash flow with operating profit (OP), because both are computed after deducting the effects of capital investment. Specifically, free cash flow deducts capital expenditures from the operating cash flow, and operating profit is calculated after deducting depreciation and amortization expense.

Models 1 and 2 of Panel A reveal that on a standalone basis, operating earnings and operating cash flows have positive and highly significant associations with each type of institutional investor's demand (columns 1–5) and overall institutional demand (column 6). It is noteworthy that in all six columns, the demand sensitivity is substantially lower for cash flows than accrual-based profits. Furthermore, when we run a "horserace" between the two measures by including them simultaneously in Model 3, we find the coefficient on operating cash flow declines substantially, and for banks and pension funds, it is insignificant. By contrast, the coefficient on operating earnings has a similar magnitude to that in Model 2 and remains statistically significant. For household demand, column 7 shows its sensitivity is negative for both operating earnings and operating cash flows. This finding is not unexpected given our prior findings of either an insignificant or negative association between household demand and profitability. Finally, for aggregate demand (column 8), we observe similar patterns as with institutional demand, although the magnitudes are smaller to reflect the household's negative sensitivity.

In Panel B, we perform an analogous set of tests but now use free cash flow and operating profit. The results parallel those in Panel A. When included individually, free cash flow and operating profit both exhibit significantly positive institutional and aggregate demand sensitivities. When the two measures are used simultaneously to explain the aggregate demand, the coefficient on free cash flows declines to a small, statistically insignificant quantity (i.e., from 0.126 to 0.060), while operating profit remains highly significant with a similar economic magnitude.[29]

In sum, this analysis provides strong evidence that accrual-based profitability measures are consistently more relevant for explaining different equity investors' portfolio-allocation decisions despite the heterogeneity in investor objectives. The findings are consistent with FASB (2010)'s well-known proposition that accrual-based earnings are more informative to investors than cash receipts and payments.

5.7 Demand relevance of accruals and cash flows

We complement the analysis in the prior subsection by disaggregating earnings into operating cash flow and accrual components. The value-relevance literature finds different types of accruals are incrementally informative in explaining stock prices and cash flows (e.g., Barth, Cram, and Nelson, 2001; Barth et al., 2016). Accordingly, we distinguish between current and non-current accruals components.

The analysis is presented in Table 11. Model 1, which focuses on total accruals, indicates that for all institutional types, both total accruals and cash flows exhibit positive demand sensitivities. The coefficient on cash flows, however, is noticeably higher. This finding suggests that although total accruals contain incremental information relevant to portfolio decisions, institutional investors understand the difference between the two components of earnings and make decisions accordingly. We observe a similar result with institutional demand (column 6) and aggregate demand (column 8). Broadly, this evidence is at odds with the notion that investors naïvely fixate on earnings by not distinguishing between accruals and cash flows (Sloan, 1996).

[29] Although Panel B of Table 10 and Table 2 both use operating profit, the results differ somewhat because we require non-missing free-cash-flow observations in Table 10, which starts in 1988, after the introduction of the statement of cash flows from FAS 95. In contrast, Table 2 requires non-missing gross profit, operating profit, and "bottom line" earnings and begins at the start of our sample period, 1980.

Model 2 splits total accruals into current and non-current portions. We find that the sensitivity of demand to current accruals is similar in magnitude to that of cash flows. This result holds for the demand of each type of institutional investor, overall institutional, and aggregate. For example, for overall institutional demand, cash flows and current-accrual sensitivities are 0.880 and 0.875, respectively.

In contrast, the demand sensitivities of non-current accruals remain consistently lower than either cash flows or current accruals. The meaningful difference in demand sensitivities for current and non-current accruals suggests investors value disaggregate accruals information and implies the reporting requirements of ASC 230, which provides detail of accruals in the statement of cash flows, is of value to investors. Furthermore, the smaller weight on non-current accruals suggests investors view these amounts to be less relevant for their decisions. This result is intuitive because non-current accruals are more likely to contain stale information, which may be less informative in predicting a firm's future cash-generating ability.

6 Conclusion

Although decision-usefulness is the primary objective of financial reporting (FASB, 2010), there is little large-scale evidence linking accounting information to investors' decisions. Unlike prior studies that indirectly examine the usefulness of accounting information based on its value relevance, we examine investors' revealed preferences to study the relevance of accounting numbers in their portfolio decisions. To do so, we draw on the recent asset-pricing literature to estimate the demand for stocks and evaluate the demand-relevance of accounting information, while allowing for heterogeneity in investors' objectives.

We document pronounced heterogeneity in the relevance of accounting information across equity investors. Some investors, such as banks and insurance companies, are, on average, more sensitive to profitability measures than others, such as mutual funds and pension funds. Households, generally, do not find accounting profits to be relevant for their asset demand choices. Incremental demand-relevance of different profit measures also varies by investor type. For the aggregate investor demand for a given stock, we find that operating profitability is the most relevant metric. However, focusing on the aggregate relations can be misleading as they do not reflect rich heterogeneity in investor preferences.

When we investigate the sources of heterogeneity in the demand relevance, we find that the differences in investor objective functions are an important contributor. In particular, investors who have less restricted investment mandates or pursue more active objectives, on average, exhibit greater demand-relevance of accounting information.

Our counterfactual analysis shows that investors' preferences have a considerable effect on the strength of the price-earnings relation. In particular, a shift towards more price-elastic demand attenuates this relation and so does a shift towards more passive investor objectives. Such effects are not obvious ex ante and are not easily explained by the traditional view that stock prices are merely present values of future expected cash flows. These results also provide micro-foundations for the traditional value-relevance framework and offer an area for future work to examine.

Beyond profit amounts, we also observe heterogeneity in the relevance of individual line items in the income statement. For example, most investors do not view R&D purely as an expense but treat it as an investment. We also add to a long-standing debate on the benefits of accrual accounting by providing evidence that different investor types consistently prefer accrual-based performance measures and that they value disaggregated information about accruals. Finally, we find that the price pressure often mitigates the direct effect of investors' demand for certain characteristics. The link between accounting characteristics and stock prices is not only a function of investors' preferences for these characteristics but also their elasticities and the elasticities of other investors.

Although we cannot directly observe whether investors actually *use* accounting information or instead rely on alternative (correlated) information sources, the analysis of the demand relevance of accounting information is a useful step toward understanding what types of information investors decisions actually require. To this end, our results should be interpreted from the viewpoint of an investor who relies on financial statements as the primary source of information about the firm. Our findings that investors do not appear to focus solely on earnings but instead utilize a broad set of accounting information, depending on investor type and the investment objective, suggests an important—but nuanced—role of accounting in shaping investors' decisions. Our results should be of interest to regulators as they evaluate the usefulness of accounting for a diverse user base and contributes to the ongoing debate about the efficacy of accounting information for decision-making.

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Appendix A Variable Definitions

This table contains descriptions of the variables used throughout this study. Each entry includes the variable name, a description of the variable, and sources used in its calculation.

Variable	Description
Active Weight	One half times the sum of absolute deviations of portfolio weights from market value weighted portfolio weights for each stock i and quarter t [CRSP; Thomson Reuters]
Asset growth	The log of the ratio of total assets (AT) and the lag of total assets [Compustat]
AUM	Assets Under Management in billions ($) [Thomson Reuters]
AUM frac.	Fraction of Assets Under Management within a type that is held by an investor [Thomson Reuters]
Banks	Indicator set to 1 if the investor is classified as a bank, and 0 otherwise. [Koijen and Yogo (2019)]
BE	The log of the sum of stockholders equity (SEQ), deferred taxes and investment tax credit (TXDITC), and purchase of common and preferred Stocks (PSTK) [Compustat]
Cash flow	Cash flow from operating activities (OANCF) scaled by average total assets [Compustat]
Cost of Goods Sold	Cost of Goods Sold (COGS) scaled by average total assets [Compustat]
Current Accruals	The sum of accounts receivable decrease (increase) (RECCH) plus inventory decrease (increase) (INVCH), accounts payable and accrued liabilities increase (decrease) (APALCH) and income taxes accrued increase (decrease) (TXACH) scaled by average total assets [Compustat]
D&A	Depreciation and amortization (DP) scaled by average total assets [Compustat]
DD OP	Operating earnings as defined in Dechow and Dichev (2002) scaled by average assets [Compustat]
Dividend to Book	Annual dividends of a firm over the book equity [CRSP]
Earnings	Earnings is defined as income before extraordinary items and discontinued operations (IB) scaled by average total assets [Compustat].
Earning Before Taxes	Pretax income (PI) less special items (SPI) scaled by total average assets [Compustat]
Free cash flow	Cash flow from extraordinary items and discontinued operations (OANCF) less capital expenditures (CAPX) and sale of property, plant, and equipment (SPPE) scaled by average total assets [Compustat]
Gross profit	Sales revenue (REVT) less cost of goods sold (COGS) scaled by average total assets [Compustat]
Insurance Companies	Indicator set to 1 if investor is classified as a Insurance Company, and 0 otherwise. [Koijen and Yogo (2019)]
Investment companies	Indicator set to 1 if investor is classified as a Investment company, and 0 otherwise. [Koijen and Yogo (2019)]
Investment advisors	Indicator set to 1 if investor is classified as an investment advisor, and 0 otherwise. [Koijen and Yogo (2019)]
ME	Stock price (PRC) times shares outstanding (SHROUT) [CRSP]
Mutual funds	Indicator set to 1 if investor is classified as a Mutual fund, and 0 otherwise. [Koijen and Yogo (2019)]
Non-current accruals	Total Accruals (TA) less Current Accruals (CA) scaled by average total assets [Compustat]
OP	Operating income after depreciation (OIADP) scaled by average total assets [Compustat]
Other	Indicator set to 1 if investor is classified as Other, and 0 otherwise. [Koijen and Yogo (2019)]

Pension funds	Indicator set to 1 if investor is classified as a Pension fund, and 0 otherwise. [Koijen and Yogo (2019)]
R&D	Research and Development Expense (XRD) scaled by average total assets [Compustat]
Sales	Net sales (SALE) scaled by average total assets [Compustat]
SG&A (net of R&D)	Selling, general, and administrative expense (XSGA) less research and development Expense (XRD)) [Compustat]
Total Accruals	Net income (NI) less cash flow scaled by average total assets [Compustat]
Turnover	The sum of absolute changes in portfolio weights for each stock i in their portfolio between quarters $t-1$ and $t-2$, using price from $t-2$ [Thomson Reuters]

Appendix B Derivations to reconcile asset demand to value-relevance

We explore the importance of heterogeneous investor preferences in shaping the relation between price and profit measures by reformulating Equation (7) to show it implies a price-earnings relation that is the share-weighted average of investors' sensitivity to profit. We begin with the market clearing condition in natural logarithms[30]

$$p_t(n) + s_t(n) = \log\left(\sum_{i=1}^{I} A_{i,t} \frac{\exp(\log(\delta_{i,t}(n)))}{1 + \sum_{m\in\mathcal{N}_{i,t}} \exp(\log(\delta_{i,t}(m)))}\right). \tag{19}$$

Taking a first-order approximation around $\log(\delta_{i,t}(n)) \approx c_t(n)$ for asset n and a zeroth-order approximation around $\log(\delta_{i,t}(n)) \approx c_t(m)$ for all $m \neq n$, where $c_t(\cdot)$ is a constant, results in the market-clearing condition becoming

$$p_t(n) + s_t(n) \approx \log\left(\sum_{i=1}^{I} A_{i,t}\bar{w}_{i,t}(n)\right) + \sum_{i=1}^{I} \theta_{i,t}(n)\big(\log(\delta_{i,t}(n)) - c_t(n)\big),$$

where

$$\bar{w}_{i,t}(n) = \frac{\exp(c_t(n))}{1 + \sum_{m\in\mathcal{N}_{i,t}} \exp(c_t(m))}$$
$$\theta_{i,t}(n) = \frac{\sum_{i=1}^{I} A_{i,t}\bar{w}_{i,t}(n)(1-\bar{w}_{i,t})}{\sum_{i=1}^{I} A_{i,t}\bar{w}_{i,t}(n)}.$$

Substituting in $\delta_{i,t}(n)$ from Equation (7) and rearranging implies

$$p_t(n) + s_t(n) \approx \sum_{k=1}^{K} \bar{\beta}_{k,t}(n) x_{k,t}(n) + \bar{\varepsilon}_t(n), \tag{20}$$

where

$$\bar{\beta}_{k,t}(n) = \frac{\sum_{i=1}^{I} \theta_{i,t}(n)\beta_{k,i,t}}{1 - \sum_{i=1}^{I} \theta_{i,t}(n)\beta_{0,i,t}} \tag{21}$$

$$\bar{\varepsilon}_t(n) = \frac{\log\left(\sum_{i=1}^{I} A_{i,t}\bar{w}_{i,t}(n)\right) + \sum_{i=1}^{I} \theta_{i,t}(n)\big(\log(\epsilon_{i,t}(n)) - c_t(n)\big)}{1 - \sum_{i=1}^{I} \theta_{i,t}(n)\beta_{0,i,t}}. \tag{22}$$

[30] This derivation is based on an earlier version of Koijen and Yogo (2019).

Equation (20) implies that the relation between price and characteristics is the share-weighted average of investors' sensitivities, scaled by the share-weighted average of investors' elasticities to price (i.e., $1 - \beta_{0,i,t}$).

Figure 1: Change in market equity for changing profit sensitivity

This figure presents the percent change in market equity for the counterfactuals when we vary investors' sensitivities to operating profit. In this figure, we sort firms into operating profit quartiles for each quarter. Panel A (B) reports the average change in the market capitalization when we exogenously increase (decrease) the coefficient on operating profit by 10% relative to the observed market capitalization.

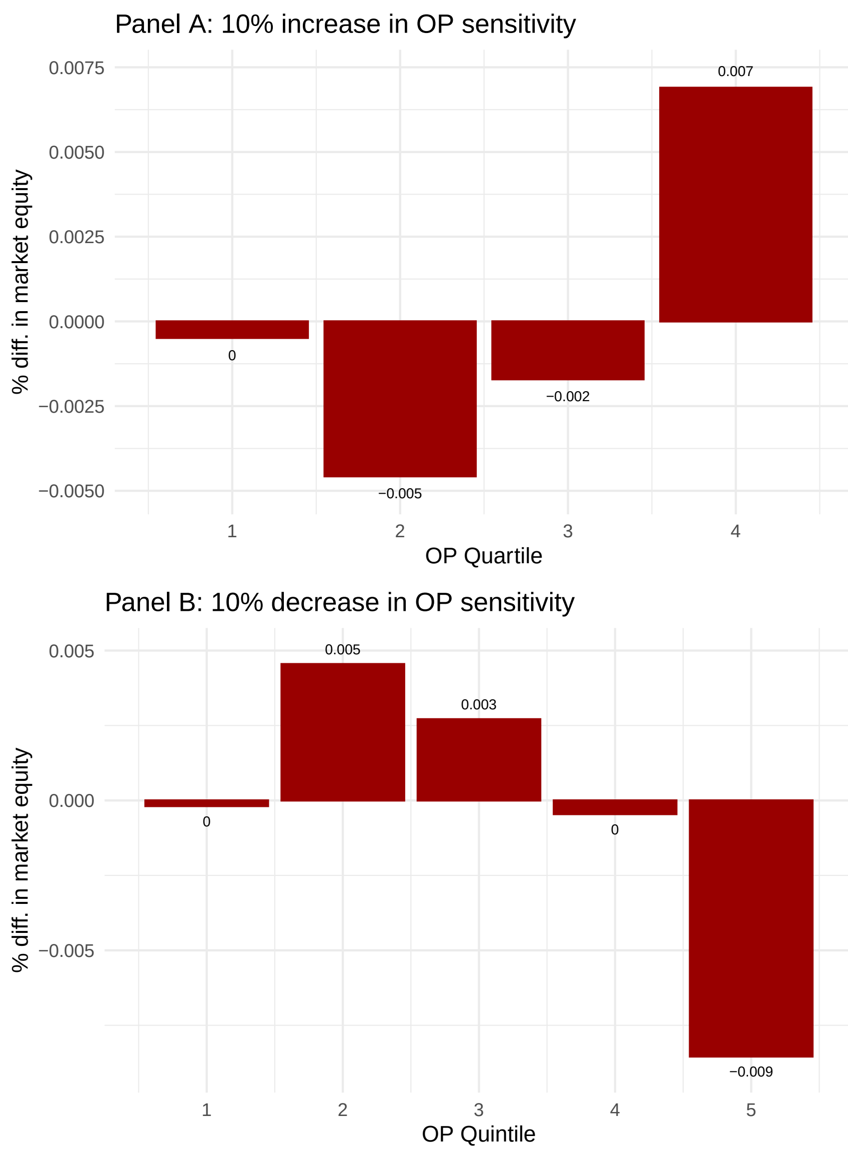

Table 1: Summary statistics

This table presents summary statistics for the variables used in the one-at-a-time profit estimations. All characteristics were truncated at 1 and 99% and the sample consists only of firms with non-missing characteristics. For Panel A, summary statistics were computed over the entire sample period; for Panel B AUM-weighted means of each variable were computed by investor type and quarter and then averaged over the quarters for each type. Types are listed in order of mean quarerly total AUM.

Panel A: Pooled sample summary

	N	Min	Q1	Median	Mean	Q3	Max	SD
log(ME)	385311	0.893	3.686	5.184	5.265	6.765	10.645	2.053
log(BE)	385311	0.157	3.292	4.625	4.699	6.055	9.642	1.899
Market beta	385311	-0.418	0.666	1.074	1.142	1.524	3.675	0.681
Asset growth	385311	-0.614	-0.018	0.065	0.095	0.172	1.254	0.228
Dividend to book	385311	0.000	0.000	0.000	0.017	0.028	0.194	0.028
Gross profit	385311	-0.516	0.197	0.349	0.379	0.528	1.294	0.264
OP	385311	-0.803	0.022	0.080	0.059	0.132	0.375	0.138
Earnings	385311	-0.869	-0.004	0.040	0.014	0.079	0.270	0.128
Cash flows	281885	-0.402	-0.003	0.051	0.042	0.105	0.316	0.106
Free cash flows	208819	-0.490	-0.050	0.012	-0.004	0.063	0.282	0.115

Panel B: Summary by investor type

	Aggregate demand	Institutional demand	Households	Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds
log(ME)	8.398	8.300	8.409	8.698	8.349	8.523	8.660	8.398
log(BE)	7.460	7.406	7.421	7.729	7.397	7.571	7.739	7.460
Market beta	1.053	1.030	1.095	1.008	1.089	1.067	1.041	1.053
Asset growth	0.113	0.108	0.121	0.106	0.116	0.111	0.105	0.113
Dividend to book	0.041	0.043	0.037	0.047	0.037	0.040	0.043	0.041
Gross profit	0.374	0.358	0.390	0.389	0.381	0.379	0.377	0.374
OP	0.120	0.114	0.123	0.129	0.119	0.124	0.123	0.120
Earnings	0.064	0.060	0.067	0.071	0.064	0.068	0.067	0.064
Cash flows	0.082	0.078	0.083	0.085	0.080	0.083	0.083	0.082
Free cash flows	0.034	0.028	0.035	0.039	0.032	0.038	0.037	0.034
AUM	4058	2,977,359	8489	5616	819	4647	5521	4058
AUM frac.	0.334	0.153	0.077	0.042	0.038	0.011	0.010	0.334

Table 2: Profitability estimations

This table presents estimates for models consisting of a series of different profitability variables and the five control variables: instrument for the log of ME, the market beta, the log of BE, the asset growth, and the annual dividend to book equity ratio. Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit. Model 4 (5) uses two measures of profit simultaneously, Gross Profit and OP (OP and Earnings), and Model 6 uses all three measures simultaneously. In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on profit from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Gross profit	0.197	0.485	0.199	0.268	0.197	0.275	-0.077	0.104	0.472
		(6.68)	(6.74)	(5.60)	(7.18)	(5.15)	(6.90)	(-2.51)	(5.07)	(18.52)
2	OP	0.832	1.512	0.914	1.178	0.709	1.054	-0.285	0.421	0.292
		(7.27)	(6.47)	(10.68)	(10.88)	(6.78)	(9.42)	(-2.82)	(7.09)	(5.49)
3	Earnings	0.954	1.843	1.062	1.283	0.877	1.247	-0.381	0.463	-0.106
		(7.12)	(4.41)	(10.34)	(8.16)	(6.06)	(6.71)	(-3.52)	(5.05)	(-2.14)
4	Gross profit	0.040	0.234	-0.008	0.054	0.059	0.082	0.023	0.039	0.542
		(1.21)	(4.51)	(-0.19)	(1.04)	(1.76)	(2.06)	(0.75)	(2.21)	(19.39)
	OP	0.784	1.218	0.939	1.133	0.668	0.970	-0.317	0.382	-0.291
		(6.09)	(7.02)	(10.85)	(8.19)	(6.84)	(11.93)	(-2.75)	(7.18)	(-5.05)
5	OP	0.511	1.170	0.526	1.064	0.317	0.719	0.318	0.457	1.709
		(3.43)	(11.47)	(5.04)	(8.40)	(3.49)	(7.65)	(1.40)	(9.15)	(20.69)
	Earnings	0.417	0.686	0.576	0.149	0.641	0.563	-0.706	0.023	-1.723
		(2.97)	(2.01)	(6.09)	(1.07)	(4.47)	(3.25)	(-2.99)	(0.28)	(-23.46)
6	Gross profit	0.038	0.235	-0.006	0.054	0.062	0.082	0.026	0.039	0.520
		(1.16)	(4.52)	(-0.14)	(1.02)	(1.93)	(2.06)	(0.88)	(2.31)	(18.84)
	OP	0.495	0.865	0.553	1.052	0.260	0.622	0.300	0.417	1.049
		(2.85)	(9.85)	(5.44)	(6.78)	(3.25)	(6.03)	(1.31)	(8.01)	(12.23)
	Earnings	0.413	0.709	0.584	0.140	0.652	0.565	-0.728	0.024	-1.601
		(2.83)	(2.09)	(6.06)	(0.96)	(4.54)	(3.26)	(-2.99)	(0.30)	(-22.29)

Table 3: Value relevance regressions

This table presents estimates of the regression of firm characteristics on the log of market equity as specified in Equation (13). Columns 1 through 3 do not include the interactions between characteristics and the firm-level sensitivities, which are the share-weighted average of investor sensitivities scaled by elasticity. Columns 4 through 6 include these interactions for all characteristics. All columns include the other four characteristics, which are unreported: market beta, log of BE, asset growth, and the annual dividend to book equity ratio. Columns 1 and 4 use gross profit as the measure of profitability (Model 1 from Table 2), columns 2 and 5 use OP (Model 2 from Table 2), and columns 3 and 6 use "bottom line" earnings (Model 3 from Table 2). We include quarter fixed effects. t-statistics are shown in parentheses and standard errors are clustered by firm. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$).

	Market equity (logs)					
	(1)	(2)	(3)	(4)	(5)	(6)
Gross profit	0.472***			0.276***		
	(18.521)			(11.124)		
OP		0.292***			0.162***	
		(5.490)			(3.542)	
Earnings			-0.106**			0.126***
			(-2.144)			(2.580)
$\bar{\beta}\times$ Gross Profit				1.167***		
				(29.878)		
$\bar{\beta}\times$ OP					1.352***	
					(45.985)	
$\bar{\beta}\times$ Earnings						1.265***
						(34.067)
All Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
$\bar{\beta}_k\times$ All Char.	No	No	No	Yes	Yes	Yes
Fixed Effect	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter
Adjusted R^2	0.857	0.853	0.853	0.864	0.867	0.863
Observations	385,311	385,311	385,311	385,311	385,311	385,311

Table 4: Regressions: Profitability estimations

This table presents regressions of the coefficient for profitability measures on investor characteristics. Columns 1-2, 3-4 and 5-6 uses the coefficient on gross profit, OP, and Earnings as the dependent variable. Each of these coefficients are estimated from the model where the particular profit measure is the only profit measure and includes the five control variables:the instrument for log of ME, market beta, the log of BE, the asset growth, and the annual dividend to book equity ratio. The investor characteristics are logged AUM (in billions), lagged turnover, and indicators for each of the institutional investor types. t-statistics are shown in parentheses and standard errors are clustered by manager and quarter. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$)

	Gross profit (1)	Gross profit (2)	OP (3)	OP (4)	Earnings (5)	Earnings (6)
Turnover_{t-1}	0.231***		0.613***		0.827***	
	(8.844)		(8.537)		(7.758)	
Active Weight		0.176***		0.479***		0.569***
		(6.253)		(6.738)		(5.669)
log(AUM)	-0.010**	-0.006	-0.051***	-0.040***	-0.078***	-0.064***
	(-2.145)	(-1.257)	(-4.332)	(-3.391)	(-4.962)	(-4.158)
Adjusted R^2	0.049	0.046	0.064	0.063	0.091	0.090
Observations	238,181	254,718	238,375	254,913	238,330	254,867

Table 5: Change in profit sensitivity around index inclusion

This table presents a regression of the firm-level sensitivity to profit, calculated as the shares weighted average of the investors who hold the stock, on an indicator for whether the firm is in the SP 500. The sample of firms are the largest 1,000 firms in each quarter. In column 1, the dependent variable is the sensitivity to gross profit in Model 1 in Table 2. In column 2, the dependent variable is the sensitivity to operating profit in Model 2 in Table 2. In column 3, the dependent variable is the sensitivity to operating profit in Model 3 in Table 2. All regressions include firm- and quarter-fixed effects. t-statistics are shown in parentheses and standard errors are clustered by firm and quarter. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$

	$\beta_{Gross\ Profit}$ (1)	β_{OP} (2)	$\beta_{Earnings}$ (3)
S&P 500 Member	-0.010	-0.085***	-0.088***
	(-1.357)	(-4.643)	(-4.218)
Adjusted R^2	0.530	0.568	0.571
Observations	72,000	72,000	72,000
Quarter Fixed Effect	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes

Table 6: Value relevance regressions with changing investor elasticities

This table presents estimates of the regression stock price on book equity and operating profit, as specified in Equation (18), when investors' elasticity to profit changes. This table uses the results from our estimation when operating profit is our measure of sensitivity (i.e., Model 2 of 2). Column 1 is our baseline estimates and uses actual stock price as the dependent variable. Column 2 uses counterfactaul prices when all investors' elasticities increase by 10%. Column 3 uses counterfactaul prices when all investors' elasticities decrease by 10%. The sample comprises of firm-quarter observations with valid prices in all counterfactuals after truncating all amounts by 1% and 99%. We include quarter fixed effects. All amounts are deflated by shares and defined in the Appendix. t-statistics are shown in parentheses and standard errors are clustered by firm. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$).

	Baseline (1)	Increase elasticity (2)	Decrease elasticity (3)
Book equity	0.414***	-0.017***	-0.004
	(25.233)	(-2.671)	(-0.436)
OP	3.319***	-0.590***	0.561***
	(47.767)	(-21.918)	(16.065)
Fixed Effect	Quarter	Quarter	Quarter
Adjusted R^2	0.491	0.305	0.227
Observations	363,188	363,188	363,188

Table 7: Value relevance regressions with changing active and passive institutional investors

This table presents estimates of the regression stock price on book equity and operating profit when the investor mix changes. This table uses the results from our estimation when operating profit is our measure of sensitivity (i.e., Model 2 of 2). Column 1 is our baseline estimates and uses actual stock price as the dependent variable and is a regression of stock price on book equity and operating profit. In the remaining columns, the dependent variable is the difference between the counterfactual price and the observed price. We compute counterfactual prices by liquidating the active (passive) investors, reallocating their wealth to the remaining passive (active) investors and re-estimating the equilibrium price as described in Section 5.4. Column 2 removes institutional investors who are above median *Active Weight*. Column 3 removes institutional investors who are below median *Active Weight*. The sample comprises of firm-quarter observations with valid prices in all counterfactuals after truncating all amounts by 1% and 99%. We include quarter fixed effects. All amounts are deflated by shares and defined in the Appendix. t-statistics are shown in parentheses and standard errors are clustered by firm. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$).

Removed investor:	Baseline (1)	Active (2)	Passive (3)
Book equity	0.415***	-0.079***	0.168***
	(25.368)	(-6.552)	(6.749)
OP	3.276***	-0.421***	0.698***
	(46.934)	(-9.846)	(8.031)
Fixed Effect	Quarter	Quarter	Quarter
Adjusted R^2	0.499	0.088	0.099
Observations	347,992	347,992	347,992

Table 8: Value relevance regressions with changing profit sensitivity

This table presents estimates of the regression stock price on book equity and operating profit, as specified in Equation (18), when investors' sensitivity to profit changes. Column 1 is our baseline estimates and uses actual stock price as the dependent variable. Column 2 uses counterfactaul prices when all investors' sensitivity to operating profit increases by 10%. Column 3 uses counterfactaul prices when all investors' sensitivity to operating profit decreases by 10%. The sample comprises of firm-quarter observations with valid prices in all counterfactuals after truncating all amounts by 1% and 99%. We include quarter fixed effects. All amounts are deflated by shares and defined in the Appendix. t-statistics are shown in parentheses and standard errors are clustered by firm. Stars indicate coefficient significance (*: $p < 0.1$, **: $p < 0.05$ and ***: $p < 0.01$).

	Baseline (1)	High sensitivity (2)	Low sensitivity (3)
Book equity	0.417***	-0.016***	0.016***
	(24.644)	(-36.714)	(37.148)
OP	3.409***	0.078***	-0.082***
	(47.219)	(31.477)	(-33.956)
Fixed Effect	Quarter	Quarter	Quarter
Adjusted R^2	0.495	0.107	0.118
Observations	365,935	365,935	365,935

Table 9: Earnings decomposition estimations

This table presents estimates for model consisting of the five base controls and elements of earnings before extraordinary items: Sales; Cost of goods sold (COGS); Sales, general and administrative before R&D (SG&A net R&D); Research and development (R&D); and Depreciation and amortization (D&A). In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on earnings decomposition from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

	Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
Sales	0.756	1.003	0.752	0.963	0.642	0.854	-0.083	0.404	0.421
	(6.20)	(6.55)	(7.12)	(6.06)	(4.39)	(7.78)	(-1.02)	(6.96)	(8.02)
Cost of goods sold	-0.803	-0.990	-0.741	-0.920	-0.658	-0.870	0.054	-0.423	-0.537
	(-6.49)	(-6.12)	(-7.31)	(-5.21)	(-4.57)	(-7.71)	(0.52)	(-7.00)	(-9.24)
SG&A net R&D	-0.741	-0.912	-0.704	-0.971	-0.594	-0.812	0.142	-0.362	-0.064
	(-8.42)	(-4.55)	(-6.74)	(-4.79)	(-4.44)	(-7.18)	(1.43)	(-5.50)	(-1.04)
R&D	-0.014	-0.115	-0.584	-0.048	0.027	-0.088	1.274	0.327	2.741
	(-0.10)	(-0.51)	(-4.81)	(-0.22)	(0.13)	(-0.59)	(4.27)	(4.36)	(26.39)
D&A	-0.909	-1.170	-1.318	-0.967	-0.710	-1.030	-0.226	-0.624	-0.358
	(-2.80)	(-3.98)	(-3.29)	(-2.41)	(-1.69)	(-5.14)	(-0.57)	(-3.47)	(-1.13)

Table 10: Cash flows versus. earnings

This table presents estimates for model consisting of the five base controls and different cash flows or earnings variables as the definition of profit. In all cases, the coefficients for the five control variables are unreported. Model numbers refer to separate estimations, using different cash flows or earnings variables. Panel A uses cash flows and operating profit from Dechow and Dichev (2002). Panel B uses free cash flows and OP. In Panel A, Model 1 uses cash flows as the definition of profit. Model 2 uses operating profit from Dechow and Dichev (2002) as the definition of profit. Model 3 includes both cash flows and operating profit from Dechow and Dichev (2002). In Panel B, Model 1 uses free cash flows as the definition of profit. Model 2 uses OP as the definition of profit. Model 3 includes both free cash flows and OP. In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on cash flow versus earnings from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Panel A: CFO vs. DD OP

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Cash flows	0.452	0.510	0.574	0.626	0.434	0.498	-0.397	0.140	-0.039
		(9.82)	(10.09)	(12.15)	(11.92)	(2.95)	(16.77)	(-4.57)	(4.69)	(-0.73)
2	DD OP	0.689	0.771	0.771	0.929	0.626	0.717	-0.491	0.218	-0.056
		(7.45)	(16.63)	(12.50)	(10.04)	(3.64)	(17.81)	(-5.30)	(6.97)	(-0.86)
3	Cash flows	0.172	0.101	0.215	0.321	0.142	0.181	-0.086	0.067	-0.002
		(3.09)	(1.48)	(3.64)	(3.34)	(1.43)	(3.59)	(-1.44)	(2.08)	(-0.05)
	DD OP	0.536	0.678	0.603	0.622	0.458	0.562	-0.407	0.176	-0.054
		(5.20)	(7.99)	(6.43)	(5.93)	(3.89)	(7.81)	(-4.33)	(5.33)	(-0.80)

Panel B: Free cash flows vs OP

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Free cash flows	0.474	0.513	0.585	0.651	0.471	0.505	-0.450	0.126	-0.144
		(11.32)	(9.00)	(14.84)	(7.85)	(3.10)	(16.33)	(-4.62)	(4.53)	(-2.96)
2	OP	0.698	0.770	0.731	0.919	0.528	0.702	-0.479	0.202	-0.158
		(5.96)	(14.05)	(11.53)	(12.48)	(3.63)	(10.81)	(-6.11)	(5.65)	(-2.80)
3	Free cash flows	0.175	0.059	0.254	0.290	0.223	0.173	-0.150	0.060	-0.058
		(4.65)	(0.73)	(4.98)	(2.71)	(2.31)	(3.54)	(-2.52)	(1.63)	(-1.46)
	OP	0.583	0.733	0.619	0.739	0.412	0.616	-0.401	0.179	-0.128
		(4.96)	(9.13)	(7.37)	(11.01)	(3.61)	(7.56)	(-5.94)	(4.08)	(-2.23)

Table 11: Cash flows versus accruals

This table presents estimates for models that disaggregates earnings into cash flows and accruals. In all cases, the coefficients for the five control variables are unreported. Model numbers refer to separate estimations, using different combinations of accruals and cash flows. Model 1 disaggregates earnings into cash flows and total accurals. Model 2 disaggregates earnings in cash flows, current accruals, and non-current accruals. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on cash flow versus accruals from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Cash flows	0.798	0.954	0.912	1.009	0.662	0.835	-0.503	0.282	-0.090
		(6.58)	(16.98)	(17.51)	(11.69)	(3.52)	(14.48)	(-5.35)	(6.00)	(-1.51)
	Total accruals	0.633	0.764	0.790	0.753	0.533	0.682	-0.565	0.174	-0.611
		(5.34)	(8.94)	(9.57)	(7.40)	(4.17)	(8.48)	(-5.26)	(3.86)	(-12.84)
2	Cash flows	0.831	1.008	0.949	1.067	0.697	0.880	-0.450	0.328	0.059
		(6.75)	(16.60)	(17.45)	(11.66)	(3.73)	(14.40)	(-5.49)	(7.69)	(0.95)
	Current accounts	0.829	1.048	0.970	0.927	0.609	0.875	-0.263	0.396	0.354
		(5.61)	(11.13)	(8.94)	(6.71)	(5.16)	(10.19)	(-2.61)	(9.39)	(5.36)
	Non-current accounts	0.574	0.664	0.740	0.668	0.513	0.621	-0.659	0.118	-0.961
		(5.59)	(7.74)	(9.74)	(6.58)	(3.82)	(7.90)	(-5.63)	(2.70)	(-19.56)

Internet Appendix for
“Demand for Stocks and Accounting Information”

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Table IA.1: Elasticities of investors

This table presents estimates of the coefficient associated with elasticity, β_{ME}, for different investor types. Besides the coefficient on the instrument for log ME, we include five additional characteristics: profit, the market beta, the log of BE, the asset growth, and the annual dividend to book equity. Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit.The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. The reported coefficients are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand
1	Gross profit	0.720	0.626	0.519	0.654	0.719	0.616	0.452	0.589
		(15.58)	(10.44)	(20.64)	(13.09)	(17.12)	(16.58)	(4.65)	(39.63)
2	OP	0.715	0.637	0.530	0.654	0.727	0.628	0.449	0.586
		(14.91)	(11.49)	(27.09)	(12.51)	(18.38)	(18.13)	(4.90)	(34.28)
3	Earnings	0.725	0.662	0.537	0.667	0.724	0.640	0.447	0.591
		(15.50)	(11.73)	(28.58)	(12.82)	(16.21)	(18.63)	(4.99)	(37.37)

Table IA.2: Elasticities of investors

This table presents estimates of the coefficient associated with elasticity, β_{ME}, for active and passive institutional investors. Besides the coefficient on the instrument for log ME, we include five additional characteristics: profit, the market beta, the log of BE, the asset growth, and the annual dividend to book equity. Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit. In all cases, coefficients other than β_{ME} are unreported. The columns indicate active and passive investors. Column 1 shows the AUM weighted average of elasticities for the above median active investors, while Column 2 shows the weighted average for passive investors. The reported coefficient is the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Active	Passive
1	Gross profit	0.481 (15.64)	0.686 (17.22)
2	OP	0.478 (16.74)	0.695 (18.58)
3	Earnings	0.491 (17.74)	0.707 (18.98)

Table IA.3: Profitability estimations with OLS without an IV for price

This table presents estimates for models consisting of a series of different profitability variables and the five control variables: the log of ME, the market beta, the log of BE, the asset growth, and the annual dividend to book equity ratio. Compared to the GMM estimation, this table presents a OLS estimation by taking log to the GMM specification while IV is not included:

$$log(\delta_{i,t}(n)) = \beta_{0,i,t} me_t(n) + \sum_{k=1}^{K-1} \beta_{k,i,t}(n) x_{k,t}(n) + \beta_{K,i,t} 1 + log(\epsilon_{i,t}(n))$$

Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit. Model 4 (5) uses two measures of profit simultaneously, Gross Profit and OP (OP and Earnings), and Model 6 uses all three measures simultaneously. In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on profit from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Gross profit	-0.080	0.173	-0.178	-0.092	-0.137	-0.067	-0.247	-0.144	0.472
		(-4.74)	(9.46)	(-6.61)	(-3.03)	(-2.64)	(-6.19)	(-5.86)	(-8.26)	(18.52)
2	OP	0.362	0.765	0.612	0.485	0.016	0.527	-0.522	0.115	0.292
		(6.49)	(12.98)	(10.43)	(5.23)	(0.12)	(12.72)	(-7.14)	(2.74)	(5.49)
3	Earnings	0.661	1.046	1.002	0.864	0.315	0.883	-0.464	0.328	-0.106
		(12.29)	(15.69)	(19.69)	(10.02)	(3.29)	(26.63)	(-8.82)	(5.70)	(-2.14)
4	Gross profit	-0.210	0.027	-0.434	-0.284	-0.201	-0.229	-0.158	-0.199	0.542
		(-10.22)	(1.03)	(-7.43)	(-11.09)	(-4.60)	(-10.28)	(-4.74)	(-8.45)	(19.39)
	OP	0.651	0.733	1.115	0.914	0.311	0.819	-0.351	0.397	-0.291
		(8.00)	(10.41)	(10.08)	(10.02)	(3.17)	(12.70)	(-5.69)	(5.39)	(-5.05)
5	OP	-0.458	0.107	-0.642	-0.384	-0.715	-0.413	-0.721	-0.488	1.709
		(-3.30)	(0.81)	(-6.52)	(-2.22)	(-3.79)	(-3.76)	(-4.89)	(-15.68)	(20.69)
	Earnings	1.152	0.970	1.687	1.208	1.049	1.307	0.213	0.720	-1.723
		(7.51)	(5.82)	(15.39)	(5.13)	(6.58)	(10.51)	(2.01)	(14.39)	(-23.46)
6	Gross profit	-0.201	0.033	-0.415	-0.285	-0.196	-0.219	-0.157	-0.193	0.520
		(-9.90)	(1.23)	(-7.34)	(-10.36)	(-4.55)	(-10.22)	(-4.75)	(-8.47)	(18.84)
	OP	-0.135	0.082	-0.050	0.072	-0.390	-0.062	-0.532	-0.193	1.049
		(-0.95)	(0.49)	(-0.36)	(0.45)	(-2.82)	(-0.45)	(-4.08)	(-6.42)	(12.23)
	Earnings	1.103	0.968	1.530	1.151	0.995	1.231	0.191	0.667	-1.601
		(7.09)	(5.68)	(14.84)	(5.00)	(6.47)	(9.77)	(1.82)	(14.65)	(-22.29)

Table IA.4: Profitability estimations using OLS

This table presents estimates for models consisting of a series of different profitability variables and the five control variables: the instrument for the log of ME, the market beta, the log of BE, the asset growth, and the annual dividend to book equity ratio. These estimates are computed by taking the natural logarithm of equation (7):

$$log(\delta_{i,t}(n)) = \beta_{0,i,t} me_t(n) + \sum_{k=1}^{K-1} \beta_{k,i,t}(n) x_{k,t}(n) + \beta_{K,i,t} 1 + log(\epsilon_{i,t}(n))$$

Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit. Model 4 (5) uses two measures of profit simultaneously, Gross Profit and OP (OP and Earnings), and Model 6 uses all three measures simultaneously. In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on profit from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Gross profit	0.006	0.225	-0.010	0.091	0.048	0.084	0.003	0.025	0.472
		(0.17)	(5.75)	(-0.65)	(1.94)	(1.67)	(4.09)	(0.08)	(1.83)	(18.52)
2	OP	0.683	1.009	1.017	1.133	0.648	0.986	-0.351	0.433	0.292
		(4.78)	(14.39)	(12.24)	(7.83)	(5.50)	(16.40)	(-2.84)	(10.58)	(5.49)
3	Earnings	0.973	1.466	1.366	1.561	1.174	1.419	-0.412	0.683	-0.106
		(6.09)	(6.97)	(21.78)	(9.28)	(3.96)	(10.06)	(-2.99)	(9.21)	(-2.14)
4	Gross profit	-0.174	0.019	-0.278	-0.139	-0.082	-0.144	0.140	-0.068	0.542
		(-6.75)	(0.36)	(-8.72)	(-4.15)	(-2.92)	(-5.11)	(2.16)	(-3.32)	(19.39)
	OP	0.787	0.921	1.226	1.114	0.603	1.033	-0.503	0.536	-0.291
		(5.07)	(24.16)	(12.08)	(7.45)	(5.48)	(19.68)	(-3.00)	(9.04)	(-5.05)
5	OP	-0.056	0.177	-0.011	0.463	-0.035	0.089	0.108	0.103	1.709
		(-0.36)	(2.16)	(-0.09)	(2.40)	(-0.33)	(1.09)	(0.65)	(2.79)	(20.69)
	Earnings	1.005	1.203	1.314	0.997	1.067	1.198	-0.519	0.474	-1.723
		(6.40)	(6.30)	(10.93)	(3.68)	(4.00)	(7.71)	(-2.68)	(7.62)	(-23.46)
6	Gross profit	-0.170	0.026	-0.266	-0.133	-0.078	-0.137	0.135	-0.066	0.520
		(-6.60)	(0.48)	(-8.34)	(-4.26)	(-2.91)	(-4.73)	(2.18)	(-3.19)	(18.84)
	OP	0.086	0.077	0.235	0.492	-0.031	0.157	-0.021	0.148	1.049
		(0.53)	(0.59)	(1.55)	(2.69)	(-0.26)	(1.38)	(-0.13)	(4.31)	(12.23)
	Earnings	0.976	1.212	1.305	0.919	1.022	1.170	-0.526	0.462	-1.601
		(6.82)	(6.52)	(11.77)	(3.55)	(4.49)	(8.30)	(-2.69)	(7.94)	(-22.29)

Table IA.5: Profitability estimations without an IV for price

This table presents estimates for models consisting of a series of different profitability variables and the five control variables: the log of ME, the market beta, the log of BE, the asset growth, and the annual dividend to book equity ratio. In this table, the instrument of the log of ME is not included. Model numbers refer to separate estimations, using different definitions of profit. Model 1, 2, and 3 use Gross Profit, OP, and Earnings as the measure of profit. Model 4 (5) uses two measures of profit simultaneously, Gross Profit and OP (OP and Earnings), and Model 6 uses all three measures simultaneously. In all cases, coefficients for the five control variables are unreported. The columns indicate the level of aggregation by investor. Columns 1 through 5 report the coefficients for the five institutional investor types, ordered by average AUM per quarter. Column 6 aggergates all institutional investors and column 7 reports the coefficients for households. Column 8 aggregates all investors, regardless of type. Column 9 reports the coefficients on profit from a regression of market equity (in logs) on all characteristics except for the market equity, and includes quarter fixed effects. The reported coefficients for column 1 – 8 are the AUM-weighted average of all investors within that column's category for each quarter, averaged over all quarters. We truncate coefficients at 1% and 99% and report Newey-West t-statistics with 12 lags. All variable definitions are in the Appendix.

Model		Mutual funds	Banks	Investment advisors	Insurance companies	Pension funds	Institutional demand	Household demand	Aggregate demand	log(ME)
1	Gross profit	0.107	0.280	0.059	0.094	0.080	0.136	-0.218	-0.024	0.472
		(3.85)	(12.29)	(2.27)	(2.13)	(2.26)	(5.85)	(-6.97)	(-2.33)	(18.52)
2	OP	0.608	1.048	0.633	0.775	0.344	0.709	-0.456	0.170	0.292
		(7.94)	(11.59)	(12.79)	(7.66)	(2.54)	(13.25)	(-8.10)	(7.74)	(5.49)
3	Earnings	0.779	1.295	0.837	0.893	0.467	0.907	-0.429	0.259	-0.106
		(7.28)	(6.83)	(12.08)	(9.06)	(3.51)	(9.93)	(-9.45)	(10.18)	(-2.14)
4	Gross profit	-0.021	0.105	-0.113	-0.107	-0.008	-0.012	-0.145	-0.076	0.542
		(-0.53)	(4.22)	(-2.73)	(-2.46)	(-0.30)	(-0.40)	(-6.09)	(-7.87)	(19.39)
	OP	0.646	0.905	0.792	0.896	0.398	0.750	-0.299	0.271	-0.291
		(6.18)	(13.77)	(9.75)	(7.41)	(3.13)	(13.16)	(-6.55)	(13.25)	(-5.05)
5	OP	0.201	0.686	0.075	0.567	0.032	0.294	-0.509	-0.043	1.709
		(2.01)	(8.05)	(0.92)	(4.32)	(0.26)	(4.55)	(-6.18)	(-2.33)	(20.69)
	Earnings	0.572	0.601	0.775	0.244	0.481	0.649	0.054	0.314	-1.723
		(4.14)	(2.74)	(7.60)	(1.66)	(6.27)	(5.13)	(0.98)	(12.51)	(-23.46)
6	Gross profit	-0.019	0.107	-0.107	-0.112	-0.003	-0.010	-0.145	-0.075	0.520
		(-0.47)	(4.25)	(-2.64)	(-2.59)	(-0.13)	(-0.33)	(-6.06)	(-7.79)	(18.84)
	OP	0.240	0.534	0.247	0.730	0.042	0.336	-0.336	0.067	1.049
		(1.65)	(4.81)	(3.99)	(5.49)	(0.38)	(3.66)	(-4.30)	(3.00)	(12.23)
	Earnings	0.565	0.609	0.754	0.234	0.483	0.633	0.036	0.298	-1.601
		(4.03)	(2.80)	(7.47)	(1.52)	(6.32)	(4.99)	(0.65)	(11.80)	(-22.29)