# Institutional investors and corporate governance: The incentive to be engaged

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# Institutional investors and corporate governance: The incentive to be engaged


## Abstract

This paper studies institutional investors' incentives to be engaged shareholders. We measure incentives as the increase in an institution's cash flow (management fees) when a stockholding increases 1% in value, considering both the direct effect on assets under management and the indirect effect on subsequent fund flows. By 2015, the average institution gains roughly $143,100 in annual cash flow if a firm in its portfolio rises 1%. The estimates range from $22,300 for small institutions (who hold relatively concentrated portfolios) to $335,900 for the largest institutions (with more diffuse holdings). Institutional shareholders in one firm often gain when rival firms in the industry do well, by virtue of the institution's holdings in those firms, but the effects are modest in the most concentrated industries. Our estimates suggest that institutional investors often have strong incentives to be active shareholders.

## 1 Introduction

This paper studies institutional investors' financial incentives to be engaged shareholders. Institutional ownership of publicly traded U.S. firms increased from 32.5% to 70.3% of total value from 1980 to 2015, according to 13F filings with the SEC, driven in part by the remarkable growth of index funds in recent years. The largest 1% of institutions alone now own roughly 40% of the overall U.S. market. These ownership changes have the potential to substantially affect the governance of public firms if institutional investors have different incentives than other shareholders.

Institutions have traditionally been viewed as passive owners, raising concerns that their growth will weaken governance and exacerbate agency problems (Bebchuk, Cohen, and Hirst 2017). However, recent studies provide evidence that larger institutions often exercise 'voice' through proxy voting and behind-the-scenes engagement with management (Carleton, Nelson, and Weisbach 1998; McCahery, Sautner, and Starks 2016; Appel, Gormley, and Keim 2016). A controversial strand of the literature argues that institutions with widespread holdings may promote anticompetitive firm behavior, either by shaping managerial incentives or advocating less aggressive corporate policies (Anton et al. 2016; Azar, Raina, and Schmalz 2017; Panayides and Thomas 2017; Azar, Schmalz, and Tecu 2018). Yet it is unclear how extensive institutional intervention is or, more fundamentally, whether institutions have strong incentives to be engaged. The answer to the latter question is complicated by the fact that institutions compete with each other and tend to be evaluated based on relative performance. Engagement by one institution will benefit other shareholders with whom it competes for funds, likely exacerbating the classic free-rider problem in corporate governance discussed by Grossman and Hart (1980) and Shleifer and Vishny (1986).

Our paper contributes to the literature by providing direct evidence on institutions' financial incentives to be engaged shareholders. We propose a simple framework to measure incentives that accounts for externalities among institutions and use this framework to estimate incentives for different types of institutions and firms. We also analyze how the payoffs of institutional shareholders in one firm are linked to the value of other firms in the industry to shed light on the potential impact of common ownership, accounting for the fact that rivals are cross-owned not only by the institution itself (similar to prior literature) but also owned by competing

institutions. The latter effect has not been previously examined.

Our analysis is based on a simple framework: we measure incentives as the impact of a 1% increase in firm value on an institution's management fees. Incentives are the sum of a direct component that captures how firm value affects an institution's assets under management (AUM) and management fees, and an indirect (flow) component that captures the impact on an institution's relative performance and subsequent fund flows. Analogous to Jensen and Murphy (1990) and Hall and Liebmann (1998), we define overall incentives as either the percent or dollar increase in cash flow caused by a 1% increase in firm value.[1]

Intuitively, direct incentives depend simply on the size of an institution's investment in the firm. Indirect incentives depend on (i) whether the institution under- or overweights a firm relative to competing institutions; and (ii) how strongly flows respond to institutions' relative performance. Thus, indirect incentives are defined as a firm's overweight in the institution's portfolio (relative to the holdings of other institutions) times the flow-to-performance sensitivity of institutional investors.

Our sample consists of all institutions with 13F filings. The sample grows from just under 500 institutions in 1980, with an average portfolio of 180 stocks worth $800 million, to 3,500 institutions in 2015, with an average portfolio of 210 stocks worth $4.8 billion. Interestingly, the size distribution becomes more skewed over time, with almost no trend in median institution size ($300–$400 million, as measured by their holdings of U.S. stocks). By the end of the sample, five institutions alone—T Rowe Price, Fidelity, State Street, Blackrock, and Vanguard—account for over 25% of total AUM.

Our first step is to estimate the flow-to-performance sensitivity for institutional investors. We find that a one percentage point increase in an institution's benchmark-adjusted quarterly return predicts a 1.29 percentage point (standard error of 0.12) increase in net inflow over the subsequent ten quarters. This estimate suggests that flows contribute significantly to institutions' incentives and extends the literature on flow-to-performance

[1] Chung et al. (2012) and Lim, Sensoy, and Weisbach (2016) use a similar approach to study the pay-for-performance sensitivities of private equity and hedge funds.

sensitivities for mutual funds (e.g., Chevalier and Ellison 1997; Sirri and Tufano 1998).

Turning to our main results, we measure direct and flow incentives for every stock in an institution's portfolio, then average over all institutions holding a stock to get an estimate of incentives for a given firm or average over an institution's holdings to get an estimate of incentives for a given institution. In both cases, we value-weight incentives, so that larger shareholdings receive a greater weight. In some tests, we also consider the incentives of just a firm's largest shareholders.

Direct and flow incentives are often quite large, especially at the end of the sample. Focusing on 2015, a typical stockholding represents 1.67% of an institution's portfolio.[2] This compares with an average weight of just 0.38% in the portfolio held by other institutions. The weight of 1.67% determines an institution's direct incentives, while the overweight relative to other institutions, 1.29%, determines flow incentives. With a flow-to-performance sensitivity of 1.29, total incentives can be expressed as 3.34% (1.67% + 1.29×1.29%), equal to the percent increase in an institution's AUM if a typical stockholding doubles in value.

In dollar terms, a 1% increase in firm value translates into a surprisingly large $21.0 million direct increase in AUM, a number that varies significantly across stocks and institutions (discussed below). If we assume, for simplicity, that institutions earn a straight 0.5% management fee, the increase in AUM implies a $104,800 increase in an institution's annual cash flow. Adding flow incentives, the overall dollar increase in annual cash flow grows to $143,100. This number can be interpreted as the annual cost an institution would be willing to incur to bring about a (one-time) 1% increase in firm value. It suggests that, even though free-rider problems mean they receive only a small fraction of the benefits, many institutions would be willing to spend significant resources monitoring and engaging at least some firms in their portfolios.

The estimates vary substantially across stocks and institutions. Small institutions (those that hold the bottom

[2] This number does not mean the average institution holds just 1/.0167 = 60 stocks. First, the average weight of 1.67% is value-weighted across holdings and drops to 0.51% on an equal-weighted basis. The latter number equals 1/N for a given institution, where N is the number of stocks in the portfolio. Second, the average of 1/N across institutions is not equal to 1/avg(N). In fact, the value-weighted average institution in our sample holds 1,960 firms in 2015.

25% of AUM) invest an average of 3.82% of their portfolios in a given firm, compared with a weight of 0.32% in the benchmark institutional portfolio. As a result, small institutions' incentives are strong on a percentage basis, 8.33%, even though they are modest in dollar terms: with a 0.5% management fee, a small institution's annual cash flow increases by $22,300 if a portfolio firm goes up 1%. In contrast, large institutions (top 25% of AUM) tend to be more diversified, investing just 0.51% of AUM in an average stock in their portfolios. Their incentives are modest in percentage terms, but, given their size, a 1% increase in firm value leads to an extra $335,900 in annual cash flow.

We also study incentives at the firm level, averaging across a firm's institutional shareholders, to understand how strong the incentives are for a given firm's shareholders to engage with management. For large stocks, a typical share (in 2015) is held by an institution that invests 2.42% of its portfolio in the firm. Direct and flow incentives together imply that the firm's average institutional shareholder gains $377,700 in annual cash flow if firm value increases by 1%. For small stocks, the incentives to intervene are much lower: a 1% increase in firm value translates into dollar incentives of just $17,100.

Finally, following the recent literature on cross-ownership among firms in the same industry, we quantify how much institutional shareholders in one firm gain if rival firms in the industry increase in value, by virtue of the institutions' holdings of those firms. We focus primarily on industries (three-digit SIC codes) with a small number of firms to highlight the potential impact on competition when strategic interactions are more likely to be important. For each institutional shareholder in a given firm, we compute the cash flow effect of a 1% increase in the value of the firm's industry rivals, again taking into account both direct and flow incentives. We calculate 'rival incentives' weighting institutions by their investment in the firm.

For relatively concentrated industries, rival incentives are positive but typically smaller than own-firm incentives. For example, in industries with 6–10 firms, the average institutional shareholder in one firm gains $100,800 in annual cash flow if that firm goes up 1% in value but $73,400 in annual cash flow if *every* competitor goes up 1% (institutions often invest in multiple firms in an industry but, when they overweight one firm, they tend not to overweight other firms in the industry). The latter number equals $9,900 per rival firm.

To put the numbers in perspective, consider a corporate action that would increase the value of a firm at the expense of industry rivals, one-for-one (for example, a move that allows the firm to take market share away from its rivals). Our estimates suggest that institutions' ownership of multiple firms in an industry makes this strategy about 35% less valuable to the institution than it otherwise would be.

Our findings contribute to the large literature on the governance role of institutional investors. The literature provides evidence that institutions influence corporate policies, including CEO pay, investment, takeovers, board structure, and, more controversially, output prices (Bushee 1998; Gillan and Starks 2000; Hartzell and Starks 2003; Aggarwal et al. 2011; Aghion, Van Reenen, and Zingales 2013; Fich, Harford, and Tran 2015; Azar, Raina, and Schmalz 2017; He and Huang 2017; Panayides and Thomas 2017; Azar, Schmalz, and Tecu 2018). However, active involvement requires an institution to spend resources to monitor the firm, engage managers, and vote on shareholder proposals. Our results directly estimate institutions' financial incentives to undertake these actions. Quantifying these effects is important to understand the trade-offs institutions face when considering active engagement with their firms and for understanding the magnitude of free-rider problems in corporate governance. The analysis also helps us gauge the plausibility of costly interventions, for which direct evidence is often difficult to obtain.

Our paper also contributes to the literature on flow-to-performance effects in asset management (Chevalier and Ellison 1997; Sirri and Tufano 1998; and others). Most studies focus on this relation at individual fund level. While a few papers explore interactions among funds within a family (Nanda et al. 2004; Brown and Wu 2016), we provide the first estimate of the fund-to-performance sensitivity for institutional investors overall. The relation is statistically and economically large, and the implied competition for fund flows contributes significantly to institutions' financial incentives.

## 2 Framework

The goal of the paper is to study the incentives that institutional investors have to be active shareholders: What is an institution's payoff from taking an action—monitoring the firm, engaging with management, voting on shareholder proposals, etc.—that affects firm value? An oft-stated view in the literature is that many, if not

most, institutions have little incentive to be involved in corporate governance, but to our knowledge no one has explicitly estimated the payoffs from being active.

We propose a simple framework to measure incentives. We assume the payoff to being active comes from the additional fees the institution earns if a stock in its portfolio increases in value, recognizing both the direct impact on AUM when the stock goes up and the indirect impact from subsequent performance-related fund flows. To be specific, suppose the institution earns an annual fee equal to a given percentage $p$ of AUM, where AUM at the end of period *t+1* can be written as:

$$AUM_{t+1} = AUM_t * \left(1 + \sum_{i=1}^{N} w_{i,t} R_{i,t+1}\right) + Flow_{t+1}. \quad (1)$$

$R_{i,t+1}$ is stock *i*'s return in period *t+1*, $w_{i,t}$ is the stock's weight in the institution's portfolio at the start of *t*+1, and $Flow_{t+1}$ represents the net inflow of new money in period *t+1*. Our estimates allow *Flow* to react with a delay to performance but, for expositional simplicity, suppose that it is driven by contemporaneous returns relative to a benchmark:

$$Flow_{t+1} = AUM_t * \left[\alpha + \beta * \left(\sum_{i=1}^{N} w_{i,t} R_{i,t+1} - \sum_{i=1}^{N} v_{i,t} R_{i,t+1}\right) + e\right], \quad (2)$$

where $\beta$ is the flow-to-performance sensitivity and $v_i$ is the weight of stock *i* in the benchmark portfolio. From eqs. (1) and (2), the incentives to increase stock *i*'s value in a given year come from a *direct component*, stemming from the additional fees associated an increase in AUM:

$$Direct\ incentives_{i,t} = p * AUM_t * w_{i,t}, \quad (3)$$

and a *flow component* coming from the incremental fund inflows driven by improved performance:

$$Flow\ incentives_{i,t} = p * AUM_t * \beta * \left(w_{i,t} - v_{i,t}\right). \quad (4)$$

Notice that flow incentives will be negative if the institution underweights a stock relative to the benchmark portfolio.

Eqs. (3) and (4) express incentives as the dollar increase in management fees of a 100% increase in stock *i*'s value. Empirically, we divide by 100 to calculate the dollar impact of a 1% increase in stock *i*'s value, which

strikes us as a more appropriate magnitude to consider. In addition, since *p*AUM* is the level of management fees, we can drop that term from the formulas to express incentives on a percentage basis.

Our incentive measures are analogous to Hall and Liebman's (1998) measures of CEO incentives, representing an institution's gain from a *percentage* increase in firm value. We consider percentage changes in firm value, rather than dollar changes, because policies that affect value roughly in proportion to a firm's size (such as governance or strategic issues) seem the most likely to attract institutional attention.

An interesting interpretation of dollar incentives is that they give an upper bound on the annual costs the institution would be willing to incur to bring about a 1% increase in value. (The total amount the institution would be willing to spend would equal the *present value* of the stream of additional fees, but we leave the numbers as annual cash flows for simplicity.) These costs might stem from the extra time, effort, and legal expenses needed to monitor the firm and engage with management. An important point is that we focus on the incentives of the money manager itself—how much the money manager would be willing to spend out-of-pocket—not the incentives of the institution's clients, who would benefit from the entire increase in AUM rather than just the increase in *p**AUM. This distinction is especially important because it is not always clear who actually bears the costs of engagement. In mutual funds, for example, some costs are paid directly by the management company, while other costs are charged to the fund as an operating expense. The latter arrangement would seem to better align the money manager's and clients' interests, since the manager would have an incentive to spend until the net benefit to investors is zero, but, anecdotally at least, engagement costs often seem to be borne directly by the mutual fund company (see, e.g., Pozen 1994).

The framework is easily extended to consider issues related to common ownership. Recent studies emphasize that institutions often invest in multiple firms in an industry, providing an incentive to support policies that benefit the industry as a whole (possibly at the expense of consumers). We measure these incentives very simply by calculating how institutional shareholders in firm *i* are affected by changes in the value of firm *i*'s competitors. Concretely, we calculate 'rival incentives' for stock *i* by summing our incentive measures over other firms in the same industry:

$$Direct\ rival\ incentives_{i,t} = p * AUM_{t-1} * \sum_j\ w_{j,t-1}, \quad (5)$$

$$Flow\ rival\ incentives_{i,t} = p * AUM_{t-1} * \beta * \sum_j \left(w_{j,t-1} - v_{j,t-1}\right), \quad (6)$$

where $j$ indexes other firms in the industry ($j \neq i$). Rival incentives are higher if the institution has larger holdings within the industry, while the flow component also depends on the holdings of competing institutions (as reflected in $v_j$). Overall rival incentives (the sum of eqs. 5 and 6) can be negative even if an institution has modest cross-holdings within the industry, if an action benefits other institutional shareholders of rival firms. This situation is observed often in our data, providing a counterweight to the incentives of some institutions to support anticompetitive policies. These rival flow incentives have not been previously incorporated into analyses of common ownership.[3]

## 3 Data

Our main data come from Thomson Reuters' database of 13F filings with the SEC. Since 1980, the SEC has required institutional investors that 'exercise investment discretion over $100 million or more' of so-called 13(f) securities to report, with some exceptions, their holdings of U.S. stocks and other exchange-traded securities every quarter. Holdings are identified by CUSIP, allowing an easy merge with price and share data from the Center for Research in Security Prices (CRSP).

Thomson Reuters classifies institutions into five groups: (i) banks, (ii) insurance companies, (iii) investment companies, (iv) investment advisors, and (v) other. The distinction between the last three categories is somewhat arbitrary, and Thomson Reuters mistakenly misclassified many institutions as 'other' starting in 1998 (see Wharton Research Data Services' (WRDS) *User Guide* for details). To circumvent these issues, we combine the last three categories into a single group—'Type 3' institutions—that includes mutual fund companies, hedge funds, pensions, endowments, and other asset managers.

[3] Several measures of common ownership have been proposed in the literature. These measures often focus on capturing the extent of cross-holdings rather than institutions' incentives. Examples include the Modified Herfindahl-Hirschman Index (MHHI) developed in Bresnahan and Salop (1986) and O'Brien and Salop (2000), and a measure of target-acquirer cross-holdings developed in Harford, Jenter, and Li (2011). An exception is in Gilje, Gormley, and Levit (2018). Their measure accounts for institutions' incentives but differs from ours in that it does not incorporate flow effects and focuses on cross-ownership within firm-pairs (rather than industries).

We make four additional changes to Thomson Reuters' data. First, to mitigate a potential problem related to split adjustments in the data (see WRDS' *User Guide*), we adjust holdings for stock splits that occur between the 'filing' and 'report' dates using CRSP's adjustment factors. Second, WRDS documents serious problems with the data starting in the second quarter of 2013 caused by stale and omitted 13F filings. As a fix, WRDS provides a supplemental dataset for June 2013–December 2015 based on institutions' original 13F filings with the SEC; we merge these data with the Thomson Reuters' dataset using the methodology of Ben-David et al. (2016). Third, Thomson Reuters reports Blackrock's holdings under seven separate entities, which we aggregate into a single institution following Ben-David et al. (2016), and we download from SEC.gov/Edgar two quarters of Blackrock's holdings (March and June 2010) that are missing from Thomson Reuters. Finally, we set institutional ownership to 100% of shares outstanding in the small number of cases that institutions appear to hold more than 100% of the firm (see Lewellen 2011 for details).

Table 1 reports descriptive statistics for the data, breaking the sample into seven 5-year periods from 1980–2015 to show how the sample evolves through time (the statistics are computed each quarter and then averaged across quarters).

Panels A and B describe the cross section of institutions. The sample grows from 566 institutions in the early 1980s to 3,065 institutions in the period 2011–2015 (in these panels, 'N' is the number of institutions in the sample). In all periods, the average institution holds roughly 200–300 U.S. firms, with a portfolio worth just under $1 billion in the early 1980s and $4.5 billion in recent years.[4] Interestingly, the median size of institutions is fairly steady over time ($300 to $400 million), and the median number of firms held actually declines from 128 firms in the first period to 74 firms in the last period. The different trends for the mean vs. median reflect the fact that institutions' size distribution becomes more skewed over time, with dramatic growth in the top AUM percentiles (AUM here is measured by an institution's holding of U.S. stocks, not its total investment in all securities). For example, the 99th AUM percentile grows from $7.8 billion in the early

[4] The unit of observation in the underlying data is an institution–quarter–CUSIP observation. We aggregate institutional ownership to the firm level using CRSP's PERMCO variable and keep only firms with common stock outstanding (CRSP share codes of 10, 11, and 12). The statistics in Panel B therefore represent the number of *firms* held by the institution, not the number of stocks, and the statistics in Panels C and D are calculated by *firm* not by stock.

1980s to $68.1 billion in 2011–2015, representing a nearly 10-fold increase. The rise of extremely large institutional investors, with widespread investment in many U.S. stocks, is the motivation for recent concerns about the competitive effects of common ownership.

Panels C and D report the distribution of institutional ownership across U.S. firms (here, 'N' represents the number of firms in the sample). The average U.S. firm at the beginning of the sample has 20 institutional shareholders who own 13% of shares outstanding, steadily increasing to 152 institutional shareholders who own 54% of shares outstanding in the last five-year period. (On a value-weighted basis, the average firm has nearly 1,000 institutional shareholders at the end of the sample, holding 70% of shares outstanding.) Nearly every firm has at least one institutional shareholder in recent years.

## 4 Flow-to-performance sensitivity

One way institutional investors are rewarded for good performance comes from a link between returns and subsequent growth. In this section, we briefly review the mutual fund literature and estimate the flow-to-performance sensitivity of institutional investors.

### *4.1 Background*

A large number of studies explore how mutual fund flows respond to a fund's past performance. For example, Chevalier and Ellison (1997) estimate the relation between a fund's annual return and subsequent annual growth. They find that a young (two-year-old) fund grows 45 percentage points faster, 55% vs. 10%, if its excess return in the prior year increases from 0% to 10%, implying a flow-to-performance sensitivity of 4.5. Flow-to-performance sensitivities are smaller for older funds, close to zero for poorly-performing funds, and strong for the best-performing funds (implying nonlinearities in the relation).

A few recent studies explore growth within fund families, though we are not aware of any study that explicitly estimates flow-to-performance sensitivities at the family level. Nanda, Wang, and Zheng (2004) show that the existence of a 'star' fund is positively related to the growth of affiliated funds (see also Khorana and Servaes 1999; Massa 2003; Gaspar, Massa, and Matos 2006; Sialm and Tham 2016). Brown and Wu (2016) argue that

investors learn about the quality of one fund by observing the performance of affiliated funds because of shared skills and resources within the family, including shared managers, analysts, trading desks, etc. They show that fund flows respond positively to the performance of other funds in the family, particularly when the managers of the funds overlap (see also Choi, Kahraman, and Mukherjee 2016).

How strongly the effects show up in institutional data depends on (i) whether results for mutual funds are representative of the wider population of institutional investors and (ii) whether new flows into a fund come from within the family or from competing institutions. Some fund companies make it more costly to move money out of the family than within the family (e.g., back-end loads are waived for within-family transfers), suggesting that a good-performing fund might grow at the expense of affiliated funds, countering the phenomena documented by Nanda, Wang, and Zheng (2004), Brown and Wu (2016), and others.

### *4.2 Flow-to-performance estimates*

We estimate institutions' flow-to-performance sensitivity by regressing net inflows on past benchmark-adjusted returns, allowing for a delay in the arrival of new money. Specifically, Table 2 reports average slopes from Fama-MacBeth-style cross-sectional regressions of an institution's net inflow in quarters $t$+1 through $t$+10 on benchmark-adjusted returns in quarter $t$. Net inflow equals the quarterly growth rate of AUM minus the institution's portfolio return:

$$Net\ Inflow_{it} = \frac{AUM_{it} - AUM_{i,t-1}(1+R_{it})}{AUM_{i,t-1}}, \tag{7}$$

where $R_{it}$ is inferred from the institution's holdings at the end of quarter $t$–1. Benchmark-adjusted returns equal $R_{it}$ minus the value-weighted return of all institutions of the same type, capturing the idea that investors are more likely to evaluate an institution's performance relative to similar institutions (the results only change slightly using raw returns).[5]

[5] Some background: Institutions' value-weighted returns from 1980–2015 are almost perfectly correlated (99.9%) with the market index (see also Lewellen 2011). Equally weighted, institutions have an average return of 3.31% quarterly (compared with a market return of 3.11%), and the cross-sectional standard deviation of their returns is 4.89%. Institutions grow 4.02% quarterly, reflecting both the returns on their portfolios and net inflows of 0.72% quarterly (the latter has a cross-sectional standard deviation of 15.8%). For the regressions, we trim the data at the 1st and 99th percentiles to eliminate extreme observations.

Table 2 shows that net inflows are strongly related to prior performance. The slopes on benchmark-adjusted quarterly returns are significantly positive for up to three years (all ten quarters reported plus three additional quarters that are not tabulated), with the strongest effects observed in quarters $t$+2 and $t$+3. The slopes range from 0.099–0.216 for the first eight quarters, implying that an additional 1% return this quarter predicts additional quarterly inflows of 0.10%–0.22% for the next two years.

For our subsequent analysis, we base our estimate of institutions' flow-to-performance sensitivity on the cumulative slopes reported in Table 2. The cumulative flow-to-performance sensitivity over 10 quarters, 1.29, implies that a 1% return in quarter $t$ leads to an immediate 1% increase in AUM followed by an additional 1.29% increase in AUM over the subsequent two-and-a-half years as new money is received (the t-statistics in the table take into account possible correlation between the slopes at different horizons using an approach similar to Jegadeesh and Titman 1993). The flow-to-performance sensitivity grows to 1.50 if we extend the horizon out to 13 quarters—the last quarter with a significant slope—but we use the cumulative slope of 1.29 from Table 2 to be conservative and to mitigate concerns about data snooping. (Our incentive measures would be slightly higher using $\beta = 1.50$.) The magnitude of our estimate is comparable to that reported by Chevalier and Ellison (1997) for older mutual funds.

Figure 1 illustrates the shape of the flow-to-performance relation for institutions. We sort institutions into relative-performance quintiles each quarter, and plot the quintiles' net inflow over the subsequent 10 quarters against their relative returns. The graph provides some evidence of convexity in the relation, mirroring results for mutual funds, but the effect is not dramatic. For simplicity, we use the (linear) regression slope from Table 2 as our baseline estimate.

It is interesting to note that flow-to-performance sensitivities vary across institutional types (not tabulated). The relation is weakest for the small number of insurance companies in the data (43 institutions per quarter with a flow-to-performance sensitivity of just 0.35), and strongest for 'Type 3' institutions that include investment companies, investment advisors, and other asset managers (1,424 institutions per quarter with a flow-to-performance sensitivity of 1.50). This suggests that the flow incentives we document below might

overstate incentives for banks and insurance companies but understate incentives for Type 3 institutions (the latter have more than 80% of total AUM in recent years). However, there is no reason to believe that average incentives across all institutions would be biased.

Perhaps surprisingly, flow-to-performance sensitivities do not seem to depend on an institution's size. In particular, our estimates are similar if the regressions include only institutions that make up the top 75% of total AUM (cumulative slope of 1.39) or just the largest 100 (cumulative slope of 1.39) or fifty (cumulative slope of 1.41) institutions each quarter. In all three cases, the flow-to-performance sensitivity is not significantly different for institutions above and below the cutoff (t-statistics of 0.54–0.80, as measured by an interaction term added to full-sample regression), so we use the estimate of 1.29 from the full sample for all institutions in the analysis below.

## 5 Institutions' incentives

As described in Section 2, we measure an institution's incentive to be an active shareholder as its payoff from a 1% increase in the firm's value. The payoff comes from an increase in management fees when AUM rises, considering both the direct increase in AUM if a holding does well (direct incentives) and the indirect impact implied by the flow-to-performance relation documented above (flow incentives). Our estimates of flow incentives are based on the flow-to-performance sensitivity of 1.29 from Table 2.

We estimate how much management fees increase in both percent and dollar terms. Percent incentives depend on a firm's weight in the institution's portfolio, while dollar incentives also depend on the magnitude of management fees. For simplicity, our baseline measures assume an annual management fee of 0.5% of AUM, but dollar incentives are easily scaled up or down to reflect alternative assumptions.

### *5.1 Institution-level estimates*

To begin, Table 3 looks at incentives measured at the institution level: we estimate incentives for each firm in an institution's portfolio and calculate the value-weighted average across the institution's holdings. The table summarizes the cross-sectional distribution of these institution-level estimates, with institutions weighted

equally in Panel A and weighted by AUM in Panel B. The table focuses on 2011–2015 since recent years are probably the most relevant and interesting given the rise of institutional ownership over time, but we report results for other time periods later.

Table 3 suggests that incentives vary substantially across institutions and can be quite large, in part because institutions hold fairly concentrated portfolios. In particular, an institution's average holding is a remarkable 5.42% of an institution's portfolio when we equal-weight institutions and 1.64% of an institution's portfolio when we value-weight institutions (these averages are reported as '%Incentives_Direct' in the table). The weights are much higher than the same stock's weight in the benchmark portfolio held by other institutions of the same type, 0.32% on an equal-weighted basis and 0.36% on a value-weighted basis (not tabulated). Thus, if a stock held by an institution doubles in value, the equal-weighted average institution realizes a direct 5.42% increase in AUM plus an additional 6.59% increase due to higher subsequent flow (1.29×(5.42%–0.32%)), for total percent incentives of 12.01%. On a value-weighted basis, a doubling in firm value leads to a 1.64% direct increase in AUM and an additional 1.65% increase due to subsequent flow (1.29×(1.64%–0.36%)), for total percent incentives of 3.29%.

To express the numbers in dollar terms, we multiply percent incentives by our baseline estimate of annual management fees (0.5% of AUM) and divide by 100, so that dollar incentives represent the dollar increase in management fees from a 1% increase in firm value.

Measured this way, incentives seem fairly small for the majority of institutions in our data, reflecting the modest size of most institutions. A 1% increase in firm leads to an estimated increase of just $7,500 in annual management fees for the equal-weighted average institution, reflecting direct and flow incentives of $3,700 apiece. However, incentives vary substantially across institutions—the cross-sectional standard deviation is $33,200—and tend to be much stronger for large institutions. On a value-weighted basis, a 1% increase in firm value leads to an estimated increase of $113,500 in annual management fees, roughly 15 times larger than the equal-weighted average, and approximately 25% of total AUM is held by institutions with incentives greater than $221,200 (the value-weighted 75th percentile of dollar incentives). Again, these incentives can be

interpreted as the maximum an institutional investor would be willing to spend annually to bring about a one-time, 1% increase in the value of one of its holdings.

Figure 2 looks more explicitly at the incentives of small, medium, and large institutions. In particular, we sort institutions into value-weighted size quartiles, such that each group contains (roughly) 25% of total AUM. The small group (Q1) includes the majority of institutions (2,931) with average AUM of $1.2 billion, while the large group (Q4) includes just the five largest institutions with average AUM of $736.4 billion.

Not surprisingly, incentives vary substantially across the groups. Small institutions invest an average of 3.50% of their portfolios in any given firm, compared with an average weight of just 0.29% for these stocks in the benchmark portfolio held by other institutions. Thus, on a percentage basis, overall incentives for small institutions are strong, with direct incentives of 3.50% and flow incentives of 4.15% (1.29×(3.50%–0.29%)). But small institutions' incentives are modest in dollar terms: assuming a 0.5% management fee, average direct incentives equal $8,500 and average flow incentives equal $9,900, implying that a small institution's annual cash flow increases by an $18,400 if a portfolio firm goes up 1%.

On the other side of the spectrum, the largest institutions invest, on average, 0.52% of AUM in a given stock in their portfolios, only slightly higher than the stock's weight (0.40%) in the benchmark portfolio held by other institutions. In percentage terms, incentives for large institutions (0.66% total = 0.52% direct + 0.15% flow) are an order of magnitude weaker than for small institutions. However, in dollar terms, a 1% increase in firm value leads to an extra $255,600 of annual management fees for the largest institutions. The estimates suggest that large institutions should be willing to spend significant resources to improve the performance of firms they hold, consistent with recent evidence that large institutions take an active role in governance (Appel, Gormley, and Keim 2016; McCahery, Sautner, and Starks 2016).

An important caveat should be noted: Fig. 2 assumes that all institutions, regardless of size, earn the same benchmark management fees of 0.5% of AUM (close to the asset-weighted average advisory fee of U.S. equity mutual funds in recent years; see, e.g., Rawson and Johnson 2015). In practice, management fees are probably

higher for smaller institutions but lower for the largest institutions. Indeed, the latter group includes Vanguard and State Street, which have a large fraction of low-fee, passively-managed funds. If we drop those two institutions from the sample (but keep the breakpoints the same as in Fig. 2), the remaining set of large institutions have estimated total incentives of $249,200, similar to our estimate of $255,600 in Fig. 2. Alternatively, if we replace Vanguard and State Street in the top group with the next two largest institutions in the sample (Wellington snd WestLB Mellon), the new group of large institutions has estimated total incentives of $225,500, about 10% lower than in Fig. 2.[6]

An interesting pattern in Fig. 2 is that the flow component of incentives is more important for smaller institutions, who tend to invest a large fraction of AUM in a limited number of stocks. Consequently, smaller institutions benefit directly from an increase in a stock's value but even more from its impact on relative performance and subsequent inflows. Larger institutions hold better diversified portfolios with weights that deviate much less from the average institution's holdings (or from market-cap weights). They benefit if a holding goes up in value, but the impact on their relative performance is much weaker.

Figure 3 illustrates how average incentives change through time, value-weighting across institutions. Total percent incentives decline during the first 25 years of the sample, from roughly 5.0% to 2.5%, but have since rebounded to about 3.25% in the last 10 years. The decline and subsequent rebound mirror the trend in institutions' average portfolio weight (not shown), which drops from 2.53% in March 1980 to a minimum of 1.32% in March 2004, before rebounding to about 1.70% in recent years. At the same time, the average institution has become much bigger over time, especially during the market boom of the late 1990s (in real terms, average AUM grew 9.7% annually in the 1980s, 22.8% annually in the 1990s, and 4.4% annually from 2000 to 2015). As a consequence, average dollar incentives increase dramatically from $13,000 in March

[6] Blackrock also combines actively-managed funds with a large portfolio of ETFs. If we drop Blackrock, Vanguard, and State Street from the sample, the remaining set of large institutions has estimated total incentives of $197,100. Optimally, we could allow the management fee to vary with the size of the institution, but we cannot estimate fees reliably for many institutions. Indeed, even for Blackrock, Vanguard, and State Street, the data on the CRSP mutual fund database misses many of their 13F holdings. If we do use the CRSP data that are available for those three companies—representing about half of their holdings—we estimate an average management fee of 0.11% for Vanguard, 0.10% for State Street, and 0.29% for Blackrock from 2011–2015. The average fee for the next largest institutions, Fidelity and T Rowe Price, are 0.38% and 0.55%, respectively. These estimates suggest that the largest active managers probably have stronger incentives to be engaged than the largest passive managers, by virtue of their higher fees.

1980 to $164,100 in June 2000. Dollar incentives have not grown since that point, fluctuating with the level of the stock market (and average AUM).

Our estimates here provide an interesting perspective on the growing role of institutional investors and, in particular, the rise of very large institutions. There seems to be a fairly common view that large institutions such as Blackrock and Vanguard have limited incentives to engage in corporate governance because of the sheer scope of their holdings and their inability to deviate significantly from their benchmarks (e.g., Blackrock had $1.34 trillion invested in 3,909 U.S. firms at the end of 2015, according to its 13F filings). The rise of low-cost index funds, in particular, suggests 'corporate governance will take a backseat' (*The Economist Intelligence Unit* 2017) and has been described as 'bad for capitalism' because index funds cannot 'sell their stocks if they dislike the actions of management' (*The Economist* 2017). However, our findings suggest that large institutions like Blackrock gain substantially when firms in its portfolio do well, by virtue of the additional management fees they stand to receive if AUM increases. Indeed, the largest institutional investors—*because* of their size—actually have stronger incentives to be engaged that many activist investors, a group we explore in more detail below.

### *5.2 Activist investors*

Our estimates imply that large institutions can earn hundreds of thousands of dollars in extra fees annually if a stockholding increases 1% in value. These incentives seem economically meaningful, but it might be useful to benchmark them against the incentives of 'activists' who make 13D filings, explicitly indicating an intention to influence the firm. In particular, Schedule 13D must be filed when an investor, or coalition of investors, acquires a 5% or greater stake in a firm unless the investor intends to remain passive (in which case Schedule 13G can be often by filed). Activist investors choose to engage with firms, so their incentives must be strong enough to compensate for engagement costs.

Our sample of 13D filers comes from *WhaleWisdom*, a data provider that collects and aggregates SEC filings. We merge *WhaleWisdom's* 13D data with our main sample in order to build a database of activist investments by institutional investors. To help ensure the integrity of the data, we require the institution to have a 13F

filing in the same quarter as the 13D filing and to report holding at least 5% of shares outstanding at quarter end on Form 13F. We also restrict the sample to those identified as investment advisors, hedge funds, or activist investors by *WhaleWisdom* (the full 13D dataset includes a small number of trusts, banks, foreign pension funds, and other investors). These filters produce a sample of 1,905 13D filings by 236 different institutional investors from 2011–2015.

Table 4 shows incentives estimates for the sample of activist investments, mirroring our estimates for the wider population of institutional investors. An observation in the panel corresponds to an institution-quarter-13D filing, with percentage and flow incentives determined by the investment's weight in the institution's broader portfolio (the table also summarizes the institution's AUM and full stock portfolio, but non-13D investments are otherwise excluded from the analysis). Observations are equally weighted in Panel A and value-weighted in Panel B.

We report two sets of estimates for activists' dollar incentives. The first calculation assumes that institutions with 13D filings ('activist institutions') earn the same 0.5% management fee assumed for the broad population of institutions. However, since many activists may be private equity or hedge funds, we also report the incentives effects of a 20% performance fee, assuming the institution gets 20% of the gain when the firm increases 1% in value. A complication here is that the performance fee is a *one-time* fee earned for good returns, while management fees are earned annually. To put the two on a comparable basis, we annualize the performance fee by dividing it by ten, i.e., we report the equivalent annual value if the performance fee is converted into a perpetuity at an interest rate of 10%.

The average activist investment in our sample is $170 million (Panel A) and represents 7.4% of an institution's portfolio on an equal-weighted basis and 14.8% of the portfolio on a value-weighted basis. These weights are much higher than for non-13D holdings, but the dollar incentives implied by activist investments are comparable to the institutional incentives reported earlier. In particular, if activist institutions earn the same 0.5% management fee assumed for the wider population of institutions, the value-weighted average direct incentive in Panel B is $54,900 and the average flow incentive is $71,400, implying total dollar incentives of

$126,300 for the typical activist investment. Annualized performance fees, as described above, would add another $219,600 of incentives if institutions get 20% of the increase.[7] These incentives compare with value-weighted average incentives of $113,500 for the full population of institutions and $255,600 for the largest institutions (as reported in Table 3 and Figure 2).

It is also useful to note that activist incentives are highly skewed and often quite modest. For example, from Panel A, 75% of activist investments have dollar incentives below $15,900 assuming a 0.5% management fee and performance-fee incentives below $27,600. These estimates suggest (i) that the costs of engaging and trying to influence firm management may be relatively small, and (ii) the incentives of the largest institutions to be engaged are often greater than the incentives of many activist investors.

### *5.3 Firm-level estimates*

The discussion above focuses on incentives measured at the institutional level. An alternative is to measure incentives at the firm level, averaging across each firm's shareholders. The underlying goal is to understand (i) whether institutional shareholders in a given firm have a strong incentive to engage with management and (ii) for what types of firms are institutional incentives the strongest. To get at these issues, we average incentives either for all institutions holding a given firm (Table 5) or for just the five largest institutional shareholders (Table 6), weighting by the value of the holdings in the firm. Again, we focus initially on the most recent period, 2011–2015, but show results for the full sample later.

In some ways, the message from Table 5 is similar to our conclusions from the institutional-level estimates: incentives often seem small but vary substantially across firms. For the equal-weighted average firm (Panel A), institutions own a combined 55% of shares outstanding and invest, on average, 1.11% of AUM in the firm (conditional on holding the stock). Average percent incentives are relatively strong, 2.51%, but average dollar

[7] Lim, Sensoy, and Weisbach (2016) estimate that hedge fund managers receive, on average, a conservatively estimated $0.39 in present value for every $1 earned by fund investors, representing the sum of all current and expected future management and incentive fees plus the increase the manager's own personal investment in the fund. On an annualized basis, using a 10% interest rate, the implied gain of $0.039 annually per $1 is about 25% larger than the total gain we estimate in Table 4 (direct + flow + annualized incentive fee ≈ $0.0315 per $1 increase in AUM). Thus, our estimates may understate activist incentives somewhat, at least for activists that are hedge funds.

incentives are just $11,100, reflecting the modest size of the typical institutional holding.

Percent and dollar incentives are both stronger for larger firms, as reflected in the value-weighted estimates in Panel B. Institutions own 68% of the value-weighted average firm and, on average, invest 1.71% of AUM in the firm. As a consequence, percent incentives are stronger for the value-weighted average firm (3.41%) compared with the equal-weighted average firm (2.51%) and, because the investments are also larger in absolute terms, dollar incentives ($123,200) are more than an order of magnitude greater. A 1% increase in firm value leads to more than $169,000 in additional annual management fees (per institutional shareholder) for firms that represent the top 25% of total market cap (as indicated by the value-weighted 75th percentile of dollar incentives in Panel B). The results suggest that institutional investors in many firms would be willing to spend significant resources to improve the firm's performance (assuming no externalities with other firms in their portfolios, an issue we consider shortly).

Flow incentives are a significant component of total incentives in Table 5, roughly on par with direct incentives. A key feature is that flow incentives can be negative if an institution invests only a small fraction of AUM in the firm (smaller than the firm's weight in the benchmark portfolio held by other institutions). In those cases, flow incentives reduce the institution's incentive to engage with the firm and, in the extreme, can actually push total incentives negative as well, i.e., some institutional shareholders would benefit if the firm *drops* in value because their losses are smaller than the losses of competing institutions. In fact, for the value-weighted average firm, 19.9% of institutional shares are held by institutions with negative flow incentives and 5.0% of institutional shares are held by institutions with negative total incentives (not tabulated). Thus, a tiny fraction of a firm's shares are held by institutions with apparently perverse incentives.

In Table 6, dollar incentives are roughly twice as strong for a firm's five biggest institutional shareholders (institutions with the largest stakes, not institutions with the largest AUM). The five biggest shareholders own roughly a quarter of total shares outstanding and gain an estimated $288,200 in annual management fees (per institution) if the value-weighted average firm increases 1% in value. Average dollar incentives for these shareholders are greater than $149,200 for firms that make up more than half of total market cap (as indicated

by the value-weighted median in Panel B of Table 6) and greater than $392,600 for firms that make up one quarter of total market cap (as indicated by the 75th percentile in Panel B). Not surprisingly, shareholders with the largest stakes have the strongest incentives to engage with management and, presumably, are also the most likely to have an impact on corporate policies.

Figure 4 shows how institutional incentives vary with the size of the firm. We sort firms into value-weighted size quartiles (each group contains roughly 25% of total market value) and report value-weighted average incentives for all institutional shareholders of the firm (not just the biggest five). Group 1 has the smallest 3,761 firms with an average market cap of $1.4 billion, while group 4 has the largest 24 firms with an average market cap of $216.1 billion.

The most striking result in the figure is that percent incentives are only modestly lower for institutional shareholders of small stocks vs. large stocks. Put differently, the average institutional shareholder of a small firm invests nearly as much in the firm (as a percent of the institution's AUM) as the average institutional shareholder of a large firm invests in that firm, despite the fact that large firms are more than 100 times bigger. This reflects the fact that, conditional on holding a small stock, the average fractional ownership is greater (4.0% vs. 1.8%) and the fact that smaller institutions are disproportionately likely to hold smaller stocks. In dollar terms, however, institutional shareholders gain substantially more when large stocks do well. For quintile 4, average direct incentives equal $227,800 and average flow incentives equal $80,100, implying that institutional shareholders in the largest firms earn an estimated $307,900 more in annual management fees (per institution) if the firm goes up 1% in value. (The cross-sectional patterns are similar but the magnitudes roughly double if we focus on the five largest shareholders of the firm.)

### *5.4 Discussion*

Our results suggest that institutions often have significant incentives to be engaged shareholders. Of course, whether institutions act on these incentives depends on the costs of being engaged and the expected impact on a firm's value. Our comparison with activist investors in Section 5.2 provides indirect evidence that incentives may well be strong enough to induce engagement, but a few studies provide direct evidence on the costs,

impact, and frequency of different types of institutional engagement.

Gantchev (2013) estimates the costs of activist campaigns using a structural model. Most activist campaigns are resolved through negotiations, but some include demands of board representation, proxy threats, and, in rare cases, proxy fights. The paper finds that campaigns ending in a proxy fight (7% of the sample) cost $10.7 million, while costs are 50% to 75% lower in less hostile cases. On the benefit side, the average returns to activism range from 2% to 8% and, on average, activists earn positive returns net of costs. (Similarly, Brav et al. 2008 report average announcement returns of 7–8% around 13D filings.)

Most institutional investors do not engage in activist campaigns (in our sample, only 236 institutions file Schedule 13D in the period 2011–2015). However, many institutions choose less confrontational forms of engagement. McCahery, Sautner, and Starks (2016) survey 143 large institutions and find that 63% of respondents conduct private discussions with management, citing inadequate corporate governance and disagreements about a firm's strategy as important triggers. Surveys by Institutional Shareholder Services (ISS) and Ernst and Young report similar results and find that such engagement has been increasing in recent years (ISS 2014; Ernst and Young 2016).

Unfortunately, the impact of behind-the-scenes engagement is difficult to quantify. The skeptical view is that non-activist institutions lack expertise to identify meaningful value-enhancing changes to a firm's strategy or power to pressure managers because, unlike activists, they are unwilling to engage in public confrontation.[8] However, Carleton, Nelson, and Weisbach (1998) show that, of 43 firms targeted for governance changes by TIAA-CREF from 1992–1996, all but one reached an agreement with TIAA-CREF, typically through private negotiations without a shareholder vote (see also Pozen 1994; Nesbitt 1994; Del Guercio and Hawkins 1999; Gillan and Starks 2000). In addition, Bushee (1998), Hartzell and Starks (2003), Aghion, Van Reenen, and Zingales (2013), Fich, Harford, and Tran (2015) and others provide evidence that institutional owners affect a variety of corporate decisions. Firms may pay attention to the views of their largest shareholders because they

[8] One reason may be that an institutional shareholder might also manage a firm's 401(k) assets. Cvijanović, Dasgupta, and Zachariadis (2016) find that mutual fund companies with business ties to the firm are more likely to vote with management in closely contested situations (see also Davis and Kim 2007).

have considerable voting power, the ability to sway others, or simply because the CEO and board want to maintain a good relationship with the firm's shareholders. Institutions seem to have both the incentive and ability to engage meaningfully with firms, even if they are not 'activist' investors.

## 6 Rival incentives

The estimates above focus on how much an institution gains if an individual firm in its portfolio does well. In practice, institutions often invest in several firms in the same industry, and decisions made by one firm can affect other firms owned by the institution. Casual observation suggests this phenomenon has become more widespread in recent years, with the rise of extremely large institutional investors, and has led to growing concerns about its potential effects on competition. In this section, we explore the prevalence of common ownership, measure its impact on institutions' incentives, and study how these incentives vary across firms and industries.

Our approach here is a simple extension of the analysis above. For each firm in an institution's portfolio, we calculate how much the institution invests in other firms in the industry ('rivals'), as defined by three-digit SIC code. 'Rival incentives' are then measured by estimating how much the institution gains or loses if rival firms increase in value. The estimates provide a simple measure of an institution's incentives to consider a firm's competitors when voting on shareholder proposals, engaging with management, etc. As discussed below, we estimate aggregate incentives for the industry as well as incentives on a per-firm basis.

A distinguishing feature of our framework is that rival incentives depend not just on an institution's own holdings of firms in the industry (i.e., direct incentives), but also on the holdings of other institutions through the impact on relative performance and subsequent flows. Even if an institution invests in rival firms, it might not have strong—or, indeed, even positive—rival incentives if other institutions invest more heavily in those firms. In other words, rival incentives depend on whether an institution under- or overweights rivals compared with other institutions, an effect that has not be considered by the prior literature.

A note on interpretation might be useful: Our measures of rival incentives are based on an overall increase in

the value of a firm's competitors, an approach that implicitly assumes all rivals in the industry increase by the same percentage amount. This measure is most applicable to corporate policies that broadly affect competition in the industry (e.g., pricing or output decisions), not decisions such as a merger or joint venture that might benefit some rivals but hurt others. In the latter case, an institution's holdings in specific rivals would be important to consider, not just the institution's overall investment in the industry.

Part of our goal here is to inform the debate on how common ownership might affect competition among firms. To that end, an important consideration is that common ownership and the possible effects on competition are likely to depend on the size of the industry. For example, an institution might be more likely to invest in several firms in an industry of 200 firms than an industry of 10 firms, and the impact of any cross-holdings in the two industries could be quite different. To address this issue, we report results separately for industries with (i) 2–5 publicly traded firms, (ii) 6–15 publicly traded firms, (iii) 16–25 publicly traded firms, and (iv) 26 or more publicly traded firms.

### *6.1 Estimates of rival incentives*

Table 7 reports our estimate of rival incentives (in Panel A) and, for comparison, the 'own-firm' measure of incentives from Section 5 (in Panel B). As in Table 5, we estimate incentives for all institutions holding a given firm, take the holding-weighted average across shareholders to get average incentives at the firm level, and report the value-weighted cross-sectional mean and standard deviation of the firm-level measures. Own-firm incentives represent the average gain to an institution if that firm goes up in value, while rival incentives represent the gain to the same institution if other firms in the industry go up in value. 'Direct' incentives depend on a firm's weight in the institution's portfolio, while 'flow' incentives depend on whether the institution under- or overweights rivals relative to other institutions.

As before, we focus initially on the period 2011–2015. During this period, the smallest industries (2–5 firms) include a total of 347 firms per quarter, the next-smallest industries (6–15 firms) include a total of 719 firms, the second-to-largest industries (16–25 firms) include a total of 507 firms, and the remaining industries with the most competitors include 2,461 firms.

The first rows of each panel in Table 7 report percent incentives, again with the convenient interpretation that direct percent incentives simply equal portfolio weights. In the most concentrated industries (2–5 firms), an average institutional shareholder in a firm invests 1.28% of AUM in that firm (Panel B) and 0.09% of AUM in all of the firm's industry rivals (Panel A). The first number represents a large overweight relative to how much other institutions invest in the firm (the 'benchmark weight' of 0.10%), while the second number is slightly higher than other institutions' investment in the same rival firms (0.05%). Thus, an institution that invests in one firm in the most-concentrated industries sometimes invests in the firms' rivals, but the size of the investment is relatively modest. As a consequence, rival incentives are, on average, much smaller than own-firm incentives in these industries, 0.14% in percent terms and $7,700 in dollar terms, compared with own-firm incentives of 2.80% and $45,300, respectively.

A key result in Table 7 is that, if an institution invests in one firm in the most-concentrated industries, it often underweights rival firms (even though the *average* overweight is slightly positive). In particular, the row labeled 'negative flow incentives' shows that 75.3% of institution-held shares are held by institutions that underweight rivals. These institutions may invest some in rival firms, generating positive direct incentives, but an increase in rivals' value reduces the institutions' performance relative to other institutions and, thus, predicts lower subsequent flow. Remarkably, 59.6% of institutional shares are held by institutions for which the negative flow effect is bigger than the positive direct effect, i.e., the institutions gain when the firm's rivals do poorly. These institutions with negative rival incentives provide a potentially powerful counterweight to other shareholders that might have an incentive to promote anticompetitive policies.

The qualitative conclusions extend to less-concentrated industries of 6–15 or 16–25 firms. In those industries, institutions that invest in one firm substantially overweight that firm but underweight rivals more than 50% of the time (despite the fact that the average overweight of rivals is again slightly positive). The main difference when looking at less-concentrated industries is that, because the set of rival firms is larger, there is more scope for cross-ownership. For example, in industries with 16–25 firms, the average institutional shareholder in a firm invests 1.69% of AUM in that firm and 1.59% of AUM in other firms in the industry (total, not per firm). The first number is much higher the firm's weight in the benchmark portfolio (0.41%), while the second

number is only marginally higher than the benchmark weight (1.24%).

Common ownership is, of course, most pervasive in industries with many firms (26 or more). Conditional on investing in one firm in those industries, the average institution invests an additional 4.56% of AUM in other firms in the industry. This weight is higher than their weight of 3.57% in the benchmark portfolio held by other institutions, and just over 50% of institutional shareholdings in a given firm are held by institutions that overweight rivals in these industries.

At one level, the interpretation of Table 7 is simple: common ownership of firms in the same industry is indeed common, especially in industries with many firms. A decision by one firm in an institution's portfolio, if it has broader industry effects, will often impact multiple firms held by the institution. Thus, at the most basic level, an institutional shareholder often has at least some incentive to consider the fortunes of rival firms when voting on shareholder proposes or engaging with management.

The magnitudes, however, are perhaps more interesting to consider. One interpretation, as discussed earlier, is that dollar incentives equal the maximum amount an institution would be willing to spend annually to bring about a one-time 1% increase in value. For rival firms in the most concentrated industries, this number is relatively modest: the average institution would be willing to spend $7,700 annually in exchange for a 1% increase in the total value of all rival firms, equivalent to just $2,000 per rival (compared with own-firm incentives of $45,300). Rival incentives are larger for industries with many firms, since a 1% increase in the value of a big portfolio of rivals represents a bigger dollar increase, but remain small on a per-rival basis. Rival incentives grow from $72,300 for industries with 6–15 firms to $533,700 for industries with more than 25 firms; the former is equivalent to $7,900 per rival and the latter is equivalent to $4,200 per rival. The per-rival numbers imply that the average institutional shareholder of one firm gains much more if that firm goes up 1% in value ($123,000 on average) than if another firm in the industry goes up 1%.

To put the numbers in perspective, suppose a regulator is worried that institutional shareholders have an incentive to promote collusion among firms, given their ownership of multiple firms in the industry. If

collusion would increase the value of all firms by 1%, a typical institutional shareholder of one firm would gain about $4,000–$8,000 per rival firm from such a policy (in addition to the own-firm effect). Thus, the average institution would only find it optimal to promote collusion if the engagement and coordination costs—not to mentione the legal risks—per firm are quite small. To be clear, we are focusing here on the *incremental* incentive effects of common ownership; the shareholders of any firm, even in the absence of common ownership, would have an incentive to collude with competitors.

Another way to interpret the magnitudes is to consider a policy that increases the value of a firm at the expense of other firms in the industry, dollar-for-dollar. If the costs are distributed across rivals in proportion to their market caps, a 1% gain for one firm implies a 0.34% loss for the average rival firm.[9] Based on our estimates in Table 7, a 1% increase in firm value leads to an $123,900 increase in annual cash flow for the average institutional shareholder of the firm (own-firm effect), offset by a $61,900 decrease in annual cash flow caused by the institution's losses from the drop in value of rival firms. The latter numbers varies from $4,400 in the most-concentrated industries to $69,700 in the least-concentrated industries. Institutions' cross-holdings in the industry tend to reduce by 10–50% the average institution's incentive to support a policy that helps the firm at the expense of industry rivals.

Table 9 replicates the analysis for a firm's five largest institutional shareholders (i.e., the five with the largest stakes). The results are similar to those in Table 8 except that dollar incentives here are 2–3 times greater. The largest institutional shareholders of one firm tend to invest in rival firms with about the same propensity as other institutions, with an average portfolio weight somewhat higher than the benchmark weight. At the same time, 71.3% of large shareholders in highly concentrated industries (2–5 firms) and roughly half of large shareholders in less-concentrated industries underweight rivals, implying that a substantial fraction of a firm's largest shareholders have negative rival flow incentives and 7%–47% have negative total rival incentives,

[9] This value of 0.34% implies that, on a value-weighted basis, the average size of a firm is 34% of the value of all industry rivals. This number is relatively high because (i) some firms have only a small number of competitors and/or come from industries where the competitors are quite small, and (ii) the average is value-weighted based on the size of the firm, so the largest weights are given to firms for which the ratio is large. We trim the ratio at 100% to mitigate the impact of a small number of extreme outliers.

depending on the size of the industry. Those institutions have a particularly strong incentive to promote policies that benefit the firm at the expense of industry rivals, again providing a potentially important counterweight to institutions with more widespread ownership in the industry.

Figure 5 explores how rival incentives (in percent) have changed through time, 1980–2015. Because incentives depend on the size of the industry, we plot separate graphs for more concentrated (2–15 firms) and less concentrated (16 firms and up) industries. For comparison, we also plot own-firm incentives in each graph. For the most-concentrated industries, rival incentives are always much lower than own-firm incentives, consistent with the results for 2011–2015 in Table 7. Rival incentives in Panel A increase somewhat through time, from roughly 0.40% in the early 1980s to around 0.70% in recent years, but remain far below own-firm incentives, which stay near 3.0% throughout the sample. In less-concentrated industries (Panel B), rival incentives also trend up through time and have been consistently higher than own-firm incentives for the last 20 years (these are total incentives if all rival firms go up in value; the numbers are much smaller on a per-firm basis). Rival incentives increase from about 4.0% in the 1980s to 5.0% in recent years, while own-firm incentives drop from about 4.0% in the 1980s to between 3.0% and 4.0% in recent years. Notwithstanding the modest trends, the graphs do not suggest a dramatic change in the importance of common ownership and rival incentives through time.

Figure 6 provides an alternative perspective on trends in common ownership, focusing on the fraction of institution-held shares for which the shareholder has negative rival incentives, i.e., the institution gains if rival firms drop in value. The solid line in each panel shows that most institutional shareholders underweight other firms in the industry, but the fraction has steadily declined through time, from 70% to 60% for more-concentrated industries and from 55% to 50% for less-concentrated industries. The dashed line shows that, even taking into account the positive direct incentives when an institution invests in rivals, total incentives are often negative as well, especially in the more-concentrated industries. The fraction of institutional shares held by institution with negative total rival incentives drops from roughly 65% to 35% for more-concentrated industries and from 30% to 15% for less-concentrated industries. These trends provide more evidence that a rise in common ownership has changed the incentives of institutional investors.

## 7 Conclusions

The growth of institutional investors in the U.S. raises fundamental questions about their role in corporate governance. The contribution of our paper is to study the financial incentives that institutions have to be active shareholders: How much does an institution gain from taking an action—monitoring the firm, engaging with management, voting on shareholder proposals—that affects firm value? We measure incentives as the increase in an institution's annual management fee caused by a 1% increase in the value of a portfolio firm, considering both the direct impact of an increase in AUM and the indirect effect via relative performance and subsequent fund inflows. Direct incentives are determined simply by the size of the institution's investment in the firm, while the indirect (flow) incentives depend on how much the institution under- or overweights the firm relative to other institutions it competes with for new money.

Our estimates suggests that institutions' incentives are frequently modest but can be quite strong, especially for larger firms and larger institutions. The typical institution holds a fairly concentrated portfolio, with a portfolio weight of 1.67% invested in an average (value-weighted) holding in 2015, far higher than the firm's weight in the aggregate portfolio held by other institutions. As a result, institutions gain an extra $143,100 in annual management fees, on average, if a holding goes up 1% in value (taking into account both direct and flow incentives, and assuming a straight 0.5% management fee). Our estimate varies from $22,300 for small institutions to $335,900 for large institutions. These numbers can be interpreted as the maximum annualized amount an institution would be willing to spend to bring about a one-time, 1% increase in firm value, suggesting that large institutions have reasonably strong incentives to be engaged shareholders. (To be sure, estimated incentives are much smaller for many holdings.) Indeed, the incentives of largest institutions, by virtue of their size, are comparable to the incentives of the typical activist fund.

We also study an institution's incentives to consider how firm policies affect other firms in the industry. As prior studies point out, such incentives arise because institutions often invest in multiple firms in an industry. We find that rival incentives can be significant but are generally weak in concentrated industries, in which the scope for strategic interactions is larger. We also find that, for a significant fraction of institutional shareholders in a given firm, rival incentives are actually negative because the institution underweights rival

firms relative to competing institutions, implying that an increase in the value of a rival hurts the institution's relative performance and, hence, subsequent flows. This flow effect has a potential to counteract the incentives of larger cross-owners to reduce competition between portfolio firms.

Our approach complements the recent literature on institutional ownership by offering a direct estimate of institutions' financial incentives to affect the value of those firms. The approach can be extended in several ways. First, while our analysis focuses on the gains from being active, the costs of engagement remain relatively poorly understood. Second, more research is needed to understand how institutions can affect managerial decisions, and in general, how effective institutional engagement is in bringing about change. Finally, institutions may be engaged shareholders for non-financial reasons, such as for legal, social, or political reasons, and the relative importance of the different motives is not well understood. We believe our approach provides a useful framework to tackle these issues.

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**Table 1: Descriptive statistics, 1980–2015**

This table reports descriptive statistics for our sample of institutions and firms (cross-sectional average, median, standard deviation, and 1st, 25th, 75th, and 99th percentiles) split into five-year periods from 1980–2015. Panels A and B report statistics *by institution* for assets under management and number of firms held (in these panels, N is the number of institutions in the sample). Panels C and D report statistics *by firm* for the number of institutional investors holding the firm and fraction of shares owned by institutions (in these panels, N is the number of firms). Institutional ownership comes from Thomson Reuters and WRDS, while price and shares outstanding come from CRSP. Institutional ownership by CUSIP is aggregated to the firm level using CRSP's PERMCO variable.

| | Avg | Med | Std | p1 | p25 | p75 | p99 | N |
|---|---|---|---|---|---|---|---|---|
| *Panel A: Assets under management ($ millions), by institution* | | | | | | | | |
| 1980–1985 | 953 | 333 | 1,615 | 13 | 155 | 954 | 7,789 | 566 |
| 1986–1990 | 1,414 | 383 | 3,167 | 8 | 158 | 1,203 | 15,694 | 830 |
| 1991–1995 | 2,040 | 388 | 6,093 | 10 | 158 | 1,337 | 25,449 | 1,065 |
| 1996–2000 | 4,297 | 461 | 19,151 | 19 | 189 | 1,677 | 76,080 | 1,444 |
| 2001–2005 | 4,152 | 337 | 22,526 | 11 | 138 | 1,305 | 74,820 | 1,919 |
| 2006–2010 | 4,111 | 297 | 25,743 | 7 | 116 | 1,201 | 65,514 | 2,550 |
| 2011–2015 | 4,540 | 303 | 34,859 | 5 | 117 | 1,253 | 68,128 | 3,065 |
| *Panel B: Number of firms held, by institution* | | | | | | | | |
| 1980–1985 | 195 | 128 | 205 | 13 | 74 | 236 | 1,004 | 566 |
| 1986–1990 | 228 | 122 | 348 | 10 | 65 | 254 | 1,646 | 830 |
| 1991–1995 | 248 | 113 | 423 | 11 | 64 | 252 | 2,013 | 1,065 |
| 1996–2000 | 270 | 110 | 497 | 8 | 61 | 239 | 2,620 | 1,444 |
| 2001–2005 | 255 | 93 | 502 | 7 | 51 | 204 | 2,855 | 1,919 |
| 2006–2010 | 221 | 78 | 458 | 5 | 38 | 178 | 2,676 | 2,550 |
| 2011–2015 | 208 | 74 | 421 | 5 | 33 | 172 | 2,486 | 3,065 |
| *Panel C: Number of institutional shareholders, by firm* | | | | | | | | |
| 1980–1985 | 20 | 3 | 45 | 0 | 0 | 15 | 241 | 5,374 |
| 1986–1990 | 30 | 9 | 62 | 0 | 2 | 27 | 335 | 6,234 |
| 1991–1995 | 41 | 14 | 75 | 0 | 5 | 39 | 396 | 6,507 |
| 1996–2000 | 53 | 19 | 95 | 0 | 6 | 58 | 498 | 7,472 |
| 2001–2005 | 88 | 44 | 132 | 0 | 12 | 111 | 690 | 5,570 |
| 2006–2010 | 117 | 70 | 161 | 1 | 21 | 144 | 840 | 4,800 |
| 2011–2015 | 152 | 91 | 205 | 2 | 33 | 179 | 1,074 | 4,199 |
| *Panel D: Institutional ownership (% of shares), by firm* | | | | | | | | |
| 1980–1985 | 0.13 | 0.05 | 0.16 | 0.00 | 0.00 | 0.20 | 0.61 | 5,374 |
| 1986–1990 | 0.18 | 0.12 | 0.19 | 0.00 | 0.01 | 0.30 | 0.71 | 6,234 |
| 1991–1995 | 0.24 | 0.18 | 0.23 | 0.00 | 0.04 | 0.40 | 0.82 | 6,507 |
| 1996–2000 | 0.29 | 0.22 | 0.25 | 0.00 | 0.06 | 0.48 | 0.91 | 7,472 |
| 2001–2005 | 0.40 | 0.36 | 0.30 | 0.00 | 0.12 | 0.65 | 0.99 | 5,570 |
| 2006–2010 | 0.51 | 0.53 | 0.32 | 0.00 | 0.21 | 0.80 | 1.00 | 4,800 |
| 2011–2015 | 0.54 | 0.59 | 0.31 | 0.00 | 0.26 | 0.83 | 1.00 | 4,199 |

**Table 2: Flow-to-performance sensitivity, 1980–2015**

This table reports the flow-to-performance sensitivity of institutional investors, based on the average slope from cross-sectional regressions of net inflows in quarters t+1, t+2, …, t+10 on benchmark-adjusted returns in quarter t (intercepts are not reported). Net inflow is the quarterly growth rate of assets under management minus the institution's quarterly return. Benchmark-adjusted returns equal an institution's return minus the aggregate return of institutions of the same type. Standard errors are based on the time-series variability of the estimates, incorporating a Newey-West correction with three lags. The cumulative slope for horizon t+k is the sum of the quarterly slopes for t+1 to t+k. N and $R^2$ are the average number of institutions each quarter and the average regression $R^2$. Institutional ownership comes from Thomson Reuters and WRDS, while stock prices and returns come from CRSP.

| | Horizon (quarter) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | t+1 | t+2 | t+3 | t+4 | t+5 | t+6 | t+7 | t+8 | t+9 | t+10 |
| Slope | 0.102 | 0.190 | 0.216 | 0.179 | 0.144 | 0.126 | 0.112 | 0.099 | 0.054 | 0.064 |
| t | 4.04 | 7.56 | 8.71 | 7.30 | 7.41 | 4.34 | 5.48 | 5.16 | 2.42 | 2.90 |
| Cumulative | 0.102 | 0.293 | 0.508 | 0.688 | 0.832 | 0.957 | 1.069 | 1.168 | 1.222 | 1.286 |
| t | 4.04 | 7.05 | 9.37 | 10.70 | 11.83 | 11.10 | 11.07 | 11.06 | 10.92 | 10.66 |
| $R^2$ | 0.004 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.003 | 0.004 | 0.004 |
| N | 1,413 | 1,372 | 1,332 | 1,295 | 1,261 | 1,229 | 1,198 | 1,169 | 1,142 | 1,116 |

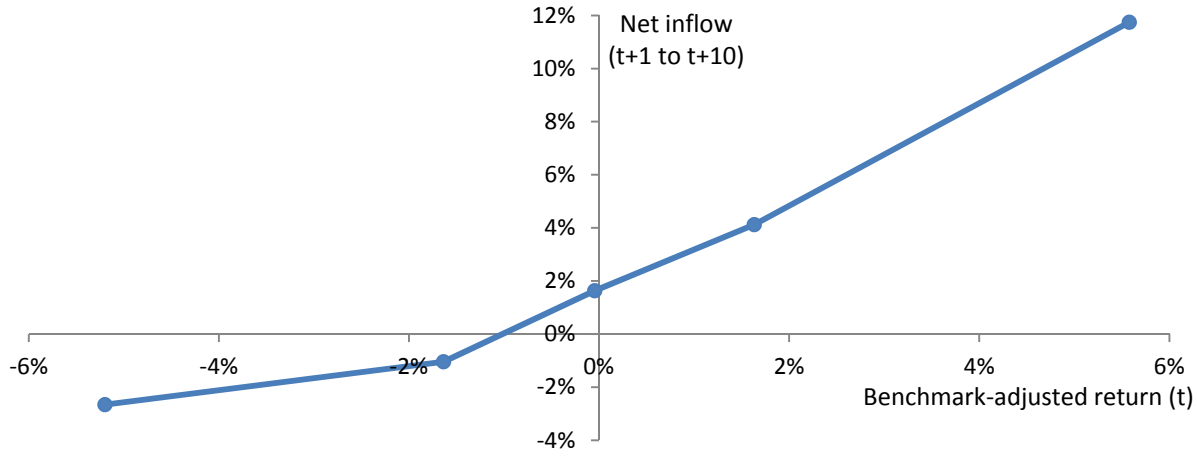


**Fig. 1: Flow-to-performance sensitivity, 1980–2015**. The figure plots the cumulative net inflow from quarter t+1 to t+10 against the quarterly benchmark-adjusted return in quarter t for institutions sorted into relative-return quintiles. Net inflow is the quarterly growth rate of assets under management minus the institution's quarterly return. Benchmark-adjusted return is an institution's return minus the aggregate return of institutions of the same type. Institutional ownership comes from Thomson Reuters and WRDS, while stock prices and returns come from CRSP.

**Table 3: Institutions' incentives, 2011–2015**

This table reports the cross-sectional distribution of institutions' stock holdings and incentives. We calculate the variables for each institution (holding-weighted averages, except for assets under management and number of firms held) and report the cross-sectional mean, median, standard deviation, and 1st, 25th, 75th, and 99th percentiles of the institution-level estimates. Institutions are equal-weighted in Panel A and value-weighted in Panel B. '%Incentives_Direct' = weight of the firm in an institution's portfolio; '%Incentives_Flow' = 1.29 × (Portfolio weight – benchmark), where 1.29 is the estimated flow-to-performance sensitivity and 'benchmark' is the firm's weight in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the percent increase in annual management fees if the average firm in the institution's portfolio goes up 100% in value). 'AUM gain' = portfolio weight × AUM × 1% (this is the increase in AUM if a firm in the institution's portfolio goes up 1% in value). Dollar incentives equal % incentives × AUM × our baseline management fee of 0.5% × 1% (this represents the dollar increase in annual management fees if a firm in the institution's portfolio goes up 1% in value). AUM gain and dollar incentives are reported in $1,000s.

| | Mean | Med | Std | p1 | p25 | p75 | p99 |
|---|---|---|---|---|---|---|---|
| *Panel A: Institutions are equal weighted* | | | | | | | |
| AUM ($ million) | 4,540 | 303 | 34,859 | 5 | 117 | 1,253 | 68,128 |
| Firms | 208 | 74 | 421 | 5 | 33 | 172 | 2,486 |
| %Incentives_Direct | 0.0542 | 0.0311 | 0.0630 | 0.0038 | 0.0172 | 0.0626 | 0.3085 |
| %Incentives_Flow | 0.0659 | 0.0356 | 0.0817 | 0.0014 | 0.0176 | 0.0768 | 0.3957 |
| %Incentives_Total | 0.1201 | 0.0667 | 0.1446 | 0.0058 | 0.0348 | 0.1393 | 0.7042 |
| AUM gain | 742.5 | 108.7 | 3,305.8 | 3.5 | 39.6 | 382.9 | 11,629.8 |
| $Incentives_Direct | 3.7 | 0.5 | 16.5 | 0.0 | 0.2 | 1.9 | 58.1 |
| $Incentives_Flow | 3.7 | 0.6 | 17.4 | 0.0 | 0.2 | 2.1 | 56.9 |
| $Incentives_Total | 7.5 | 1.2 | 33.2 | 0.0 | 0.4 | 4.0 | 114.8 |
| *Panel B: Institutions are value weighted* | | | | | | | |
| AUM ($ million) | 273,472 | 78,896 | 364,089 | 229 | 16,656 | 371,676 | 1,089,300 |
| Firms | 1,759 | 1,778 | 1,333 | 15 | 447 | 3,092 | 3,685 |
| %Incentives_Direct | 0.0164 | 0.0061 | 0.0303 | 0.0025 | 0.0051 | 0.0132 | 0.1672 |
| %Incentives_Flow | 0.0165 | 0.0028 | 0.0394 | 0.0001 | 0.0013 | 0.0130 | 0.2128 |
| %Incentives_Total | 0.0329 | 0.0089 | 0.0697 | 0.0028 | 0.0066 | 0.0260 | 0.3799 |
| AUM gain | 15,975.2 | 7,152.3 | 18,614.3 | 57.5 | 1,840.0 | 28,623.9 | 48,561.9 |
| $Incentives_Direct | 79.9 | 35.8 | 93.1 | 0.3 | 9.2 | 143.1 | 242.8 |
| $Incentives_Flow | 33.7 | 20.2 | 60.4 | 0.0 | 5.1 | 50.8 | 195.0 |
| $Incentives_Total | 113.5 | 59.2 | 139.7 | 0.5 | 15.4 | 221.2 | 365.2 |

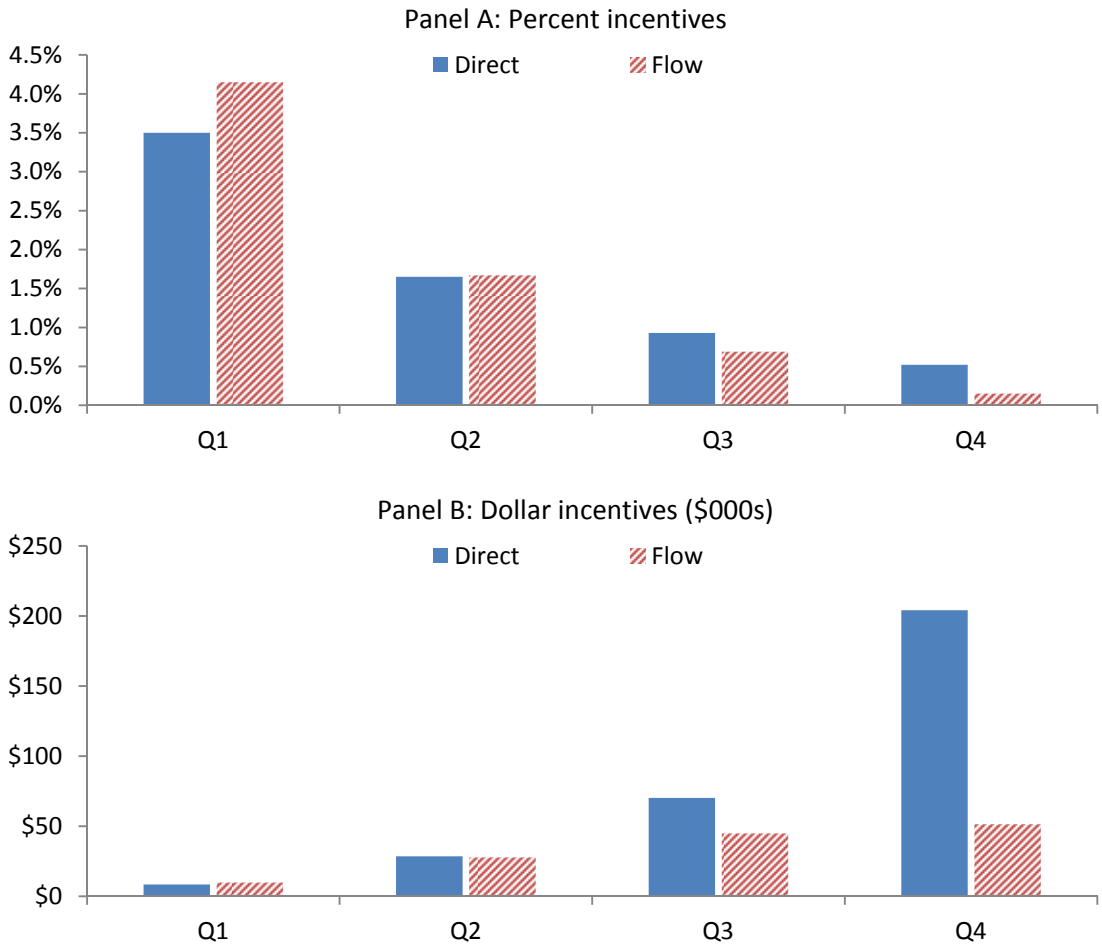


**Fig. 2: Institutions' incentives, 2011–2015**. The figure plots percent (Panel A) and dollar (Panel B) incentives for insitutional investors sorted into value-weighted size quartiles. Each group has roughly 25% of total AUM. Incentives measure the impact on annual management fees of a 100% (Panel A) or 1% (Panel B) increase in the value of a firm in the institution's portfolio, as described in the text.

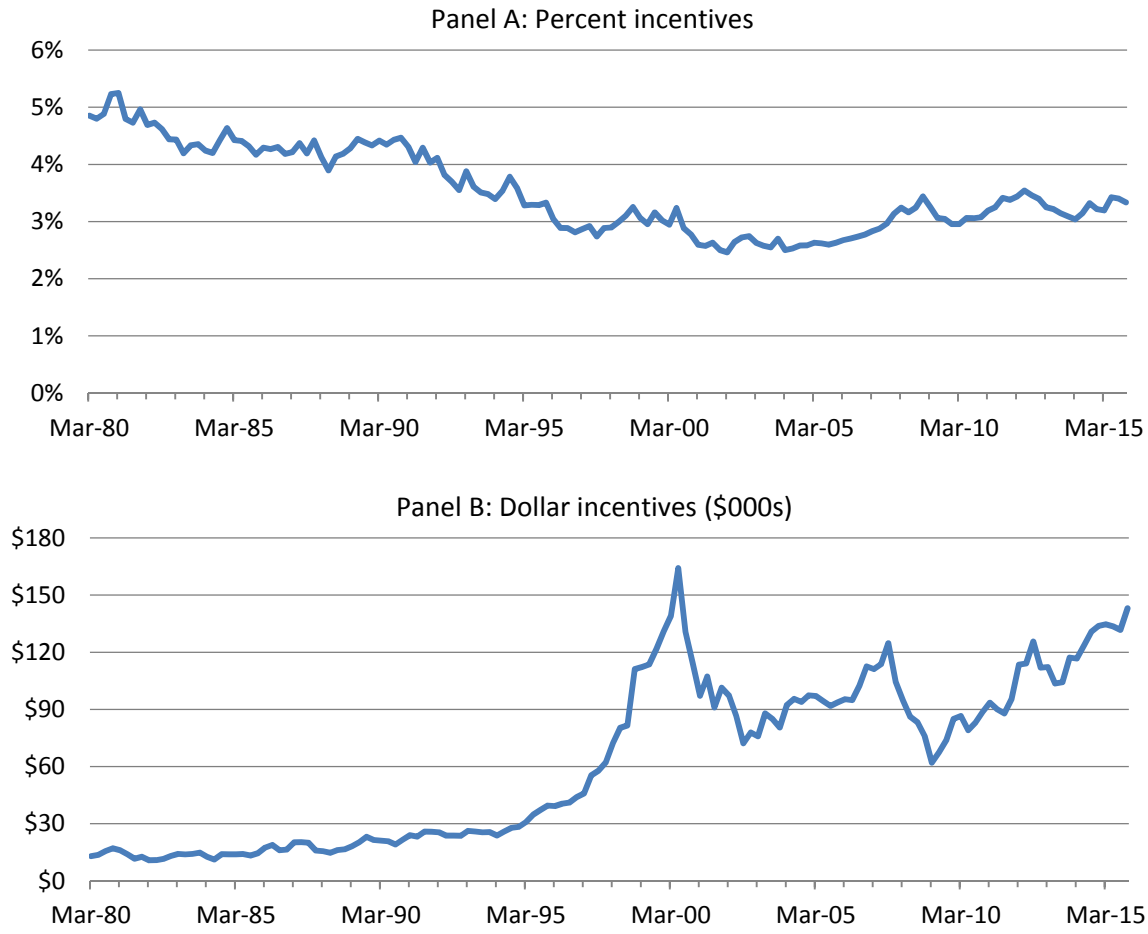


**Fig. 3: Institutions' incentives, 1980–2015**. The figure plots average percent (Panel A) and dollar (Panel B) incentives for insitutional investors, quarterly, from 1980–2015. Institutions are value-weighted, and dollar incentives are measured in 2015 dollars. Incentives measure the impact on annual management fees of a 100% (Panel A) or 1% (Panel B) increase in the value of a firm in the institution's portfolio, as described in the text.

**Table 4: Activist investors, 2011–2015**

This table reports the cross-sectional distribution (mean, median, std deviation, and 1st, 25th, 75th, and 99th percentiles) of portfolio holdings and incentives for institutions that make 13D filings. An observation corresponds to a investor–quarter–13D filing. Observations are equal-weighted in Panel A and value-weighted in Panel B (based on the value of the 13D holding). 'AUM' and 'Firms' are the institution's total AUM and number of firms held, respectively. '13D holding ($ million)' is the value (at quarter end) of the stockholding for which the 13D is filed. '%Incentives_Direct' = weight of the 13D holding in the institution's portfolio; '%Incentives_Flow' = 1.31×(Portfolio weight–benchmark weight), where 1.31 is the estimated flow-to-performance sensitivity and the benchmark weight is the firm's weight in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the percent increase in annual management fee if the firm doubles in value). Dollar incentives equal % incentives × AUM × our baseline management fee of 0.5% × 1% (this represents the dollar increase in annual management fees if a firm in the institution's portfolio goes up 1% in value). '$Performance fee (ann.)' represents the dollar fee resulting from a 1% increase in firm value if the institution gets 20% of the increase, expressed on an annualized basis (for comparability) assuming a 10% annual discount rate. Dollar incentives are reported in $1,000s.

| | Mean | Med | Std | p1 | p25 | p75 | p99 |
|---|---|---|---|---|---|---|---|
| *Panel A: 13D holdings are equal weighted* | | | | | | | |
| AUM ($ million) | 6,664 | 1,904 | 15,892 | 64 | 347 | 10,389 | 43,684 |
| Firms | 196 | 27 | 357 | 6 | 16 | 142 | 1,095 |
| 13D holding ($ million) | 170 | 42 | 397 | 2 | 15 | 138 | 1,845 |
| %Incentives_Direct | 0.0743 | 0.0421 | 0.0921 | 0.0002 | 0.0078 | 0.1049 | 0.4265 |
| %Incentives_Flow | 0.0972 | 0.0551 | 0.1205 | 0.0003 | 0.0103 | 0.1372 | 0.5586 |
| %Incentives_Total | 0.1716 | 0.0972 | 0.2126 | 0.0005 | 0.0181 | 0.2421 | 0.9851 |
| $Incentives_Direct | 8.5 | 2.1 | 19.8 | 0.1 | 0.8 | 6.9 | 92.2 |
| $Incentives_Flow | 11.0 | 2.8 | 25.8 | 0.1 | 1.0 | 9.0 | 120.8 |
| $Incentives_Total | 19.5 | 4.8 | 45.6 | 0.2 | 1.7 | 15.9 | 213.0 |
| $Performance fee (ann.) | 33.9 | 8.5 | 79.4 | 0.4 | 3.0 | 27.6 | 368.9 |
| *Panel B: 13D holdings are value weighted* | | | | | | | |
| AUM ($ million) | 11,743 | 7,376 | 20,056 | 159 | 3,210 | 14,446 | 161,838 |
| Firms | 118 | 18 | 397 | 6 | 10 | 36 | 3,111 |
| 13D holding ($ million) | 1,098 | 635 | 1,265 | 14 | 238 | 1,409 | 5,663 |
| %Incentives_Direct | 0.1478 | 0.1074 | 0.1286 | 0.0020 | 0.0445 | 0.2215 | 0.5165 |
| %Incentives_Flow | 0.1929 | 0.1407 | 0.1680 | 0.0026 | 0.0578 | 0.2900 | 0.6737 |
| %Incentives_Total | 0.3407 | 0.2481 | 0.2966 | 0.0045 | 0.1021 | 0.5115 | 1.1902 |
| $Incentives_Direct | 54.9 | 31.7 | 63.3 | 0.7 | 11.9 | 70.5 | 283.1 |
| $Incentives_Flow | 71.4 | 41.5 | 82.0 | 0.9 | 15.6 | 92.2 | 367.7 |
| $Incentives_Total | 126.3 | 73.2 | 145.3 | 1.6 | 27.5 | 162.6 | 650.9 |
| $Performance fee (ann.) | 219.6 | 126.9 | 253.0 | 2.8 | 47.6 | 281.9 | 1,132.5 |

**Table 5: Institutions' incentives by firm, 2011–2015**

This table reports the cross-sectional distribution across firms of institutional ownership and incentives. We calculate the variables for each firm (holding-weighted averages, except size and number of institutional investors) and report the cross-sectional mean, median, standard deviation, and 1st, 25th, 75th, and 99th percentiles of the firm-level estimates. Firms are equal-weighted in Panel A and value-weighted in Panel B. '%Incentives_Direct' = weight of the firm in the institution's portfolio; '%Incentives_Flow' = 1.29 × (Portfolio weight – benchmark), where 1.29 is the estimated flow-to-performance sensitivity and 'benchmark' is the firm's weight in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the percent increase in annual management fees for the mean institutional shareholder if the firm goes up 100% in value). 'AUM gain' is the portfolio weight × an institution's AUM × 1% (this is the increase in AUM for the mean institutional investor if the firm goes up 1% in value). Dollar incentives equal % incentives × an institution's AUM × our baseline management fee of 0.5% × 1% (this represents the dollar increase in annual management fees for the mean institutional investor if the firm goes up 1% in value). Dollar incentives are reported in $1,000s.

| | Mean | Med | Std | p1 | p25 | p75 | p99 |
|---|---|---|---|---|---|---|---|
| *Panel A: Firms are equal weighted* | | | | | | | |
| Size ($ million) | 5,002 | 553 | 20,506 | 7 | 124 | 2,455 | 80,115 |
| Institutional investors | 155 | 94 | 206 | 4 | 35 | 181 | 1,082 |
| Institutional ownership | 0.55 | 0.60 | 0.31 | 0.00 | 0.28 | 0.83 | 1.00 |
| %Incentives_Direct | 0.0111 | 0.0051 | 0.0226 | 0.0000 | 0.0021 | 0.0109 | 0.1140 |
| %Incentives_Flow | 0.0140 | 0.0063 | 0.0291 | 0.0000 | 0.0026 | 0.0134 | 0.1469 |
| %Incentives_Total | 0.0251 | 0.0113 | 0.0516 | 0.0000 | 0.0048 | 0.0243 | 0.2609 |
| AUM gain | 1,341.6 | 235.8 | 4,221.2 | 0.4 | 49.1 | 921.4 | 19,445.0 |
| $Incentives_Direct | 6.7 | 1.2 | 21.1 | 0.0 | 0.2 | 4.6 | 97.2 |
| $Incentives_Flow | 4.4 | 1.1 | 12.7 | 0.0 | 0.3 | 3.6 | 52.8 |
| $Incentives_Total | 11.1 | 2.3 | 32.6 | 0.0 | 0.5 | 8.3 | 146.7 |
| *Panel B: Firms are value weighted* | | | | | | | |
| Size ($ million) | 89,238 | 38,870 | 116,302 | 340 | 11,157 | 128,246 | 523,317 |
| Institutional investors | 812 | 703 | 531 | 56 | 353 | 1,291 | 1,848 |
| Institutional ownership | 0.68 | 0.69 | 0.18 | 0.12 | 0.58 | 0.80 | 1.00 |
| %Incentives_Direct | 0.0171 | 0.0127 | 0.0177 | 0.0016 | 0.0073 | 0.0199 | 0.0783 |
| %Incentives_Flow | 0.0170 | 0.0111 | 0.0217 | 0.0020 | 0.0073 | 0.0179 | 0.0983 |
| %Incentives_Total | 0.0341 | 0.0244 | 0.0390 | 0.0037 | 0.0150 | 0.0385 | 0.1765 |
| AUM gain | 17,346.5 | 8,992.3 | 20,735.8 | 117.3 | 3,089.7 | 23,730.1 | 91,886.6 |
| $Incentives_Direct | 86.7 | 45.0 | 103.7 | 0.6 | 15.4 | 118.7 | 459.4 |
| $Incentives_Flow | 36.4 | 20.7 | 43.5 | 0.4 | 8.5 | 45.0 | 178.9 |
| $Incentives_Total | 123.2 | 68.9 | 142.2 | 1.1 | 25.2 | 169.0 | 608.0 |

**Table 6: Incentives for the largest institutional shareholders in each firm, 2011–2015**

This table reports the cross-sectional distribution across firms of institutional ownership and incentives for the five institutions with the largest holdings in each firm. We calculate the variables for each firm (holding-weighted averages for the five largest shareholders), and report the cross-sectional mean, median, standard deviation, and 1st, 25th, 75th, and 99th percentiles of the firm-level estimates. Firms are equal-weighted in Panel A and value-weighted in Panel B. '%Incentives_Direct' = weight of the firm in the institution's portfolio; '%Incentives_Flow' = 1.29×(Portfolio weight – benchmark), where 1.29 is the estimated flow-to-performance sensitivity and 'benchmark' is the firm's weight in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the average percent increase in annual management fees for the five largest institutional shareholders if the firm goes up 100% in value). 'AUM gain' is the portfolio weight × an institution's AUM × 1% (this is the increase in AUM for the mean institutional investor if the firm goes up 1% in value). Dollar incentives equal % incentives × an institution's AUM × our baseline management fee of 0.5% × 1% (this represents the average dollar increase in annual management fees for the five largest institutional shareholders if the firm goes up 1% in value). AUM gain and dollar incentives are reported in $1,000s.

| | Mean | Med | Std | p1 | p25 | p75 | p99 |
|---|---|---|---|---|---|---|---|
| *Panel A: Firms are equal weighted* | | | | | | | |
| IO of 5 largest institutions | 0.26 | 0.27 | 0.13 | 0.00 | 0.18 | 0.34 | 0.62 |
| %Incentives_Direct | 0.0138 | 0.0039 | 0.0308 | 0.0000 | 0.0011 | 0.0122 | 0.1621 |
| %Incentives_Flow | 0.0175 | 0.0047 | 0.0397 | 0.0000 | 0.0012 | 0.0153 | 0.2090 |
| %Incentives_Total | 0.0313 | 0.0086 | 0.0705 | 0.0000 | 0.0022 | 0.0275 | 0.3711 |
| AUM gain | 2,797.0 | 387.2 | 9,701.5 | 0.4 | 66.4 | 1,744.4 | 43,769.1 |
| $Incentives_Direct | 14.0 | 1.9 | 48.5 | 0.0 | 0.3 | 8.7 | 218.8 |
| $Incentives_Flow | 8.4 | 1.8 | 25.1 | 0.0 | 0.4 | 6.2 | 106.1 |
| $Incentives_Total | 22.4 | 3.8 | 70.9 | 0.0 | 0.7 | 15.3 | 316.5 |
| *Panel B: Firms are value weighted* | | | | | | | |
| IO of 5 largest institutions | 0.24 | 0.23 | 0.08 | 0.06 | 0.19 | 0.28 | 0.48 |
| %Incentives_Direct | 0.0183 | 0.0093 | 0.0279 | 0.0004 | 0.0042 | 0.0182 | 0.1310 |
| %Incentives_Flow | 0.0186 | 0.0062 | 0.0357 | 0.0002 | 0.0025 | 0.0151 | 0.1666 |
| %Incentives_Total | 0.0368 | 0.0159 | 0.0633 | 0.0008 | 0.0072 | 0.0333 | 0.2976 |
| AUM gain ($000s) | 41,201.6 | 19,688.8 | 51,153.6 | 184.1 | 6,446.4 | 57,366.9 | 229,810.6 |
| $Incentives_Direct | 206.0 | 98.4 | 255.8 | 0.9 | 32.2 | 286.8 | 1,149.1 |
| $Incentives_Flow | 82.2 | 42.7 | 102.9 | -3.5 | 14.8 | 103.2 | 437.8 |
| $Incentives_Total | 288.2 | 149.2 | 346.3 | 1.7 | 51.5 | 392.6 | 1,509.6 |

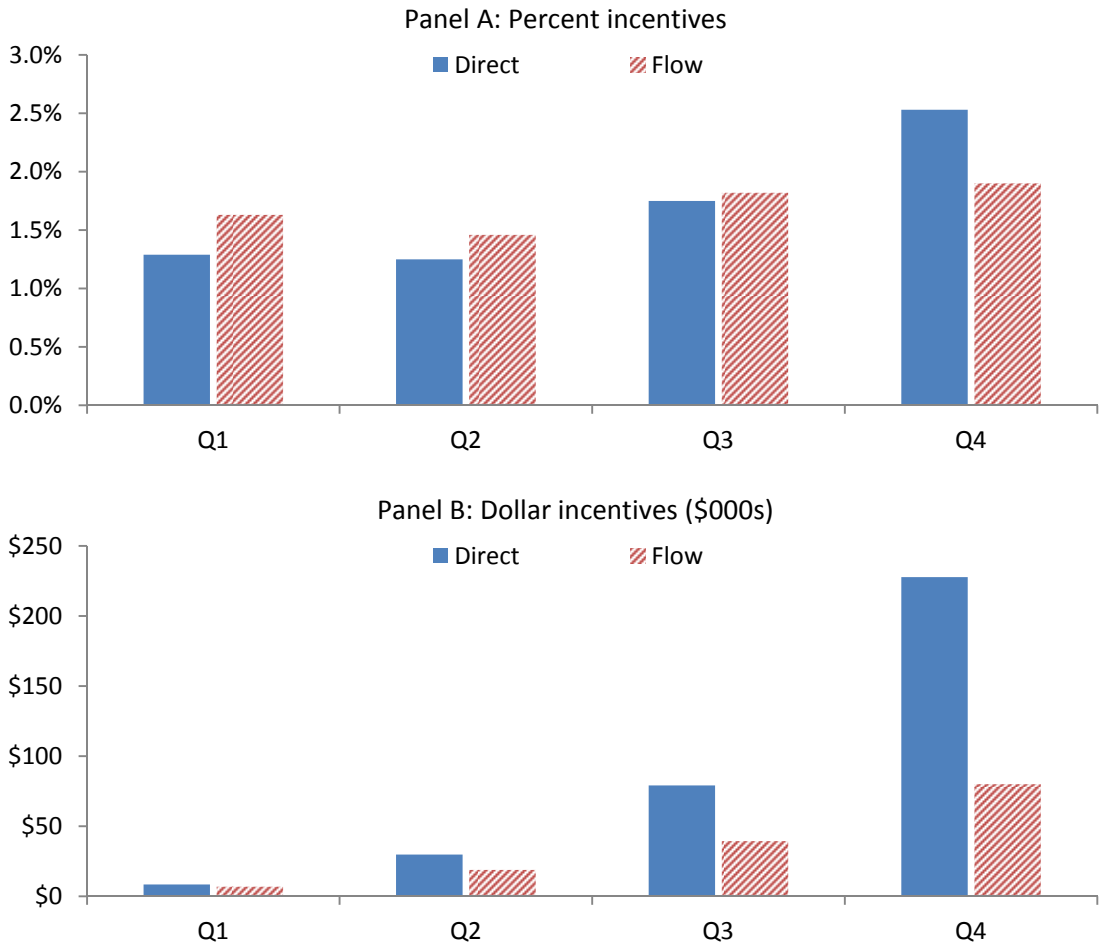


**Fig. 4: Incentives vs. firm size, 2011–2015**. The figure plots percent (Panel A) and dollar (Panel B) incentives for insitutional shareholders of firms sorted into value-weighted size quartiles. Each group has roughly 25% of total market cap. Incentives measure the impact on annual management fees for the average institutional investor if the firm goes up 100% (Panel A) or 1% (Panel B) in value, as described in the text.

**Table 7: Own-firm vs. rival incentives, by industry size, 2011–2015**

This table reports the value-weighted cross-sectional mean and standard deviation (across firms) of institutional incentives for industries with (i) 2–5, (ii) 6–15, (iii) 16–25, and (iv) 26 or more publicly traded firms. We calculate the variables for each firm (holding-weighted averages based on institutional ownership) and report the cross-sectional mean and standard deviation of the firm-level estimates. Industries are defined by three-digit SIC code. Own-firm incentives represent an institutions' gain if that firm increases in value (mirroring Table 5), while rival incentives represent the institutions' gain if other firms in the industry increase in value. '%Incentives_Direct' = weight of the firm (or rival firms) in the institution's portfolio; '%Incentives_Flow' = 1.29 × (Portfolio weight – benchmark), where 1.29 is the estimated flow-to-performance sensitivity and 'benchmark' is the firm's weight, or rival firms' weight, in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the percent increase in annual management fees for the mean institutional shareholder if the firm goes up 100% in value (in the case of own-firm incentives) or if rival firms go up 100% in value (in the case of rival-firm incentives)). 'AUM gain' is the portfolio weight × an institution's AUM × 1% (this is the increase in AUM if the firm or its rival group goes up 1% in value). Dollar incentives equal % incentives × an institution's AUM × our baseline management fee of 0.5% × 1% (this represents the dollar increase in annual management fees if the firm goes up 1% in value (own-firm incentives) or rival firms go up 100% in value (rival-firm incentives)). AUM gain and dollar incentives are reported in $1,000s.

| Industry size | 2 to 5 firms | | 6 to 15 firms | | 16 to 25 firms | | >25 firms | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std | Mean | Std | Mean | Std | Mean | Std |
| *Panel A: Rival incentives* | | | | | | | | |
| %Incentives_Direct | 0.0009 | 0.0016 | 0.0058 | 0.0058 | 0.0159 | 0.0122 | 0.0456 | 0.0364 |
| %Incentives_Flow | 0.0005 | 0.0017 | 0.0021 | 0.0044 | 0.0045 | 0.0074 | 0.0128 | 0.0304 |
| %Incentives_Total | 0.0014 | 0.0032 | 0.0079 | 0.0097 | 0.0203 | 0.0179 | 0.0584 | 0.0626 |
| AUM gain | 1,468.2 | 2,267.0 | 12,945.9 | 12,916.8 | 38,565.1 | 34,428.9 | 102,529.0 | 76,519.5 |
| $Incentives_Direct | 7.3 | 11.3 | 64.7 | 64.6 | 192.8 | 172.1 | 512.6 | 382.6 |
| $Incentives_Flow | 0.3 | 3.4 | 7.5 | 20.5 | 22.8 | 44.8 | 21.0 | 79.8 |
| $Incentives_Total | 7.7 | 13.6 | 72.3 | 80.5 | 215.6 | 209.5 | 533.7 | 416.7 |
| Benchmark weight | 0.0005 | 0.0007 | 0.0042 | 0.0037 | 0.0124 | 0.0098 | 0.0357 | 0.0241 |
| Negative flow incentives | 0.7527 | 0.1455 | 0.5755 | 0.1632 | 0.5240 | 0.1725 | 0.4893 | 0.1747 |
| Negative total incentives | 0.5963 | 0.1931 | 0.3197 | 0.1549 | 0.2247 | 0.1466 | 0.1365 | 0.1075 |
| *Panel B: Own-firm incentives* | | | | | | | | |
| %Incentives_Direct | 0.0128 | 0.0155 | 0.0137 | 0.0151 | 0.0169 | 0.0149 | 0.0187 | 0.0186 |
| %Incentives_Flow | 0.0152 | 0.0199 | 0.0142 | 0.0192 | 0.0165 | 0.0181 | 0.0182 | 0.0226 |
| %Incentives_Total | 0.0280 | 0.0354 | 0.0278 | 0.0341 | 0.0334 | 0.0326 | 0.0369 | 0.0408 |
| AUM gain | 5,543.2 | 5,949.0 | 12,049.6 | 12,200.8 | 20,007.3 | 22,768.9 | 19,612.7 | 22,139.9 |
| $Incentives_Direct | 27.7 | 29.7 | 60.2 | 61.0 | 100.0 | 113.8 | 98.1 | 110.7 |
| $Incentives_Flow | 17.5 | 22.6 | 25.7 | 23.6 | 47.6 | 55.9 | 38.5 | 43.7 |
| $Incentives_Total | 45.3 | 51.1 | 86.0 | 82.6 | 147.6 | 166.6 | 136.5 | 148.2 |
| Benchmark weight | 0.0010 | 0.0010 | 0.0027 | 0.0028 | 0.0041 | 0.0044 | 0.0045 | 0.0055 |
| Negative flow incentives | 0.1807 | 0.0695 | 0.2011 | 0.0668 | 0.2067 | 0.0693 | 0.1985 | 0.0785 |
| Negative total incentives | 0.0495 | 0.0219 | 0.0499 | 0.0202 | 0.0500 | 0.0205 | 0.0494 | 0.0244 |

**Table 8: Own-firm vs. rival incentives for the largest shareholders, by industry size, 2011–2015**

This table reports the value-weighted cross-sectional mean and standard deviation (across firms) of institutional incentives for the five institutions with the largest holdings in each firm, separated for industries with (i) 2–5, (ii) 6–15, (iii) 16–25, and (iv) 26 or more publicly traded firms. We calculate the variables for each firm (holding-weighted averages based on institutional ownership) and report the cross-sectional mean and standard deviation of the firm-level estimates. Industries are defined by three-digit SIC code. Own-firm incentives represent an institutions' gain if that firm increases in value (mirroring Table 5), while rival incentives represent the institutions' gain if other firms in the industry increase in value. '%Incentives_Direct' = weight of the firm (or rival firms) in the institution's portfolio; '%Incentives_Flow' = 1.29 × (Portfolio weight – benchmark), where 1.29 is the estimated flow-to-performance sensitivity and 'benchmark' is the firm's weight, or rival firms' weight, in the portfolio held by other institutions of the same type; '%Incentives_Total' = %Incentives_Direct + %Incentives_Flow (this represents the percent increase in annual management fees for the mean institutional shareholder if the firm goes up 100% in value (in the case of own-firm incentives) or if rival firms go up 100% in value (in the case of rival-firm incentives)). 'AUM gain' is the portfolio weight × an institution's AUM × 1% (this is the increase in AUM if the firm or its rival group goes up 1% in value). Dollar incentives equal % incentives × an institution's AUM × our baseline management fee of 0.5% × 1% (this represents the dollar increase in annual management fees if the firm goes up 1% in value (own-firm incentives) or rival firms go up 100% in value (rival-firm incentives)). AUM gain and dollar incentives are reported in $1,000s.

| Industry size | 2 to 5 firms | | 6 to 15 firms | | 16 to 25 firms | | >25 firms | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std | Mean | Std | Mean | Std | Mean | Std |
| *Panel A: Rival incentives* | | | | | | | | |
| %Incentives_Direct | 0.0007 | 0.0018 | 0.0053 | 0.0063 | 0.0153 | 0.0138 | 0.0455 | 0.0431 |
| %Incentives_Flow | 0.0002 | 0.0020 | 0.0014 | 0.0057 | 0.0037 | 0.0111 | 0.0126 | 0.0419 |
| %Incentives_Total | 0.0010 | 0.0037 | 0.0067 | 0.0115 | 0.0190 | 0.0230 | 0.0581 | 0.0812 |
| AUM gain | 3,220.4 | 5,238.0 | 30,024.9 | 30,661.5 | 89,865.8 | 85,418.9 | 231,965.6 | 181,725.5 |
| $Incentives_Direct | 16.1 | 26.2 | 150.1 | 153.3 | 449.3 | 427.1 | 1,159.8 | 908.6 |
| $Incentives_Flow | 0.7 | 8.9 | 18.0 | 53.5 | 58.8 | 126.5 | 30.3 | 188.3 |
| $Incentives_Total | 16.8 | 32.1 | 168.1 | 193.9 | 508.1 | 532.7 | 1,190.2 | 963.3 |
| Benchmark weight | 0.0005 | 0.0007 | 0.0042 | 0.0037 | 0.0124 | 0.0099 | 0.0358 | 0.0241 |
| Negative flow incentives | 0.7130 | 0.2432 | 0.5251 | 0.2782 | 0.5028 | 0.2990 | 0.4805 | 0.2979 |
| Negative total incentives | 0.4687 | 0.2925 | 0.1974 | 0.2191 | 0.1474 | 0.1928 | 0.0714 | 0.1449 |
| *Panel B: Own-firm incentives* | | | | | | | | |
| %Incentives_Direct | 0.0137 | 0.0245 | 0.0134 | 0.0244 | 0.0195 | 0.0264 | 0.0200 | 0.0288 |
| %Incentives_Flow | 0.0164 | 0.0317 | 0.0137 | 0.0317 | 0.0198 | 0.0336 | 0.0199 | 0.0368 |
| %Incentives_Total | 0.0301 | 0.0562 | 0.0271 | 0.0559 | 0.0393 | 0.0598 | 0.0399 | 0.0653 |
| AUM gain | 11,914.3 | 12,712.9 | 28,496.5 | 30,134.8 | 45,969.3 | 52,730.3 | 47,265.9 | 55,691.3 |
| $Incentives_Direct | 59.6 | 63.6 | 142.5 | 150.7 | 229.8 | 263.7 | 236.3 | 278.5 |
| $Incentives_Flow | 35.3 | 47.6 | 58.8 | 59.0 | 108.9 | 133.1 | 86.6 | 102.8 |
| $Incentives_Total | 94.8 | 106.8 | 201.3 | 204.9 | 338.7 | 389.0 | 322.9 | 366.4 |
| Benchmark weight | 0.0010 | 0.0010 | 0.0027 | 0.0029 | 0.0042 | 0.0047 | 0.0045 | 0.0055 |
| Negative flow incentives | 0.1634 | 0.1574 | 0.1765 | 0.1701 | 0.1863 | 0.1643 | 0.1677 | 0.1778 |
| Negative total incentives | 0.0032 | 0.0217 | 0.0029 | 0.0214 | 0.0036 | 0.0227 | 0.0044 | 0.0273 |

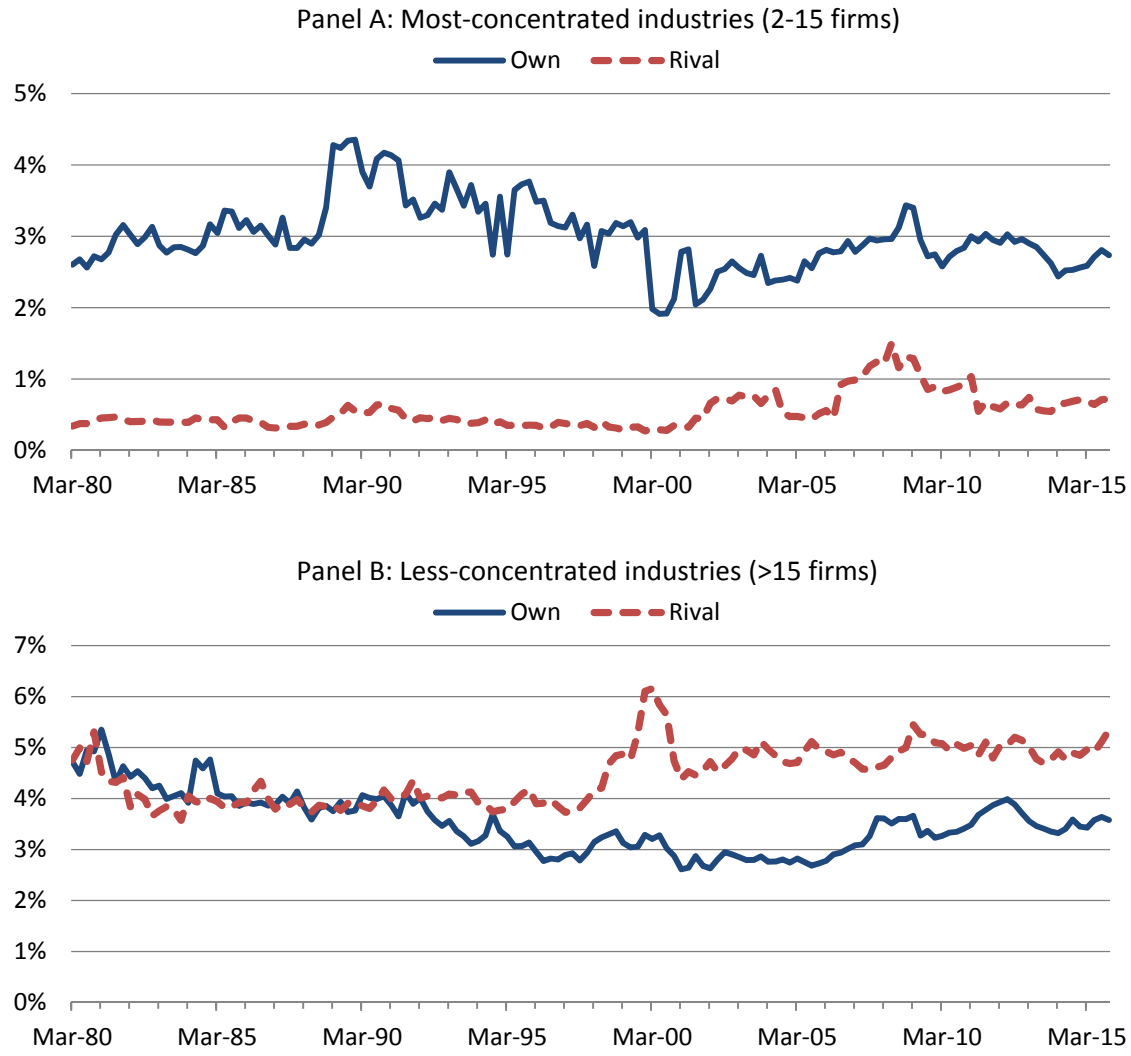


**Fig. 5: Own-firm vs. rival incentives, 1980–2015**. The figure plots average percent incentives for institutional investors in industries with 2–15 firms (Panel A) and industries with greater than 15 firms (Panel B), quarterly, from 1980–2015. Institutions are value-weighted. Incentives equal the percent increase in annual management fees for the average institutional shareholder if the firm goes up 100% in value (in the case of 'own-firm' incentives) or rival firms go up 100% in value (in the case of 'rival incentives'), as described in the text.

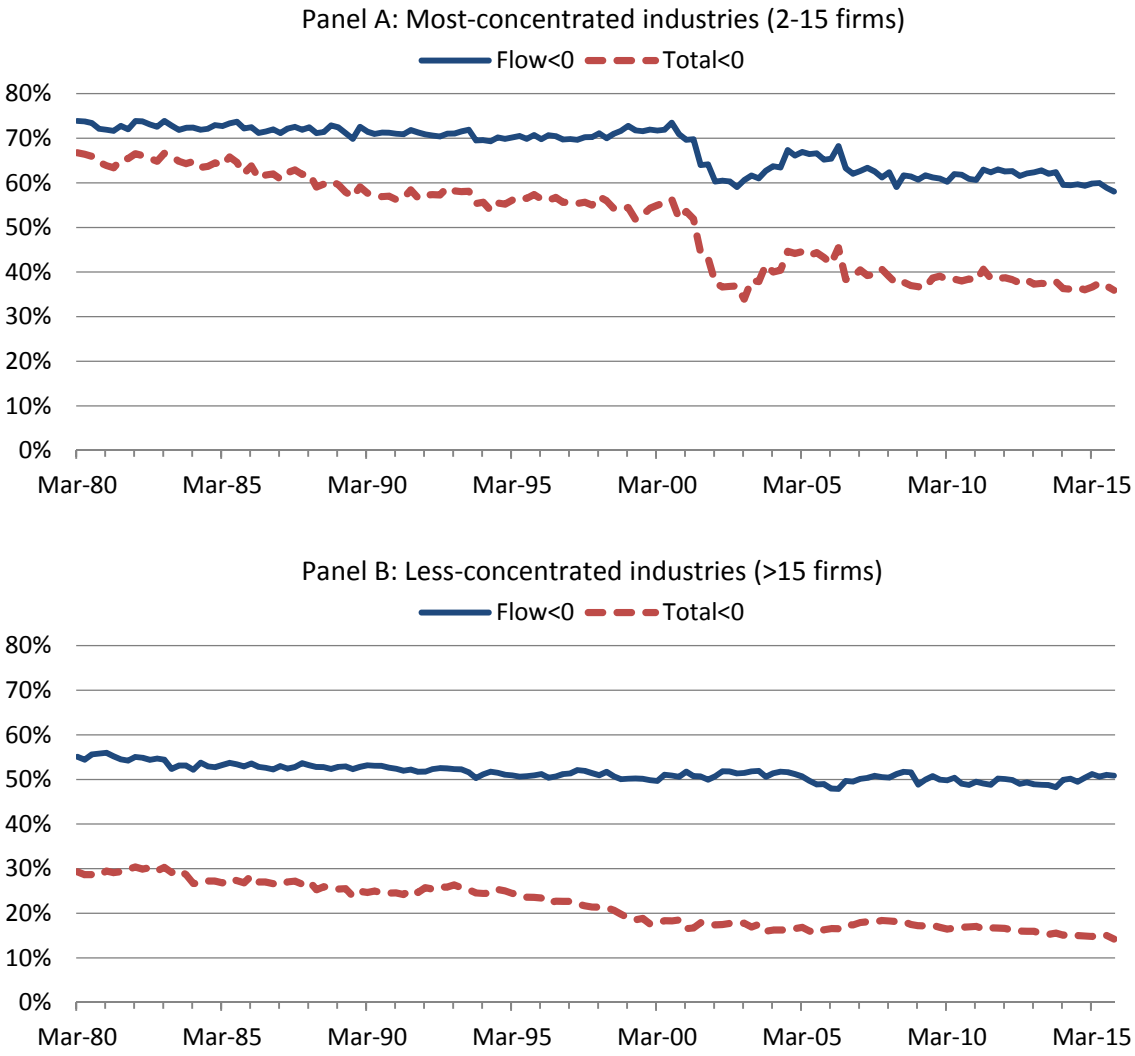


**Fig. 6: Frequency of negative rival incentives, 1980–2015**. The figure plots the fraction of institution-held shares for which the institution has rival flow incentives that are negative (the institution underweights rivals) or rival total incentives that are negative (the institution gains if rival firms drop in value). Panel A shows results for industries with 2–15 firms and Panel B shows resutls for industries with greater than 15 firms.