Common Institutional Ownership and Earnings Management*

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ABSTRACT

This study examines the relation between earnings management and block ownership of same-industry peer firms by a common set of institutional investors (common institutional ownership). This relation is important given the tremendous growth of common institutional ownership and the significant influence of blockholders on financial reporting. We hypothesize that common institutional ownership mitigates earnings management by enhancing institutions' monitoring efficiency and by encouraging institutions to internalize the negative externality of a firm's earnings management on peer firms' investments. Consistent with our hypothesis, we find that higher common institutional ownership is related to less earnings management. Analyses of a quasi-natural experiment based on financial institution mergers show that this negative relation is unlikely to be driven by the endogeneity of common institutional ownership. Cross-sectional tests provide evidence that the negative relation is stronger among firms for which common institutional ownership is likely to generate a greater reduction in institutions' information acquisition and processing costs, and among firms whose severe financial misstatements are more likely to distort co-owned peer firms' investments, supporting both mechanisms underlying our hypothesis. Our findings inform the ongoing debate on the costs and benefits of common institutional ownership by highlighting an important benefit: the enhanced monitoring of financial reporting.

Keywords: institutional investors, common ownership, earnings management, monitoring, externality, blockholdings

Propriété commune par des investisseurs institutionnels et gestion des résultats

RÉSUMÉ

La présente étude examine la relation entre la gestion des résultats et la détention commune de blocs d'actions de sociétés paires d'un même secteur d'activités par un ensemble d'investisseurs institutionnels (propriété commune). Cette relation est importante, compte tenu de l'énorme croissance de la propriété commune et de l'influence des détenteurs de blocs d'actions sur la communication de l'information financière. Nous présumons que la propriété commune réduit la gestion des résultats en augmentant l'efficacité du contrôle des institutions et en encourageant celles-ci à internaliser l'externalité négative de la gestion des résultats d'une firme sur les investissements des firmes paires. Conformément à notre hypothèse, nous établissons qu'un haut niveau de propriété commune est lié à une gestion des résultats moindre. Des analyses d'une expérience quasi naturelle fondée sur des fusions d'institutions financières montrent que cette relation

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négative n'est pas susceptible d'être stimulée par l'endogénéité de la propriété commune. Des analyses transversales fournissent des données probantes indiquant que la relation négative est plus marquée chez les sociétés pour lesquelles la propriété commune est susceptible de générer une réduction plus importante des coûts d'acquisition et de traitement de l'information assumés par les institutions, de même que chez celles dont des déclarations financières inexactes graves sont plus susceptibles de fausser les investissements des sociétés paires en copropriété, à l'appui des deux mécanismes qui sous-tendent notre hypothèse. Nos observations éclairent le débat en cours sur les coûts et avantages de la propriété commune en mettant en lumière un avantage important, soit un meilleur contrôle de la communication de l'information financière.

Mots clés : blockholdings, propriété commune par des investisseurs institutionnels, gestion des résultats, contrôle, externalité, blocs d'actions

1. Introduction

Block ownership of same-industry peer firms by a common set of institutional owners—that is, common institutional ownership (CIO, hereafter)—has increased tremendously over the past two decades. For example, the fraction of US public firms with an institutional blockholder that also simultaneously blockholds at least one of the firm's industry peers has increased from less than 10% in 1980 to about 60% in 2014. The rising importance of CIO stands in sharp contrast to our limited understanding of its influences on firms' financial reporting. Prior research generally finds that institutional investors or blockholders are large, sophisticated users of financial statements who play a monitoring role in improving financial reporting (e.g., Rajgopal and Venkatachalam 1997; Ayers et al. 2011; Ramalingegowda and Yu 2012; Dou et al. 2018). However, these studies treat institutions' or blockholders' holdings in each portfolio firm as an independent position and do not consider that the impact of one portfolio firm's financial reporting on other portfolio firms could, in turn, influence institutions' or blockholders' monitoring role. In this study, we take a first step to fill this void by examining the relation between CIO and firms' earnings management.

We posit that CIO can help discipline earnings management through two mechanisms. The first mechanism is through reducing institutions' information costs of monitoring (the economy of scale mechanism, hereafter). Given the economic commonality among firms in the same industry, information and expertise that common institutional investors gain from monitoring one portfolio firm can help them better analyze and monitor peer firms they blockhold. This economy of scale effect can reduce common institutional investors' information acquisition and processing costs and enhance their efficiency in monitoring portfolio firms' financial reporting.

The second mechanism is through internalizing the negative externality of a firm's earnings management on peer firms (the externality mechanism, hereafter). To the extent that a firm's financial reports are used by the firm's peers to identify profitable investment opportunities, accounting misstatements by the firm can send a misleading signal to its peers about available investment opportunities, distorting peers' investment decisions. Consistent with this prediction, Beatty et al. (2013) find that accounting overstatements result in higher investments by peer firms (see also Li 2016). This negative externality increases the cost of earnings management to common institutional investors because one portfolio firm's overstatement not only reduces the overstating firm's value but also reduces the value of other co-owned peer firms whose investment strategies are distorted by the overstatement. Thus, we expect common institutional investors to internalize the externality of earnings management on peer firms' investments and thereby enhance institutions' incentives to discipline portfolio firms' earnings management.

Although we posit that CIO can discipline earnings management, it is also possible that CIO may not reduce, and may even exacerbate, earnings management. Common institutional investors likely possess superior information over other investors. Their large ownership of multiple peer firms not only gives common institutional investors access to firm management and boards of

directors (e.g., McCahery et al. 2016), but also enhances their information advantage by facilitating information spillovers across co-owned peer firms. Further, common institutional investors are better able to process public information, in part because analyzing multiple co-owned peer firms simultaneously can enhance their abilities to extract useful information from noise. Overall, given their superior information and processing ability, common institutional investors may have lower demand for high-quality financial reporting and may even prefer less transparency to protect their information advantage (e.g., Bushee et al. 2003; Dou, Hope, Thomas, and Zou 2016).

We examine the relation between CIO and earnings management using a large sample of 60,148 firm-years over the period 1989–2015. We focus on income-increasing earnings management because it is likely more detrimental to firm value (e.g., Becker et al. 1998) and because it is known to induce negative externalities that are detrimental to peer firms' value (Beatty et al. 2013). These reasons provide common institutional investors stronger incentives to reduce income-increasing earnings management. We measure CIO using an indicator variable equal to one for a firm-year if an institutional investor has a blockholding (>5% of shares outstanding) in this firm and at least one of its industry peers simultaneously in that year (He and Huang 2017). We gauge income-increasing earnings management using both performance-adjusted discretionary accruals and the likelihood of meeting or beating analysts' forecasts by one cent or less. Controlling for total institutional ownership, the presence of blockholdings, various determinants of earnings management, and firm and year fixed effects, our regression analysis reveals a negative relation between CIO and earnings management. This negative relation is also economically meaningful. Our results indicate that the presence of CIO is associated with a 0.003 decrease in discretionary accruals (compared with the sample mean of −0.003), and a 1.5 percentage point decrease in the likelihood of meeting or just beating analyst forecasts, which is equivalent to a 13% decrease from the unconditional base rate of 11.6% in our sample.

We address potential concerns about endogeneity of CIO by conducting a difference-in-differences analysis of the quasinatural experiment of financial institution mergers. Financial institution mergers result in a significant increase in CIO but are plausibly exogenous to the characteristics of institutions' portfolio firms, including portfolio firms' financial reporting attributes. We compare the change in earnings management for a treatment sample consisting of firms for which the mergers are likely to increase the firms' ownership linkages with peer firms–that is, with peer firm block-holdings by both merging institutions before the merger—relative to a control sample consisting of other blockheld firms in the same institutions' portfolios that are unlikely to experience changes in CIO due to the mergers. We find that, relative to control firms, treatment firms exhibit a decrease in earnings management after the mergers. Overall, these results are consistent with CIO having a causal effect in mitigating earnings management.

We next conduct cross-sectional tests of the mechanisms—economy of scale or externality—through which CIO mitigates earnings management. First, we examine the economy of scale mechanism by exploring cross-sectional variation in the likelihood that CIO reduces information costs of monitoring. CIO is likely to generate a greater economy of scale effect among firms whose common institutional investors blockhold more peer firms. Hence, we expect CIO to have a stronger effect in mitigating earnings management among these firms. Consistent with our expectation, we find that the negative relation between CIO and earnings management is more pronounced among firms whose common institutional investors blockhold more peer firms. This result provides evidence in support of the economy of scale mechanism.

Second, we examine the externality mechanism by exploring cross-sectional variation in the likelihood of the negative externality of earnings management on peer firms' investments. Beatty et al. (2013) predict and find that this negative externality is greater among industries with higher investor sentiment, lower cost of capital, and higher private benefits of control, because under these conditions accounting overstatements are more likely to lead peer firms to become optimistic about industry productivity and consequently make more investments. They also predict and find the negative externality is greater among firms with higher unexpected overlap in analyst coverage with peer

firms, because analysts help transmit peer information (e.g., Hope and Zhao 2018) that includes distorted signals about investment opportunities around misstatements and thus facilitates the spillover of this externality. Hence, to the extent that CIO internalizes this negative externality of earnings management on peer firms' investments, we would expect the negative relation between CIO and earnings management to be stronger in these industries and firms. We find only limited support for this expectation with our accrual and meet/beat measures of earnings management. We generally find a significantly negative relation between CIO and discretionary accruals or meet/beat among (i) industries with higher investor sentiment, lower cost of capital and higher private benefits of control and (ii) firms with higher unexpected overlap in analyst coverage with common institutional investors' other co-owned peer firms. However, the magnitude of the negative relation in these industries/firms is not statistically different from the magnitude of the negative relation in other industries/firms.

One possible reason for the limited support for the externality mechanism is the lack of power of our tests using the discretionary accrual and meet/beat measures of earnings management. These two measures likely capture both opportunistic reporting that pushes the boundaries of GAAP and severe misstatements that fall outside the boundaries of GAAP. To the extent only severe misstatements that violate GAAP generate a significant externality on peer firm's investments, in part due to the larger magnitude of earnings management in severe misstatements, discretionary accruals and meet/beat may be less powerful in detecting the externality mechanism. Thus, we focus on severe financial misstatements to conduct a more powerful test of the externality mechanism. Using financial misstatements or frauds based on SEC and DOJ enforcement actions, as identified by Call et al. (2018), as a proxy for the extreme form of earnings management, we find that CIO is negatively related to earnings management among (i) industries with higher investor sentiment, lower cost of capital, and higher private benefits of control and (ii) firms with higher unexpected overlap in analyst coverage with common institutional investors' other co-owned peer firms. Further, we find that this negative relation in these industries/firms is significantly more negative than the negative relation in other industries/firms. These results provide stronger evidence in support of the externality mechanism.

To shed light on the effect of CIO on other forms of earnings management, we examine the relation between CIO and firms' real activities manipulation. On the one hand, if the enhanced monitoring by CIO also helps discipline real activities manipulation, we expect a similar negative relation between CIO and real activities manipulation. On the other hand, if CIO has a disciplinary effect on accrual-based earnings management only, it can lead firms to shift their earnings management behavior away from accrual-based earnings management toward real activities manipulation, resulting in a positive relation between CIO and real activities manipulation. We find that CIO is negatively related to abnormal discretionary expenses, providing some evidence that CIO also disciplines real activities manipulation through discretionary expenses.

Finally, we examine whether CIO has an effect on earnings response coefficients (ERCs). Given our findings that CIO has a disciplinary effect on earnings management, it is possible that this effect results in greater price informativeness of earnings because the market places more weight on reported earnings of firms with CIO. We find that CIO is positively related to earnings response coefficients, consistent with CIO enhancing the price informativeness of earnings.

Our study contributes to the literature on investor monitoring and financial reporting. Prior studies focus on institutional or blockholder ownership in an individual firm and treat holdings in each portfolio firm as an independent position (e.g., Rajgopal and Venkatachalam 1997; Ayers et al. 2011; Ramalingegowda and Yu 2012; Dou, Hope, Thomas, and Zou 2016; Dou et al. 2018). We extend this literature by examining a distinct and increasingly important aspect of institutional ownership—common block ownership of industry peers. We find that CIO has a disciplining effect on financial reporting, and that this disciplining effect is greater where (i) CIO lowers information costs of monitoring to a greater extent and (ii) a firm's earnings management generates a greater negative externality on peer firms' investments. These findings add to the literature by

providing new evidence that CIO mitigates earnings management by enhancing institutions' monitoring efficiency and by internalizing the negative externality of earnings management.

Our study also adds to the growing literature on CIO. Prior finance research shows that CIO weakens product market competition (e.g., Azar et al. 2018; Azar et al. 2019), fosters market share growth (He and Huang 2017), increases return correlations (Antón and Polk 2014), and reduces executive pay incentives (Antón et al. 2018). Our findings highlight a new role of CIO in improving firms' financial reporting—another important firm decision that impacts firm value.

Our study is related to, but distinct from, Park et al. (2019), who find that CIO increases voluntary disclosure by reducing proprietary costs of disclosure and internalizing the positive externalities of disclosure in improving peer firms' liquidity and cost of capital. We contribute to the literature beyond Park et al. (2019) in at least two ways. First, we examine how CIO influences financial reporting—a firm decision distinct from voluntary disclosure.[1] Second, we show that CIO affects financial reporting through reducing information costs of monitoring and internalizing the negative externality of earnings management in distorting peer firms' investments. These two mechanisms are new and distinct from the mechanisms documented by Park et al. (2019).[2]

2. Related research and hypothesis development

Background and related research

CIO by large institutional investors has become ubiquitous across all industries in the United States. For example, as of 2016, BlackRock (the largest asset management firm) had $4.5 trillion of assets under management and had blockholdings (more than 5% ownership) in more than half of all listed companies in the United States. The combined ownership of BlackRock, Vanguard, and State Street now makes them the largest shareholder in more than 40% of all United States listed companies and 88% of S&P 500 companies (Fichtner et al. 2017). The large holdings give these institutional investors access to management and the board, and the clout to influence decisions. Although within fund management companies (e.g., BlackRock) each individual fund's (e.g., BlackRock Large Cap Growth Fund) holdings in a portfolio firm may be small, fund management companies generally exercise the shareholder voting rights of all individual funds jointly and centralize their formal and informal interactions with their portfolio firms (see Appel et al. 2016; Fichtner et al. 2017). Institutional investors typically exert influence on their portfolio firms through regular communications with firm executives, "behind the scenes" engagements, proxy voting, litigation, and the threat of exit (e.g., Carleton et al. 1998; Cheng et al. 2010; Appel et al. 2016; Azar et al. 2018, 2019; Dou et al. 2018).[3]

The increasing importance of CIO has spurred a growing literature examining its economic consequences (see, e.g., Schmalz (2018) for a review). One stream of research examines anticompetitive effects of CIO. Theory in industrial organization predicts that because one firm's competitive actions may hurt peer firms in the industry and thereby reduce the total value of the industry portfolio, CIO

1. Ex ante, one cannot "infer" our findings on earnings management from Park et al.'s (2019) results on voluntary disclosure because earnings quality and voluntary disclosure can be both substitutes and complements (e.g., Francis et al. 2008; Baginski and Rakow 2012). Hinson and Utke (2019) also show earnings quality and voluntary disclosure are distinct constructs that have a relatively low correlation.
2. In concurrent work, He et al. (2020) find that CIO is related to more negative accruals and the negative accruals improve the association between accruals and cash flows, consistent with CIO enhancing monitoring. Our study differs from He et al. (2020) in three ways. First, while they focus on properties of accruals, we examine a broader construct of earnings management that includes meet/beat and financial fraud. Second, we present evidence on the mechanism through which CIO enhances monitoring—namely, through reducing information costs of monitoring (the economy of scale mechanism). Third, they do not consider the negative externality of financial reporting. We show that internalizing the externality of misreporting on peer firms' investments is an important mechanism for CIO to reduce earnings management.
3. Whether the influence of the subset of passive investors on governance is positive (Appel et al. 2016; Barzuza et al. 2019) or negative (Schmidt and Fahlenbrach 2017; Qin and Wang 2018; Heath et al. 2020) is the subject of debate.

can reduce firms' incentives to compete aggressively with one another (O'Brien and Salop 2000; Gilo et al. 2006). Consistent with this anticompetitive effect, Azar et al. (2018) find that higher CIO in the US airline industry is associated with an increase in airline ticket prices by 3–7%. Azar et al. (2019) provide similar evidence from the US banking industry showing that higher CIO is related to lower deposit account interest rates, higher maintenance fees, and higher thresholds for waiving fees. Antón et al. (2018) suggest that one important mechanism for this anticompetitive effect of CIO is through less use of relative performance evaluation (RPE) and more weight on industry profit in executives' compensation contracts.[4] Further, He and Huang (2017) document that CIO encourages various forms of product market collaboration among commonly owned firms and increases market share growth, productivity, and profitability. Relatedly, Freeman (2019) shows that CIO of customer-supplier pairs enhances the customer-supplier relationship.

Recent work also examines how CIO influences acquisitions, shareholder voting, and innovation. Matvos and Ostrovsky (2008) find that institutions owning both the acquirer and the target in a merger are more likely to approve the acquisition. Harford et al. (2011) show that common ownership increases the likelihood that portfolio firms are targeted in takeovers. He et al. (2019) find a positive relation between CIO and the likelihood of voting against management in shareholder-sponsored governance proposals. Kostovetsky and Manconi (2020) find that higher CIO is associated with more patent citations among portfolio firms, consistent with CIO facilitating the spread of innovation. We add to this emerging literature by examining the effect of CIO on firms' financial reporting—another important firm decision that impacts firm value.

Institutional investors are generally large, sophisticated investors who play a monitoring role in enhancing reporting quality. For example, Bushee (1998) finds that firms with higher institutional ownership are less likely to cut R&D expenditures to meet earnings benchmarks. Rajgopal and Venkatachalam (1997) and Cornett et al. (2008) find a negative association between institutional ownership and abnormal accruals. Ayers et al. (2011) and Chhaochharia et al. (2012) find that the presence of local institutional investors is associated with less aggressive reporting. Ramalingegowda and Yu (2012) find that firms with higher ownership by monitoring institutions report more conservatively. We extend this literature by examining the influence of CIO—a distinct and increasingly important ownership structure—on financial reporting. Prior work treats institutions' holdings in each portfolio firm as an independent position, but does not consider (i) the possibility that analyzing a portfolio firm's financial reports affects the efficiency in monitoring co-owned peer portfolio firms or (ii) the externalities of a portfolio firm's reporting practices on the institution's co-owned peer firms. CIO provides a unique opportunity to examine how these interactions among portfolio firms affect institutions' influence on financial reporting.

Our study is also related to the literature that examines the effect of large shareholders on financial reporting in general.[5] Earlier studies in this literature find inconclusive evidence. While some studies find a negative relation between large shareholders and earnings management (e.g., Dechow et al. 1996), other studies find no significant relation between the two (e.g., Larcker et al. 2007). In more recent work, Dou, Hope, Thomas, and Zou (2016) analyze all blockholders of S&P 1500 firms using a fixed effects approach, and document evidence of significant heterogeneity in blockholders' influence on earnings management. Dou et al. (2018) find evidence that blockholders have a positive impact on financial reporting quality and this impact is stronger when managers' wealth is tied more closely to stock prices, consistent with blockholders improving financial reporting through exit threats. Our study adds to this literature by showing how simultaneous blockholdings of peer firms (i.e., CIO) influences the effect of blockholders on financial reporting.

4. In contrast, Kwon (2016) reports a positive relation between CIO and RPE and argues that the anticompetitive effects of CIO may occur through channels other than RPE. However, Elhauge (2017) argues that data limitations and research design choices in Kwon (2016) cause those results to differ from Antón et al. (2018).

5. See Armstrong et al. (2010), Beyer et al. (2010), and Hope (2013) for recent reviews of this literature.

Hypothesis development

A large body of accounting research shows that managers have various economic incentives for opportunistic financial reporting, including capital market, contractual, and regulatory motivations, and managers' opportunistic financial reporting can destroy firm value and impose significant costs on shareholders (e.g., Field et al. 2001). Institutional investors with large holdings have the financial incentives and clout to influence firms' financial reporting practices (e.g., Armstrong et al. 2010). These institutions require timely and reliable information to monitor management's actions and participate in firms' strategic decisions. They are also sophisticated investors with a superior ability to process information. Large institutions can influence their portfolio firms' policies directly through regular communications with firm executives, "behind the scenes" engagements and proxy voting to improve governance structure, and litigation (e.g., Carleton et al. 1998; Cheng et al. 2010; Edmans 2014; Boone and White 2015; Appel et al. 2016; Azar et al. 2018, 2019; McCahery et al. 2016; He et al. 2019), and indirectly through the threat of exit—that is, "voting with their feet" (e.g., Admati and Pfleiderer 2009; Edmans and Manso 2011; Dou et al. 2018).

Institutional investors' size, sophistication, and interactions with firms and managers indicate that institutional investors can affect earnings management in at least three ways. First, they can voice their preferences to managers through private communications or voting. For example, BlackRock claims that it engages with firms or uses its vote to encourage better disclosure when it believes reporting or disclosure is inadequate (Boone and White 2015). Second, their monitoring can improve the firm's governance structure, which has been found to constrain earnings management. Third, they can use the threat of exit to better align the incentives of managers and shareholders, which reduces managers' rent-extracting activities and thereby their need to manipulate earnings (Dou et al. 2018). Because these mechanisms enable institutional investors to impose significant costs on managers that manipulate earnings, incentives for earnings management are reduced. While some governance changes may take time, institutional blockholders can have a timely impact on earnings management by engaging in private communications with management promptly. Further, corporate managers likely avoid earnings management in anticipation of higher costs, such as price drops due to institutions' selling of shares, in the presence of monitoring by institutional blockholders (e.g., Park et al. 2019). Consistent with the above arguments, prior research finds evidence that institutional investors play a monitoring role in improving financial reporting and disciplining earnings management (e.g., Rajgopal and Venkatachalam 1997; Bushee 1998; Cornett et al. 2008; Ayers et al. 2011).

We posit that CIO can discipline earnings management through both the economy of scale and externality mechanisms. The economy of scale mechanism refers to the reduction in institutions' information costs of monitoring. Firms in the same industry tend to have similar business environments, geographic locations, products, operations, and financial reporting practices. These commonalities among same-industry firms give rise to a significant fixed component in institutions' costs in monitoring firms from the same industry. The industry-level information and expertise that an institutional blockholder gains from monitoring one portfolio firm can effectively reduce that blockholder's information acquisition and processing costs of monitoring peer firms in the portfolio. Institutional investors have also implemented mechanisms to facilitate information sharing among fund managers and coordinate monitoring activities. For example, many large funds such as Vanguard and BlackRock have a centralized governance committee that communicates with the fund managers in making monitoring decisions.[6] Invesco uses a voting platform in which fund managers debate upcoming votes at their portfolio companies and reach consensus.

6. For example, in explaining its approach, BlackRock states that its investment stewardship team "work[s] closely with BlackRock's active portfolio managers when engaging companies and in addressing relevant governance issues. Additionally, BlackRock's investment teams leverage qualitative and quantitative company information, as well as sector and industry research, from various external service providers which can be used in BIS' analysis of and conversations with companies and with clients" (see "BlackRock Investment Stewardship," https://www.blackrock.com/corporate/literature/publication/blk-profile-of-blackrock-investment-stewardship-team-work.pdf).

T. Rowe Price requests that a fund manager explain when their voting deviates from the central recommendations (Fisch et al. 2019). Consistent with this notion that holding same-industry firms reduces information costs and enhances monitoring effectiveness, Gompers et al. (2008) find venture capital firms with more investments in the same industry make more efficient investments. Kang et al. (2018) show that institutions' monitoring effectiveness increases with the number of their blockholdings, especially when these blockholdings are in the same industry. Therefore, by creating an economy of scale, CIO can enable institutions to better monitor their portfolio firms and discipline the firms' earnings management.

The externality mechanism refers to the internalization of the negative externality of a firm's earnings management on peer firms' investments. To the extent a firm's financial reports are used by the firm's peers to identify profitable investment opportunities, accounting misstatements by the firm can send a misleading signal to its peers about available investment opportunities, distorting peers' investment decisions. Specifically, Gigler (1994) and Kumar and Langberg (2010) develop theoretical models showing that favorable reports from one firm lead to increased investments by peer firms. Durnev and Mangen (2009) find that peers of restating firms revise their investments in response to the restatements. Beatty et al. (2013) and Li (2016) find that financial misreporting misleads peer firms and in turn distorts peer firms' investments. In the presence of this negative externality, earnings management becomes more costly for common institutions because one portfolio firm's misstatement not only reduces its own firm value but also reduces the value of co-owned peer firms whose investment strategies are distorted by the misstatement. Thus, by internalizing this negative externality, CIO gives institutions stronger incentives to monitor and discipline portfolio firms' financial reporting, resulting in less earnings management. Therefore, based on the above discussions, we state our hypothesis in the alternative form as follows:

HYPOTHESIS 1. *Higher common institutional ownership is associated with less earnings management, ceteris paribus.*

However, there are also reasons to believe that our hypothesized relation may not hold, or that CIO may even increase earnings management. Large holdings provide institutions access to firm management and boards, along with their private information. CIO can enhance institutions' information advantage in two ways. First, it facilitates information spillovers across co-owned peer firms. That is, private information common institutional investors obtain from one portfolio firm also gives them an information advantage in co-owned peer firms. Second, CIO enhances institutions' ability to process public information. By analyzing multiple co-owned peer firms simultaneously, common institutional investors are better able to extract useful information from noise, which may be more difficult and costly for other shareholders. The increased private information can substitute for common institutional investors' demand for high quality financial reporting. Further, given the potential incentives to extract private benefits from other stakeholders, common institutional investors may even prefer greater managerial discretion in financial reporting to protect their information advantage (e.g., Bushee et al. 2003; Dou, Hope, Thomas, and Zou 2016).

3. Research design

Measures of CIO and earnings management

Our main measure of CIO in a firm is the *CROSSDUM* measure introduced by He and Huang (2017). Because CIO arises when an institution concurrently blockholds more than one firm in the same industry in a particular period, *CROSSDUM* is an indicator variable equal to one for a firm-year if an institution has a blockholding (> 5% of shares outstanding) in that firm and at least one of its industry peers simultaneously in any of the four quarters in the year, and zero otherwise. We use

4-digit SIC to identify peer firms. We also examine an alternative measure of CIO based on the number of unique institutions that cross-hold the firm and find similar results (see "Alternative measures of CIO and earnings management" in section 5).

To gauge earnings management, we focus on two measures of income-increasing earnings management.[7] The first measure is discretionary accruals (*DACC*) based on the performance-adjusted modified Jones model (Kothari et al. 2005). Specifically, *DACC* is the regression residual obtained from estimating the following model for each industry (4-digit SIC) and year:

$$AC_{jt} = \alpha + \beta_0\left(1/AVGAT_{jt}\right) + \beta_1 \Delta CASHREV_{jt} + \beta_2 PPE_{jt} + \beta_3 ROA_{jt-1} + \beta_4 ROA_{jt} + \varepsilon_{jt}, \quad (1)$$

where AC_{jt} is total accruals for firm j in year t, defined as net income from continuing operations minus operating cash flow scaled by average total assets; $AVGAT_{jt}$ is average total assets for firm j based on assets at the beginning and end of year t; $\Delta CASHREV_{jt}$ is the change in cash sales (i.e., change in revenue minus change in accounts receivable) for firm j at the end of year t scaled by average total assets; PPE_{jt} is net property, plant, and equipment for firm j at the end of year t scaled by average total assets; and $ROA_{jt-1(jt)}$ is net income for firm j in year $t-1$ *(t)* scaled by total assets at the end of year $t-1$ *(t)*.

Our second measure of earnings management is the propensity to meet or just beat analysts' consensus EPS forecast by up to one cent. Specifically, *BEAT* is an indicator variable equal to one if actual EPS is equal to or greater than I/B/E/S analysts' consensus EPS forecast by up to one cent. *BEAT* is equal to zero otherwise. The forecast is measured immediately before firm j's earnings announcement for year t.

Regression model

To test Hypothesis 1, we estimate the following regression model to examine the relation between CIO and earnings management:

$$EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + CONTROLS + \varepsilon_{jt}, \quad (2)$$

where EM_{jt} is either: $DACC_{jt}$, firm j's performance-adjusted discretionary accruals in year t; or $BEAT_{jt}$, firm j's propensity to meet or beat analysts' consensus EPS forecast by up to one cent in year t. $CROSSDUM_{jt-1}$ is our measure of CIO at the end of year $t-1$. The key coefficient of interest, α_1, captures the relation between CIO and earnings management. A negative α_1 would indicate that CIO is related to less earnings management (i.e., lower discretionary accruals or a lower propensity to beat analysts' forecasts by a small margin), providing support for Hypothesis 1.

We include three sets of controls. First, we control for a variety of firm characteristics that are likely related to earnings management. $LogTA_{jt}$ is the natural logarithm of total assets and proxies for firm size. We include return on assets (ROA_{jt}) for the *BEAT* regression (note that *DACC* is already adjusted for *ROA*) and a measure of how frequently a firm experiences losses ($LOSS_{jt}$) to account for the effect of high or poor performance on incentives to manage earnings to sustain or increase reported performance. We include market-to-book ratio (MB_{jt}) and sales growth ($SALEGR_{jt}$) to account for the incentives of high or low growth firms to manage earnings to sustain or increase reported growth. We control for return volatility ($STDRET_{jt}$) to account for differences in earnings management across firms operating in more or less volatile environments, and the debt to asset ratio ($DEBT_{jt}$) to account for any effect of debt on earnings management.

7. In untabulated tests, we find no significant relation between common institutional ownership and unsigned discretionary accruals, a proxy for both income-increasing and income-decreasing earnings management. This finding, combined with our results on income-increasing earnings management, is consistent with monitoring by common institutional owners having a stronger effect in mitigating income-increasing earnings management.

We also control for the prior year's level of earnings management ($DACC_{jt-1}$ or $BEAT_{jt-1}$) to account for the potential mean reversion of earnings management.[8]

Second, to ensure that our CIO measure ($CROSSDUM_{jt-1}$) does not pick up other effects of institutional ownership, we control for total institutional ownership (IO_{jt-1}), an indicator for blockholdings (more than 5% ownership) in a firm in any of the four quarters of the year ($BLOCK_{jt-1}$), and the natural logarithm of the average number of firms owned by each of firm j's institutional investors ($LogNUMFIRMS_{jt-1}$).[9] Further, to ensure that our results are not confounded by common institutional investors' industry expertise, we control for common institutional investors' industry holdings ($INDHOLD_{jt-1}$).[10] The Appendix presents detailed variable definitions.

Third, we include firm fixed effects to control for any time-invariant observable or unobservable firm characteristics. To control for time trends in earnings management, we also include year fixed effects.[11]

4. Sample

We obtain institutional ownership data based on institutional investors' 13-F filings with the US SEC from Thomson Reuters. We combine firm-year institutional ownership data from the Thomson Reuters database with firm-year data from the merged Compustat/CRSP and I/B/E/S databases. After excluding financial and utility firms, and deleting firms with missing financial, price, institutional ownership or analyst forecast data, our sample consists of 60,148 (43,667) firm-years from 1989 to 2015 for the *DACC* (*BEAT*) sample.[12]

Table 1 provides summary statistics for our sample. Panel A presents descriptive statistics and panel B presents correlations. All continuous variables are winsorized at the 1 and 99% levels to mitigate the influence of outliers. The mean value of *DACC* is −0.003, close to 0 as expected of the residual of the performance-adjusted discretionary accruals regression. The mean value of *BEAT* is 0.116, suggesting that around 12% of firms meet or beat consensus analyst annual earnings forecast by one cent or less. The mean value of *CROSSDUM* is 0.572, indicating 57.2% of our sample firm-years are cross-held by at least one blockholding institutional investor. This percentage is higher than the 41.5% reported in He and Huang (2017), possibly because our sample firms are from a more recent time period. The average firm-year in our sample has a return on assets (*ROA*) of −0.031, a market-to-book ratio (*MB*) of 3.216, sales growth (*SALEGR*) of 0.179, return volatility (*STDRET*) of 0.040, and a long-term debt to assets ratio (*DEBT*) of 0.148. On average, institutions own 40% of common shares of the sample firm-years (*IO*), and have a blockholding (*BLOCK*) in 76.2% of the sample firm-years.

Panel B presents univariate evidence that *CROSSDUM* is negatively correlated with both *DACC* and *BEAT*, as predicted in Hypothesis 1. *CROSSDUM* is also significantly correlated with virtually all other control variables. For example, *CROSSDUM* is positively related with size and performance (*LogTA* and *ROA*) and negatively correlated with return volatility (*STDRET*). This highlights the importance of controlling for these variables in our multivariate regressions in section 5.

8. Results are similar if we include one- and two-year, or one-, two-, and three-year, lags of earnings management measures or do not include any lagged earnings management measure (untabulated).
9. Results are also robust to controlling for ownership by the firm's top five institutional investors (untabulated).
10. In untabulated analysis, we also examine the robustness of our results to controlling for year $t-1$ ownership by insiders and percentage of independent directors. Data on these two characteristics is available only for years 1996–2015 from ExecuComp and RiskMetrics for a limited number of firms. Nevertheless, the results for our variable of interest, *CROSSDUM*, are robust to including these two controls in equation (2).
11. Our results are robust to excluding the financial crisis period (2007–2009) and do not differ significantly between pre- and post-SOX periods.
12. The sample begins in 1989 because it is the first year with comprehensive cash flow data necessary to compute *DACC*.

TABLE 1
Summary statistics

Panel A: Descriptive statistics

Variable	Mean	SD	P25	P50	P75
$DACC_{jt}$	−0.003	0.080	−0.042	−0.002	0.037
$BEAT_{jt}$	0.116	0.321	0.000	0.000	0.000
$CROSSDUM_{jt-1}$	0.572	0.495	0.000	1.000	1.000
$LogTA_{jt}$	5.318	2.066	3.791	5.168	6.677
ROA_{jt}	−0.031	0.214	−0.045	0.031	0.074
$LOSS_{jt}$	0.324	0.328	0.000	0.200	0.500
MB_{jt}	3.216	3.740	1.246	2.088	3.633
$SALEGR_{jt}$	0.179	0.597	−0.025	0.084	0.236
$STDRET_{jt}$	0.040	0.023	0.024	0.034	0.049
$DEBT_{jt}$	0.148	0.167	0.001	0.090	0.250
IO_{jt-1}	0.400	0.288	0.133	0.373	0.646
$BLOCK_{jt-1}$	0.762	0.426	1.000	1.000	1.000
$LogNUMFIRMS_{jt-1}$	7.478	0.491	7.232	7.537	7.785
$INDHOLD_{jt-1}$	0.013	0.035	0.000	0.001	0.009
$DACC_{jt-1}$	−0.001	0.081	−0.042	−0.001	0.039
$BEAT_{jt-1}$	0.119	0.324	0.000	0.000	0.000

(The table is continued on the next page.)

TABLE 1 (continued)

Panel B: Correlation table

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) $DACC_{jt}$	1.000	**0.011**	**−0.039**	**−0.042**	**0.021**	**0.076**	**0.014**	**0.043**	**0.011**	−0.006	**−0.053**	**−0.027**	**0.035**	−0.004	**0.164**	−0.005
(2) $BEAT_{jt}$	0.008	1.000	**−0.010**	**0.030**	**0.064**	**−0.021**	**0.059**	0.004	**−0.039**	**−0.036**	**0.028**	−0.008	**−0.046**	−0.007	**−0.013**	**0.095**
(3) $CROSSDUM_{jt-1}$	**−0.040**	**−0.010**	1.000	**0.314**	**0.089**	**−0.099**	**−0.039**	**−0.043**	**−0.206**	**0.031**	**0.515**	**0.646**	**−0.108**	**0.329**	**−0.041**	0.004
(4) $LogTA_{jt}$	**−0.050**	**0.027**	**0.342**	1.000	**0.348**	**−0.405**	**−0.018**	**−0.048**	**−0.551**	**0.302**	**0.662**	**0.325**	**−0.613**	**0.084**	**−0.051**	**0.019**
(5) ROA_{jt}	**−0.011**	**0.080**	**0.060**	**0.297**	1.000	**−0.535**	**−0.109**	**−0.026**	**−0.435**	**0.101**	**0.228**	**0.114**	**−0.217**	**−0.088**	**−0.103**	**0.040**
(6) $LOSS_{jt}$	**0.068**	**−0.030**	**−0.084**	**−0.407**	**−0.509**	1.000	**0.217**	**0.166**	**0.429**	**−0.100**	**−0.271**	**−0.146**	**0.281**	**0.150**	**0.054**	**−0.024**
(7) MB_{jt}	**−0.009**	**0.083**	**−0.013**	**0.087**	**0.200**	**0.058**	1.000	**0.177**	**0.035**	0.004	**0.012**	**−0.064**	**−0.105**	**0.109**	**−0.021**	**0.043**
(8) $SALEGR_{jt}$	**0.051**	**0.043**	0.003	**0.045**	**0.258**	**0.010**	**0.259**	1.000	**0.038**	**−0.023**	**−0.060**	**−0.044**	0.007	**0.033**	**0.044**	−0.003
(9) $STDRET_{jt}$	**0.036**	**−0.030**	**−0.182**	**−0.606**	**−0.441**	**0.474**	**−0.084**	**−0.051**	1.000	**−0.103**	**−0.445**	**−0.260**	**0.389**	**−0.013**	**0.041**	**−0.032**
(10) $DEBT_{jt}$	**−0.008**	**−0.035**	**0.014**	**0.343**	**−0.010**	**−0.128**	**−0.094**	**−0.013**	**−0.167**	1.000	**0.087**	**0.054**	**−0.097**	**−0.047**	**0.013**	**−0.042**
(11) IO_{jt-1}	**−0.060**	**0.029**	**0.521**	**0.692**	**0.227**	**−0.277**	**0.122**	**0.017**	**−0.474**	**0.097**	1.000	**0.539**	**−0.446**	**0.196**	**−0.051**	**0.028**
(12) $BLOCK_{jt-1}$	**−0.030**	−0.008	**0.646**	**0.356**	**0.083**	**−0.137**	**−0.031**	−0.002	**−0.239**	**0.045**	**0.566**	1.000	**−0.179**	**0.212**	**−0.025**	−0.007
(13) $LogNUMFIRMS_{jt-1}$	**0.053**	**−0.043**	**−0.181**	**−0.643**	**−0.291**	**0.336**	**−0.255**	**−0.091**	**0.477**	**−0.162**	**−0.536**	**−0.255**	1.000	**−0.045**	**0.032**	**−0.032**
(14) $INDHOLD_{jt-1}$	**−0.038**	−0.005	**0.893**	**0.320**	**0.019**	−0.006	**0.060**	**0.019**	**−0.141**	**−0.030**	**0.498**	**0.577**	**−0.193**	1.000	−0.002	−0.006
(15) $DACC_{jt-1}$	**0.183**	**−0.017**	**−0.042**	**−0.061**	**−0.121**	**0.053**	**−0.038**	**0.046**	**0.061**	**0.014**	**−0.058**	**−0.027**	**0.052**	**−0.037**	1.000	0.008
(16) $BEAT_{jt-1}$	**−0.010**	**0.095**	0.004	**0.016**	**0.048**	**−0.031**	**0.076**	**0.024**	**−0.027**	**−0.042**	**0.029**	−0.007	**−0.029**	0.000	0.007	1.000

Notes: Panel A reports descriptive statistics for the main and control variables in equation (2) over the years 1989–2015 (t = 1989 to 2015). Panel B reports Pearson (Spearman) correlations above (below) the diagonal for the main and control variables in equation (2) over the years 1989–2015 (t = 1989 to 2015). Correlations in bold are significant at the 0.05 level (two-tailed).The statistics are based on 60,148 firm-years for all variables except for the two *BEAT* variables, which are based on 43,667 firm-years. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. The Appendix contains detailed variable definitions.

5. Results

Test of the relation between CIO and earnings management

Table 2 reports the main results on the average relation between CIO (*CROSSDUM*) and earnings management (*DACC* or *BEAT*) in the full sample. Column (1) and column (2) report the

TABLE 2
The relation between common institutional ownership and earnings management

$$EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + (\alpha_3 ROA_{jt}) + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} EM_{jt-1} + \varepsilon$$

$EM =$	$DACC_{jt}$ (1) Coefficient	$BEAT_{jt}$ (2) Coefficient
Variable	(SE)	(SE)
$CROSSDUM_{jt-1}$	−0.325***	−0.015***
	(0.108)	(0.005)
$LogTA_{jt}$	0.067	−0.003
	(0.105)	(0.004)
ROA_{jt}		0.115***
		(0.013)
$LOSS_{jt}$	2.071***	0.035**
	(0.341)	(0.016)
MB_{jt}	0.066***	0.003***
	(0.017)	(0.001)
$SALEGR_{jt}$	0.264***	−0.003
	(0.095)	(0.003)
$STDRET_{jt}$	−29.570***	−0.710***
	(3.384)	(0.162)
$DEBT_{jt}$	−2.399***	−0.005
	(0.406)	(0.019)
IO_{jt-1}	−0.730***	−0.018
	(0.225)	(0.011)
$BLOCK_{jt-1}$	0.018	−0.001
	(0.147)	(0.007)
$LogNUMFIRMS_{jt-1}$	−0.272	−0.045***
	(0.185)	(0.010)
$INDHOLD_{jt-1}$	2.119	0.043
	(1.870)	(0.064)
EM_{jt-1}	−0.027***	−0.062***
	(0.006)	(0.006)
Fixed effects	Firm, Year	Firm, Year
N	60,148	43,667
Adj. R^2	0.007	0.012

Notes: Columns (1) and (2) report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC* and *BEAT*, respectively. *DACC* is multiplied by 100 for clearer exposition. *ROA* (α_3) is not included in the *DACC* regression because we use performance-adjusted *DACC*, adjusted for *ROA*. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

OLS estimation of equation (2) using *DACC* and *BEAT*, respectively.[13] In all regressions, we multiply *DACC* by 100 for exposition, and cluster standard errors by firm.

We find that the coefficient on *CROSSDUM* is negative and significant in both columns, indicating that higher CIO is associated with lower discretionary accruals and a lower likelihood of meeting or just beating analyst forecasts. This relation is not only statistically significant but also economically meaningful. Specifically, our results in column (1) indicate that the presence of CIO is associated with a 0.003 decrease in discretionary accruals, which is significant given that the mean of *DACC* is −0.003 in our sample.[14] Our results in column (2) indicate that the presence of CIO is on average associated with a 1.5 percentage point decrease in the likelihood of meeting or just beating analysts' forecasts, which is equivalent to a 13% decrease from the unconditional base rate of *BEAT* in our sample (11.6%). Overall, these results indicate that CIO is associated with less earnings management, providing support for Hypothesis 1.[15]

Turning to the control variables, we find a positive relation between earnings management and market-to-book ratios and frequent losses, and a negative relation for return volatility and lagged earnings management. These results are largely consistent with prior research (e.g., Reichelt and Wang 2010; Ayers et al. 2011).

Tests to address endogeneity of CIO

We conduct two tests to alleviate the endogeneity concern about CIO and to provide more evidence on the causal relation between CIO and earnings management. First, we conduct a falsification test. If common institutions self-select into firms with lower earnings management, we would expect that earnings management *prior to* CIO should be negatively associated with CIO. To rule this out, we regress $CROSSDUM_{jt}$ on lagged earnings management ($DACC_{jt-1}$ or $BEAT_{jt-1}$) and controls within a subsample of firms with no CIO in the prior two years (i.e., both $CROSSDUM_{jt-1}$ and $CROSSDUM_{jt-2}$ equal zero). As shown in panel A of Table 3, we find no significant relation between lagged earnings management and current CIO, providing no evidence that common institutional investors self-select into low earnings management firms.

Second, we follow prior research (e.g., He and Huang 2017) and analyze a plausibly exogenous shock to CIO stemming from financial institution mergers. These institution-level mergers are likely exogenous to the characteristics of the institutions' portfolio firms, including the earnings management attributes of the portfolio firms. Further, upon merger, the acquiring financial institution generally takes over the existing portfolio of the target institution and maintains these holdings for an extended period of time. Thus, by acquiring same-industry blockholdings of the target institution, the acquiring financial institution likely becomes a common institutional blockholder of a number of additional firms, resulting in a natural increase in CIO. If CIO disciplines earnings management, we expect a decrease in earnings management following the mergers for treatment firms (i.e., firms for which the mergers are likely to increase CIO) relative to control firms (i.e., firms for which the mergers are unlikely to change CIO).

We identify merging institutions based on the list provided in He and Huang (2017). As discussed in He and Huang (2017), to be included in their list the merger must be between financial institutions (SIC 6000 to 6999) in the Thomson Reuters institutional ownership database, the

13. Because our regression includes a large number of fixed effects, we use OLS to estimate the *BEAT* equation to avoid the incidental parameter problem (Greene 2004). However, our inferences remain unchanged if we estimate a probit regression for *BEAT* with industry fixed effects (untabulated).

14. The *DACC* coefficient in Table 2 is multiplied by 100 for exposition. The effect is −0.325 / 100 = −0.003.

15. In untabulated tests, we examine how the results vary between long-term and short-term (i.e., transient) institutions (e.g., Bushee 1998; Dou, Hope, Thomas, and Zou 2016). Our results hold for the subsample of long-term, but not short-term, common owners, consistent with the stronger monitoring role of long-term institutions documented in prior research. In another test, we find that the effect of CIO on earnings management is significantly negative for firms with more persistent CIO (i.e., two or more consecutive years). We find no significant effect in firms with less persistent CIO.

TABLE 3
Tests to address endogeneity of common ownership

Panel A: Falsification test of common institutional owners self-selecting into firms with low earnings management

$DV =$	$CROSSDUM_{jt}$ (1) Coefficient (SE)	$CROSSDUM_{jt}$ (2) Coefficient (SE)
Variable		
$DACC_{jt-1}$	> −0.001 (< 0.001)	
$BEAT_{jt-1}$		0.004 (0.012)
Controls	Included	Included
Fixed effects	Firm, Year	Firm, Year
N	21,734	11,829
Adj. R^2	0.300	0.312

Panel B: Test based on the exogenous shock to common ownership using financial institution mergers

$EM =$	$DACC_{jt}$ (1) Coefficient (SE)	$BEAT_{jt}$ (2) Coefficient (SE)
Variable		
$TREAT \times POST_{jt}$	−1.921**	−0.080*
	(0.815)	(0.043)
$POST_t$	0.576	0.012
	(0.441)	(0.021)
$LogTA_{jt}$	0.790	−0.018
	(0.989)	(0.040)
ROA_{jt}		0.182**
		(0.087)
$LOSS_{jt}$	8.644**	0.141
	(3.955)	(0.165)
MB_{jt}	0.093	0.007
	(0.147)	(0.005)
$SALEGR_{jt}$	1.207	−0.035
	(0.948)	(0.029)
$STDRET_{jt}$	−34.257*	−1.269
	(19.547)	(0.800)
$DEBT_{jt}$	−3.283	−0.085
	(3.095)	(0.109)
IO_{jt-1}	−1.300	−0.016
	(0.856)	(0.039)
$BLOCK_{jt-1}$	−3.262***	0.013
	(1.234)	(0.067)
$LogNUMFIRMS_{jt-1}$	3.521**	−0.084
	(1.712)	(0.077)
$INDHOLD_{jt-1}$	−11.350	−0.461
	(13.267)	(0.383)
EM_{jt-1}	−0.097**	0.094**
	(0.045)	(0.037)

(The table is continued on the next page.)

TABLE 3 (continued)

Panel B: Test based on the exogenous shock to common ownership using financial institution mergers

EM =	$DACC_{jt}$	$BEAT_{jt}$
	(1)	(2)
	Coefficient	Coefficient
Variable	(SE)	(SE)
Fixed effects	Firm-Merger	Firm-Merger
N	1,892	1,628
Adj. R^2	0.046	0.030

Notes: In panel A, we regress current common ownership (*CROSSDUM*) on prior period earnings management (*DACC* and *BEAT* in columns (1) and (2), respectively) over the period t = 1989–2015. We retain firm-years with no common institutional ownership in the prior two years (i.e., $CROSSDUM_{jt-1} = 0$ and $CROSSDUM_{jt-2} = 0$). *DACC* is multiplied by 100 for clearer exposition. Equation (2) control variables are included, where the institutional ownership controls are at time t and the other controls are at time $t - 1$, but not tabulated for brevity. Panel B reports the difference-in-difference test of the effect of financial institution mergers on earnings management. The sample covers one year before and one year after the merger of 22 institutions over years 1992 to 2008. Columns (1) and (2) report the results of estimating OLS regression on equation (3), for *DACC* and *BEAT*, respectively. *DACC* is multiplied by 100 for clearer exposition. *TREAT* is absorbed by firm-merger fixed effects and not presented in the table. *POST* is an indicator variable equal to one for the year after the financial institution merger, and zero for the year before the merger. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm-merger level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

merger must be completed within one year of the announcement date, and the target institution must stop filing ownership reports within one year of the completion of the deal. Following He and Huang (2017), our treatment firms include those blockheld by *only one* of the merging institutions in the quarter prior to the merger announcement, with the other merging institution blockholding at least one industry rival in the same quarter prior to the merger. Thus, by construction, treatment firms cannot have CIO prior to the merger through ownership by both the acquirer and target. However, treatment firms can have CIO prior to the merger due to holdings by the acquirer *or* target *and* some other institution not involved in the merger. Our control firms include those blockheld by the merging institution that blockholds the treatment firms, with the other party to the merger *not* blockholding any same-industry peer of the firm. Thus, these control firms are unlikely to experience a change in CIO as a result of the merger. After excluding mergers before the start of our main sample period and requiring data on earnings management and control variables for treatment and control firms over three years centered on the merger year, our final sample for this test consists of 1,892 (1,628) observations for the *DACC* (*BEAT*) regression from 22 financial institution mergers over years 1992–2008.

We conduct a difference-in-differences test of changes in earnings management for treatment versus control firms using the following regression:

$$EM_{jt} = \alpha_0 + \alpha_1 TREAT_j + \alpha_2 POST_t + \alpha_3 TREAT_j \times POST_t + CONTROLS + \varepsilon_{jt}, \quad (3)$$

where EM_{jt} refers to $DACC_{jt}$ or $BEAT_{jt}$. *TREAT* is an indicator set equal to one for treatment firms and zero for control firms. *POST* is an indicator set equal to one for the year after the merger year, and zero for the year before the merger year (the merger year is omitted). In addition to the

controls in equation (2), this model includes fixed effects for firm-institution merger pairs, following He and Huang (2017).[16,17]

Table 3, panel B, reports the results. Column (1) (column (2)) reports an OLS estimation where the proxy for earnings management is *DACC* (*BEAT*). Note that the *TREAT* variable is absorbed by the firm-institution merger fixed effects. Consistent with our main results, we find that *TREAT*×*POST* is significantly negative in both columns, indicating a decrease in earnings management after the mergers for treatment firms relative to control firms. Similar to He and Huang (2017), we find effects of larger magnitude in the mergers sample than in the full sample. As noted by He and Huang (2017), this may be due to endogeneity in the main sample related to cross-holders diversifying across firms with inherently different properties, including earnings management attributes, or due to differences in the firms or industries included in the mergers sample. The results from analyzing the quasi-natural experiment based on financial institution mergers provide evidence that CIO has a causal effect in mitigating earnings management.

Cross-sectional test of the economy of scale mechanism

We examine the economy of scale mechanism by exploring the cross-sectional variation in the effect of CIO in reducing information costs of monitoring. If CIO creates economies of scale (i.e., spreading the fixed costs of monitoring), then this effect should be stronger when institutions blockhold a relatively larger number of same-industry firms (e.g., Kang et al. 2018). Thus, we expect that the negative relation between CIO and earnings management is stronger among firms whose common institutional investors blockhold more peer firms. To test this prediction, we follow He and Huang (2017) and calculate *AvgNum*, the average number of firm *j*'s industry peers blockheld by firm *j*'s common institutional investors in the year.[18] At the beginning of each year, we put firms with CIO (*CROSSDUM* = 1) into *AvgNum* terciles and retain the lowest ("low-*AvgNum*") and highest ("high-*AvgNum*") terciles or groups, and then compare firms in the low- and high-*AvgNum* groups to firms with no CIO (*CROSSDUM* = 0) separately. That is, in the low-*AvgNum* (high-*AvgNum*) subsample, the coefficient on *CROSSDUM* measures the effect of CIO on earnings management in commonly owned low-*AvgNum* (high-*AvgNum*) firm-years relative to firm-years with no CIO.

Results are reported in Table 4. Controls are included but untabulated for brevity. Column (1) and column (3) report the results for the low-*AvgNum* group for the *DACC* and *BEAT* measures, respectively. The coefficient on *CROSSDUM* is negative and significant at the 5% level for both the *DACC* (column 1) and *BEAT* (column 3) measures. Column (2) and column (4) report the results for the high-*AvgNum* group for the *DACC* and *BEAT* measures, respectively. The coefficient on *CROSSDUM* is negative and significant at the 1% level for both the *DACC* (column 2) and *BEAT* (column 4) measures. Further, the coefficient on *CROSSDUM* in the high-*AvgNum* group is significantly more negative than that in the low-*AvgNum* group for both *DACC* (two-tailed $p = 0.051$) and *BEAT* (two-tailed $p = 0.039$). These results show that the negative relation

16. Consistent with He and Huang (2017), we find a significant increase in CIO for treatment firms relative to control firms after the merger. Specifically, following He and Huang (2017), we regress *CROSSDUM* on *TREAT*, *POST*, *TREAT*×*POST*, controls, and fixed effects from equation (3) (except lagged earnings management). *CROSSDUM* is measured at the end of the quarter before the merger announcement date (for the pre-event period) or at the end of quarter after the deal closing date (for the postevent period). We find that the coefficient on *TREAT*×*POST* is 0.099 and significant (*t*-stat = 2.40), representing a 47% increase in *CROSSDUM* for treatment firms relative to control firms.

17. We conduct two tests of whether the parallel trends assumption holds in our setting. First, we compare the mean change in our earnings management measures between treatment and control firms for each year in the six-year premerger window and find no significant difference between the two groups of firms in any year. Second, we conduct a placebo test using year $t - 3$ as the "pseudo-event" year, and find no evidence that treatment firms exhibit a significant change in earnings management relative to control firms around this pseudo-event year.

18. Results are similar if we calculate *AvgNum* after excluding firm-years with material misstatements (untabulated), mitigating the concern that the economy of scale results may be attributable to the externality mechanism.

TABLE 4
Cross-sectional test of the relation between common institutional ownership and earnings management based on the number of same-industry blockholdings by common institutional owners

$$EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + (\alpha_3 ROA_{jt}) + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} EM_{jt-1} + \varepsilon$$

EM =	$DACC_{jt}$		$BEAT_{jt}$	
Number of industry peers held cross section	Low-*AvgNum* (1)	High-*AvgNum* (2)	Low-*AvgNum* (3)	High-*AvgNum* (4)
Variable	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
$CROSSDUM_{jt-1}$	−0.242**	−0.592***	−0.013**	−0.031***
	(0.113)	(0.173)	(0.006)	(0.009)
Controls	Included	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Difference in *CROSSDUM* (High minus Low)	−0.350*		−0.018**	
p-value (two-tailed)	0.051		0.039	
N	74,783		49,202	
Adj. R^2	0.009		0.013	

Notes: Columns (1) and (3) report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC* and *BEAT*, respectively, for "low-*AvgNum*" industries. Columns (2) and (4) report the same information for "high-*AvgNum*" industries. More specifically, following He and Huang (2017), we compute the average number of rivals blockheld by common owners, *AvgNum*, and then group firms in the highest tercile of $AvgNum_{jt-1}$ into the "high-*AvgNum*" group and firms in the lowest tercile of $AvgNum_{jt-1}$ into the "low-*AvgNum*" group. We then compare firms in the in the low- and high-*AvgNum* groups to firms with no common institutional owners (*CROSSDUM* = 0) separately. That is, in the low-*AvgNum* (high-*AvgNum*) subsample, the coefficient on *CROSSDUM* measures the effect of CIO on earnings management in commonly owned low-*AvgNum* (high-*AvgNum*) firm-years relative to firm-years with no CIO. *DACC* is multiplied by 100 for clearer exposition. Equation (2) control variables are included but not tabulated for brevity. *ROA* (α_3) is not included in the *DACC* regression because we use performance-adjusted *DACC*, adjusted for *ROA*. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

between CIO and earnings management is stronger for firms where CIO leads to a greater reduction in institutions' information costs of monitoring. This finding provides evidence consistent with CIO reducing earnings management through the economy of scale mechanism.

Cross-sectional test of the externality mechanism

We examine the externality mechanism by exploring cross-sectional variation in the negative externality of earnings management on peer firms' investments. If CIO mitigates earnings management through the externality mechanism, then this mitigating effect should be stronger among firms whose earnings management is likely to generate a greater externality on peer firms' investments. The theoretical work of Kumar and Langberg (2010) suggests that misreporting by one firm generates greater investment distortion by peer firms when the cost of capital is lower, managers' private

benefits of control are higher, or when investors are more optimistic about growth potential. Under these conditions the misreporting will cause peer firms to have more overly optimistic expectations. Consistent with this prediction, Beatty et al. (2013) find that the negative externality of misstatements in distorting peer firms' investments is greater in industries with higher investor sentiment, lower cost of capital, and higher private benefits of control. Thus, to the extent that CIO internalizes this negative externality of earnings management on peer firms' investments, we expect the negative relation between CIO and earnings management to be more pronounced in these industries.

Following Beatty et al. (2013), for each industry (4-digit SIC)-year, we measure (i) investor sentiment (*SENTIMENT*) using the first principal component of the total number of IPOs, the average first-day returns of IPOs, stock turnover, and the difference between the average market to book ratio between dividend and nondividend paying firms; (ii) cost of capital using the median earnings-to-price ratio (*MEDIANEP*); and (iii) managers' private benefits of control using the number of merger and acquisitions (*M&A*). We then rank all industries in our sample based on *SENTIMENT*, negative *MEDIANEP*, and *M&A* separately, and then take the average of the three ranks to capture the overall effect of the three measures (*Factor*). We then put the firms in the top (bottom) tercile of the average rank into the "high-*Factor*" ("low-*Factor*") group.

Table 5, panel A, reports the results of estimating the relation between CIO and earnings management for the low-*Factor* group (columns (1) and (3)) and the high-*Factor* group (columns (2) and (4)) separately. Controls are included but untabulated for brevity. Using the *DACC* measure of earnings management, we find that the coefficient on *CROSSDUM* is negative but insignificant for the low-*Factor* group, but significantly negative for the high-*Factor* group (−0.482, two-tailed $p < 0.05$). Although the magnitude of the negative coefficient on *CROSSDUM* is larger for the high-*Factor* group, the difference in this coefficient between the high-*Factor* and low-*Factor* groups is not statistically significant at the 0.10 level (two-tailed $p = 0.174$). Using the *BEAT* measure of earnings management, we find that the coefficient on *CROSSDUM* is insignificant and similar for the both the high- and low-*Factor* groups.

In addition to the externality being greater in "high-*Factor*" firms, Beatty et al. (2013) argue that analysts help transmit distorted investment signals, and predict and find that the externality of misstatements in distorting peer firms' investments is greater when the misstating firm and its peer firms have higher unexpected overlap in analyst coverage. Thus, if CIO mitigates earnings management through the externality mechanism, we expect this mitigating effect to be stronger among firms with higher unexpected overlap in analyst coverage with peer firms.

We first follow Beatty et al.'s (2013) approach to estimate residual analyst coverage overlap by first removing the economic similarity between firms with overlapping analyst coverage. For each industry-year, we measure the raw overlap between each pair of firms in that industry as the logarithm of one plus the number of analysts covering the both firms, and then regress the raw overlap on the economic determinants of overlap including return co-movement (the *R*-square from regressing one firm's daily return on the other firm's daily returns) and the firm-pair average of firm size, market-to-book ratio, leverage, sales growth. We extract the regression residual as residual analyst overlap for each pair of firms (*Overlap*).

We then sort the firm-pairs with CIO into terciles based on residual analyst overlap, and put firms with CIO (*CROSSDUM* = 1) with at least one residual analyst overlap in the top tercile in the "high-*Overlap*" group and the rest in the "low-*Overlap*" group. We then compare firms in the low- and high-*Overlap* groups to firms with no CIO (*CROSSDUM* = 0) separately. That is, in the low-*Overlap* (high-*Overlap*) subsample, the coefficient on *CROSSDUM* measures the effect of CIO on earnings management in commonly owned low-*Overlap* (high-*Overlap*) firm-years relative to firm-years with no CIO.

Table 5, panel B, reports the results of estimating the relation between CIO and earnings management for the low-*Overlap* group (columns (1) and (3)) and the high-*Overlap* group (columns (2) and (4)) separately. For both the *DACC* and *BEAT* regressions, we find that the coefficient on *CROSSDUM* is insignificantly negative for the low-*Overlap* group, and significantly

TABLE 5
Cross-sectional test of the relation between common institutional ownership and earnings management based on the negative externality of misreporting

Panel A: Cross-sectional test based on the negative externality from high investor sentiment, low cost of capital, and high private benefits of control

$$EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + (\alpha_3 ROA_{jt}) + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} EM_{jt-1} + \varepsilon$$

EM =	$DACC_{jt}$		$BEAT_{jt}$	
Factor cross section =	Low-*Factor*	High-*Factor*	Low-*Factor*	High-*Factor*
	(1)	(2)	(3)	(4)
Variable	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
$CROSSDUM_{jt-1}$	−0.132	−0.482**	−0.007	−0.010
	(0.169)	(0.194)	(0.012)	(0.008)
Controls	Included	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Difference in *CROSSDUM* (High minus Low)	−0.350		−0.003	
p-value (two-tailed)	0.174		0.880	
N	44,855		32,631	
Adj. R^2	0.008		0.011	

Panel B: Cross-sectional test based on the negative externality from analyst overlap

$$EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + (\alpha_3 ROA_{jt}) + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} EM_{jt-1} + \varepsilon$$

EM =	$DACC_{jt}$		$BEAT_{jt}$	
Analyst overlap cross section =	Low-*Overlap*	High-*Overlap*	Low-*Overlap*	High-*Overlap*
	(1)	(2)	(3)	(4)
Variable	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
$CROSSDUM_{jt-1}$	−0.191	−0.412***	−0.006	−0.016***
	(0.125)	(0.115)	(0.007)	(0.006)
Controls	Included	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Difference in *CROSSDUM* (High minus Low)	−0.221		−0.010	
p-value (two-tailed)	0.101		0.159	
N	85,913		58,461	
Adj. R^2	0.009		0.012	

Notes: Panel A, columns (1) and (3), report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC* and *BEAT*, respectively, for "low-*Factor*" industries. Panel A, columns (2) and (4), report the same information for "high-*Factor*" industries. Specifically, we put the firms in the top tercile of *Factor* into the "high-*Factor*" group and the firms in the bottom tercile into the "low-*Factor*" group. Panel B, columns (1) and (3), report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC* and *BEAT*, respectively, for "low-*Overlap*" firms. Panel B, columns (2) and (4), report the same information for "high-*Overlap*" firms. Specifically, we retain firm-pairs

TABLE 5 (continued)

with residual analyst overlap (*Overlap*) that also have common institutional owners. These firm-pairs are sorted into terciles based on *Overlap*. Firms with common institutional investors (*CROSSDUM* = 1) with at least one residual analyst overlap in the top tercile are classified as the "high-*Overlap*" group. Firms with common institutional investors (*CROSSDUM* = 1) that do not have at least one residual analyst overlap in the top tercile are classified as the "low-*Overlap*" group. We then compare firms in the lowest and highest groups to firms with no common institutional owners (*CROSSDUM* = 0) separately. That is, in the low-*Overlap* (high-*Overlap*) subsample, the coefficient on *CROSSDUM* measures the effect of CIO on earnings management in commonly owned low-*Overlap* (high-*Overlap*) firm-years relative to firm-years with no CIO. *DACC* is multiplied by 100 for clearer exposition. Equation (2) control variables are included but not tabulated for brevity. *ROA* (α_3) is not included in the *DACC* regression because we use performance-adjusted *DACC*, adjusted for *ROA*. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Variable definitions are in the Appendix.

negative for the high-*Overlap* group. However, the difference between high- and low-*Overlap* groups in the magnitude of the negative coefficient is only marginally significant for the *DACC* measure (two-tailed $p = 0.101$), and insignificant (two-tailed $p = 0.159$) for the *BEAT* measure.

Overall, the results in Table 5 provide limited support for the externality mechanism. Although the negative relation between CIO and earnings management is generally larger in magnitude among (i) industries with higher investor sentiment, lower cost of capital, and higher private benefits of control and (ii) firms with higher unexpected overlap in analyst coverage, the difference between these industries or firms and other industries or firms is not statistically significant, providing inconclusive evidence for our cross-sectional externality predictions.

Further tests of the externality mechanism using material misstatements

As discussed in the introduction, one possible reason for the limited support for the externality mechanism in Table 5 is the lack of power of our tests using the general measures of earnings management based on accruals and meet/beat. In this subsection, we conduct a more powerful test of the externality mechanism using more extreme types of earnings management—that is, severe misstatements that violate GAAP, which are more likely to generate a significant externality on peer firms' investments. Thus, severe misstatements are likely to provide a more powerful setting for detecting the externality mechanism. We identify severe financial misstatements using the data from Call et al. (2018), which include the universe of SEC and DOJ enforcement actions that we were able to match to Compustat covering misstated periods (i.e., violation periods) from 1989 to 2010.[19] We identify misstating firms as either firms against whom fraud charges were filed or firms that misled their auditors. We set the indicator variable, *MISSTATE*, equal to one for the firm-years that were misstated (i.e., violation periods), and zero otherwise.

Table 6, column (1), reports the results of estimating equation (2) using *MISSTATE* as the dependent variable for our full sample, and columns (2) through (5) report the cross-sectional tests of the externality mechanism (described in the previous subsection). We find no significant relation between *CROSSDUM* and *MISSTATE* on average (column (1)). However, when we examine the subsample of industries where misstatements likely generate a greater negative externality on peer firms' investments, we observe a significantly negative relation between *CROSSDUM* and *MISSTATE*. More specifically, as shown in column (3), the coefficient on

19. The dataset is publicly available at https://research.chicagobooth.edu/-/media/research/arc/docs/journal/online-supplements/csmw-datasheet-and-code.zip?la=en&hash=3037EBF733967B4A9C76A1EBFC7E9B751A2276A1. We thank the authors for making the data available. We also thank Antonis Kartapanis for sharing firm ID information.

TABLE 6
The relation between common institutional ownership and misstatements

$$MISSTATE_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + \alpha_3 ROA_{jt} + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} MISSTATE_{jt-1} + \varepsilon$$

Sample =	Full sample	*Factor*		*Overlap*	
Cross section =	*None*	*Low*	*High*	*Low*	*High*
	(1)	(2)	(3)	(4)	(5)
Variable	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
$CROSSDUM_{jt-1}$	−0.001	0.003	−0.004**	> −0.001	−0.003**
	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)
Controls	Included	Included	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Difference in *CROSSDUM* (High minus Low)	n/a	−0.007**		−0.003*	
p-value (two-tailed)	n/a	0.023		0.069	
N	54,415	40,320		79,540	
Adj. R^2	0.350	0.328		0.335	

Notes: Column (1) reports the results of estimating equation (2) using a pooled OLS regression over t = 1989–2010 for *MISSTATE*. Columns (2) and (3) report the results of partitioning the sample between "low-*Factor*" and "high-*Factor*" industries, which is calculated from Beatty et al. (2013) and detailed in Table 5, panel A. Columns (4) and (5) report the results for "low-*Overlap*" and "high-*Overlap*" firms, which are calculated based on Beatty et al. (2013) and detailed in Table 5, panel B. Equation (2) control variables are included but not tabulated for brevity. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

CROSSDUM is significantly negative (−0.004, two-tailed $p < 0.05$) in industries with higher investor sentiment, lower cost of capital, and higher private benefits of control (i.e., the high-*Factor* group). In contrast, as shown in column (2), the coefficient on *CROSSDUM* is insignificant in the low-*Factor* group. Further, the negative coefficient on *CROSSDUM* in the high-*Factor* group is significantly more negative than the coefficient on *CROSSDUM* in the low-*Factor* group (two-tailed $p = 0.023$). Columns (4) and (5) reveal a similar pattern when we examine firms based on low- and high-analyst overlap.[20] Overall, the results from examining severe misstatements provide stronger evidence in support of the externality mechanism. The findings are consistent with CIO mitigating earnings management by internalizing the negative externality of earnings management on peer firms' investments.

Tests of real activities manipulation

Having found that CIO mitigates accrual-based earnings management, we further examine the effect of CIO on firms' real activities manipulation, which is achieved by altering the timing or structuring

20. Untabulated tests also show that the externality mechanism results are stronger when we use an alternate measure of CIO from He and Huang (2017) that incorporates the number of firms in an industry held by common institutional investors, consistent with the importance of the externality increasing with the number of peer portfolio firms.

of an operational, investment, or financing transaction. Prior research (e.g., Roychowdhury 2006; Cohen and Zarowin 2010) provides evidence for both accrual-based earnings management and real activities manipulation and examine the trade-off between the two earnings management strategies. If the enhanced monitoring by CIO also helps discipline firms' real activities manipulation, we expect a similar negative relation between CIO and real activities manipulation. Alternatively, if CIO has a disciplinary effect on accrual-based earnings management only, it can lead firms to shift their earnings management behavior away from accrual-based earnings management toward real activities manipulation, resulting in a positive relation between CIO and real activities manipulation.

We follow Roychowdhury (2006) and measure real earnings management (*REAL_EM*) using three separate proxies: (i) abnormal discretionary expenses (*ABNDISX*); (ii) production expenses (*ABNPROD*); and (iii) cash flow from operations (*ABNCFO*).[21] These three variables are defined in the Appendix. Columns (1) through (3) of Table 7 present results of estimating equation (2) using *ABNDISX*, *ABNPROD*, and *ABNCFO* as the dependent variable, respectively. We find that the coefficient on *CROSSDUM* is negative and significant at the 0.10 level for *ABNDISX*, but insignificant for *ABNPROD* and *ABNCFO*. This result provides evidence that CIO has a disciplinary effect in mitigating real activities manipulation through discretionary expenses. However, we find no evidence that CIO affects real activities manipulation through production expenses or cash flow. Overall, these findings are consistent with CIO disciplining not only accrual-based earnings management but also some real activities manipulation. Further, these results are inconsistent with commonly owned firms shifting earnings management from accruals to real activities, suggesting that CIO is associated with an overall improvement in financial reporting quality.

Tests of earnings response coefficient (ERC)

In this subsection, we examine whether CIO has an effect on earnings response coefficients (ERCs). Given our findings that CIO has a disciplinary effect on earnings management, it is possible that this effect results in greater price informativeness of earnings because the market places more weight on higher quality earnings (e.g., Ali et al. 2007). To examine this possibility, we examine whether CIO is associated with a greater ERC (i.e., a positive coefficient on *EARNINGS*×*CROSSDUM*). Results are reported in Table 8. The variable measurement of returns (*RETURN*), earnings (*EARNINGS*), and the control variables follow Ali et al. (2007, equation (7)) and are described in the Appendix. We find a significant positive relation between *CROSSDUM* and ERC, indicated by the positive coefficient on *EARNINGS*×*CROSSDUM*. This suggests that firms with CIO have an incrementally stronger response to earnings surprises. This result is consistent with CIO enhancing the price informativeness of earnings.

Alternative measures of CIO and earnings management

In this subsection, we examine the robustness of our results to alternate measures of CIO and earnings management. First, we examine the robustness of our findings to an alternative measure of CIO, *RNumCross*, defined as the decile rank of the average number of unique institutions that cross-held the firm in the four quarters of the year (He and Huang 2017), which considers the number of common institutional investors in the firm. As shown in columns (1) and (2) of Table 9, panel A, our results are robust to using this alternative measure of CIO.

Second, we examine the robustness of our results to using the text-based fixed industry classification (FIC) developed by Hoberg and Phillips (2010, 2016) to identify industry peers for CIO (*CROSSDUM_HP*). Hoberg and Phillips (2010, 2016) assign firms to 400 industries based on product descriptions in firms' 10-K filings. As shown in columns (3) and (4) of Table 9, panel A, our results are robust to this alternative measure of industry classification. Note that we also

21. We thank Bret Johnson for sample code for these measures, as used in Cunningham et al. (2020).

TABLE 7
The relation between common institutional ownership and real earnings management

$$REAL\_EM_{jt} = \alpha_0 + \alpha_1 CROSSDUM_{jt-1} + \alpha_2 LogTA_{jt} + \alpha_3 ROA_{jt} + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} REAL\_EM_{jt-1} + \varepsilon$$

$REAL\_EM =$	$ABNDISX_{jt}$ (1) Coefficient (SE)	$ABNPROD_{jt}$ (2) Coefficient (SE)	$ABNCFO_{jt}$ (3) Coefficient (SE)
Variable			
$CROSSDUM_{jt-1}$	−0.066*	0.001	−0.004
	(0.036)	(0.003)	(0.010)
$LogTA_{jt}$	0.094***	0.022***	0.028***
	(0.024)	(0.004)	(0.009)
ROA_{jt}	−0.015	−0.228***	0.391***
	(0.099)	(0.010)	(0.038)
$LOSS_{jt}$	−0.048	0.016	−0.087***
	(0.082)	(0.011)	(0.029)
MB_{jt}	−0.013***	−0.004***	0.004*
	(0.004)	(0.001)	(0.002)
$SALEGR_{jt}$	−0.089***	−0.002	0.119***
	(0.019)	(0.004)	(0.013)
$STDRET_{jt}$	3.337***	−0.212**	1.209***
	(0.892)	(0.083)	(0.270)
$DEBT_{jt}$	−0.170	−0.008	−0.051
	(0.129)	(0.012)	(0.038)
IO_{jt-1}	0.096	−0.018***	0.027
	(0.088)	(0.007)	(0.027)
$BLOCK_{jt-1}$	−0.053	−0.004	−0.000
	(0.043)	(0.004)	(0.014)
$LogNUMFIRMS_{jt-1}$	−0.029	0.015***	0.000
	(0.048)	(0.006)	(0.012)
$INDHOLD_{jt-1}$	−2.677***	−0.060	−0.621**
	(0.932)	(0.063)	(0.277)
$REAL\_EM_{jt-1}$	0.185***	−0.040***	0.232***
	(0.007)	(0.015)	(0.010)
Fixed effects	Firm, Year	Firm, Year	Firm, Year
N	50,775	50,775	50,775
Adj. R^2	0.138	0.082	0.177

Notes: Columns (1), (2), and (3) report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 after replacing the dependent variable with *ABNDISX*, *ABNPROD*, and *ABNCFO*, respectively. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

adjust our discretionary accruals calculation to use the FIC rather than SIC industry classifications (*DACC_HP*) to correspond to the adjusted CIO measure.

Finally, we examine the robustness of our results to three alternate measures of earnings management. First, we use *BEAT_ADJ*, which equals one for firms that meet or beat analysts' forecasts but would have missed the forecasts in the absence of discretionary accruals (Davis et al. 2009). This measure potentially reduces measurement error by capturing firms most likely

TABLE 8
The relation between common institutional ownership and earnings response coefficients

$$RETURN_{jt} = \alpha_0 + \alpha_1 EARNINGS_{jt} + \alpha_2 CROSSDUM_{jt-1} + \alpha_3 EARNINGS_{jt} \times CROSSDUM_{jt-1} + \alpha_4 IO_{jt-1} + \alpha_5 EARNINGS_{jt} \times IO_{jt-1} + \alpha_6 LogNUMFIRMS_{jt-1} + \alpha_7 EARNINGS_{jt} \times LogNUMFIRMS_{jt-1} + \alpha_8 INDHOLD_{jt-1} + \alpha_9 EARNINGS_{jt} \times INDHOLD_{jt-1} + \alpha_{10} EARNINGS_{jt} \times VAR_{jt-1} + \alpha_{11} EARNINGS_{jt} \times DEBT_{jt-1} + \alpha_{12} EARNINGS_{jt} \times MB_{jt-1} + \alpha_{13} EARNINGS_{jt} \times LogMVE_{jt-1} + \alpha_{14} EARNINGS_{jt} \times BETA_{jt-1} + \alpha_{15} EARNINGS_{jt} \times ROA_{jt-1} + \alpha_{16} EARNINGS_{jt} \times PROA_{jt-1} + \varepsilon$$

Variable	Coefficient (SE)
$EARNINGS_{jt}$	−0.390
	(0.816)
$CROSSDUM_{jt-1}$	0.033***
	(0.008)
$EARNINGS_{jt} \times CROSSDUM_{jt-1}$	0.136**
	(0.068)
IO_{jt-1}	−0.064***
	(0.013)
$EARNINGS_{jt} \times IO_{jt-1}$	−0.119
	(0.137)
$BLOCK_{jt-1}$	−0.012
	(0.011)
$EARNINGS_{jt} \times BLOCK_{jt-1}$	−0.107
	(0.102)
$LogNUMFIRMS_{jt-1}$	0.043***
	(0.007)
$EARNINGS_{jt} \times LogNUMFIRMS_{jt-1}$	0.050
	(0.097)
$INDHOLD_{jt-1}$	0.003
	(0.089)
$EARNINGS_{jt} \times INDHOLD_{jt-1}$	−1.709**
	(0.717)
$EARNINGS_{jt} \times VAR_{jt-1}$	−0.208**
	(0.099)
$EARNINGS_{jt} \times DEBT_{jt-1}$	−0.515***
	(0.165)
$EARNINGS_{jt} \times MB_{jt-1}$	0.034***
	(0.010)
$EARNINGS_{jt} \times LogMVE_{jt-1}$	0.010
	(0.024)
$EARNINGS_{jt} \times BETA_{jt-1}$	0.011
	(0.041)
$EARNINGS_{jt} \times ROA_{jt-1}$	0.699***
	(0.097)
$EARNINGS_{jt} \times PROA_{jt-1}$	0.111
	(0.228)
Fixed effects	Industry×*EARNINGS*
N	44,757
Adj. R^2	0.060

Notes: The table reports the results of estimating ERC following equation (7) from Ali et al. (2007) using a pooled OLS regression over t = 1989–2015. Ali et al. (2007) control variables, plus additional institutional ownership controls from equation (2), are included. In addition to the previously defined variables, control variables from Ali et al. (2007) are defined in the Appendix. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%.

TABLE 9
Alternative measures of common institutional ownership or earnings management

Panel A: Alternative measures of common institutional ownership

$$EM_{jt} = \alpha_0 + \alpha_1 CIO\_Measure_{jt-1} + \alpha_2 LogTA_{jt} + (\alpha_3 ROA_{jt}) + \alpha_4 LOSS_{jt} + \alpha_5 MB_{jt} + \alpha_6 SALEGR_{jt} + \alpha_7 STDRET_{jt} + \alpha_8 DEBT_{jt} + \alpha_9 IO_{jt-1} + \alpha_{10} BLOCK_{jt-1} + \alpha_{11} LogNUMFIRMS_{jt-1} + \alpha_{12} INDHOLD_{jt-1} + \alpha_{13} EM_{jt-1} + \varepsilon$$

$EM =$	$DACC_{jt}$	$BEAT_{jt}$	$DACC\_HP_{jt}$	$BEAT_{jt}$
	(1)	(2)	(3)	(4)
	Coefficient	Coefficient	Coefficient	Coefficient
Variable	(SE)	(SE)	(SE)	(SE)
$RNumCross_{jt-1}$	−0.450***	−0.019***		
	(0.144)	(0.007)		
$CROSSDUM\_HP_{jt-1}$			−0.357***	−0.009*
			(0.134)	(0.005)
Controls	Included	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year
N	60,148	43,667	47,195	43,667
Adj. R^2	0.008	0.012	0.006	0.012

Panel B: Alternative measures of earnings management

$EM =$	$BEAT\_ADJ_{jt}$	$Special\ items_{jt}$	$Write\ downs_{jt}$
	(1)	(2)	(3)
	Coefficient	Coefficient	Coefficient
Variable	(SE)	(SE)	(SE)
$CROSSDUM_{jt-1}$	−0.014***	−0.137**	−0.044*
	(0.004)	(0.069)	(0.025)
Controls	Included	Included	Included
Fixed effects	Firm, Year	Firm, Year	Firm, Year
N	42,555	62,047	26,975
Adj. R^2	0.012	0.320	0.108

Notes: Panel A, columns (1) and (2), report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC* and *BEAT*, respectively, after replacing $CROSSDUM_{jt-1}$ with $RNumCross_{jt-1}$. Panel A, columns (3) and (4), report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *DACC_HP* and *BEAT*, respectively, after replacing $CROSSDUM_{jt-1}$ with $CROSSDUM\_HP_{jt-1}$. Panel B, columns (1), (2), and (3), report the results of estimating equation (2) using a pooled OLS regression over t = 1989–2015 for *BEAT_ADJ* and *Special items*, respectively, and over t = 2001–2015 for *Write downs*. *DACC*, *DACC_HP*, *Special items*, and *Write downs* are multiplied by 100 for clearer exposition. Equation (2) control variables are included but not tabulated for brevity. *ROA* (α_3) is not included in the *DACC* regression because we use performance-adjusted *DACC*, adjusted for *ROA*. Robust standard errors are reported in parentheses below the coefficients and are based on standard errors clustered at the firm level to adjust for heteroscedasticity and serial correlation. *, **, and *** represent two-tailed significance levels of 0.10, 0.05, and 0.01, respectively. All continuous variables are winsorized at 1% and 99%. Detailed variable definitions are in the Appendix.

managing earnings to meet or beat earnings. As shown in column (1) of Table 9, panel B, our result is robust to this alternative *BEAT* measure. However, we caution that this measure may be subject to the "backing out" problem (Elgers et al. 2003).[22] We also employ two model-free

22. In brief, the backing out problem is the mechanical relation that can arise when measuring performance relative to a target by subtracting estimated discretionary accruals from reported earnings to generate "unmanaged earnings." Elgers et al. (2003) show that this approach can lead to patterns resembling earnings management even in the absence of earnings management.

measures of earnings management, special items (*Special items*) and write-downs (*Write downs*), following Dou, Khan, and Zou (2016). Results, presented in columns (2) and (3) of Table 9, panel B, are consistent with CIO encouraging firms to recognize these expenses.

6. Conclusion

Common block ownership of industry rivals by institutional investors (common institutional ownership; CIO) has become increasingly common over the past two decades. This study examines how CIO influences earnings management. We propose that CIO can have a disciplinary effect on firms' earnings management by creating an economy of scale in institutional monitoring (the economy of scale mechanism) and by internalizing the negative externality of a firm's earnings management on peer firms' investments (the externality mechanism).

We find a negative relation between CIO and earnings management. A difference-in-differences analysis of an exogenous increase in CIO stemming from financial institution mergers yields evidence that this negative relation is unlikely to be driven by the endogeneity of CIO. Further, cross-sectional tests provide evidence consistent with CIO mitigating earnings management through both the economy of scale and externality mechanisms. More specifically, the negative relation between CIO and earnings management is more pronounced among firms whose common institutional investors blockhold a relatively larger number of peer firms, consistent with the economy of scale mechanism. We also find that the negative relation between CIO and earnings management is more pronounced among (i) industries with higher investor sentiment, lower cost of capital, and higher private benefits of control, and (ii) firms with higher unexpected overlap in analyst coverage with common institutional investors' other co-owned peer firms. Both of these results are consistent with the externality mechanism.

Our study adds to our understanding of how institutional investors influence financial reporting by documenting a disciplinary effect of CIO that is above and beyond the effect of institutional ownership in the firm. Our study also adds to our understanding of the economic consequences of CIO by providing new evidence on the effect of CIO on financial reporting and the mechanisms behind the effect. Our findings are relevant to policy makers, regulators, and investors who seek to better understand the benefits and costs of CIO. While much of the ongoing debate on CIO focuses on its potential anticompetitive effects, our findings highlight a "bright side" of common institutional ownership: it enhances shareholder monitoring of financial reporting and reduces earnings manipulation.

While we show that CIO mitigates earnings management by enhancing institutions' monitoring efficiency and by internalizing the negative externality of earnings management on peer firms' investments, CIO can also influence investee firms' financial reporting through other potential mechanisms. For example, CIO could affect financial reporting through the change in firms' competitive environments, adjustments to board structure, or the internalization of other externalities of financial reporting. Future research can investigate these other potential mechanisms, which will shed additional light on how CIO shapes financial reporting.

Appendix

Variable definitions

Variable	Definition
Main dependent variables	
EM_{jt}	$DACC_{jt}$ or $BEAT_{jt}$
$DACC_{jt}$	Discretionary accruals calculated as the residual from the performance-adjusted modified Jones model based on Kothari et al. (2005) estimated for each industry

(The Appendix is continued on the next page.)

Appendix (continued)

Variable	Definition
	(4-digit SIC)-year requiring at least 10 observations per industry-year. Specifically, $AC_{jt} = \alpha + \beta_0(1/AVGAT_{jt}) + \beta_1 \Delta CASHREV_{jt} + \beta_2 PPE_{jt} + \beta_3 ROA_{jt-1} + \beta_4 ROA_{jt} + \varepsilon_{jt}$, where AC_{jt} is total accruals for firm j in year t, defined as net income from continuing operations minus operating cash flow scaled by average total assets; $AVGAT_{jt}$ is average total assets for firm j based on assets at the beginning and end of year t; $\Delta CASHREV_{jt}$ is the change in cash sales (i.e., change in revenue minus change in accounts receivable) for firm j at the end of year t scaled by average total assets; PPE_{jt} is net property, plant, and equipment for firm j at the end of year t scaled by average total assets; $ROA_{jt-1(jt)}$ is income before extraordinary items for firm j in year $t-1$ (t) scaled by total assets at the end of year $t-1$ (t)
$BEAT_{jt}$	An indicator variable equal to one if firm j meets or beats by up to one cent the consensus analyst annual EPS forecast existing in I/B/E/S immediately before the earnings announcement of earnings for year t, and zero otherwise
$MISSATATE_{jt}$	An indicator variable equal to one if either fraud charges (Fraud) are included in an enforcement action or the firm misled its auditors (Misled auditor) for the misstated firm-years (i.e., violation periods for firm j in year t) per the Call et al. (2018) dataset, and zero otherwise. This definition follows Call et al. (2018, 137), who identify misstatements as enforcement actions for financial misrepresentation with "intent"
Main variables of interest	
$CROSSDUM_{jt-1}$	An indicator variable equal to one for firm j if an institution has a blockholding (> 5% of shares outstanding) in this firm and at least one of its industry peers simultaneously in any of the four quarters in year $t-1$, and zero otherwise. Industry peers are identified using 4-digit SIC
$TREAT_j$	An indicator variable equal to one if firm j is a treatment firm, and zero otherwise (i.e., if firm j is a control firm). Treatment firms are firms that are blockheld by *one* of the merging institutions in the quarter prior to the merger announcement, where the other merging institution does *not* blockhold the firm, but blockholds at least one industry rival in the same quarter prior to the merger. Control firms include firms blockheld by the merging institution that blockholds the treatment firms, with the other party to the merger not blockholding any same-industry rivals of the firm
$POST_t$	An indicator variable equal to one for the year after the financial institution merger for the treatment and control firms identified for this merger, and equal to zero for the year before the merger
Main control variables	
$LogTA_{jt}$	The natural logarithm of total assets of firm j as of the end of year t
ROA_{jt}	Income before extraordinary items divided by total assets of firm j, both measured as of the end of year t (as defined in the *DACC* calculation)
$LOSS_{jt}$	The proportion of years prior to year t in which firm j reported negative net income. We calculate this measure using up to 10 prior years of data
MB_{jt}	Market value of equity divided by total common equity for firm j, both measured as of the end of year t

(The Appendix is continued on the next page.)

Appendix (continued)

Variable	Definition
$SALEGR_{jt}$	Sales growth in year t for firm j
$STDRET_{jt}$	Standard deviation of daily returns for firm j over year t
$DEBT_{jt}$	Long-term debt divided by total assets for firm j, both measured as of the end of year t
IO_{jt-1}	Shares held, as a percentage of shares outstanding, by all institutional investors of firm j at the end of year $t - 1$
$BLOCK_{jt-1}$	An indicator variable equal to one if firm j is blockheld in any of the four quarters of year $t - 1$, and zero otherwise
$LogNUMFIRMS_{jt-1}$	The natural logarithm of the average number of firms owned by firm j's institutional investors at the end of year $t - 1$
$INDHOLD_{jt-1}$	The industry expertise of firm j's common owners at the end of year $t - 1$, calculated as follows. First, we calculate the percentage of each common owner's portfolio value invested in a given 4-digit SIC industry for each quarter of year $t - 1$ (*Ind_Pct*). We then calculate the average *Ind_Pct* of all firm j's common owners in a quarter (*Ind_Pct_Firm*). Finally, because common ownership is measured over the four quarters of $t - 1$, we average the firm-quarter measure over the four quarters of $t - 1$. This variable equals zero for firms that are not commonly owned
Variables for creating cross sections	
$AvgNum_{jt-1}$	Average number of rivals blockheld by firm j's common owners in year $t - 1$. Specifically, for each quarter of year $t - 1$ we compute the number of firms commonly owned by each institutional blockholder of firm j. We sum this number across the institutional owners of firm j and divide by the total number of common owners to calculate the average number of rivals owned by each common owner of firm j in each quarter of $t - 1$. We then average the quarterly values over the year
$SENTIMENT_{jt-1}$	Following Beatty et al. (2013), this variable is the first principal component of the following four measures, computed at the industry (4-digit SIC)-year level: total number of IPOs (from Jay Ritter's IPO founding date file, available at https://site.warrington.ufl.edu/ritter/ipo-data/, updated as of March 2019 and described in Loughran and Ritter 2004); the average first-day returns of IPOs (obtained by linking Ritter's offer dates to CRSP); annual stock turnover; and the difference in the average *MB* between the dividend and nondividend paying firms. The variable is calculated for firm j's industry in year $t - 1$
$MEDIANEP_{jt-1}$	The median earnings-per-share (basic, before extraordinary items) divided by year end stock price for firm j's industry (4-digit SIC) in year $t - 1$
$M\&A_{jt-1}$	The number of completed mergers and acquisitions, where the acquirer is in firm j's industry (4-digit SIC), in year $t - 1$. Merger and acquisition data is obtained from SDC, requiring US based. Acquirers and greater than 50 percent ownership of the target after the acquisition
$Factor_{jt-1}$	The average of the ranks of $SENTIMENT_{jt-1}$, negative $MEDIANEP_{jt-1}$ and $M\&A_{jt-1}$
$Overlap_{jt-1}$	Following Beatty et al. (2013), for each industry (4-digit SIC)-year, we measure the analyst overlap between each pair of firms in that industry as the logarithm of one plus the number of analysts covering a given pair of firms. We then regress the overlap on the economic determinants including return comovement (the R-square from regressing one firm's daily return on the other firm's daily returns over the year, requiring at least 100 daily observations) and the firm-pair average of lag *LogTA*, lag market-to-book ratio (market value of equity plus book value

(The Appendix is continued on the next page.)

Appendix (continued)

Variable	Definition
	of liabilities, scaled by total assets), lag *DEBT*, and *ChgSALE* (*ChgSALE* is defined below). We extract the regression residual as residual analyst overlap for each pair of firms. We retain firm-pairs with residual analyst overlap that also have common institutional investors
Additional analyses—dependent variables	
$REAL\_EM_{jt}$	$ABNDISX_{jt}$, $ABNPROD_{jt}$, or $ABNCFO_{jt}$
$ABNDISX_{jt}$	Following Roychowdhury (2006), abnormal discretionary expenses is the residual from the following regression (multiplied by −1): $DISX_{jt} = \beta_0(1/AT_{jt-1}) + \beta_1 SALE_{jt} + \varepsilon_{jt}$, where $DISX_{jt}$ is SG&A expense for firm j in year t scaled by lagged assets. Note that Roychowdhury (2006) adds advertising and R&D expenses to this variable, but these amounts are already included in total SG&A expense so we do not add them (as also noted in Srivastava 2019, footnote 13) $SALE_{jt}$ is revenue for firm j in year t scaled by lagged assets.
$ABNPROD_{jt}$	Following Roychowdhury (2006), abnormal production costs is the residual from the following regression: $PROD_{jt} = \beta_0(1/AT_{jt-1}) + \beta_1 SALE_{jt} + \beta_2 ChgSALE_{jt} + \beta_3 ChgSALE_{jt-1} + \varepsilon_{jt}$, where $PROD_{jt}$ is firm j's cost of goods sold in year t plus its change in inventory from year $t-1$ to year t scaled by lagged assets $ChgSALE_{jt\ (jt-1)}$ is firm j's change in sales from year $t-1$ ($t-2$) to year t ($t-1$), scaled by lagged assets
$ABNCFO_{jt}$	Following Roychowdhury (2006), abnormal operating cash flow is the residual from the following regression: $CFO_{jt} = \beta_0(1/AT_{jt-1}) + \beta_1 SALE_{jt} + \beta_2 ChgSALE_{jt} + \varepsilon_{jt}$, where CFO_{jt} is cash flow from continuing operations for firm j in year t scaled by lagged assets
$RETURN_{jt}$	The abnormal return for the 12-month period ending 3 months after the year t fiscal year end for firm j, where abnormal return is the firm return minus the CRSP equal weighted index
$DACC\_HP_{jt}$	Discretionary accruals as calculated previously, except substituting Hoberg and Phillips's (2010, 2016) fixed industry classification (FIC), which assigns firms to 400 industries based on product descriptions in the firms' 10-K, in place of 4-digit SIC. Because this text-based classification is unavailable prior to 1996, we use the earliest available text-based classification to backfill any prior years
$BEAT\_ADJ_{jt}$	Following Davis et al. (2009), an indicator variable equal to one if firm j's annual forecast error is non-negative and adjusted annual forecast error is less than zero, and zero otherwise. Forecast error is actual minus consensus analyst EPS forecast existing in I/B/E/S immediately before the earnings announcement of earnings for year t. Adjusted forecast error is actual EPS minus *DACC* per share minus consensus analyst EPS forecast existing in I/B/E/S immediately before the earnings announcement of earnings for year t
$Special\ items_{jt}$	Special items divided by total assets for firm j, both measured as of the end of year t. Missing special items are set equal to zero
$Write\ downs_{jt}$	After-tax write-downs divided by total assets for firm j, both measured as of the end of year t. Data begins in 2001. Missing write-downs (in 2001 or later) are set equal to zero

(The Appendix is continued on the next page.)

Appendix (continued)

Variable	Definition
Additional analyses—control variables	
$EARNINGS_{jt}$	Change in earnings per share (annual) of firm j for year t scaled by the stock price at the beginning of the return (*RETURN*) accumulation period
VAR_{jt-1}	The standard deviation of firm j's *ROA* for the prior 16 quarters through the end of year $t - 1$
$LogMVE_{jt-1}$	Natural logarithm of firm j's market value of equity as of the end of year $t - 1$
$BETA_{jt-1}$	Firm j's beta over year $t - 1$ over the 200 trading days starting 20 days before the earnings announcement. We require at least 100 daily observations
$PROA_{jt-1}$	The sum of firm j's total income before extraordinary items over the five years prior to year $t - 1$ divided by the sum of assets over the same period
Additional analyses—alternative variables of interest	
$RNumCross_{jt-1}$	The decile rank of the average number of unique institutions that cross-held the firm in the four quarters of year $t - 1$. Specifically, we compute the number of same-industry rivals that are owned by firm j's common institutional investors in each quarter of year $t - 1$. These values are then averaged over year $t - 1$ and decile ranked
$CROSSDUM\_HP_{jt-1}$	An indicator variable equal to one for firm j if an institution has a blockholding (> 5% of shares outstanding) in this firm and at least one of its industry peers simultaneously in any of the four quarters in year $t - 1$, and zero otherwise. Industry peers are identified using Hoberg and Phillips's (2010, 2016) fixed industry classification (FIC), which assigns firms to 400 industries based on product descriptions in the firms' 10-K. Because this text-based classification is unavailable prior to 1996, we use the earliest available text-based classification to backfill any prior years

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