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ABSTRACT

Using theories from the behavioral finance literature to predict that investors are attracted to industries with more salient outcomes and that therefore firms in such industries have higher valuations, we find that firms in industries that have high industry-level dispersion of profitability have on average higher market-to-book ratios than firms in low dispersion industries. This positive relation between market-to-book ratios and industry profitability dispersion is economically large and statistically significant and is robust to controlling for variables used to explain firm-level valuation ratios in the literature. Consistent with the mispricing explanation of this finding, we show that firms in less boring industries have a lower implied cost of equity and lower realized returns. We explore alternative explanations for our finding, but find that these alternative explanations cannot explain our results.

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When investors consider investing in stocks, they have to find ways to simplify the problem of choosing among thousands of stocks. To organize their thinking, the behavior finance literature has shown that investors put stocks in categories, such as styles (see Hirshleifer (2014) for a review). This categorization has implications for valuations and stock returns (Barberis and Shleifer (2003)). Since there are important valuation commonalities within industries (e.g., Hou and Robinson (2006)), we would expect investors to find industry categorizations to be useful. In fact, industry categorizations are used widely in the finance industry. For instance, analysts typically specialize within industries and investment funds often restrict their investments to specific industries. When investors think about investment through categories, they pay more attention to some categories than others. We would expect salient industries to draw interest from investors. With the behavioral finance literature, investors increase their holdings of stocks in categories that attract their interest, so that these categories are valued more on average.

In this paper, we investigate the hypothesis that more salient industries have higher valuations than less salient industries. We call this hypothesis the industry saliency hypothesis. We use as our proxy for the saliency of an industry the dispersion of the profitability of firms within the industry (IPD). With that proxy, we find strong evidence that more salient industries have higher valuations.

The motivation for our proxy for saliency is straightforward. First, large positive or negative unexpected earnings draw attention.[1] Second, industries with high IPD are industries where investors can believe that they have a chance at a high return by picking the right stock since a higher IPD means that there is a higher probability of some firm having unexpectedly high earnings large enough to lead to a large stock return. With a low IPD industry, firms are more expected to perform similarly. Third, industries with high IPD are more likely to be industries where investors have good stories to report, as some investors will have done well.[2] Similarly, the media are more likely to devote attention to such

[1] Lee (1992) finds that small traders are net buyers after both positive and negative earnings surprises. Hirshleifer, Myers, Myers, and Teoh (2008) show that individual investors are net buyers after positive and negative extreme earnings news.
[2] Han and Hirshleifer (2013) propose that investors (“senders” in the language of Han and Hirshleifer) like to recount to others their investment successes more than their failures and that listeners (“receivers”) do not fully discount for this behavior.

industries. There is little to say about industries that have low IPD. Fourth, industries with high IPD are more likely to be industries where investors have differences in opinion, which lead to higher volume and hence further attention (Hong and Stein (2007)). Each one of these factors means that high IPD industries are more salient and valued higher.

To make our hypothesis more concrete, it is useful to compare a high IPD industry to a low IPD industry. We sort all Fama-French 49 industries by average IPD over the sample period. The Computer Software industry is the industry with the highest IPD. Perhaps not surprisingly, Utilities is the industry with the lowest IPD. It seems reasonable to believe that investors are much more likely to believe that they have the potential to earn a high return in the Computer Software industry than in Utilities. With Computer Software, investors can focus on their victories as some stocks will most likely always do extremely well. They can read about success stories and failures in the news. In contrast, the news will be much less likely to have exciting stories about firms in the utilities industry.

To test our hypothesis, we estimate the relation between a standard measure of equity valuation, market-to-book ratio, and within-industry dispersion of firm-level profitability measured by the within-industry standard deviation of return on equity (ROE). We find a positive relation between these two variables: firms in industries that have higher profitability dispersion (IPD) have on average higher market-to-book ratios (MB). This positive relation is economically large. A one standard deviation increase in IPD is associated with an increase of 0.506 in MB, representing a 26.0% increase compared to the cross-sectional mean of MB. This positive relation is robust to controlling for variables that Fama and French (1998) and Pástor and Veronesi (2003) use to explain the cross section of firm valuation.

Our theory also implies that, all else equal, firms in high IPD industries have lower returns. To examine this prediction, we use both realized returns and ex ante discount rates. We find that firms in high IPD industries have both lower realized returns and lower ex ante discount rates. The effect is economically significant.

Though our theory predicts that firms in high IPD industries are overvalued, we examine three other possible explanations that could explain the high valuations of firms in such industries. First, investors' limited attention can lead to a positive relation between industry profitability dispersion and the market-to-book ratio. Limited attention per se does not predict overvaluation, but only slow adjustment to news of firms that suffer from limited attention. However, if investors pay more attention to high dispersion industries and relatively inadequate attention to low dispersion industries, they are likely to have a higher demand for the shares of firms in industries with high profitability dispersion than firms in industries with low profitability dispersion as long as investors with limited attention are primarily long investors.

Second, Pástor and Veronesi (2003) show that the market-to-book ratio of a firm increases with uncertainty about average profitability of the firm. If firms in industries with higher IPD have higher uncertainty about future profitability, then those firms can have higher market-to-book ratios.

Third, if firms in industries with high profitability dispersion are less risky and have lower risk-adjusted discount rates, they should have higher market-to-book ratios all else equal. This explanation predicts that, for given expected cash flows, firms in high IPD industries are valued more. Further, it also implies that they have lower returns.

We consider four groups of variables proxying for the mispricing and the three alternative explanations. First, we use three variables to measure the extent to which a stock is mispriced: the ratio of fundamental value to price of Frankel and Lee (1998), the composite equity issuance measure of Daniel and Titman (2006), and a modified version of the industry-wide pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005). Second, we use three variables to capture investor attention: the number of analysts following a stock, the share of institutional ownership of a stock, and a stock's trading volume or turnover. Third, Pástor and Veronesi (2003) argue that uncertainty about mean profitability declines over time due to learning and this effect is stronger for dividend non-payers. Hence, we use firm age and a dividend non-payer dummy as well as their interaction to proxy for uncertainty about average profitability. Fourth, we measure the risks of a firm using the factor loadings on the Fama-French three factors plus a momentum factor and the volatility of raw monthly stock returns.

Since the industry saliency hypothesis implies that firms in high saliency industries should be overvalued, we first use our mispricing proxies to test whether firms in high IPD industries are overvalued. We find that this is the case for each mispricing measure we use. Examining the relations between industry profitability dispersion and the other three groups of explanatory variables shows that firms in high IPD industries tend to be younger and are less likely to pay dividends, but the relations between industry profitability dispersion and variables proxying for investor attention and factor risk loadings are mixed. We then include the four groups of explanatory variables in the regressions of the market-to-book ratio on industry profitability dispersion and find that the mispricing proxies reduce the effect of industry profitability dispersion on market-to-book ratio more than the other groups of explanatory variables do.

To further distinguish between these four explanations, we estimate industry-level regressions of industry profitability dispersion on the industry averages of the four groups of explanatory variables and then use these regressions to decompose industry profitability dispersion into components related to the four explanations. When we use these components of industry profitability dispersion to explain market-to-book ratios, we find that only the component related to mispricing has the right sign and significant explanatory power, while the components related to investor attention, uncertainty about mean profitability, and risk do not. These results suggest mispricing as the main driver of the positive relation between industry profitability dispersion and firm valuation. Our industry saliency hypothesis provides an explanation for the mispricing.

We organize the rest of this paper as follows. Section 1 introduces the data. Section 2 studies the differences in profitability dispersion across industries. Section 3 documents the positive relation between industry profitability dispersion and firm valuation. Section 4 shows that industry profitability dispersion is negatively related with returns and ex ante discount rates. Section 5 distinguishes between the four explanations of the positive relation between industry profitability dispersion and firm valuation. Section 6 concludes.

Section 1. Data

For our analysis, we use all listed securities from NYSE, Amex, and NASDAQ that have sharecodes

10 or 11 and are at the intersection of CRSP monthly return files from July 1963 to June 2010 and the Compustat fundamentals annual file from 1963 to 2010. Earnings is income before extraordinary items from Compustat, and book equity is common equity from Compustat. We also obtain total assets and dividends from Compustat. We measure profitability using return on equity (ROE), which is earnings in year *t* divided by book equity from year *t*-1. For each industry, industry profitability dispersion is the cross-firm standard deviation of return on equity, which we denote DROE. We also construct an alternative measure of industry profitability dispersion, PROE, which is the within-industry 80th percentile minus the 20th percentile of return on equity.

Section 2. Variation in profitability dispersion across industries

In this section, we examine how profitability dispersion differs across industries. Panel A of Table 1 reports time-series averages of cross-industry summary statistics for our IPD measures. Not surprisingly, there is considerable variation in these measures across industries. For both DROE and PROE, the 80th percentile is almost twice the 20th percentile. In Panel B of Table 1, we sort the Fama-French 49 industries according to the time-series average of DROE. Results are similar if we use PROE. The average profitability dispersion for Computer Software is 0.258, which is the highest among all 49 industries. Utilities has the lowest value of average profitability dispersion, which is 0.072. The IPD of the Computer Software industry is 3.5 times the IPD of the Utilities industry. The average profitability dispersion for Printing and Publishing is 0.152, which is at the median of all industries. The difference between Computer Software and Utilities is thus 122% of this median value of industry profitability dispersion.

In order to understand what distributional features of profitability cause this wide variation in profitability dispersion across industries, we study the difference in the distribution of profitability between high IPD industries and low IPD industries. To do that, we use DROE to rank the Fama-French 49 industries every year into 3 groups: top five industries, bottom five industries, and other industries. In the same year, we also rank all individual firms into deciles based on their firm-specific profitability. For each industry group (high IPD, low IPD, and others) each year, we then count the numbers of firms falling in each profitability decile rank and normalize these numbers so that they add up to one for each industry group. Finally, we average the normalized numbers across different years, resulting in three separate histograms in Figure 1 for the three groups of industries.

The profitability distribution is very different between the top five and bottom five industries ranked by profitability dispersion. The top five IPD industries have more firms in the low and high profitability deciles than in the middle deciles, while the bottom five IPD industries have more firms in the middle deciles than in the extreme deciles. In other words, industries with high profitability dispersion have more firms performing either very well or very poorly relative to the average firm. Industries with low profitability dispersion, on the other hand, have more firms having the average profitability performance than firms performing either very well or very poorly. In unreported tests, we also study the differences in profitability persistence between high IPD and low IPD industries. When we regress firm-level profitability on lagged profitability, industry profitability dispersion, and the interaction between lagged profitability and industry profitability dispersion, the coefficient on lagged profitability is significantly positive while the coefficient on the interaction term is significantly negative, suggesting that high IPD industries are associated with lower levels of profitability persistence. Therefore, firms in industries with high profitability dispersion are not only more likely to have extreme (very good or very bad) profitability performance, this extreme performance is also more transitory than that of extreme performers in industries with low profitability dispersion.

Section 3. The relation between industry profitability dispersion and firm valuation

In Table 2, we use regression analysis to study whether a firm's market-to-book ratio is related to the profitability dispersion of the industry the firm is in. We assign industry profitability dispersion to the firms in the corresponding industry year and estimate firm-level panel regressions of the market-to-book ratio on industry profitability dispersion and other control variables. Because we are mainly interested in the cross-sectional relation, we use year fixed effects in these panel regressions. The standard errors are two-way clustered by firm and year according to Petersen (2008). In Model 1, we use only DROE as the explanatory variable. The coefficient on DROE is positive and statistically highly significant, indicating a positive relation between industry profitability dispersion and market-to-book ratio. The coefficient is also economically large. A one standard deviation increase in industry profitability dispersion is associated with an increase of 0.506 in the market-to-book ratio,[3] representing a 26.0% increase compared to the mean of market-to-book ratio (1.944). In Model 2, we use the alternative measure of industry profitability dispersion, PROE, as the only explanatory variable. The positive coefficient on PROE shows that the positive relation between industry profitability dispersion and market-to-book ratio is robust to using this alternative measure.

To account for the possibility that the positive relation between industry profitability dispersion and market-to-book ratio is driven by known valuation determinants, we control for variables that have been shown by the previous literature to be related to firm valuation. Specifically, Fama and French (1998) examine valuation regressions that perform well in a battery of tests and have been used in subsequent studies (e.g., Pinkowitz, Stulz, and Williamson (2006)). Further, Pástor and Veronesi (2003) develop a model that explains the cross section of market-to-book ratios. We use as controls the variables from these papers which include current and next two years' earnings, total assets, interest expenses, dividends, and current R&D expenditure all scaled by current book equity, skewness of daily stock returns, log total assets, firm-level volatility of profitability estimated using the data from the previous five years (three years minimum), and current and next two years' stock returns.[4] Appendix Table 1 provides detailed definitions of all the variables we use in the paper. Appendix Table 2 presents summary statistics for these variables.

Model 3 includes only the control variables as explanatory variables, and the results are similar to those in Fama and French (1998) and Pástor and Veronesi (2003), suggesting that the control variables are related to firm valuation in the same way in our sample as in past studies. Specifically, market-to-book

[3] We obtain this number by multiplying the coefficient on DROE from Model 1, 7.672, by the time-series average of cross-industry standard deviation of DROE, 0.066, from Table 1.

[4] We leave out the two primary variables that Pástor and Veronesi (2003) use to proxy for uncertainty about mean profitability (log(Age) and the non-dividend payer dummy) from the list of control variables because we want to later explore these variables as potential drivers of the positive relation between industry profitability dispersion and market-to-book ratio.

ratio is positively related to current and future profitability, future leverage ratio, future interest expense, current and future dividend payment, current year stock return, R&D expenditure, and past profitability volatility, and negatively related to current leverage ratio, current interest expense, future stock return, log total assets, a dummy variable for zero R&D expenditure, and daily return skewness.

In Models 4 and 5, we regress market-to-book ratio on measures of industry profitability dispersion (DROE in Model 4 and PROE in Model 5) and control variables. We refer to these regressions as the baseline regressions in subsequent analysis. The coefficients on the IPD measures remain positive and are significant both economically and statistically. Specifically, Model 4 shows that a one standard-deviation increase in DROE is associated with an increase of 0.431 in the market-to-book ratio, which is 22.2% of the cross-sectional mean market-to-book ratio. Similarly, Model 5 shows that a one standard deviation increase in PROE is associated with an increase of 0.418 in the market-to-book ratio, which is 21.5% of the cross-sectional mean market-to-book ratio.

These results suggest that the variables that the previous literature uses to explain firm valuation do not subsume the positive relation between industry profitability dispersion and market-to-book ratio. Also, the coefficients on the variables used by the previous literature are largely unaffected by the IPD measures. The one exception is the dummy variable for zero R&D expenditure. The variable is significantly negative when we estimate the regression without the IPD measures but it becomes insignificant after including the IPD measures.

Section 4. The relation between industry profitability dispersion, returns, and discount rates

As discussed in the introduction, our hypothesis implies that firms in high IPD industries are overvalued and thus are expected to earn, all else equal, lower returns. We use two different approaches to assess the relation between IPD and returns. First, we use realized returns. Second, we use measures of ex ante discount rates. Low realized returns could have two different explanations. First, investors could require lower expected returns for firms in high IPD industries. Second, investors could overvalue firms in high IPD industries by overestimating future expected cash flows, so that they are negatively surprised when they learn the true cash flows. Low ex ante discount rates imply that investors value expected cash flows from firms in high IPD industries more than expected cash flows from firms in low IPD industries.

We measure ex ante discount rates using the implied cost of capital (ICC) estimates of Hou, van Dijk, and Zhang (2012). HVZ use earnings forecasts from a cross-sectional model to proxy for cash flow expectations and estimate the implied cost of capital for a large sample of firms. They show that the earnings forecasts generated by the cross-sectional model are superior to analysts' forecasts in terms of coverage, forecast bias, and earnings response coefficient. More importantly, they show that the model-based ICC is a more reliable proxy for expected returns than the ICC based on analysts' forecasts.[5]

In Table 3, we examine the relations between realized return/ICC and our IPD measures using firm-level Fama-McBeth regressions. Model 1 of Panel A regresses log realized returns from July of year t+1 to June of year t+2 on DROE measured at the fiscal-year end of year t and Model 1 of Panel B regresses realized returns on PROE. In both cases, the IPD measures have negative and significant coefficients. We then add to the regressions size, book-to-market, and past annual return to capture the size, value, and momentum effects in average returns. With these additional variables, our IPD measures maintain their negative and significant coefficients. Finally, we add ROE and asset growth as explanatory variables. Again, the coefficients on the IPD measures remain negative and significant. Therefore, there is a negative relation between the IPD measures and future realized returns as expected with our hypothesis. This relation is economically significant. A one-standard deviation increase in DROE is associated with a decrease in next year's log return of 4.28%, which represents 32.3% of the log mean annual return (13.18%).

In Model 4 of Panels A and B, we regress the composite ICC measure of Hou, van Dijk, and Zhang (2012) on the IPD measures. The regressions show that when used alone, both DROE and PROE are negatively and significantly related to ICC. Based on Model 4 of Panel A, a one-standard deviation increase in DROE is associated with a reduction in ICC of 0.59%, which represents 6.1% of the mean

[5] See Hou, van Dijk, and Zhang (2012) for details on their ICC estimates.

ICC (9.68%). The negative relation persists when we add the firm characteristics as controls. In fact, in contrast to the coefficients on the IPD measures in the realized return regressions, the coefficients on the IPD measures become more significant when we add the firm characteristics.

In sum, the results from Table 3 show that our IPD measures are associated with lower realized returns and lower ex ante discount rates. The evidence supports that investors value expected cash flows of firms in high IPD industries more. We cannot exclude, however, that investors also overestimate future cash flows for firms in such industries.

Section 5. An examination of four possible explanations

We identify four possible explanations of the positive relation between industry profitability dispersion and firm valuation. First, our industry saliency hypothesis predicts that firms in high IPD industries are overvalued relative to the firms in low IPD industries. Hence, our hypothesis provides a mispricing explanation for the relation between IPD and market-to-book ratios.

Second, investors' limited attention can lead to this positive relation if we are willing to assume that the investors whose attention is limited for some industries are primarily long investors, which seems reasonable given the obstacles to short sales faced by retail investors. If investors' attention to low IPD industries is inadequate, their demand for stocks in those industries will be lower, which leads to lower valuations. On the other hand, if investors pay more attention to high IPD industries, their demand for stocks in such industries will be higher. As a result, firms in high IPD industries can have higher market-to-book ratios than firms in low IPD industries.

Third, Pástor and Veronesi (2003) argue that the market-to-book ratio of a firm increases with uncertainty about the average profitability of the firm, and the resolution of this uncertainty over time is associated with a decline in the market-to-book ratio. The intuition is simple. High uncertainty about average profitability increases the probability that the firm will have a persistently high profitability or persistently low profitability in the future. Because of the convexity of compounding, a persistently high profitability has a larger impact on the market-to-book ratio than persistently low profitability. As a result, higher uncertainty about mean profitability leads to a higher market-to-book ratio. If firms in high IPD industries have higher uncertainty about future profitability, then these firms will have higher market-to-book ratios according to Pástor and Veronesi (2003).

Fourth, firms that are less risky have lower risk-adjusted discount rates which, for a given set of expected cash flows, leads to a higher valuation according to standard valuation theories. If firms in high IPD industries are less risky and thus have lower discount rates, all else being equal, these firms should have higher market-to-book ratios.

These four explanations are not mutually exclusive. For instance, the limited attention explanation could lead to mispricing, so that evidence supportive of the industry saliency hypothesis is not necessarily inconsistent with evidence supportive of the limited attention explanation. However, if the relation between IPD and valuation were explained fully by variables proxying for the other explanations than the industry saliency hypothesis, this would be evidence against the industry saliency hypothesis.

Section 5.1. Variables proxying for the four explanations

To assess these four alternative explanations, we first study the relations between our IPD measures and variables that are associated with these explanations. The first group of variables includes known proxies for the extent to which a stock is mispriced. We use three variables for this purpose: the ratio of fundamental value to price of Frankel and Lee (1998), the composite equity issuance measure of Daniel and Titman (2006), and a modified version of the industry-wide pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005). Our industry saliency hypothesis implies that firms in high IPD industries are mispriced, but firms could be mispriced for other reasons.

To construct the ratio of fundamental value to price, V/P, for a firm in a given year *t*, we calculate the fundamental value, V, using Equation 3.3 in Frankel and Lee (1998),

$$V_t = B_t + \frac{FROE_t - r_e}{1+r_e} B_t + \frac{FROE_{t+1} - r_e}{\left(1+r_e\right)^2} B_{t+1} + \frac{FROE_{t+2} - r_e}{\left(1+r_e\right)^2 r_e} B_{t+2} \quad (1)$$

where $FROE_t$, $FROE_{t+1}$, and $FROE_{t+2}$ are forecasts of return on equity for year *t*, *t*+1, and *t*+2, respectively. These profitability forecasts are based on Hou, van Dijk, and Zhang (2012). B_t is book equity for year *t*. To estimate the discount rate, r_e, we estimate the Fama-French three-factor model for each of the Fama-French 49 industries using value-weighted industry returns for the full sample and then use the fitted values of the model as the discount rates for all firms in that industry. The V/P measure is the fundamental value divided by the market value of equity. According to Frankel and Lee (1998), when V/P of a firm is low, the firm is overvalued relative to other firms.

Second, we consider the composite equity issuance variable of Daniel and Titman (2006) as another measure of mispricing as new issue and repurchase activities are indicative of managers exploiting mispricing of their firm's stock, i.e., firms tend to issue shares when their stocks are overvalued and repurchase when their stocks are undervalued. For a firm in a given month *q*, we calculate the equity issuance measure as

$$NI_q = \ln\left(\frac{ME_q}{ME_{q-1}}\right) - r\left(q-1, q\right), \quad (2)$$

where ME_q and ME_{q-1} are the market values of equity of the firm for month *q* and *q*-1, and $r\left(q-1, q\right)$ is the log stock return from the end of month *q*-1 to the end of month *q*. It can be interpreted as the part of a firm's growth in market equity that is not coming from the stock return. Issuance activities, including actual equity issuance, employee stock option plans, or any other actions that trade ownership for cash or services, increase the composite issuance measure, while retiring activities, including repurchases and dividends, reduce the measure. Splits and stock dividends do not affect the measure. To be consistent with other annual data in our analysis, we construct the annual composite issuance measure by summing the monthly issuance measures within each year.

Third, we construct an industry-wide pricing deviations measure using an approach similar to

Rhodes-Kropf, Robinson, and Viswanathan (2005). Specifically, we first express the fundamental value as a linear function of firm-specific accounting information. To do that, we estimate a firm-level cross-sectional regression of log market value on log book value for each Fama-French 12 industry[6] every year as follows,

$$m_{it} = \alpha_{0jt} + \alpha_{1jt} b_{it} + \varepsilon_{it}, \tag{3}$$

where m_{it} and b_{it} are log market value of equity and log book value of equity, respectively. We estimate the regression for each industry-year separately to account for the possibility that the growth rates and discount rates vary over time and across industries. The fitted value of the regression above is

$$v\left(b_{it}; \hat{\alpha}_{0jt}, \hat{\alpha}_{1jt}\right) = \hat{\alpha}_{0jt} + \hat{\alpha}_{1jt} b_{it}, \tag{4}$$

where $\hat{\alpha}_{0jt}$ and $\hat{\alpha}_{1jt}$ are the estimated coefficients. This fitted value is a measure of the fundamental value of a firm conditional on year *t* and industry *j*, which captures the cross-sectional variation in firm value that is industry specific, while the residual value of the regression captures the firm-specific variation.

We also compute a measure of the fundamental value that is industry neutral:

$$v\left(b_{it}; \bar{\alpha}_{0t}, \bar{\alpha}_{1t}\right) = \bar{\alpha}_{0t} + \bar{\alpha}_{1t} b_{it}, \tag{5}$$

where $\bar{\alpha}_{0t} = \frac{1}{J}\sum \hat{\alpha}_{0jt}$ and $\bar{\alpha}_{1t} = \frac{1}{J}\sum \hat{\alpha}_{1jt}$ are the averages of the estimated coefficients across industries in year *t*. The difference between the industry-specific valuation and the market-level valuation, $v\left(b_{it}; \hat{\alpha}_{0jt}, \hat{\alpha}_{1jt}\right) - v\left(b_{it}; \bar{\alpha}_{0t}, \bar{\alpha}_{1t}\right)$, thus captures the extent to which firm *i* in industry *j* is overvalued relative to firms in other industries in a given year. A high value of the difference suggests that the firm is overvalued relative to firms in other industries. We denote this industry-wide pricing deviation measure PD_IND.

The second group of variables includes three proxies for investors' attention to a stock: the number of analysts following a stock (N_ANLST), the share of institutional ownership of a stock (INST_OWN),

[6] We choose Fama-French 12 industries rather than finer industry classifications because the classification of Fama-French 12 industries allows for more firms for each industry-year.

and a stock's trading volume or turnover (TURNOVER). N_ANLST is the average number of analysts providing FY1 forecast in the I/B/E/S summary file in year *t*. INST_OWN is the average quarterly 13F reported fraction of shares held by institutions in year *t*. TURNOVER is the average of daily share turnover in year *t*. When calculating TURNOVER, we adjust for the institutional features of the way that NASDAQ and NYSE/Amex volume are computed by following Gao and Ritter (2010). Note that while TURNOVER is a variable known to proxy for attention, it also plays a role in our industry saliency hypothesis. With that hypothesis, we would expect more salient industries to have greater turnover.

The third group of variables is related to the explanation based on uncertainty about average profitability proposed by Pástor and Veronesi (2003). According to their model, uncertainty about mean profitability declines over time due to learning. Note that in Table 2 we already control for the volatility of past profitability, which is a variable related to the uncertainty that Pástor and Veronesi (2003) focus on. Here, we consider additional proxies that are central to their model. All else equal, a young firm should have higher uncertainty about profitability than a mature firm. Therefore, we include firm age in our analysis. We measure firm age as the log of one plus the current year minus the first year that a valid PERMCO appears on CRSP. We use log firm age because the model of Pástor and Veronesi (2003) implies that one additional year of age should matter more for a young firm than for an old firm.[7] We denote this variable Log(Age). Pástor and Veronesi (2003) also point out that whether a firm pays dividends or not can interact with firm age to affect firm valuation. To account for the impact of dividends, we construct a dividend non-payer dummy, which equals one if the firm does not pay dividends in the current year and zero otherwise. We denote this variable ND.

The fourth group of variables proxies for the explanation that firms in high IPD industries are less risky and have lower risk-adjusted discount rates, which can lead to higher market-to-book ratios. This group includes five variables. The first four are the factor loadings on the Fama-French three factors plus a momentum factor estimated using monthly data over the past five years (24 months minimum). *b*, *s*, *h*,

[7] While Pástor and Veronesi (2003) strictly follow their model to use negative of the reciprocal of firm age rather than log of age in their primary analysis, they show that log firm age generates similar results.

w are the loadings on the market, SMB, HML, and WML factors, respectively. The fifth variable, SD_RET, is the total volatility of raw monthly stock returns over the past five years (24 months minimum).

Section 5.2. The relation between industry profitability dispersion and the four groups of explanatory variables

In this subsection, we examine the relation between industry profitability dispersion and the industry averages of the four groups of explanatory variables. Table 4 reports the correlations between them.

First, among the mispricing proxies, V/P is negatively correlated with industry profitability dispersion measured by either DROE or PROE, and both NI and PD_IND are positively correlated with industry profitability dispersion. Thus, higher industry profitability dispersion is associated with lower fundamental value to price ratios, higher composite equity issuance, and higher industry-level pricing deviations. These results suggest that firms in high IPD industries tend to be overvalued.

Second, among the variables proxying for investor attention, INST_OWN and TURNOVER have positive correlations with industry profitability dispersion. These correlations are consistent with the view that higher industry profitability dispersion is associated with more investor attention. However, the number of analysts covering a firm, N_ANLST, is negatively correlated with industry profitability dispersion, which is inconsistent with the results based on institutional ownership and turnover.

Third, the correlations between the variables proxying for uncertainty about mean profitability, Log(Age) and ND, and industry profitability dispersion show that firms in high IPD industries tend to be younger and are more likely to be dividend non-payers than firms in low dispersion industries. These results suggest that uncertainty about mean profitability can also potentially explain the positive relation between industry profitability dispersion and firm valuation.

Fourth, among the risk loadings, *h* and *w* are negatively correlated with industry profitability dispersion, suggesting that firms in high IPD industries have lower exposures to the value and momentum factors. This is consistent with the view that higher profitability dispersion is associated with lower risk-adjusted discount rates. On the other hand, both *b* and *s* are positively correlated with industry profitability dispersion, which suggests that firms in high IPD industries have higher exposures to the market and size factors. In addition, total volatility, SD_RET, is also positively correlated with industry profitability dispersion. These results are inconsistent with the negative association between industry profitability dispersion and risk-adjusted discount rates. Therefore, similar to the attention-based variables, the correlations show that the evidence on the relations between risk proxies and industry profitability dispersion is also mixed.

To help gauge the economic magnitude of the correlations in Table 4, Table 5 reports the average values of the four groups of explanatory variables for industries with different levels of profitability dispersion. Every year, we sort the Fama-French 49 industries into three groups based on their profitability dispersion. The low and high IPD groups have 16 industries each and the middle dispersion group has 17 industries. We then calculate the average values of the explanatory variables for each IPD group as well as the differences between the low and high IPD groups and then average them over time. Panel A of Table 5 shows the results based on DROE and Panel B shows the results based on PROE.

Panel A shows firms in high IPD industries have on average lower fundamental value to price ratios (0.727 vs. 1.018), higher composite equity issuance (0.009 vs. -0.013), and higher industry-wide pricing deviations (0.191 vs. -0.121) than firms in low IPD industries, and all the differences are highly significant. These results are consistent with firms in high IPD industries being overvalued relative to firms in low IPD industries. Turning to the investor attention proxies, we find that firms in high IPD industries have on average slightly higher institutional ownership (42.3% vs. 36.7%) and share turnover (0.4% vs. 0.2%), but slightly lower analyst coverage (5.945 vs. 5.831) than firms in low IPD industries, thus providing inconclusive evidence to the explanation based on investor attention. Firms in high IPD industries are also 2.45 years younger on average and are 29% more likely not to pay dividends than firms in low IPD industries, consistent with the explanation based on uncertainty about mean profitability. Finally, in terms of risk proxies, firms in high IPD industries have lower HML betas (-0.024 vs. 0.318) and WML betas (-0.089 vs. -0.081) but higher market betas (1.082 vs. 0.899) and SMB betas (0.905 vs.

0.504) as well as higher total volatility (0.032 vs. 0.023) than firms in low IPD industries. The results for the last three risk measures do not support the explanation that firms in high IPD industries have high valuations because of low risk-adjusted discount rates. The results from Panel B based on PROE are similar to those in based on DROE.

Overall, the results in Tables 4 and 5 indicate that high industry profitability dispersion is associated with overvaluation and high uncertainty about mean profitability, while the relation between industry profitability dispersion and investor attention and firm risks is more mixed. Our industry saliency hypothesis predicts that firms in high saliency industries are overvalued, which is supported by the positive relation between our IPD measures and mispricing proxies shown in Tables 4 and 5. We investigate this relation further in Table 6, using firm-level panel regressions with year fixed effects and standard errors clustered by firm and year. Model 1 in Panel A regresses V/P on DROE. The prediction from our hypothesis is that the coefficient on DROE should be negative, as more salient industries should have a higher market value relative to their fundamental valuation. Consistent with this prediction, the coefficient on DROE is −2.087 and statistically highly significant. We then add variables known to be related to discount rates in Models 2 and 3. We find that the negative relation between $DROE_t$ and V/P is robust to the addition of these control variables. We then repeat the exercise for the other two mispricing proxies and find similar results. Finally, in Panel B, we re-estimate the same regressions but use PROE to measure industry profitability dispersion. We find similar results as well. Consequently, as predicted by our industry salience hypothesis, our saliency measures are associated with overvaluation.

Section 5.3. Do the explanatory variables reduce the effect of industry profitability dispersion on firm valuation?

In Table 7, we add the four groups of explanatory variables to the baseline regressions of market-to-book ratio on IPD measures and control variables. By studying the coefficients on IPD measures in these regressions, we can learn whether and how these explanatory variables can explain the effect of industry profitability dispersion on firm valuation. Panel A presents the results based on DROE and Panel B presents the results on PROE.

In Panel A, Model 1 regresses MB on DROE and the standard control variables. This is essentially the same regression as Model 4 in Table 2, but the sample is different because we require the availability of the additional explanatory variables. To conserve space, we do not report the coefficients on the control variables. In this model, the coefficient on DROE is positive and statistically highly significant, which is consistent with the result from Table 2.

In Models 2-5, we add the four groups of explanatory variables one group at a time to Model 1. The coefficients on DROE in all four models are smaller than that in Model 1 but remain significantly positive, suggesting that none of the four groups of explanatory variables can completely drive out the positive relation between industry profitability dispersion and market-to-book ratio. We see the largest drop in the coefficient on DROE in Model 2 after controlling for the mispricing proxies (from 6.330 in Model 1 to 3.819, a 39.7% drop), compared with 17.5% (investor attention proxies), 11.2% (proxies for uncertainty about mean profitability), and 10.3% (risk proxies) drops in Models 3, 4, and 5 respectively. These results suggest that the three mispricing proxies (V/P, NI and PD_IND) have the largest effect on the positive relation between industry profitability dispersion and market-to-book ratio. Finally, in Model 6, when we add all four groups of explanatory variables to Model 1, the coefficient on DROE decreases from 6.330 in Model 1 to 2.870 (a 54.7% drop) but remains significant.

In Panel B of Table 7, we use PROE to measure industry profitability dispersion and obtain similar results to those in Panel A. Specifically, the coefficient on PROE remains positive and significant after controlling for the four groups of explanatory variables. Furthermore, including the mispricing proxies in the regression results in the largest reduction in the coefficient on PROE (from 3.806 in Model 1 to 2.072 in Model 2), compared with investor attention proxies (3.176 in Model 3), proxies for uncertainty about mean profitability (3.330 in Model 4), and risk proxies (3.341 in Model 5), which confirms that mispricing proxies have the largest contribution to the positive relation between industry profitability dispersion and firm valuation.

Section 5.4. Decomposing the relation between industry profitability dispersion and firm valuation

An alternative way of examining how well the four groups of explanatory variables explain the relation between industry profitability dispersion and firm valuation is to decompose industry profitability dispersion into components using the explanatory variables and then study the effects of these components on market-to-book ratio. The ability of these components to explain the market-to-book ratio can help us understand the relative contributions of the four explanations to the positive relation between industry profitability dispersion and firm valuation.

We conduct this analysis in two steps. First, we estimate industry-level regressions of profitability dispersion on industry averages of proxy variables for the four explanations and use the regression coefficients to decompose industry profitability dispersion into four components, each related to an explanation, and a residual component. The results of these industry-level regressions are reported in Table 8. In the second step, we replace industry profitability dispersion with its components in the firm-level valuation regressions. Those results are reported in Table 9.

In Table 8, the first four models of Panel A show that when DROE is regressed on the explanatory variables one group at a time, it is positively related to composite equity issuance, industry-wide price deviation, analyst coverage, turnover, log firm age, dividend non-payer dummy, market beta, size beta, momentum beta, and total return volatility, and negatively related to fundamental value to price ratio, institutional ownership, the interaction term between firm age and dividend dummy, and value beta. The regression R-squareds range 30-41% depending on the model. When all four groups of explanatory variables are included together in Model 5, every variable except value and momentum betas retains its sign. The regression R-Squared is 46%, suggesting that these explanatory variables capture significant fraction of the variation in DROE. In Panel B, we regress PROE on the explanatory variables, and the results are similar to those in Panel A.

We use Model 5 in both panels to decompose the two IPD measures into four components each related to an explanation by multiplying the coefficients in Model 5 with industry average values of the corresponding proxies, as well as a residual component. The various components of DROE are denoted

DROE (Mispricing), DROE (Attention), DROE (Uncertainty), DROE (Risk), and DROE (Residual). The components of PROE are named similarly.

Panel A of Table 9 regresses firm-level market-to-book ratio on the different components of DROE and the standard control variables to investigate the relative importance of different explanations in driving the positive relation between industry profitability dispersion and firm valuation. Models 1-5 show that when the different components of DROE are included individually in the regressions, every component except DROE (Uncertainty) is positively and significantly related to market-to-book ratio just like DROE itself. DROE (Uncertainty), on the other hand, is negatively and significantly related to market-to-book ratio, which is in the opposite direction of the original DROE-MB relation. In Model 6 when we include all five components of DROE in the same regression, DROE (Mispricing) and DROE (Residual) retain their signs and statistical significance while the other three components, DROE (Attention), DROE (Uncertainty), and DROE (Risk), become statistically insignificant. We obtain similar results in Panel B of Table 9 when we study the different components of PROE.

Overall, the results in Table 9 show that the mispricing component of industry profitability dispersion can better explain its positive relation with market-to-book ratio than the components related to investor attention, uncertainty about average profitability, and risk. This is consistent with the results in Table 7, where we see the biggest reduction in the effect of industry profitability dispersion on market-to-book ratio after controlling for the mispricing proxies. These results suggest that mispricing is the main channel through which industry profitability dispersion affects firm valuation, consistent with our industry salience hypothesis.

Section 6. Conclusion

In this paper, we introduce and test the industry saliency hypothesis. This hypothesis predicts that industry categorizations are useful for investors and that they are attracted to salient industries. We measure industry saliency by the dispersion of profitability within an industry. We find that firms in more salient industry are valued more, have lower returns and lower ex ante discount rates. Our analysis shows that mispricing can better explain the positive relation between valuation and industry saliency than explanations related to limited attention, uncertainty about mean profitability, and risk.

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Figure 1: Distribution of Profitability for Three Groups of Industries Sorted by Profitability Dispersion

Each year, the Fama-French 49 industries are ranked into three groups (top five industries, bottom five industries, and other industries) based on their industry profitability dispersion, DROE. In the same year, individual firms are also ranked into deciles based on their firm-specific profitability. For each group of industries in each year, we then count the numbers of firms falling in each profitability decile rank and normalize these numbers so that they add up to one for each industry group. Finally, we average the normalized numbers across different years, resulting in three separate histograms of normalized numbers of firms for the three groups of industries. Profitability is measured by return on equity, which is earnings divided by lagged book equity. DROE is the cross-sectional standard deviation of firm-level return on equity for each industry.

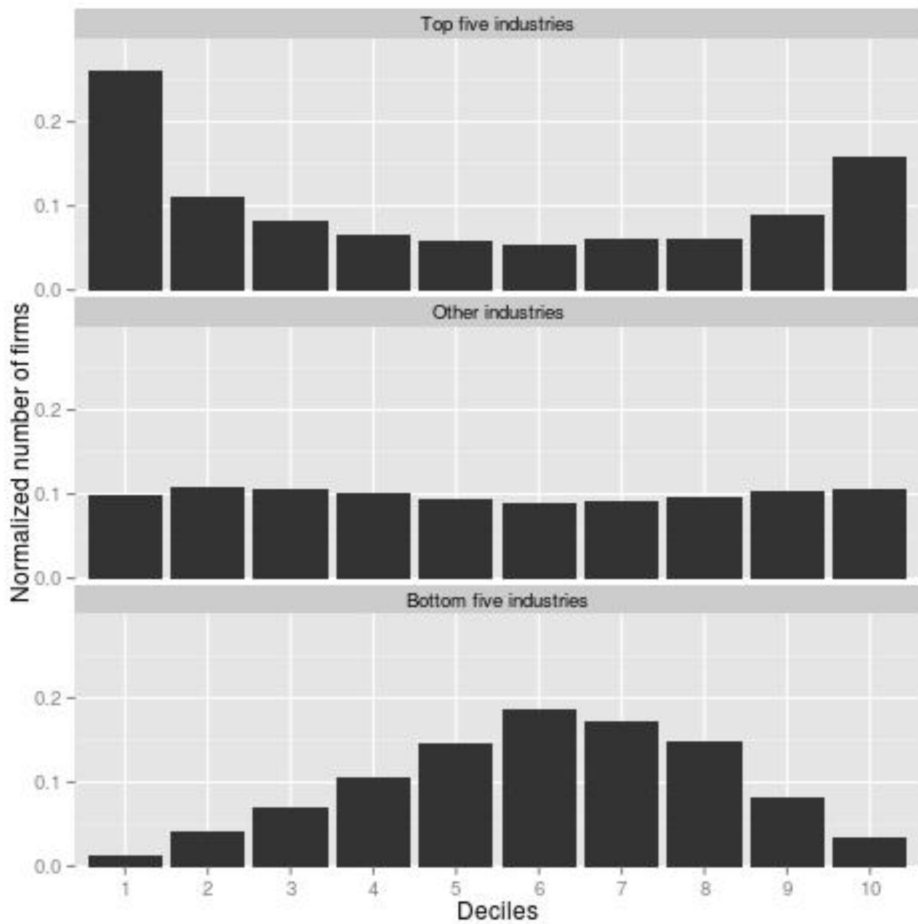

Table 1: Industry profitability dispersion

For each year and each one of the Fama-French 49 industries, $DROE_t$ is the within-industry standard deviation of firm-level return on equity, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity. Return on equity is earnings divided by lagged book equity. Panel A reports the time-series averages of cross-industry summary statistics of the two measures of industry profitability dispersion. In Panel B, the Fama-French 49 industries are ranked by their time-series averages of DROE. Also reported is the average number of firms for each industry. See Appendix Table 1 for detailed variable definitions.

Panel A: Summary statistics of industry profitability dispersion

	Mean	Std. Dev.	Min.	20%	Median	80%	Max.
$DROE_t$	0.159	0.066	0.050	0.109	0.149	0.202	0.368
$PROE_t$	0.203	0.110	0.048	0.134	0.177	0.248	0.635

Panel B: Fama-French 49 industries sorted by average industry profitability dispersion

Industry Name	Dispersion	Number of Firms
Computer Software	0.258	116
Pharmaceutical Products	0.257	78
Precious Metals	0.254	6
Tobacco Products	0.243	6
Communication	0.211	51
Coal	0.208	5
Computers	0.203	62
Business Services	0.195	125
Entertainment	0.191	25
Personal Services	0.189	24
Healthcare	0.187	42
Non-Metallic and Industrial Metal Mining	0.185	13
Petroleum and Natural Gas	0.180	99
Electronic Equipment	0.177	113
Agriculture	0.176	9
Recreation	0.176	22
Transportation	0.173	66
Electrical Equipment	0.170	50
Medical Equipment	0.169	49
Construction	0.168	33
Consumer Goods	0.164	61
Apparel	0.157	41
Real Estate	0.156	23
Restaurants, Hotels, Motels	0.156	54
Printing and Publishing	0.152	32
Rubber and Plastic Products	0.152	20
Steel Works Etc	0.151	52
Measuring and Control Equipment	0.151	43

Industry Name	Dispersion	Number of Firms
Wholesale	0.150	93
Shipbuilding, Railroad Equipment	0.149	6
Food Products	0.147	53
Beer & Liquor	0.147	11
Machinery	0.145	100
Retail	0.144	148
Automobiles and Trucks	0.142	48
Defense	0.137	6
Chemicals	0.137	57
Fabricated Products	0.136	11
Insurance	0.135	72
Construction Materials	0.135	83
Trading	0.131	158
Textiles	0.129	28
Candy & Soda	0.124	10
Almost Nothing	0.123	12
Shipping Containers	0.123	19
Aircraft	0.120	16
Business Supplies	0.116	33
Banking	0.102	194
Utilities	0.072	142

Table 2: The relation between industry profitability dispersion and firm valuation

This table estimates firm-level panel regressions of market-to-book ratio (M_t/B_t) on industry profitability dispersion and other control variables. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. The control variables are selected based on Fama and French (1998), Pástor and Veronesi (2003), and Pinkowitz, Stulz, and Williamson (2006). They include current and future (next two years') earnings divided by current book equity ($E_{t+\tau}/B_t$, τ=0 to 2), current and future total assets divided by current book equity ($A_{t+\tau}/B_t$, τ=0 to 2), current and future interest expenses divided by current book equity ($I_{t+\tau}/B_t$, τ=0 to 2), current and future dividends divided by current book equity ($D_{t+\tau}/B_t$, τ=0 to 2), current and future stock returns ($RET_{t+\tau}$, τ=0 to 2), log total assets ($Log(A_t)$), current R&D expenditure divided by current book equity (RD_t/B_t), a dummy variable that equals one for zero R&D expenditure and zero otherwise (RD_ZERO_t), skewness of daily stock returns over the past year ($SKEW\_RET_t$), and firm-level time series volatility of profitability over the previous five years ($VOLP_t$). See Appendix Table 1 for detailed variable definitions. The panel regressions are estimated with year fixed effects and standard errors clustered by firm and year. Reported are the coefficients, and *t*-statistics are in parentheses.

Dependent Variable:	M_t/B_t	M_t/B_t	M_t/B_t	M_t/B_t	M_t/B_t
	(1)	(2)	(3)	(4)	(5)
$DROE_t$	7.672			6.535	
	(12.27)			(17.18)	
$PROE_t$		4.925			3.804
		(10.44)			(9.59)
E_t/B_t			0.170	0.171	0.173
			(0.83)	(0.78)	(0.79)
E_{t+1}/B_t			0.456	0.500	0.503
			(1.34)	(1.38)	(1.39)
E_{t+2}/B_t			0.232	0.255	0.258
			(1.26)	(1.36)	(1.36)
A_t/B_t			-0.103	-0.087	-0.09
			(-2.32)	(-2.06)	(-2.10)
A_{t+1}/B_t			0.088	0.09	0.089
			(2.21)	(2.23)	(2.19)
A_{t+2}/B_t			0.010	0.012	0.011
			(0.57)	(0.68)	(0.60)
I_t/B_t			-0.175	-0.202	-0.154
			(-0.29)	(-0.34)	(-0.25)
I_{t+1}/B_t			1.610	1.467	1.500
			(1.55)	(1.45)	(1.48)
I_{t+2}/B_t			0.317	0.195	0.233
			(0.48)	(0.30)	(0.36)
D_t/B_t			1.32	1.318	1.322
			(3.74)	(3.51)	(3.55)
D_{t+1}/B_t			6.648	6.963	6.867
			(4.70)	(4.79)	(4.75)

D_{t+2}/B_t			3.007	2.957	2.955
			(7.78)	(7.18)	(7.25)
RET_t			0.881	0.867	0.872
			(4.89)	(5.04)	(4.92)
RET_{t+1}			-0.33	-0.325	-0.333
			(-3.12)	(-3.29)	(-3.29)
RET_{t+2}			-0.175	-0.184	-0.184
			(-3.02)	(-3.71)	(-3.39)
$Log(A_t)$			-0.067	-0.044	-0.045
			(-2.52)	(-1.61)	(-1.63)
RD_t/B_t			5.943	5.184	5.15
			(10.99)	(9.74)	(9.59)
RD_ZERO_t			-0.211	-0.039	-0.049
			(-2.68)	(-0.69)	(-0.83)
$SKEW\_RET_t$			-0.113	-0.12	-0.119
			(-4.56)	(-4.78)	(-4.77)
$VOLP_t$			0.55	0.404	0.436
			(2.67)	(2.55)	(2.55)
Intercept	1.951	1.916	1.694	1.022	1.058
	(63.78)	(48.73)	(12.59)	(6.16)	(6.20)
$Adj.R^2$	0.10	0.09	0.31	0.33	0.33
No. of Obs.	99576	99576	99576	99576	99576

Table 3: Regressions of realized return and ICC on profitability dispersion and control variables

This table estimates firm-level cross-sectional Fama-MacBeth regressions of log annual realized stock returns from July of year t+1 to June of year t+2 (RET_{t+1}) and implied cost of capital (ICC_{t+1}) estimated at the end of June of year t+1 (as in Hou, van Dijk, and Zhang (2012)) on industry profitability dispersion and control variables. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. Log($SIZE_t$) is log of end-of-June market capitalization, Log(B_t/M_t) is log of book value of equity at the fiscal-year end of year t divided by the market value of equity at the end of December of year t, MOM_t is log stock return from July of year t to May of year t+1, ROE_t is the earnings from the fiscal year ending in year t divided by the book equity from the fiscal year ending in year t-1, and $\Delta A_t/A_{t-1}$ is the change in total assets between year t-1 and year t divided by total assets for year t-1. See Appendix Table 1 for detailed variable definitions. Reported are the time-series averages of annual regression coefficients and the associated time-series t-statistics in parentheses.

Panel A: using DROE to measure industry profitability dispersion

	Log (1+RET_{t+1})	*Log (1+RET_{t+1})*	*Log (1+RET_{t+1})*	*ICC_{t+1}*	*ICC_{t+1}*	*ICC_{t+1}*
	(1)	(2)	(3)	(4)	(5)	(6)
$DROE_t$	-0.648	-0.385	-0.302	-0.090	-0.100	-0.093
	(-3.52)	(-2.74)	(-2.12)	(-4.77)	(-8.84)	(-8.59)
Log($SIZE_t$)		0.013	0.01		-0.017	-0.017
		(2.62)	(2.10)		(-11.12)	(-11.27)
Log(B_t/M_t)		0.064	0.05		0.025	0.027
		(5.78)	(5.24)		(21.02)	(19.90)
MOM_t		0.056	0.048		-0.015	-0.017
		(3.80)	(3.08)		(-7.53)	(-7.89)
ROE_t			0.052			0.033
			(4.92)			(4.42)
$\Delta A_t/A_{t-1}$			-0.059			-0.007
			(-7.41)			(-5.29)
Intercept	0.117	-0.052	-0.026	0.115	0.322	0.318
	(3.23)	(-0.71)	(-0.36)	(27.46)	(16.19)	(16.60)
Adj. R^2	0.020	0.073	0.078	0.017	0.331	0.345
Avg. No. of Obs.	3465	2947.9	2681.7	2675.4	2605.9	2446.9

Panel B: using PROE to measure industry profitability dispersion

	Log (1+RET$_{t+1}$)	*Log (1+RET$_{t+1}$)*	*Log (1+RET$_{t+1}$)*	*ICC$_{t+1}$*	*ICC$_{t+1}$*	*ICC$_{t+1}$*
	(1)	(2)	(3)	(4)	(5)	(6)
PROE$_t$	-0.419	-0.217	-0.165	-0.072	-0.074	-0.068
	(-3.41)	(-2.49)	(-1.90)	(-8.13)	(-9.67)	(-8.58)
Log(SIZE$_t$)		0.013	0.01		-0.017	-0.017
		(2.58)	(2.07)		(-11.08)	(-11.23)
Log(B$_t$/M$_t$)		0.065	0.051		0.025	0.027
		(5.75)	(5.32)		(21.31)	(20.21)
MOM$_t$		0.057	0.049		-0.015	-0.017
		(3.85)	(3.12)		(-7.48)	(-7.86)
ROE$_t$			0.053			0.033
			(5.11)			(4.41)
$\Delta A_t/A_{t-1}$			-0.06			-0.007
			(-7.44)			(-5.33)
Intercept	0.096	-0.065	-0.037	0.112	0.32	0.316
	(2.95)	(-0.89)	(-0.51)	(23.52)	(15.66)	(16.08)
Adj. R^2	0.018	0.072	0.077	0.016	0.330	0.345
Avg. No. of Obs.	3467.2	2948.7	2682.1	2675.6	2606	2447.1

Table 4: Industry-level correlation coefficients

This table reports the pooled correlation coefficients of industry-level variables, including $DROE_t$, $PROE_t$, and industry average values of the variables proxying for the four explanations of the positive relation between industry profitability dispersion and market-to-book ratio. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. The variables proxying for the mispricing explanation are fundamental value-to-price ratio of Frankel and Lee (1998) (V_t/P_t), the composite equity issuance measure of Daniel and Titman (2006) (NI_t), and a modified version of the industry-level pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005) (PD_IND_t). The variables proxying for the investor attention explanation are the average of number of analysts providing FY1 forecast in the I/B/E/S summary file in year *t* (N_ANLST_t), the average quarterly 13F reported fraction of shares held by institutions in year *t* ($INST\_OWN_t$), and the average daily turnover in year *t* ($TURNOVER_t$). The variables proxying for the uncertainty about mean profitability explanation proposed by Pástor and Veronesi (2003) are log firm age ($Log(AGE_t)$) and a dividend non-payer dummy (ND_t). The variables proxying for the risk explanation are b_t, s_t, h_t, w_t, and SD_RET_t. The first four variables are the loadings on the Fama-French three factors plus the momentum factor estimated over the past five years, and SD_RET_t is the standard deviation of daily returns over the past year. See Appendix Table 1 for detailed variable definitions.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
$DROE_t$	(1)	100.0														
$PROE_t$	(2)	71.8	100.0													
Industry V_t/P_t	(3)	-49.7	-52.9	100.0												
Industry NI_t	(4)	44.6	42.9	-49.4	100.0											
Industry PD_IND_t	(5)	29.4	32.2	-26.7	26.1	100.0										
Industry N_ANLST_t	(6)	-0.3	-0.6	-11.3	-10.1	16.8	100.0									
Industry $INST\_OWN_t$	(7)	29.0	14.5	-37.7	8.3	-1.0	21.7	100.0								
Industry $TURNOVER_t$	(8)	52.2	38.9	-52.6	44.7	18.6	8.8	68.8	100.0							
Industry $Log(AGE_t)$	(9)	-24.6	-20.3	16.1	-48.2	-19.9	15.7	18.7	-10.9	100.0						
Industry ND_t	(10)	54.3	50.5	-55.0	68.9	27.1	-19.7	15.3	48.8	-58.3	100.0					
Industry b_t	(11)	18.3	20.0	-10.5	23.8	18.8	7.0	2.8	18.1	-26.1	25.8	100.0				
Industry s_t	(12)	19.2	18.8	-6.9	37.0	22.1	-34.3	-21.0	10.4	-39.6	41.8	30.1	100.0			
Industry h_t	(13)	-3.0	-13.5	-1.2	-10.1	-40.8	-11.3	34.5	14.9	30.8	-12.4	-17.1	-23.4	100.0		
Industry w_t	(14)	-19.1	-12.1	16.1	-10.7	14.8	8.1	-21.4	-20.5	9.2	-28.6	-8.8	-9.9	-4.9	100.0	
Industry SD_RET_t	(15)	41.9	40.0	-31.8	48.7	6.8	-19.8	-1.3	29.6	-53.6	68.7	34.3	37.7	-10.5	-29.9	100.0

Table 5: Averages of the variables proxying for the four explanations for industries with different levels of profitability dispersion

This table reports the average values of the variables proxying for the four explanations for three groups of industries sorted by profitability dispersion. Every year, we sort the Fama-French 49 industries into 3 groups by industry profitability dispersion measured by $DROE_t$ (Panel A) or $PROE_t$ (Panel B). The numbers in columns labeled "Low", "Middle", and "High" are the time-series means of the average values for low IPD (16 industries), middle IPD (17 industries), and high IPD (16 industries) groups, respectively. The numbers in the column labeled "Low - High" are the average differences between the low IPD group and the high IPD group. The variables proxying for the mispricing explanation are fundamental value-to-price ratio of Frankel and Lee (1998) (V_t/P_t), the composite equity issuance measure of Daniel and Titman (2006) (NI_t), and a modified version of the industry-level pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005) (PD_IND_t). The variables proxying for the investor attention explanation are the average of number of analysts providing FY1 forecast in the I/B/E/S summary file in year *t* (N_ANLST_t), the average quarterly 13F reported fraction of shares held by institutions in year *t* ($INST\_OWN_t$), and the average daily turnover in year *t* ($TURNOVER_t$). The variables proxying for the uncertainty about mean profitability explanation proposed by Pástor and Veronesi (2003) are log firm age ($Log(AGE_t)$) and a dividend non-payer dummy (ND_t). The variables proxying for the risk explanation are b_t, s_t, h_t, w_t, and SD_RET_t. The first four variables are the loadings on the Fama-French three factors plus the momentum factor estimated over the past five years, and SD_RET_t is the standard deviation of daily returns over the past year. See Appendix Table 1 for detailed variable definitions. Also reported are the *p*-values for the null hypothesis that the difference between the low IPD group and the high IPD group is equal to zero.

Panel A: average values of three industry groups sorted by DROE

	Low	Middle	High	Low - High	*p*-value
V_t/P_t	1.018	0.885	0.727	0.291	0.000
NI_t	-0.013	-0.002	0.009	-0.022	0.000
PD_IND_t	-0.121	-0.062	0.191	-0.312	0.000
N_ANLST_t	5.831	5.721	5.945	-0.114	0.600
$INST\_OWN_t$	0.367	0.434	0.423	-0.056	0.000
$TURNOVER_t$	0.002	0.003	0.004	-0.001	0.000
$Log(AGE_t)$	2.706	2.658	2.527	0.179	0.000
ND_t	0.214	0.374	0.503	-0.290	0.000
b_t	0.899	1.026	1.082	-0.183	0.000
s_t	0.504	0.790	0.905	-0.401	0.000
h_t	0.318	0.191	-0.024	0.342	0.000
w_t	-0.081	-0.129	-0.089	0.009	0.633
SD_RET_t	0.023	0.028	0.032	-0.009	0.000

Panel B: average values of three industry groups sorted by PROE

	Low	Middle	High	Low - High	*p*-value
V_t/P_t	1.006	0.888	0.675	0.331	0.000
NI_t	-0.012	-0.002	0.011	-0.023	0.000
PD_IND_t	-0.121	-0.062	0.191	-0.312	0.000
N_ANLST_t	5.768	5.750	5.955	-0.187	0.312
$INST\_OWN_t$	0.372	0.441	0.419	-0.046	0.000
$TURNOVER_t$	0.002	0.003	0.004	-0.001	0.000
$Log(AGE_t)$	2.681	2.676	2.506	0.175	0.000
ND_t	0.224	0.388	0.520	-0.296	0.000
b_t	0.903	1.024	1.105	-0.202	0.000
s_t	0.524	0.803	0.925	-0.401	0.000
h_t	0.329	0.189	-0.088	0.417	0.000
w_t	-0.099	-0.110	-0.093	-0.005	0.823
SD_RET_t	0.023	0.028	0.033	-0.009	0.000

Table 6: The relation between industry profitability dispersion and mispricing proxies

This table estimates firm-level panel regressions of mispricing proxies on industry profitability dispersion and control variables. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. Log($SIZE_t$) is log of end-of-June market capitalization, Log(B_t/M_t) is log of book value of equity at the fiscal-year end of year *t* divided by the market value of equity at the end of December of year *t*, MOM_t is log stock return from July of year *t* to May of year *t*+1, ROE_t is the earnings from the fiscal year ending in year *t* divided by the book equity from the fiscal year ending in year *t*-1, and $\Delta A_t/A_{t-1}$ is the change in total assets between year *t*-1 and year *t* divided by total assets for year *t*-1. See Appendix Table 1 for detailed variable definitions. The panel regressions are estimated with year fixed effects and standard errors clustered by firm and year. Reported are the coefficients, and *t*-statistics are in parentheses.

Panel A: using DROE to measure industry profitability dispersion

Dependent Variable	V_t/P_t	V_t/P_t	V_t/P_t	NI_t	NI_t	NI_t	PD_IND_t	PD_IND_t	PD_IND_t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$DROE_t$	-2.087	-1.609	-1.207	0.154	0.131	0.116	1.644	1.467	1.453
	(-8.01)	(-6.16)	(-6.70)	(12.71)	(14.57)	(15.60)	(12.31)	(12.45)	(12.62)
$Log(SIZE_t)$		-0.068	-0.079		-0.005	-0.005		-0.014	-0.014
		(-3.05)	(-3.47)		(-11.23)	(-11.94)		(-6.90)	(-6.55)
$Log(B_t/M_t)$		0.223	0.288		-0.015	-0.015		-0.098	-0.099
		(4.51)	(4.63)		(-12.15)	(-13.03)		(-13.96)	(-13.94)
MOM_t		0.215	0.175		0.006	0.008		-0.003	-0.002
		(4.62)	(3.92)		(2.23)	(3.05)		(-0.41)	(-0.22)
ROE_t			0.755			-0.014			-0.018
			(2.24)			(-2.14)			(-2.60)
$\Delta A_t/A_{t-1}$			0.084			0.012			0.001
			(4.62)			(3.02)			(0.55)
Intercept	0.997	1.907	1.937	-0.026	0.025	0.025	-0.091	0.025	0.023
	(53.59)	(6.39)	(6.65)	(-39.52)	(5.10)	(5.44)	(-13.73)	(1.02)	(0.93)
Adj. R^2	0.10	0.13	0.14	0.10	0.12	0.14	0.26	0.33	0.33
No. of Obs.	95758	95701	95701	122313	121939	121853	122041	121704	121627

Panel B: using PROE to measure industry profitability dispersion

Dependent Variable	V_t/P_t	V_t/P_t	V_t/P_t	NI_t	NI_t	NI_t	PD_IND_t	PD_IND_t	PD_IND_t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$PROE_t$	-1.497	-1.197	-0.904	0.100	0.083	0.074	1.065	0.943	0.935
	(-9.78)	(-7.61)	(-5.25)	(12.84)	(13.27)	(10.17)	(14.05)	(13.92)	(13.75)
$Log(SIZE_t)$		-0.07	-0.08		-0.005	-0.005		-0.013	-0.013
		(-3.11)	(-3.53)		(-10.62)	(-11.69)		(-6.55)	(-6.38)
$Log(B_t/M_t)$		0.219	0.284		-0.015	-0.015		-0.098	-0.098
		(4.30)	(4.43)		(-12.13)	(-13.00)		(-15.05)	(-14.86)
MOM_t		0.218	0.177		0.005	0.007		-0.011	-0.009
		(4.70)	(3.96)		(1.78)	(2.60)		(-1.19)	(-1.03)
ROE_t			0.747			-0.013			-0.013
			(2.23)			(-2.12)			(-2.40)
$\Delta A_t/A_{t-1}$			0.081			0.012			0.005
			(4.59)			(3.14)			(2.16)
Intercept	1.012	1.938	1.96	-0.027	0.023	0.023	-0.1	0.001	0.001
	(59.62)	(6.49)	(6.76)	(-37.84)	(4.45)	(4.97)	(-15.69)	(0.06)	(0.03)
Adj. R^2	0.11	0.13	0.14	0.09	0.12	0.14	0.25	0.31	0.31
No. of Obs.	95765	95708	95708	122328	121954	121868	122050	121713	121636

Table 7: The relation between industry profitability dispersion and firm valuation after controlling for variables proxying for the four explanations

This table estimates firm-level panel regressions of market-to-book ratio on industry profitability dispersion and standard control variables as well as variables proxying for the four explanations of the positive relation between industry profitability dispersion and market-to-book ratio. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. The variables proxying for the mispricing explanation are fundamental value-to-price ratio of Frankel and Lee (1998) (V_t/P_t), the composite equity issuance measure of Daniel and Titman (2006) (NI_t), and a modified version of the industry-level pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005) (PD_IND_t). The variables proxying for the investor attention explanation are the average of number of analysts providing FY1 forecast in the I/B/E/S summary file in year *t* (N_ANLST_t), the average quarterly 13F reported fraction of shares held by institutions in year *t* ($INST\_OWN_t$), and the average daily turnover in year *t* ($TURNOVER_t$). The variables proxying for the uncertainty about mean profitability explanation proposed by Pástor and Veronesi (2003) are log firm age ($Log(AGE_t)$) and a dividend non-payer dummy (ND_t). The variables proxying for the risk explanation are b_t, s_t, h_t, w_t, and SD_RET_t. The first four variables are the loadings on the Fama-French three factors plus the momentum factor estimated over the past five years, and SD_RET_t is the standard deviation of daily returns over the past year. In all models, we use the same control variables as in Table 2 but do not report the coefficients on these control variables. See Appendix Table 1 for detailed variable definitions. The panel regressions are estimated with year fixed effects and standard errors clustered by industry and year. Reported are the coefficients and *t*-statistics in parentheses.

Panel A: using DROE to measure industry profitability dispersion

Dependent Variable:	M_t/B_t	M_t/B_t	M_t/B_t	M_t/B_t	M_t/B_t	M_t/B_t
	(1)	(2)	(3)	(4)	(5)	(6)
$DROE_t$	6.330	3.819	5.221	5.622	5.681	2.870
	(16.22)	(13.92)	(15.80)	(15.82)	(13.41)	(10.45)
V_t/P_t		-0.100				-0.065
		(-3.46)				(-3.22)
NI_t		2.983				1.814
		(8.65)				(7.94)
PD_IND_t		1.644				1.334
		(12.86)				(10.56)
N_ANLST_t			0.084			0.073
			(7.00)			(6.76)
$INST\_OWN_t$			0.915			0.701
			(7.57)			(5.67)
$TURNOVER_t$			42.808			34.156
			(4.15)			(4.75)
$Log(AGE_t)$				-0.331		-0.282
				(-7.06)		(-6.83)
ND_t				0.791		0.315
				(4.55)		(1.89)
$Log(AGE_t)\times ND_t$				-0.104		-0.005
				(-1.85)		(-0.09)
b_t					0.289	0.104
					(4.67)	(2.11)
s_t					0.041	-0.011
					(1.43)	(-0.49)
h_t					-0.312	-0.16
					(-8.33)	(-5.54)
w_t					0.258	0.228
					(4.14)	(4.07)
SD_RET_t					0.665	-8.169
					(0.18)	(-2.33)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.29	0.32	0.34	0.31	0.31	0.38
No. of Obs.	56339	56339	56339	56339	56339	56339

Panel B: using PROE to measure industry profitability dispersion

Dependent Variable:	M_t/B_t (1)	M_t/B_t (2)	M_t/B_t (3)	M_t/B_t (4)	M_t/B_t (5)	M_t/B_t (6)
$PROE_t$	3.806	2.072	3.176	3.330	3.341	1.529
	(9.82)	(7.42)	(9.16)	(9.26)	(10.56)	(6.20)
V_t/P_t		-0.100				-0.064
		(-3.49)				(-3.22)
NI_t		3.045				1.835
		(8.75)				(7.97)
PD_IND_t		1.775				1.431
		(13.32)				(12.16)
N_ANLST_t			0.085			0.073
			(6.91)			(6.75)
$INST\_OWN_t$			0.986			0.739
			(7.58)			(5.85)
$TURNOVER_t$			43.820			34.467
			(4.02)			(4.62)
$Log(AGE_t)$				-0.330		-0.282
				(-7.02)		(-6.82)
ND_t				0.833		0.328
				(4.54)		(1.92)
$Log(AGE_t)\times ND_t$				-0.110		-0.005
				(-1.91)		(-0.09)
b_t					0.291	0.102
					(4.84)	(2.10)
s_t					0.042	-0.012
					(1.41)	(-0.55)
h_t					-0.314	-0.159
					(-8.22)	(-5.46)
w_t					0.261	0.228
					(4.09)	(4.02)
SD_RET_t					1.620	-7.676
					(0.40)	(-2.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.28	0.31	0.34	0.30	0.31	0.37
No. of Obs.	56339	56339	56339	56339	56339	56339

Table 8: The relation between industry profitability dispersion and the variables proxying for the four explanations

This table estimates industry-level panel regressions of industry profitability dispersion on industry average values of the variables proxying for the four explanations of the positive relation between industry profitability dispersion and market-to-book ratio. $DROE_t$ is the cross-sectional standard deviation of firm-level return on equity for each of Fama-French 49 industries, and $PROE_t$ is the 80th percentile minus the 20th percentile of return on equity for each industry. Variables whose names start with "Industry" are average values of the corresponding firm-level variables. The variables proxying for the mispricing explanation are fundamental value-to-price ratio of Frankel and Lee (1998) (V_t/P_t), the composite equity issuance measure of Daniel and Titman (2006) (NI_t), and a modified version of the industry-level pricing deviation of Rhodes-Kropf, Robinson, and Viswanathan (2005) (PD_IND_t). The variables proxying for the investor attention explanation are the average of number of analysts providing FY1 forecast in the I/B/E/S summary file in year *t* (N_ANLST_t), the average quarterly 13F reported fraction of shares held by institutions in year *t* ($INST\_OWN_t$), and the average daily turnover in year *t* ($TURNOVER_t$). The variables proxying for the uncertainty about mean profitability explanation proposed by Pástor and Veronesi (2003) are log firm age ($Log(AGE_t)$) and a dividend non-payer dummy (ND_t). The variables proxying for the risk explanation are b_t, s_t, h_t, w_t, and SD_RET_t. The first four variables are the loadings on the Fama-French three factors plus the momentum factor estimated over the past five years, and SD_RET_t is the standard deviation of daily returns over the past year. See Appendix Table 1 for detailed variable definitions. The panel regressions are estimated with year fixed effects and standard errors clustered by industry and year. Reported are the coefficients and *t*-statistics in parentheses.

Panel A: using DROE to measure industry profitability dispersion

Dependent Variable	$DROE_t$	$DROE_t$	$DROE_t$	$DROE_t$	$DROE_t$
	(1)	(2)	(3)	(4)	(5)
Industry V_t/P_t	-0.021				-0.014
	(-1.72)				(-1.31)
Industry NI_t	1.363				0.769
	(4.11)				(2.63)
Industry PD_IND_t	0.103				0.086
	(3.32)				(2.91)
Industry N_ANLST_t		0.000			0.001
		(0.10)			(0.41)
Industry $INST\_OWN_t$		-0.207			-0.106
		(-1.82)			(-1.46)
Industry $TURNOVER_t$		14.966			6.435
		(2.65)			(2.61)
Industry $Log(AGE_t)$			0.046		0.043
			(1.66)		(1.55)
Industry ND_t			0.414		0.127
			(2.39)		(0.81)
Industry $Log(AGE_t)$×*Industry* ND_t			-0.097		-0.054
			(-1.45)		(-0.96)
Industry b_t				0.022	0.005
				(1.13)	(0.30)
Industry s_t				0.005	0.005
				(0.30)	(0.36)
Industry h_t				-0.017	0.000
				(-1.07)	(0.00)
Industry w_t				0.039	-0.002
				(2.14)	(-0.15)
Industry SD_RET_t				5.347	3.207
				(4.80)	(3.21)
Intercept	0.152	0.155	-0.035	-0.011	-0.043
	(12.98)	(8.87)	(-0.46)	(-0.45)	(-0.53)
Adj. R^2	0.41	0.30	0.32	0.37	0.46
No. of Obs.	1182	1182	1182	1182	1182

Panel B: using PROE to measure industry profitability dispersion

Dependent Variable	$PROE_t$ (1)	$PROE_t$ (2)	$PROE_t$ (3)	$PROE_t$ (4)	$PROE_t$ (5)
Industry V_t/P_t	0.005				0.002
	(0.90)				(0.69)
Industry NI_t	-0.436				-0.321
	(-2.04)				(-2.31)
Industry PD_IND_t	24.239				12.112
	(2.86)				(3.32)
Industry N_ANLST_t		-0.068			-0.061
		(-3.74)			(-3.56)
Industry $INST\_OWN_t$		1.909			1.380
		(2.30)			(2.67)
Industry $TURNOVER_t$		0.119			0.109
		(1.89)			(2.00)
Industry $Log(AGE_t)$			0.109		0.096
			(1.89)		(1.93)
Industry ND_t			0.605		0.089
			(1.90)		(0.35)
Industry $Log(AGE_t)$×*Industry* ND_t			-0.134		-0.053
			(-1.04)		(-0.55)
Industry b_t				0.058	0.043
				(1.79)	(1.49)
Industry s_t				-0.019	-0.005
				(-0.66)	(-0.20)
Industry h_t				-0.012	0.003
				(-0.35)	(0.13)
Industry w_t				0.068	-0.000
				(2.05)	(-0.02)
Industry SD_RET_t				8.114	4.651
				(4.03)	(3.34)
Intercept	0.225	0.248	-0.189	-0.039	-0.112
	(6.36)	(14.16)	(-1.17)	(-0.79)	(-0.80)
Adj. R^2	0.23	0.31	0.18	0.23	0.41
No. of Obs.	1182	1182	1182	1182	1182

Table 9: Decomposing the relation between industry profitability dispersion and firm valuation

This table estimates firm-level panel regressions of market-to-book ratio on components of industry profitability dispersion and other control variables. These components are computed by multiplying the estimated coefficients from Model 5 of Table 9 Panels A and B with the industry average values of the proxy variables for the four explanations of the positive relation between industry profitability dispersion and market-to-book ratio. $DROE_t$ (Mispricing) is based on Industry V_t/P_t, Industry NI_t, *and* Industry PD_IND_t. $DROE_t$ (Attention) is based on Industry N_ANLST_t, Industry $INST\_OWN_t$, and Industry $TURNOVER_t$.. $DROE_t$ (Uncertainty) is based on Industry Log(AGE_t) and Industry ND_t as well as the interaction between these two variables. $DROE_t$ (Risk) is based on Industry b_t, Industry s_t, Industry h_t, Industry w_t, and Industry SD_RET_t. We use the same control variables as in Table 2 but do not report the coefficients on these variables. See Appendix Table 1 for detailed variable definitions. The panel regressions are estimated with year fixed effects and standard errors clustered by firm and year. Reported are the coefficients and *t*-statistics in parentheses.

Panel A: using components of DROE to explain market-to-book ratio

Dependent Variable:	M_t/B_t (1)	M_t/B_t (2)	M_t/B_t (3)	M_t/B_t (4)	M_t/B_t (5)	M_t/B_t (6)
$DROE_t$ (Mispricing)	18.551					17.854
	(15.11)					(13.57)
$DROE_t$ (Attention)		19.721				-1.313
		(2.94)				(-0.46)
$DROE_t$ (Uncertainty)			-21.222			5.034
			(-7.95)			(1.28)
$DROE_t$ (Risk)				15.033		0.866
				(6.61)		(0.31)
$DROE_t$ (Residual)					5.519	4.188
					(8.36)	(9.92)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.32	0.30	0.30	0.30	0.30	0.33
No. of Obs.	71054	71054	71054	71054	71054	71054

Panel B: using components of PROE to explain market-to-book ratio

Dependent Variable:	M_t/B_t (1)	M_t/B_t (2)	M_t/B_t (3)	M_t/B_t (4)	M_t/B_t (5)	M_t/B_t (6)
$PROE_t$ *(Mispricing)*	9.819					9.857
	(13.03)					(14.17)
$PROE_t$ *(Attention)*		5.668				0.046
		(1.99)				(0.03)
$PROE_t$ *(Uncertainty)*			-11.019			-1.160
			(-8.96)			(-0.87)
$PROE_t$ *(Risk)*				8.935		-2.338
				(6.32)		(-1.31)
$PROE_t$ *(Residual)*					2.819	1.849
					(6.88)	(5.60)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.32	0.30	0.30	0.30	0.30	0.32
No. of Obs.	71054	71054	71054	71054	71054	71054

Appendix

Appendix Table 1: Variable definitions

Variable	Definition
$DROE_t$	Cross-sectional standard deviation of firm-level ROE_t for each Fama-French 49 industries.
$PROE_t$	Cross-sectional 80th percentile minus 20th percentile of ROE_t for each Fama-French 49 industries.
M_t/B_t	Market value of equity at fiscal year end in year *t* (the product of closing price of the firm's stock (Compustat mnemonic PRCC_F) and the number of common shares outstanding (Compustat mnemonic CSHO)) divided by book value of equity (Compustat mnemonic CEQ) for fiscal year ending in year *t*.
E_t/B_t, E_{t+1}/B_t, E_{t+2}/B_t	Current and next two years' earnings (Compustat mnemonic IB) divided by current book equity (Compustat mnemonic CEQ).
A_t/B_t, A_{t+1}/B_t, A_{t+2}/B_t	Current and next two years' total assets (Compustat mnemonic AT) divided by current book equity (Compustat mnemonic CEQ).
I_t/B_t, I_{t+1}/B_t, I_{t+2}/B_t	Current and next two years' interest expenses (Compustat mnermonic XINT) divided by current book equity (Compustat mnemonic CEQ).
D_t/B_t, D_{t+1}/B_t, D_{t+2}/B_t	Current and next two years' dividends (Compustat mnemonic DVC) divided by current book equity (Compustat mnemonic CEQ).
RET_t, RET_{t+1}, RET_{t+2}	Current and next two years' stock returns.
$ASSET_t$	Total assets for fiscal year ending in year *t* (Compustat mnemonic AT).
RD_t/B_t	R&D expenditure (Compustat mnemonic XRD) divided by book equity (Compustat mnemonic CEQ) for fiscal year ending in year *t*.
RD_ZERO_t	Dummy variable that equals one for zero R&D expenditure and zero otherwise.
$SKEW\_RET_t$	Skewness of daily stock returns of year *t* (50 daily observations minimum).
$VOLP_t$	Firm-level time series volatility of return on equity in a five-year window ending in year *t* (three years minimum).
ICC_{t+1}	The composite implied cost of capital estimate of Hou, van Dijk, and Zhang (2012) at the end of June of year *t*+1.
$SIZE_t$	End-of-June Market capitalization.
B_t/M_t	Book value of equity (Compustat mnemonic CEQ) at the fiscal-year end of year *t* divided by the market value of equity at the end of December of year *t*.
MOM_t	Log return from July of year *t* to May of year *t*+1.
ROE_t	Return on equity. This variable is the earnings from the fiscal year ending in year *t* divided by the book equity (Compustat mnemonic CEQ) from the fiscal year ending in year *t*-1. Earnings is income before extraordinary items from Compustat (Compustat mnemonic IB).
$\Delta A_t/A_{t-1}$	The change in total assets between year *t*-1 and year *t* divided by total assets for year *t*-1.
V_t/P_t	The fundamental value-to-price ratio of Frankel and Lee (1998).
NI_t	The composite equity issuance measure of Daniel and Titman (2006).
PD_IND_t	A modified version of the industry-wide pricing deviation measure of Rhodes-Kropf, Robinson, and Viswanathan (2005).
N_ANLST_t	The average of number of analysts providing FY1 forecast in the IBES summary file in year *t*. We use data starting from 1983. Missing values are set to zero.
$INST\_OWN_t$	The average quarterly 13F reported fraction of shares held by institutions in year *t*. We use data starting from 1983. Missing values are set to zero.
$TURNOVER_t$	The average daily turnover in year *t*.
AGE_t	Firm age is calculated as one plus the current year minus the first year that a

Variable	Definition
	valid PERMCO appears on CRSP tapes.
ND_t	A dividend non-payer dummy which equals to one if the firm does not pay dividends in year *t* and zero otherwise.
b_t, s_t, h_t, w_t	Factors loadings on the Fama-French three factors and the momentum factor estimated over the past 60 months (24 months minimum).
SD_RET_t	Standard deviation of daily stock returns of year *t* (50 daily observations minimum).

Appendix Table 2: Summary statistics

This table reports the time-series averages of cross-sectional summary statistics of the variables used in the paper. See Appendix Table 1 for detailed variable definitions.

	Mean	Std. Dev.	Min.	20%	Median	80%	Max.
M_t/B_t	1.944	2.016	0.125	0.908	1.449	2.501	43.899
E_t/B_t	0.067	0.294	-7.876	0.027	0.109	0.164	2.330
A_t/B_t	3.827	5.203	1.035	1.580	2.277	4.310	114.525
I_t/B_t	0.067	0.172	0.000	0.007	0.034	0.088	5.096
D_t/B_t	0.037	0.088	0.000	0.007	0.024	0.056	2.963
RET_t	0.160	0.491	-0.779	-0.160	0.085	0.399	6.769
$Log(A_t)$	6.041	1.686	3.033	4.513	5.806	7.532	12.326
RD_t/B_t	0.038	0.105	0.000	0.000	0.000	0.055	2.304
RD_ZERO_t	0.656	0.464	0.000	0.111	1.000	1.000	1.000
$SKEW\_RET_t$	0.409	0.971	-6.855	-0.077	0.338	0.847	10.240
$VOLP_t$	0.088	0.178	0.001	0.021	0.051	0.119	5.259
ICC_t	0.094	0.067	0.010	0.054	0.081	0.121	0.965
$Log(SIZE_t)$	12.348	1.729	7.779	10.797	12.246	13.843	18.384
$Log(B_t/M_t)$	-0.342	0.698	-3.422	-0.867	-0.310	0.183	2.789
MOM_t	0.052	0.341	-1.879	-0.178	0.062	0.292	1.693
ROE_t	0.103	0.192	-2.345	0.030	0.121	0.191	2.568
$\Delta A_t/A_{t-1}$	0.127	0.348	-0.692	-0.009	0.078	0.200	8.669
V_t/P_t	0.861	1.290	-11.906	0.316	0.713	1.281	24.211
NI_t	-0.006	0.055	-0.150	-0.043	-0.013	0.016	0.372
PD_IND_t	-0.016	0.243	-0.652	-0.221	-0.050	0.168	0.928
N_ANLST_t	6.426	7.428	0.000	0.704	3.519	11.573	40.733
$INST\_OWN_t$	0.430	0.240	0.000	0.184	0.434	0.667	0.977
$TURNOVER_t$	0.003	0.003	0.000	0.001	0.002	0.004	0.042
AGE_t	21.277	15.102	5.000	9.089	16.311	33.129	64.000
ND_t	0.313	0.419	0.000	0.000	0.244	0.600	1.000
b_t	0.992	0.540	-1.418	0.565	0.950	1.399	4.332
s_t	0.668	0.843	-2.686	-0.009	0.567	1.289	6.223
h_t	0.184	0.854	-4.631	-0.404	0.232	0.794	4.983
w_t	-0.104	0.560	-3.879	-0.488	-0.084	0.291	2.930
SD_RET_t	0.026	0.013	0.006	0.016	0.023	0.034	0.146