Internet Appendix for
Noisy Stock Prices and Corporate Investment

July 2018

This appendix contains proofs and additional analyses. It is organized as follows.

- Section A reports selected quotes from managers on peers' stock prices.
- Section B contains additional material for the theory section.
- Section C presents and discusses complementary empirical findings.

A Selected Manager Quotes on Peers' Stock Prices

A firm managers can obtain external information from its own stock price and its peers' stock prices, i.e., firms whose fundamentals are correlated with $\widetilde{\theta}_i$. We provide hereafter anecdotal evidence, gleaned from managers' reports (e.g., in earnings calls or shareholders annual meetings), suggesting that managers pay close attention to their peers' stock prices (see, for instance, the shareholders annual meeting address of Belo Corporation's CEO) and view them as signals about their own growth opportunities (see, for instance, the earnings conference call of Combinatrix).

T. Martin, CEO, Vedior

"Our development program will continue. Already in the third quarter we've expanded into a new market, Poland and hopefully the differentiation between our market valuation and our peers will disappear." Source: Q2 2003 Earnings Conference Call (July 31, 2003)

J.C. Smith, CEO, Webster Financial Corporation

"We're encouraged by the gradual reduction in our PE discount relative to the peer group median since we undertook our currents strategic plan in 2001 and are beginning to see improvement in the implied discount rate also. We remain committed to closing these valuation gaps through our strong performance and attainment of our clearly stated strategic goals." Source: Q3 2003 Earnings Conference Call (October 15, 2003)

S. Chamberlain, CEO, Integral Systems

"Everybody else in our industry, with the sole exception of ViaSat, has a P/E ratio half of ours. And ViaSat has the same as we do. So if you look at our ranking with our peers, our stock price is exactly where it should be. It is actually at the top of the pack. And that is really all I had to say." Source: Q3 2005 Earnings Conference Call (August 16, 2005)

A. Kumar, CEO, Combimatrix

"Let me make some contextual remarks regarding the emerging molecular diagnostics market (...). Each of our competitors seeks to enter the molecular diagnostics business as that will be a growth driver and provides strong recurring revenue streams. And one might argue that, considering the multiple of revenues and earnings at which they trade, most of our competitors' stock prices already anticipate big successes of their molecular diagnostic strategies. As many of you know, CombiMatrix began selling microarray products to researchers roughly 2.5 years ago. It was necessary for us to enter this market to validate our technology and products, but our eventual goal was to sell to physicians, patients and clinical laboratories for diagnostic applications (...). We have now achieved that goal and are in the process of expanding our scale" Source: Q2 2007 Acacia Earnings Conference Call (July 26, 2007)

J. Rubright, CEO, Rock-Tenn

"We looked at our assets and we said, "Why are we trading at a discount?" We've got good assets. We've got good peo-ple. And actually, our results wouldn't have justified that discount. We're still fighting that battle today. We are still fighting that battle today in terms of valuation. If you compare our valuation across our sector, you're going, "What's going on?" And I don't know what's going on." Source: Analyst & Investor Meeting (September 18, 2008)

R. Decherd, CEO, A.H. Belo Corporation

"A.H. Belo's stock price and the stock price of its peer media companies experienced dramatic declines in 2008. Much of this decline was due to the conditions that continue today, including investor unease about the economy and the financial markets as a whole, secular concerns about the newspaper industry, and the cyclical impact of advertis-ing-based companies – on advertising-based companies during recessions." Source: Shareholders Annual Meeting (May 14, 2009)

C. Koliopoulos, CEO, Zigo

"So in our benchmarking of our peer group, last quarter we saw valuations – average valuation of that peer group at over 2 times revenue. And Zygo has been trading at below that level. So I believe that Zygo in comparison with that – those benchmark companies is undervalued.(...) If Zygo shows as we go forward improved operating models, I think Zygo will – should – and it's just a guess on my part – should come up to the levels of our – at least our peer group. And as we improve our operating models, we should improve our valuations." Source: Q1 2011 Earnings Conference Call (November 4, 2010)

D. Wall, CEO, PattersonUTI Energy

"And I think today the one point that I think we're all a little bit concerned about, but you can probably say this about a number of companies in the market, but certainly in our case we're trading at a substantial discount to both historical valuations and to our peers. And I'm not sure that the valuations are really warranted. But we've got to tell our story and run our business." Source: UBS Global Energy Conference (May 23, 2012)

M. Burger, CEO, Cascade Microtech

"Analyst: Even with increased CapEx, you're going to have what I see as tremendous cash flow this year. Might that number go up, or would you rather spend it some other way?"

"Michael Burger: We would love to spend it in R&D. We actually are getting a return today. And we've got a lot of customer pull for stuff. So we actually think we can get probably at – it depends on the multiples and where the stock price is. We watch the multiple very closely compared to our competitor set. So assuming that we are receiving a fair multiple, we'd like to spend it in R&D. The minute we think our multiples are cheap or undervalued, we'll purchase it. But it really depends. R&D would be our first preference." Source: Q1 2014 Earnings Conference Call (April 29, 2014)

G. Henkels, CFO, Swift Transportation

"So this is a chart of our stock price from when we were public in December of 2010, through the end of 2012. So obviously, we did not perform very well in this period. We had – decreased 18% in our stock price where our peers were only down about 7%." Source: Investor Day (May 2, 2014)

D. Allingham, CEO, Lifecore Biomedical

"So, I have inserted a chart that just reflects what the stock price looks like and how it has performed over the last several years. The blue line is Lifecore Biomedical; the green line is the performance of our peer index that includes a number of companies – Align, Anika, Biolase, Dentsply, Integra, Isolagen, LifeCell, Mentor, Nobel Biocare, Regen Technologies, Sirona, Straumann, Sybron, and Young Innovations – pretty elite company to be part of, but again you will see that certainly the blue line, the stock has outperformed that peer group and considerably above the yellow line which is the index for the S&P 500." Source: Annual Shareholder Meeting (November 16, 2016)

B Additional Theoretical Results

B.1 Decomposition peers' stock prices in Schneemeier (2017)

In Schneemeier (2017), there are n firms and firm i's fundamentals (the productivity of its investment) is $\theta_i = e_i + \rho e_{i+1}$ with e_i and e_{i+1} being independent and normally distributed (ρ is a constant). The manager of firm i observes e_i (this observation corresponds to the manager's private signal in our model) but not e_{i+1}. The stock of each firm is publicly traded and the market for, say, stock i features informed traders who observe e_i and noise traders. Schneemeier (2017) (Proposition 1) shows that when managers observe all stock prices and use them to form their beliefs, the equilibrium price of firm i is:

$$p_i = 2a_0 + 2\underbrace{(e_i + a_1\rho e_{i+1})}_{Fundamental} + \underbrace{a_1\rho x_{i+1} + x_i}_{Noise}, \quad \forall i \tag{1}$$

where x_i is noise traders' demand for stock i, and a_0 and a_1 are constants that are determined in equilibrium. Thus, in equilibrium, the manager of firm i can learn information about the unknown (to her) component of her firm's fundamentals, e_{i+1}, from her own stock price and her peer's stock price, i.e., p_{i+1}. Equation (1) implies that the signal conveyed by this price in equilibrium is:

$$P_{-i} \overset{def}{=} \frac{p_{i+1} - 2a_0}{2} = e_{i+1} + u_{-i}, \tag{2}$$

where $u_{-i} = a_1\rho e_{i+2} + 0.5(a_1\rho x_{i+2} + x_{i+1})$. As assumed directly in our model, this signal is equal to the fundamentals, e_{i+1}, plus a noise term, u_{-i}. As explained in the text, this feature is a general property of models with feedback like Schneemeier (2017) and more generally models with informed trading. This is the only property that we use for deriving testable implications of the faulty informant hypothesis. Equilibrium models, like Schmeemeier (2017) generate additional predictions as the equilibrium or the assumptions on the information structure puts more restriction on u_{-i}, the noise in the signal conveyed by the peer of firm i's stock price. For instance, in Schneemeier (2017)'s model, non-fundamental shocks (x_{i+2}) to the peer of the peer of firm i–firm $i+2$–affects u_{-i} (see eq.(2)) due to the particular structure of firms' payoffs in this model. Moreover, the equilibrium of the model pins down the determinants of the variance of the noise conveyed by peers' stock price ($\sigma^2_{u_{i+1}}$) since the latter depends on a_1, which in equilibrium depends on exogenous parameters of the model (e.g., the mass of informed traders). Testing implications of this type is interesting but beyond the scope of our paper.

B.2 Cross-sectional Implications

In Section IV.C of the paper, we observe that a firms' investment should be more sensitive to the noise in peers' stock price (α_{-i} is higher) when (i) managers are less able to filter out the noise in their peers' stock price (i.e., in the model, when their signal about the noise in peers' stock price is noisier; $\sigma^2_{\eta_{-i}}$ is high), (ii) peers stock prices are more informative (i.e., $\sigma^2_{u_{-i}}$ is low or ρ_i is high in absolute value) or (iii) managers have less precise private information about their fundamentals (i.e., $\sigma^2_{\chi_i}$ is high). In this section, we prove that these are indeed predictions of the model considered in Section II.

To see this, consider the expression for α_{-i} derived in Appendix A of the paper. We have:

$$\alpha_{-i} = \frac{\rho_i^{-1}(1-\phi_{-i})(1-\psi_i^*)\kappa_{-i}}{(1-\phi_{-i})(1-\kappa_{-i}) + (1-\psi_i^*)\kappa_{-i}}, \tag{3}$$

where $\kappa_{-i} = \sigma^2_{\theta_i}\left(\sigma^2_{u_{-i}} + \sigma^2_{\theta_i}\right)^{-1}$, $\phi_{-i} = \sigma^2_{u_{-i}}\left(\sigma^2_{\eta_{-i}} + \sigma^2_{u_{-i}}\right)^{-1}$ and $\psi_i^* = \frac{\sigma^2_{\theta_i}}{\sigma^2_{\theta_i}+\sigma^2_{\chi_i^*}}$. Moreover, $\sigma^2_{\chi_i^*} = \left(\frac{a_i^*}{a_i^*+b_i^*+c_i^*}\right)^2 \sigma^2_{\chi_i} + \left(\frac{b_i^*+c_i^*}{a_i^*+b_i^*+c_i^*}\right)^2 \sigma^2_{u_i} + \left(\frac{c_i^*}{a_i^*+b_i^*+c_i^*}\right)^2 \sigma^2_{\eta_i}$, and $\psi_i^* = \frac{\sigma^2_{\theta_i}}{\sigma^2_{\theta_i}+\sigma^2_{\chi_i^*}}$.

Thus, α_{-i} decreases with ϕ_{-i}. As ϕ_{-i} decreases with $\sigma^2_{\eta_{-i}}$, we deduce that α_{-i} increases with $\sigma^2_{\eta_{-i}}$. Moreover, ϕ_{-i} increases with $\sigma_{u_{-i}}$ and κ_{-i} decreases with $\sigma^2_{u_{-i}}$. Thus, α_{-i} decreases with $\sigma^2_{u_{-i}}$. Last, α_{-i} decreases with ψ_i^*. As ψ_i^* is inversely related to $\sigma^2_{\chi_i^*}$, which itself increases with $\sigma^2_{\chi_i}$, we deduce that α_{-i} increases with $\sigma^2_{\chi_i}$.

In the baseline model, ρ_i is constrained to be equal to 1 or -1, which precludes comparative statics with respect to the absolute value of ρ_i. In the next section, we relax this assumption and we show (at the end of the section) that α_{-i} is larger when firm i's fundamentals and its peers' fundamentals are more correlated ($|\rho_i|$ is higher).

B.3 Imperfect correlation between the fundamentals of firm i and its peers' fundamentals

In the paper, we focus for brevity on the case in which the correlation between the fundamentals of firm i and its peers' fundamentals is perfect ($\rho_i = 1$ or $\rho_{-i} = -1$). In this section, we show that the results obtained in Section II still hold when this correlation is imperfect (but strictly different from zero). We use the same notations as in the baseline model, except if stated otherwise.

As in the baseline model, the manager of firm i forms her expectation of firm i's final payoff using the following signals $\{P_i, s_{mi}, s_{u_i}, s_{u_{-i}}, P_{-i}\}$. The only difference with the baseline model is that $P_{-i} = \rho_i \theta_i + u_{-i}$ where ρ_i can take any value in $[-1, 1]$, except zero as otherwise P_{-i} is uninformative about θ_i.

Let define:

$$\hat{u}_{-i} = \rho_i^{-1} u_{-i}, \tag{4}$$

$$\hat{\eta}_{-i} = \rho_i^{-1} \eta_{-i}, \tag{5}$$

$$\hat{P}_{-i} = \rho_i^{-1} P_{-i} = \theta_i + \hat{u}_{-i}, \tag{6}$$

and

$$\hat{s}_{u_{-i}} = \rho_i^{-1} P_{-i} = \rho_i^{-1} s_{u_{-i}}. \tag{7}$$

Clearly, the information content of $\Omega_1 = \{P_i, s_{mi}, s_{u_i}, s_{u_{-i}}, P_{-i}\}$ about θ_i is the same as the informational content of $\hat{\Omega}_1 = \{P_i, s_{mi}, s_{u_i}, \hat{s}_{u_{-i}}, \hat{P}_{-i}\}$. Thus:

$$\mathrm{E}(\widetilde{\theta}_i \left|\Omega_1\right.) = \mathrm{E}(\widetilde{\theta}_i \left|\hat{\Omega}_1\right.). \tag{8}$$

Observe that, formally, the problem of computing $\mathrm{E}(\widetilde{\theta}_i \left|\hat{\Omega}_1\right.)$ is identical to that of computing $\mathrm{E}(\widetilde{\theta}_i \left|\Omega_1\right.)$ when $\rho_i = 1$, replacing (i) the variance of the noise in manager's signal about the noise in peer's stock price ($\sigma^2_{\eta_{-i}}$) by the variance of $\hat{s}_{u_{-i}}$, i.e., $\sigma^2_{\hat{\eta}_{-i}} = \rho_i^{-2} \sigma^2_{\eta_{-i}}$ and (ii) the informativeness of peers' stock price by the informativeness of $\hat{P}_{-i}$ denoted by

$$\hat{\kappa}_{-i}(\rho_i) = \frac{\sigma^2_{\theta_i}}{\sigma^2_{\theta_i} + \sigma^2_{\hat{\eta}_{-i}}} = \frac{\rho_i^2 \sigma^2_{\theta_i}}{\rho_i^2 \sigma^2_{\theta_i} + \sigma^2_{u_{-i}}}. \tag{9}$$

Thus, we can proceed exactly as in the paper to obtain that:

$$K_i^* = a_i(\rho_i) s_{mi} + b_i(\rho_i) P_i + c_i(\rho_i) s_{u_i} + b_{-i}(\rho) P_{-i} + c_{-i}(\rho) s_{u_{-i}}, \tag{10}$$

where:

$$a_i(\rho_i) = a_i^*(1 - b_{-i}(\rho)), \tag{11}$$

$$b_i(\rho_i) = b_i^*(1 - b_{-i}(\rho)), \tag{12}$$

$$c_i(\rho_i) = c_i^*(1 - b_{-i}(\rho)). \tag{13}$$

where a_i^*, b_i^* and c_i^* are defined as in the paper. Moreover:

$$b_{-i}(\rho_i) = \frac{\rho_i^{-1}(1 - \psi_i^*)\hat{\kappa}_{-i}}{(1 - \phi_{-i})(1 - \hat{\kappa}_{-i}) + (1 - \psi_i^*)\hat{\kappa}_{-i}}, \tag{14}$$

$$c_{-i}(\rho_i) = -\frac{\rho_i^{-1}(1 - \psi_i^*)\phi_{-i}\hat{\kappa}_{-i}}{(1 - \phi_{-i})(1 - \hat{\kappa}_{-i}) + (1 - \psi_i^*)\hat{\kappa}_{-i}}, \tag{15}$$

where Ψ_i^* is defined as in the paper. It is easily check that the expressions for the coefficients in eq.(10) go to those in the paper when ρ_i goes to 1 or -1.

Now, proceeding as in the proof of Proposition 1 in the paper, we can use eq.((10)) to show that:

$$\mathrm{E}(K_i^* \,|P_i, u_i^o, P_{-i}, u_{-i}^o) = \gamma_i(\rho_i) P_i^* + \alpha_i u_i^o + \gamma_{-i}(\rho_{-i}) P_{-i}^* + \alpha_{-i} u_{-i}^o, \tag{16}$$

where P_i^* and P_{-i}^* are defined as in the paper and

$$\alpha_{-i}(\rho_i) = b_{-i}(\rho_i) + c_{-i}(\rho_i), \tag{17}$$

$$\alpha_i(\rho_i) = b_i(\rho_i) + c_i(\rho_i), \tag{18}$$

For brevity, we do not report the expressions for $\gamma_i(\rho_i)$ and $\gamma_{-i}(\rho_i)$ since they are not necessary for our main prediction. We deduce from eq.(17):

$$\alpha_{-i} = \frac{\rho_i^{-1}(1-\psi_i^*)(1-\phi_{-i})\hat{\kappa}_{-i}(\rho_i)}{(1-\phi_{-i})(1-\hat{\kappa}_{-i}(\rho_i)) + (1-\psi_i^*)\hat{\kappa}_{-i}(\rho_i)}. \tag{19}$$

Thus, $\alpha_{-i} \neq 0$ is strictly different from zero if and only if (i) the manager's private signal is not perfect ($\psi_i^* < 1$), (ii) peers' stock prices are informative ($\hat{\kappa}_{-i} > 0$), and (iii) the manager cannot perfectly filter out the noise in her peers' stock prices ($\phi_{-i} < 1$). Moreover, the sign of α_{-i} is the same as the covariance between firm i's fundamentals and its peers' fundamentals, i.e., ρ_i, as claimed in Proposition 1 of the paper. Thus, our main prediction holds true even when the correlation between a firm's fundamentals and its peers' fundamentals is imperfect, as long as it is not zero.

Moreover, substituting $\hat{\kappa}_{-i}(\rho_i)$ by its expression in eq.(9), we obtain using eq.(19), that α_{-i} increases with $|\rho_i|$ as claimed in Section IV.C of the paper.

C Additional Empirical Findings

C.1 Case where the correlation of fundamentals is negative (i.e., $\rho_i < 0$)

Our model predicts that the sign of the investment-to-noise sensitivity with respect to peers' stock prices (α_{-i}) should be negative when the fundamentals of the firm are negatively correlated with the fundamentals of its peers ($\rho_i < 0$). In the data, this case almost never happens and when it does, the estimated correlation (measured under a variety of proxies) is typically not statistically significant at conventional levels.

[Insert Table 1 About Here]

For completeness, Table 1 reports the results of estimating specification (9) on the subsamples of firm-year observations for which the estimated correlation ρ_i is negative and significant at the usual conventional levels. For these subsamples, we find that firm investment sensitivity to the noise contained in peers' stock prices is indeed negative. Table 1 shows that the sign of the regression coefficient on $\overline{MFHS}_{-i}$ is negative whatever proxy we use, and regardless of the statistical significance threshold we impose. However, and presumably because of power issues, this negative sensitivity is only weakly significant, except in Column (6) where it is significant at the 10% level.

C.2 Robustness to alternative definitions of peers

Table 2 reports the results of estimating specification (9) using alternative definitions of product market peers. Doing so allows us to start our sample in 1982. In columns (1) to (3), we define product market peers as firms operating in the same NAICS industry. In columns (4) to (6), we define product market peers as firms operating in the same SIC industry. Column (7) to (12) report the results of performing the same tests over the 1996-2011 period only, which is the time period we use in the paper due to TNIC availability.

[Insert Table 2 About Here]

In all columns, the coefficient on $\overline{MFHS}_{-i}$ is positive, statistically significant, and lower than the coefficient on $\overline{Q}^{*}_{-i}$ by an order of magnitude comparable to what we obtain using the TNIC classification. Overall, this table shows that using alternative definitions of product market peers does not materially change our main results.

C.3 Robustness to measures of mutual fund fire sales

Table 3 reports the results of estimating specification (9) using actual rather than hypothetical fire sales by mutual funds. Column (1) reports the first-stage regression, in which we regress a firms stock price (Q_i) on mutual funds actual sales (MFS_i).

[Insert Table 3 About Here]

The estimated coefficient on MFS_i is positive and significant. Thus, an increase in actual sales by mutual funds experiencing fire sales episodes (i.e., a decrease in MFS_i) leads to a significant decrease in the prices of stocks held by these funds. For comparison purposes, Column 2 shows the same first-stage when using hypothetical sales. The coefficient on MFS_i in Column 2 is comparable, albeit lower than the one estimated with actual sales MFS_i, suggesting that mutual fund managers mainly proportionally sell their stocks when facing large redemptions. This result is consistent with Lou (2012), who shows that "fund managers on average liquidate their holdings dollar-for-dollar in response to capital outflows", and that existing "ownership share has no significant impact on the extent to which managers liquidate their individual positions" (Lou 2012, p. 3465).

The rest of Table 3 looks at the effect on investment. Column 3 presents our main specification with actual sales. Column 4 presents the same specification with hypothetical sales. Both approaches lead to comparable estimates that are not statistically different from one another.

C.4 Robustness of conglomerate results post 1996

We re-estimate specification (11) over the 1996-2011 period only. Table 4 below reports the results.

[Insert Table 4 About Here]

In all columns, the coefficient on $\overline{MFHS}_{-i,d}$ is positive, statistically significant, and comparable in magnitude to what we report in the paper over a longer period.

[Insert Table 5 About Here]

In Table 5, we add the lag of $\overline{MFHS}_{-i,d}$ to study a possible correction of this initial reaction. We find that the coefficient on the lag of $\overline{MFHS}_{-i,d}$ is never statistically different from zero. In other words, there is also irreversibility in the composition of investment over the 1996-2011 period.

C.5 Complementary Cross-Sectional Results

A number of alternative channels discussed and tested in the paper also have specific cross-sectional predictions about the investment-to-noise sensitivity that we test in this section. First, under the financing channel explanation discussed in Section V.B, the sensitivity to the noise contained in peers' stock price should be greater for firms that are more financially constrained. We test whether this is the case by estimating a specification similar to specification (9), but where all explanatory variables are interacted with various proxies for financing constraints (denoted ψ_i hereafter). The results are reported in the first four columns of Table 6.

[Insert Table 6 About Here]

In Columns 1 to 4, the regression coefficient on the interaction term between $\overline{MFHS}_{-i}$ and ψ_i is never statistically significant. That is, whatever proxy we use to measure financing constraints, constrained and unconstrained firms respond to the noise contained in peers' stock price in the same way, which is inconsistent with the prediction of the financing channel.

Another alternative channel discussed in section V.C is that treated firms postpone their investment because they anticipate greater takeover activity among peers when peers' stock price goes down. This explanation predicts that our main result should be weaker when there are greater barriers to takeover activity, for example because peers have more antitakover defenses. We test this prediction in the last two columns of Table 6 and find little empirical support for it. In Column (5) and (6), firms whose peers have many antitakover provisions react as strongly as firms whose peers are more vulnerable to takovers.

Table 1: Investment-to-noise sensitivity when fundamentals are negatively correlated (i.e., $\rho_i < 0$)

This table presents OLS estimations of specification (9) on subsamples of firms whose fundamentals are negatively correlated with the fundamentals of their peers (i.e., $\rho_i < 0$). We use two proxies for ρ_i: the correlation of the log of sales, and the correlation of the log of assets, which are estimated for each pair of firms by OLS over a 3-year period using quarterly data, and then averaged across peers at the firm-year level. The dependent variable is the investment of firm i in year t, defined as capital expenditures divided by lagged property, plant, and equipment (PPE). $\overline{MFHS}_{-i}$ is the average hypothetical stock sales due to mutual funds large outflows ("price pressure") of all firms belonging to the same TNIC industry as firm i in year $t-1$, excluding firm i. $\overline{Q}^*_{-i}$ is the error term $\hat{\upsilon_{-i}}$ estimated from specification (8) and corresponds to the component of peers' stock price that is unexplained by mutual fund hypothetical sales. The subscript $-i$ for a variable refers to a portfolio that aggregates the peers of firm i. In all columns, we restrict the sample to firm-year observations where the estimated correlation ρ_i is negative. We further impose that this correlation be significant at the 10% level in Columns (1) and (4), at the 5% level in Columns (2) and (5), and at the 1% level in Columns (3) and (6). All explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. All variables are defined in Appendix B of the paper. Standard errors used to compute t-statistics (in brackets) are clustered in two ways, by industry (FIC300) and by year. Symbols ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	$Capex/PPE_i$					
Proxy for ρ_i	$\overline{SalesCorrelation}_i$			$\overline{AssetsCorrelation}_i$		
Sample restriction on p-value of estimated ρ_i	< 0.10	< 0.05	< 0.01	< 0.10	< 0.05	< 0.01
	(1)	(2)	(3)	(4)	(5)	(6)
$\overline{MFHS}_{-i}$	-0.005	-0.017	-0.015	-0.006	-0.004	-0.013*
	(-0.40)	(-1.36)	(-0.64)	(-0.57)	(-0.33)	(-1.84)
$\overline{Q}^*_{-i}$	-0.004	-0.001	0.009	0.019***	0.024***	0.021***
	(-0.29)	(-0.10)	(0.63)	(3.26)	(3.79)	(3.08)
$\overline{CF/A}_{-i}$	0.035*	0.050**	0.032	0.039***	0.035***	0.034**
	(1.90)	(2.56)	(1.69)	(3.45)	(2.98)	(2.76)
$\overline{Size}_{-i}$	0.005	0.014	0.014	0.006	0.003	-0.004
	(0.31)	(0.82)	(0.56)	(0.58)	(0.25)	(-0.40)
$\overline{Capex/PPE}_{-i}$	0.025	0.045*	0.016	-0.002	-0.005	-0.005
	(1.51)	(2.06)	(0.78)	(-0.19)	(-0.34)	(-0.31)
$MFHS_i$	0.009	0.003	0.014	0.012*	0.016**	0.019**
	(0.98)	(0.44)	(1.64)	(1.79)	(2.37)	(2.61)
Q^*_i	0.059***	0.046***	0.053**	0.057***	0.061***	0.056***
	(3.69)	(2.92)	(2.26)	(5.27)	(4.59)	(4.22)
CF/A_i	0.025*	0.021*	0.044***	0.018	0.015	0.019
	(2.05)	(2.04)	(3.56)	(1.31)	(1.13)	(1.49)
$Size_i$	-0.042	-0.020	0.071	-0.064*	-0.077**	-0.053
	(-0.91)	(-0.46)	(1.18)	(-1.93)	(-2.19)	(-1.09)
Obs.	2,912	2,374	1,466	5,734	5,125	3,905
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.260	0.244	0.300	0.293	0.300	0.304

Table 2: Investment-to-noise sensitivity with alternative definitions of peers

This table presents OLS estimations of specification (9) with alternative definitions of product market peers. The dependent variable is the investment of firm i in year t, defined as capital expenditures divided by lagged property, plant, and equipment (PPE). $\overline{MFHS}_{-i}$ is the average hypothetical stock sales due to mutual funds large outflows ("price pressure") of all firms belonging to the same TNIC industry as firm i in year $t-1$, excluding firm i. $\overline{Q}^*_{-i}$ is the error term $\hat{\upsilon_{-i}}$ estimated from specification (8) and corresponds to the component of peers' stock price that is unexplained by mutual fund hypothetical sales. The subscript $-i$ for a variable refers to a portfolio that aggregates the peers of firm i. We use equally-weighted averages in all columns. All explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. All variables are defined in Appendix B. Standard errors used to compute t-statistics (in brackets) are clustered in two ways, by industry and by year. Symbols ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	$Capex/PPE_i$											
Sample Period	1982 − 2011						1996 − 2011					
Peer Definition	NAICS3	NAICS4	NAICS5	SIC2	SIC3	SIC4	NAICS3	NAICS4	NAICS5	SIC2	SIC3	SIC4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\overline{MFHS}_{-i}$	0.007**	0.004**	0.003*	0.006*	0.004**	0.003*	0.011**	0.010***	0.009***	0.010**	0.009***	0.008***
	(2.05)	(2.35)	(1.76)	(1.81)	(2.50)	(1.97)	(2.64)	(5.33)	(4.91)	(2.57)	(4.73)	(4.28)
$\overline{Q}^*_{-i}$	0.010***	0.010***	0.009***	0.008***	0.010***	0.010***	0.013***	0.014***	0.013***	0.012***	0.013***	0.014***
	(4.76)	(4.75)	(4.75)	(3.28)	(4.00)	(4.94)	(4.35)	(5.03)	(4.48)	(2.86)	(2.90)	(4.47)
$\overline{CF/A}_{-i}$	0.018***	0.015***	0.011***	0.020***	0.015***	0.012***	0.016***	0.014**	0.009*	0.019***	0.013**	0.010**
	(3.56)	(3.39)	(2.70)	(4.55)	(3.65)	(3.03)	(2.87)	(2.71)	(1.91)	(3.72)	(2.77)	(2.21)
$\overline{Size}_{-i}$	0.004	0.001	0.009*	-0.001	0.004	0.007	0.004	-0.008	0.002	-0.006	-0.005	-0.000
	(0.39)	(0.11)	(1.89)	(-0.07)	(0.75)	(1.41)	(0.35)	(-1.23)	(0.31)	(-0.48)	(-0.84)	(-0.07)
$\overline{Capex/PPE}_{-i}$	0.027***	0.019***	0.014***	0.031***	0.019***	0.016***	0.029***	0.022***	0.019***	0.032***	0.020***	0.019***
	(5.52)	(4.47)	(3.65)	(6.11)	(4.45)	(4.53)	(4.33)	(3.58)	(3.07)	(5.23)	(3.07)	(3.57)
$MFHS_i$	0.011***	0.010***	0.010***	0.011***	0.011***	0.011***	0.010***	0.010***	0.010***	0.011***	0.010***	0.010***
	(8.26)	(7.21)	(7.15)	(5.63)	(6.31)	(6.75)	(5.83)	(6.74)	(6.34)	(4.23)	(4.97)	(5.92)
Q^*_i	0.087***	0.087***	0.087***	0.087***	0.087***	0.087***	0.080***	0.080***	0.081***	0.081***	0.080***	0.080***
	(12.90)	(13.14)	(13.18)	(12.53)	(12.60)	(16.49)	(11.13)	(10.76)	(10.78)	(10.64)	(10.68)	(13.21)
CF/A_i	0.039***	0.039***	0.039***	0.039***	0.040***	0.040***	0.031***	0.031***	0.032***	0.031***	0.031***	0.031***
	(14.55)	(14.31)	(14.57)	(11.10)	(11.73)	(13.13)	(13.94)	(11.89)	(11.52)	(11.67)	(10.55)	(11.17)
$Size_i$	-0.117***	-0.116***	-0.114***	-0.117***	-0.116***	-0.117***	-0.082***	-0.080***	-0.078***	-0.082***	-0.080***	-0.081***
	(-8.89)	(-9.11)	(-8.86)	(-8.41)	(-8.70)	(-8.96)	(-3.65)	(-3.46)	(-3.29)	(-3.19)	(-3.12)	(-3.41)
Obs.	87,028	85,841	82,565	87,878	87,311	86,585	48,403	47,894	46,227	48,446	48,102	47,691
Controls (Interacted)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.357	0.356	0.356	0.357	0.356	0.355	0.378	0.377	0.377	0.378	0.377	0.377

Table 3: Actual sales

This table presents the results from estimations of specification (8) in columns (1) and (2), and (9) in columns (3) and (4). All variables are defined in Appendix A. The subscript -i for a variable refers to a portfolio that aggregates the peers of firm i. We use equally-weighted averages in all columns. MFS is Mutual Funds Hypothetical Sales (MFHS) in (2) and (4), and Mutual Funds Actual Sales (MFAS) in (1) and (3). All other explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. Standard errors are double-clustered by industry and year. t-statistics are in brackets. All specifications include firm and year fixed effects. Symbols ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	Q_i		$Capex/PPE_i$	
Type of fire sales	Actual	Hypothetical	Actual	Hypothetical
	(1)	(2)	(3)	(4)
$\overline{MFS}_{-i}$			0.013***	0.015***
			(3.99)	(5.50)
$\overline{Q}^*_{-i}$			0.025***	0.024***
			(5.52)	(4.96)
$\overline{CF/A}_{-i}$			0.019***	0.019***
			(3.26)	(3.39)
$\overline{Size}_{-i}$			0.002	0.002
			(0.35)	(0.40)
$\overline{Capex/PPE}_{-i}$			0.029***	0.028***
			(3.91)	(3.85)
MFS_i	0.132***	0.108***	0.011***	0.011***
	(6.15)	(4.22)	(7.85)	(5.92)
Q^*_i			0.082***	0.080***
			(11.29)	(11.78)
CF/A_i			0.036***	0.037***
			(11.72)	(12.11)
$Size_i$			-0.080***	-0.080***
			(-2.91)	(-2.91)
Obs.	45,275	45,275	45,275	45,275
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R^2	0.515	0.513	0.371	0.371

Table 4: Within-Conglomerate Investment

This table presents OLS estimations of specification (11). The dependent variable is the investment of division d of firm i in year t, defined as capital expenditures divided by lagged total assets. $\overline{MFHS}_{-i,d}$ is the average hypothetical stock sales due to mutual funds large outflows ("price pressure") of all firms operating in the same industry as division d of firm i in year $t-1$, excluding firm i. $\overline{Q}^*_{-i,d}$ is the error term $\hat{\upsilon_{-i,d}}$ estimated from equation (**??**) and corresponds to the component of division peers' stock price unexplained by mutual funds hypothetical sales. In column (1) we define industry using the Fama-French 49 classification (FF49), in column (2) we define industry using the 2-digit Standard Industry Classification (SIC2), and in column (3) we define industry using the 3-digit North American Industry Classification System (NAICS3). In columns (4) to (6), we perform the same tests as in columns (1) to (3), except that we restrict the definition of peers to single-division firms from the same industry. All variables are defined in Appendix B. The subscript $-i$ for a variable refers to the (equally-weighted) average value of the variable across peers of division d of firm i. All explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. Standard errors used to compute t-statistics (in brackets) are clustered in two ways, by industry (FF49 in columns (1) and (4), SIC2 in columns (2) and (5), and NAICS3 in columns (3) and (6)) and by year. Symbols ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	$Capex/Assets_{i,d}$					
Industry:	FF49	SIC2	NAICS3	FF49	SIC2	NAICS3
	(1)	(2)	(3)	(4)	(5)	(6)
$\overline{MFHS}_{-i,d}$	0.004**	0.004**	0.003*	0.004**	0.004**	0.003*
	(2.46)	(2.21)	(1.81)	(2.40)	(2.26)	(1.79)
$\overline{Q}^*_{-i,d}$	0.009***	0.007***	0.004	0.009***	0.008***	0.004*
	(5.77)	(2.91)	(1.65)	(5.45)	(3.29)	(1.84)
$\overline{CF/A}_{-i,d}$	0.000	-0.000	0.004	-0.000	-0.000	0.004
	(0.12)	(-0.17)	(1.29)	(-0.14)	(-0.13)	(1.32)
$\overline{Size}_{-i,d}$	-0.005	-0.005	-0.000	-0.001	-0.004	-0.002
	(-1.22)	(-0.78)	(-0.06)	(-0.13)	(-0.63)	(-0.33)
$\overline{Capex/PPE}_{-i,d}$	0.002	0.003	0.005**	0.001	0.002	0.005**
	(1.09)	(1.26)	(2.47)	(0.80)	(0.86)	(2.38)
Obs.	28,116	28,230	29,636	28,116	27,903	29,612
Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Division FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.362	0.363	0.385	0.362	0.366	0.385

Table 5: Within-Conglomerate Investment with Lags

This table presents OLS estimations of specification (11) with lags. The dependent variable is the investment of division d of firm i in year t, defined as capital expenditures divided by lagged total assets. $\overline{MFHS}_{-i,d}$ is the average hypothetical stock sales due to mutual funds large outflows ("price pressure") of all firms operating in the same industry as division d of firm i in year $t-1$, excluding firm i. $\overline{Q}^*_{-i,d}$ is the error term $\hat{\upsilon_{-i,d}}$ estimated from equation (**??**) and corresponds to the component of division peers' stock price unexplained by mutual funds hypothetical sales. In column (1) we define industry using the Fama-French 49 classification (FF49), in column (2) we define industry using the 2-digit Standard Industry Classification (SIC2), and in column (3) we define industry using the 3-digit North American Industry Classification System (NAICS3). All variables are defined in Appendix B. The subscript $-i$ for a variable refers to the (equally-weighted) average value of the variable across peers of division d of firm i. All explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. Standard errors used to compute t-statistics (in brackets) are clustered in two ways, by industry (FF49 in columns (1), SIC2 in columns (2), and NAICS3 in columns (3)) and by year. Symbols ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	$Capex/Assets_{i,d}$		
Industry:	FF49 (1)	SIC2 (2)	NAICS3 (3)
$\overline{MFHS}_{-i,d,t-1}$	0.003* (1.84)	0.003** (2.47)	0.004** (2.23)
$\overline{MFHS}_{-i,d,t-2}$	-0.001 (-0.81)	-0.003 (-1.72)	-0.001 (-0.51)
$\overline{Q}^*_{-i,d,t-1}$	0.006*** (3.28)	0.007** (2.70)	0.005* (1.96)
$\overline{Q}^*_{-i,d,t-2}$	0.003 (1.51)	-0.002 (-0.59)	-0.000 (-0.03)
$\overline{CF/A}_{-i,d}$	0.003 (1.44)	0.002 (0.81)	0.005 (1.60)
$\overline{Size}_{-i,d}$	-0.005 (-0.87)	-0.006 (-0.83)	-0.003 (-0.47)
$\overline{Capex/PPE}_{-i,d}$	0.001 (0.69)	0.005 (1.71)	0.007*** (2.80)
Obs.	23,912	24,051	24,849
Firm-Year FE	Yes	Yes	Yes
Firm-Division FE	Yes	Yes	Yes
Adj. R^2	0.380	0.381	0.394

Table 6: Complementary cross-sectional results

This table shows how investment-to-noise sensitivity varies in the cross-section along two dimensions: the financing constraints of the treated firm (ψ_i), and the existence of barriers to takeover activity among its peers (ϕ_{-i}). We present OLS estimations of specification (9) where all explanatory variables are interacted with proxies for the cross-sectional variation of interest. The dependent variable is the investment of firm i in year t, defined as capital expenditures divided by lagged property, plant, and equipment (PPE). In column (1), the proxy for ψ_i is the size of firm i as measured by the log of total assets. In column (2), the proxy for ψ_i is the age of firm i. In Column (3), the proxy for ψ_i is a dummy equal to one if firm i has no credit rating, and zero if not. In Column (4), the proxy for ψ_i is a dummy equal to 1 if firm i pays a dividend, and zero if not. In Column (5), the proxy for ϕ_{-i} is the G-index averaged across all peers $-i$. In Column (6), the proxy for ϕ_{-i} is the likelihood that peers $-i$ have dual-class stock structure, and zero if not. $\overline{MFHS}_{-i}$ is the average hypothetical stock sales due to mutual funds large outflows ("price pressure") of all firms belonging to the same TNIC industry as firm i in year $t-1$, excluding firm i. All variables are defined in Appendix B of the paper. All explanatory variables are interacted with the proxy variable, and this proxy variable is included as a control in all specifications. All explanatory variables are divided by their sample standard deviation to facilitate economic interpretation. Standard errors used to compute t-statistics (in brackets) are clustered in two ways, by industry (FIC300) and by year. Symbols ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable:	$Capex/PPE_i$					
Cross-Sectional Variation of Interest:	Financings Constraints ψ_i				Barriers to takeovers amongs peers ϕ_{-i}	
Proxy Variable:	$Size_i$	Age_i	$NoRating_i$	$Dividend_i$	$\overline{GIndex}_{-i}$	$\overline{DualClass}_{-i}$
	(1)	(2)	(3)	(4)	(5)	(6)
$\overline{MFHS}_{-i}$	0.010	0.024**	0.014***	0.013***	0.007	0.025**
	(1.45)	(2.47)	(5.14)	(4.75)	(0.26)	(2.92)
$\overline{MFHS}_{-i}\times \psi_i$	0.002	-0.006	0.002	0.001		
	(0.70)	(-1.50)	(0.56)	(0.42)		
$\overline{MFHS}_{-i}\times \phi_{-i}$					0.002	-0.007
					(0.61)	(-1.49)
Obs.	45,275	45,255	45,275	44,732	14,716	14,716
Controls (Interacted)	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.373	0.385	0.372	0.371	0.350	0.344