THE EFFECT OF INSTITUTIONAL OWNERSHIP ON FIRMS' THRUST TO COMPETE: THE IMPLICATIONS FOR CRASH RISK

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ABSTRACT

This paper develops a measure of firm's emphasis on competition, which we term firm's thrust to compete, based on textual analysis of managements' disclosures in the 10-K filings. Using this measure, we provide evidence regarding institutional investors' preferences and behind-the-scenes interventions. We show that transient institutional ownership intensifies firms' thrust to compete, while dedicated institutional ownership lessens it. Further, we demonstrate that as firms intensify their thrust to compete, they also become more susceptible to future stock price crash risk, a phenomenon observed among such firms with a high proportion of transient, and a low proportion of dedicated, institutional ownership. These findings have policy implications, since they identify firms' thrust to compete as a channel through which transient institutional investors influence firms' decision-making and economic outcomes, albeit at the expense of shareholder value creation.

Keywords: Thrust to compete; Institutional ownership; Transient investors; Crash risk; Firm value.

JEL classification numbers: G20, G32, G34, G38, M48.

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1 INTRODUCTION

A growing body of literature emphasizes the importance of shared organizational beliefs, principles, social norms, and other intangible structures for a firm's ability to improve its corporate policies and performance (see, for example, Loughran et al., 2009; Popadak, 2013; Fiordelisi and Ricci, 2014; Callen and Fang, 2015; Guiso et al., 2006, 2015a, 2015b; Zingales, 2015; Erhard et al., 2016; Graham et al., 2017). These studies suggest that such corporate values inform the organizational culture that guide the top management teams' decision-making and influence firms' economic outcomes. A separate strand of literature documents the strong influence of institutional ownership structure on organizational outcomes, such as earnings manipulation, R&D investments, M&As, and financing (see, for example, Gaspar et al., 2005; Chen et al., 2007; Elyasiani et al., 2010; Harford et al., 2017), as well as on financial performance (see, for example, Gompers and Metric, 1998; Nofsinger and Sias, 1999; Cai and Zheng, 2004; Giannetti and Yu, 2017). This paper contributes by examining how these two influencing factors for organizational outcomes – firms' corporate values and institutional ownership structures – are linked. Particularly, we propose the *thrust to compete* as an important corporate value and a channel through which institutional investors influence firms' decision-making and economic outcomes.

This study relies on the competing values framework (CVF) of Quinn and Rohrbaugh (1983) and Cameron et al. (2014) to define the thrust to compete as a type of corporate value that focus the firm on achieving superior financial performance by assimilating and responding to external environmental information. The competing values framework for effective organizational performance has been named as one of the forty most important frameworks in the history of business (Ten Have et al., 2003). This framework postulates thrust to compete as an important corporate value that impacts corporate decision-making. Within this framework, the thrust to compete of a firm encapsulates value-creating activities that are empowered by forceful pursuit of competitiveness and achievements. Hence, speed of action, driving through barriers to deliver results, and building competition-oriented decision-making, all typify firms which place great emphasis towards the competitors (Cameron et al., 2014). In this vein, firms with an intensified thrust to compete have a proclivity towards being aggressive and moving fast, while assessing success based on indicators such as increased sales growth, profitability, and market share. Conversely, when a firm's thrust to compete is excessively intensified, for instance by over-exertion and high levels of external pressure to deliver sustained revenue growth and superior performance, the management can become highly susceptible to making suboptimal decisions and taking actions with negative consequences that potentially harm shareholder value creation.

Following the growing literature that applies textual analysis in accounting and finance research (see, for instance, Tetlock, 2007; Loughran and McDonald, 2009; Hoberg and Phillips, 2010, 2016; Li, 2010a, 2010b, Li et al., 2013; Popadak, 2013; Hoberg et al., 2014; Fiordelisi and Ricci, 2014; Bushman

et al., 2016), we develop a measure of a firm's thrust to compete by exploiting a large corpus of archival data from the 10-K filings describing current and future operations of US listed firms. We adopt this measurement approach as it provides an efficient and objective way of capturing the intensity that a firm is placing towards competition via the management's disclosures as per the firm's annual financial statements. We operationalize our measure by parsing 10-K reports to identify a set of keywords relating to attributes that shape firms' thrust to compete. We focus on keywords that reflect external effectiveness criteria such as the aggressive pursuit of enhanced competitiveness, the achievement of organizational goals and results, the drive for rapid sales growth and superior financial performance, etc. For instance, it is reasonable to expect that firms using in their 10-K reports a relatively high frequency of word variants pertaining to "achievement", "aggressive", "compete", "goal", "growth" "profits", and "performance", among others, to be highly driven by corporate attributes steered towards the thrust to compete.

Having developed our text-based measure of thrust to compete, we proceed with investigating the overarching question, *what is the influence of institutional investor base composition on firms' thrust to compete?* This question is interesting to explore because recent literature documents that institutional investors regularly engage with management and the board of directors in behind-the-scene interventions that can shape corporate culture and climate (Edmans, 2014; Bebchuk et al., 2015; Brav et al., 2015; McCahery et al., 2016). Further, the composition of a firm's institutional investor base can agitate (or mitigate) implicit incentives for managers to over-allocate effort towards improving current performance, potentially at the expense of shareholder value creation (e.g., Bushee, 1998; Dikolli et al., 2009; Popadak, 2013). Recent surveys of C-suite executives and directors conducted by researchers at the McKinsey Global Institute (MGI)[1] suggest that 87% of executives and directors indeed feel under pressure to demonstrate strong financial performance within two or less years (Barton et al., 2016).

Our investigation provides robust evidence that transient institutional ownership has a strong positive casual relation to a firm's thrust to compete. Because transient institutional investors invest based on the likelihood of reaping short-term trading profits (Bushee, 1998, 2001), our findings support the notion that they intervene and exert pressure on managers to intensify their firms' thrust to compete, hence pushing the firms' operating philosophy towards a corporate culture that emphasizes *results-right-now* and immediate superior financial performance. In this vein, the management of a firm with more transient institutional investors would succumb to such pressures under the threat that if these institutional investors become unhappy they might forcefully exit by selling shares, thereby suppressing the firm's stock price (Bernardo and Welch, 2004; Fos and Kahn, 2015). Indeed, Graham et al. (2005)

[1] Founding in 1990, the McKinsey Global Institute (MGI) seeks to develop a deeper understanding of the evolving global economy and in this study it systematical investigates short-termism using an online survey of 1,035 C-level executives and board members representing the full range of regions, industries, and functional specialties. This study can be found at the following url: https://www.fcltglobal.org/docs/default-source/default-document-library/fclt-global-rising-to-the-challenge.pdf?sfvrsn=0

report that most managers would avoid initiating a positive NPV project and sacrifice long-term shareholder value creation for short-term profits, in exchange for being able to cater to investors' expectations. Moreover, Barton et al. (2016) note that 55% of executives and directors at companies that do not have a long-term oriented corporate culture admit that their company would delay a new project to hit quarterly targets even if it is at the expense of value.

Conversely, we demonstrate that dedicated institutional ownership has a negative relation to firms' thrust to compete. This evidence supports the notion that dedicated institutional investors also intervene and influence managers, albeit by lessening firms' thrust to compete. Perhaps, this happens because these investors have incentives to monitor and offset managerial myopia, mostly by relying on information beyond current earnings to appraise managers' performance (Gaspar et al., 2005; Chen et al., 2007; Harford et al., 2017). Likewise, this evidence might reveal that the managers of firms with a higher proportion of dedicated institutional ownership feel less pressurized to consistently meet short-term performance expectations. In this vein, they might ease their thrust of being aggressive and forceful in the pursuit of competitiveness and performance, as they have less reason to expect large price drops spurred by the exit/selling strategies of dedicated institutional investors.[2]

Overall, the above findings lend further credence to the view that institutional investors are far from homogeneous, whereby their investment horizon and performance-related objectives and preferences incentivize them to exert very different governance on firms' operating philosophy, priorities and decision-making processes.

Subsequently, we also investigate the relation between thrust to compete and a firm's proclivity to engage in bad news hoarding. In general, managers have financial incentives and other career motives to overstate performance by strategically withholding bad news and accelerating the release of good news, hoping that poor current performance will be camouflaged by strong future performance. However, such practices make firms vulnerable to adverse economic outcomes in the form of large idiosyncratic stock price declines, known as crash risk (Hutton et al., 2009; Kim et al., 2011a, 2011b; An and Zhang, 2013; Callen and Fang, 2013, 2015; Kim and Zhang, 2016; Andreou et al., 2016, Andreou et al., 2017; Chen et al., 2017). With firms that place great emphasis on competitors, managerial incentives to conceal negative information regarding poor operating performance would be naturally intensified, since such firms need to consistently deliver superior financial performance. Thus, after controlling for known crash risk determinants and indicators of managerial myopia, we empirically test this proposition and find a strong positive relation between thrust to compete and one-year-ahead

[2] This is reasonable since most dedicated investors are in fact passive investors who simply invest in firms based on an index. These investors are therefore usually unable or unwilling to directly sell the stock of specific firms that comprise the index. As a result, managers at firms where dedicated institutional investors hold a great proportion of their firms are increasingly less likely to be concerned by selling pressure brought about by initial signals of underperformance (Cella et al., 2013; Giannetti and Yu, 2017).

crash risk. As crash risk associates with devastating stock price drops, this evidence corroborates that, on average, thrust to compete appears to be harmful for firms' shareholder value creation.

Combining the result that transient institutional ownership intensifies firms' thrust to compete with the evidence that thrust to compete increases the propensity for crash risk, we postulate that thrust to compete might be a channel through which transient institutional ownership exerts direct intervention within firms to influence corporate policies and economic outcomes. To investigate this, we conduct subsample analyses, the results of which are consistent with our expectations. Specifically, we find that the strong positive relation between thrust to compete and future crash risk is present *only* within the subsample of firms that is dominated by a high proportion of transient institutional ownership and a low proportion of dedicated institutional ownership. Hence, consistent with the theoretical underpinnings in the competing values framework, the analysis shows that thrust to compete does not cause any adverse effects on shareholder value creation; rather, the striking result is that firms' thrust to compete becomes harmful only when it is associated with a high proportion of transient and a low proportion of dedicated ownership structure. By and large, this finding qualifies institutional investors as key corporate governance agents who can (either curb or) exacerbate firms' thrust to compete, as their preferences and interventions can lead the management to become highly susceptible to making suboptimal decisions and prioritize activities that harm shareholder value creation in the long term.

In terms of econometric methods, our regression approaches are carefully implemented to tackle any identification issues that may cloud the interpretation of the results. For instance, to mitigate potential endogeneity concerns when investigating the relationship between thrust to compete and institutional ownership, we adopt an instrumental variables approach by using a firm's inclusion or exclusion in the Russell 1000/2000 indexes as a source of exogenous variation in institutional ownership (Crane et al., 2015; Appel et al., 2016). In addition, we estimate models using two-stage least squares (2SLS) analysis, dynamic panel generalized methods of moments (GMM) estimation, as well as firm fixed-effects estimations. Irrespective of the approach, all econometric estimates confirm the robustness of our main findings and lend credence to the idea that the composition of the institutional investor base influences the firms' thrust to compete.

Our study contributes to the literature as follows. First, our main finding that the composition of the institutional ownership base influences managers' operating philosophy and decision-making as detailed by their firms' focus on competition, adds knowledge to our understanding of how institutional investors engage with managers in behind-the-scenes interventions that leave their indelible mark on firms. In this regard, our findings complement other recent studies (for example, Popadak, 2013; Edmans, 2014; Bebchuk et al., 2015; Brav et al., 2015; McCahary et al., 2016) that endeavor to provide evidence of institutional investors' preferences and actions about their portfolio of firms. Second, it contributes to the ongoing debate regarding the benefits and costs of institutional investors on corporate decision making (for example, Massa et al., 2015; Giannetti and Yu, 2017; Harford et al., 2017) by

investigating the impact of transient and dedicated investors on firms' thrust to compete, which is argued to affect managers' decision-making. Finally, we also contribute to the burgeoning literature that focuses on the impact of corporate culture, organizational norms and principles to policies and economic outcomes (for example, Loughran et al., 2009; Guiso et al., 2006, 2015a, 2015b; Popadak, 2013; Fiordelisi and Ricci, 2014; Callen and Fang, 2015; Zingales, 2015; Erhard et al., 2016; Graham et al., 2017) by introducing thrust to compete as another organizational effectiveness factor that links to shareholder value creation. Because it is frequently very hard to measure the impalpable corporate characteristics that reflect a specific culture, we show how to empirically operationalize such a construct using textual analysis of the 10-K filings as reported in the SEC Edgar database. In this regard, we also complement other recent studies (for example, Li et al., 2013; Bushman et al., 2016), because in our analysis we demonstrate that firms' thrust to compete remains distinct from other conceptualizations of market competitiveness behaviors pertaining to product market competition.

The remainder of this paper is presented as follows: details of the data and summary statistics are presented in Section 2; Sections 3 and 4 present the empirical results and the additional analyses respectively; and Section 5 concludes.

2 DATA, MEASURES AND VARIABLES

2.1 Data

We build our data set by merging information from various data sources. We obtain annual firm-level data of US publicly traded firms for the period 1994 to 2014 from Compustat. To measure thrust to compete through textual analysis, we obtain firms' 10-K fillings from SEC's Edgar database. For the institutional ownership variables, we employ data from the Thomson Reuters Institutional Holdings Database.

Our analysis is carried out on all firms included in the Compustat database excluding financials (SIC 6000-6999) and utilities (SIC 4900-4999). To limit survivorship bias, firms that are inactive and/or acquired by another firm during the period of study are retained in the sample. We delete from our sample all firm-year observations with missing data on the variables of interest. This results in a final sample consisting of 31,223 firm-year observations. Table 1 reports the definition of all the variables used in the empirical analysis.

[Insert Table 1 here]

2.2 Measurement of Thrust to Compete

Corporations can be thought of as micro-societies that can shape distinct norms and values (Guiso et al., 2015a, 2015b; Zingales, 2015). These principles are the essence of a company's identity as defined by beliefs, priorities and operating philosophy. In measuring such corporate values, a strand of the literature relies on the Competing Values Framework (CVF) which originated in the work of Quinn and Rohrbaugh (1983) and was extended by Cameron et al. (2014) (see also, Hartnell et al., 2011; Schneider et al., 2013; Fiordelisi and Ricci, 2014). The CVF classifies firms' culture into four quadrants by first differentiating between those competing values of the firm that emphasize an external orientation from those that focus on internal capabilities – the so-called *external-internal domain*. Further, it distinguishes between corporate values that emphasize effectiveness criteria that focus on flexibility and discretion from those that are centered on stability and internal control – i.e. the so-called *flexibility-stability domain.* As illustrated in Figure 1, these two dimensions intersect to define four distinct types of corporate cultures that comprise the CVF, namely the: *compete*, *create*, *control*, and *collaborate*.

[Insert Figure 1 here]

Organizations characterized by the compete culture (bottom-right corner of Figure 1) are externally focused and market-driven, and are therefore more likely to encourage organization-wide generation, dissemination, and integration of external environmental information (Quinn and Cameron, 1983; Quinn and Rohrbaugh, 1983; Harris and Ogbonna, 2001; Hartnel et al., 2011; Cameron et al., 2014). Success is assessed based on indicators like increased sales growth, profitability, and market share. The typical motto of such firms is *results-right-now*, hence doing things fast and effectively is an essential element in maintaining a competitive edge. Corporate values of this kind are strongly associated with operating effectiveness and achievement, which are important determinants of reported financial performance. Overall, these firms naturally have a *thrust to compete* as they endeavour at producing superior shareholder value creation by placing greater emphasis on aggressiveness and engendering competitiveness to accomplish their goals.

In comparison, corporate values associated with the create culture (upper-right corner of Figure 1) are focused externally and center on creating future opportunity through innovation and cutting-edge output. These elements within the firms are supported by a flexible organizational structure which stipulates freedom of thought and action among employees and allows the firm to effectively handle discontinuity, change and risk (Hartnell et al., 2011; Cameron et al., 2014). Conversely, the control and collaborate cultures are internally focused, placing emphasis on integration. However, while the collaborate culture stresses employee development and consensus building that is facilitated by a flexible organizational structure aiming at long-term development, corporate values that pertain to the control culture focus on creating value through internal improvements in efficiency supported by a

stable organizational structure that is driven by strong internal control mechanisms (Quinn and Cameron, 1983; Quinn and Rohrbaugh, 1983; Hartnell et al., 2011; Cameron et al., 2014).

To estimate a firm's thrust to compete, we create four bags of words comprised by various keywords that best describe the corporate cultures as theorized by the CVF.[3] Following in spirit the approach by Fiordelisi and Ricci (2014), this is achieved by a two-step procedure that minimizes subjectivity in the selection process. First, we select certain keywords as suggested by Cameron et al. (2014) to identify corporate values associated with the compete culture. For instance, a relatively high frequency of keywords in 10-Ks related to *achievement*, *performance*, *competitiveness*, *market*, *growth*, etcetera, should be associated with this kind of culture. Second, all keywords selected in the first step are looked up in the Harvard IV-4 Psychosocial Dictionary to identify other synonyms. We account for suffixes (forming grammatical and derivational variants of the same keyword) by reducing these words to their stemmed form, for example, *competitiveness* becomes *compet**. This helps to ensure that when we conduct the word search in the 10-Ks, we count all variants of words that make up the corresponding bag of words. We are careful to exclude references to firm names, industries and other words that are likely to systematically bias our results (for example, we ignore words such as *compendia* that is stemmed from *compet** but it is irrelevant to the purpose). We follow similar steps to create the corresponding bag of words for the other three corporate cultures (i.e., create, control, and collaborate) theorized by the CVF. The bags of words with all keywords used to parse the 10-K fillings are listed in the Appendix of the paper.[4]

Specifically, we measure a firm's thrust to compete (*TC*) as follows:

$$TC = \frac{Number\ of\ keywords\ describing\ the\ compete\ culture}{Total\ number\ of\ keywords\ for\ all\ CVF\ cultures}. \quad (1)$$

Scaling the frequency of keywords describing compete culture by the total number of keywords in the bag of words for all four corporate cultures, allows to construct a measure that captures the relative emphasis a firm is placing on corporate values that characterize the compete culture compared to those values in rest corporate cultures. Hence, this scaling approach allows us to naturally account for the

[3] To generate a valid bag-of-words suitable to capture the intended informational context, we rely on the assumption that the expressions/words chosen by management in producing firms' 10-K fillings are representative of firms' corporate culture that firms have developed over time. This assumption is reasonable as recent literature has used firms' corporate disclosures and narratives to discover distinctive firm features relating to organizational culture (Fiordelisi and Ricci, 2014; Guiso et al., 2015a; Guiso et al., 2015b). Furthermore, studies demonstrate that textual analysis represents one of the main strategies used by researchers to discover core firm attributes, values and norms (Tetlock, 2007; Loughran and McDonald, 2009, 2011, 2016; Hoberg and Phillips, 2010, 2016; Li, 2010a, 2010b; Li et al., 2013; Popadak, 2013; Bushman et al., 2016; Graham et al., 2017;). Thus, parsing 10-K filings for specific keywords could enable us to quantify corporate attributes associated with the four corporate cultures of the CVF.

[4] While conducting our count we exclude negation of the lexical items by ignoring occasions when the word is preceded by "no", "non", "not", "less", "few" or "limited" by three or fewer words.

competing nature of firms' corporate cultures as theorized by the CVF, and helps to mitigate potential bias in our analysis that could otherwise be caused by the omission of the other three competing cultures.

Eq. (1) admits that the main ingredient of *TC* is the bag-of-words that associates with the compete culture, because low (high) values of *TC* emerge when the number of keywords in the compete culture bag of words is relative small (big) compared to number of keywords in the other three bags of words. In this regard, Figure 2 presents some interesting properties of our measure by highlighting the frequency of the compete culture-related words used per 10-K filling. We observe keywords such as *result**, *market**, and *performanc** ranking highest, with 10 to 15 occurrences on average per 10-K filling. This distribution across words is consistent with corporate attributes that characterize the compete culture under the CVF, and is suggestive that the construction of the bag-of-words method used to compute *TC* can indeed capture important facets of the compete culture.

[Insert Figure 2 here]

Further, we consider the relation between the compete culture-related words and Loughran and McDonald's (2011) sentiment classifications. We investigate the possibility that the compete culture keywords may proxy for some persistent tone and sentiment in corporate 10-K fillings.[5] Figure 3 presents the compete culture-related words classified into the main sentiment/tone dictionaries found in Loughran and McDonald (2011) (see also Bodnaruk et al., 2015). We note that the overlap between the keywords for the compete culture and their dictionaries is minimal. In fact, most keywords in the compete culture bag of words are not classified under theirs. More importantly, however, *TC* does not present any important correlation with the Loughran and McDonald (2011) tone measures; for instance, the correlation of *TC* with their "Negative" (*Fin-Neg*) dictionary is 0.04 and with their "Positive" (*Fin-Pos*) is 0.02. Thus, this evidence builds confidence that the compete culture bag of words does not overlap with other renowned business word dictionaries, which are widely applied in finance and accounting research, hence *TC* captures something distinctly new.

[Insert Figure 3 here]

In introducing our *TC* measure, we do not claim our method or chosen framework represents the one best approach to assess core firm attributes, values and norms. To do so would be of course unreasonable, as other authors have proposed alternative approaches to measuring organizational culture (see, for example, Hofstede, 1998; Hofstede et al., 1990; Li, 2010a, 2010b, Li et al., 2013; Popadak, 2013; Guiso et al., 2015a; Guiso et al., 2015b; Bushman et al., 2016). However, we argue that our approach is practical, as it allows us to quantify the key dimensions of organizational philosophy that should matter under the CVF, and to do so in a manageable way for a large sample of firms that is unlikely to be influenced by subjective biases. Further, our measure and the CVF upon which it is built

[5]The Loughran and McDonald (2011) word list is available at http://www3.nd.edu/~mcdonald/Word_Lists.html.

have a verified scholarly foundation (Quinn and Rohrbaugh, 1983). In addition, the development of the bag of words follows in spirit Fiordelisi and Ricci (2014), who operationalized the four dimensions of the CVF by conducting a textual analysis of firms' 10-K filings. More importantly, we also show that our measure does not overlap with conceptualizations of product-market competition developed using textual analysis in the spirit of studies such as those of Li et al. (2013) and Bushman et al. (2016).

2.3 Measurement of Institutional Ownership

We adopt two measures of institutional ownership, namely transient and dedicated institutional ownership, as in Bushee (1998) and subsequently studied in numerous works.[6] To develop these measures, we first use a cluster analysis to categorize institutional investors as either transient or dedicated institutional investors based on their past investment behavior. Transient institutional investors are those firms with a relative short-term investment horizon, while dedicated institutional investors have greater long-term investment behavior. Accordingly,, transient investors focus on short-term performance and invest based on the likelihood of earning short-term trading profits (Bushee, 1998, 2001; An and Zhang, 2013; Callen and Fang, 2013). Conversely, dedicated investors are defined as those that hold large stakes in a limited number of firms and have strong incentives to monitor the long-term performance of management (Bushee, 1998, 2001; Chen et al. 2001; An and Zhang, 2013). As a result, we define transient institutional ownership, *TRA*, as the percentage of stock ownership in the firm by short investment horizon institutional investors relative to total shares outstanding. Dedicated institutional ownership, *DED*, is defined as the percentage of stock ownership in the firm by long investment horizon institutional investors relative to total shares outstanding.

2.4 Measurement of Stock Price Crash Risk

We estimate the following three firm-specific measures of stock price crash risk, namely *DUVOL*, *ESIGMA*, and *NCSKEW*. Each of these measures reflects different aspects of the distribution of returns (Chen et al., 2001; Hutton et al., 2009; An and Zhang, 2013; Callen and Fang, 2013; Andreou et al., 2016; Andreou et al., 2017; Chen et al., 2017) and is computed by estimating firm-specific weekly returns using the following expanded index model regression:

$$r_{j,w} = \alpha_j + \beta_{1,j} r_{m,w-2} + \beta_{2,j} r_{m,w-1} + \beta_{3,j} r_{m,w} + \beta_{4,j} r_{m,w+1} + \beta_{5,j} r_{m,w+2} + \varepsilon_{j,w}, \quad (2)$$

where $r_{j,w}$ is the return on stock *j* in week *w* and $r_{m,w}$ is the CRSP value-weighted market index in week *w*. This regression removes market-wide return movements from firm returns, and thus the residuals of

[6] A non-exhaustive list of studies includes Shleifer and Vishny (1986), Gompers and Metrick (1998), Bushee (2001), Cai and Zheng (2004), Gaspar et al. (2005), Chen et al. (2007), Yan and Zhang (2009), Elyasiani and Jia (2010), Elyasiani et al. (2010), Callen and Fang (2013) and Andreou et al. (2016).

this model capture weekly firm-specific returns. Since the residuals from Eq. (2) are skewed, we define the firm-specific weekly return for firm *j* in week *t* as the natural logarithm of one plus the residual, namely $R_{j,w} = \ln(1 + \varepsilon_{j,w})$.

The *DUVOL* stock price crash risk measure is computed for each firm *j* over a fiscal year *t*, where all weeks with firm-specific returns below the annual mean are separated from those above the annual mean. *DUVOL* is the log of the ratio of the standard deviations of the weeks below the mean (DOWN) over the weeks above the mean (UP), and is computed as follows:

$$DUVOL_{j,t} = \log\{(n_u - 1)\sum_{\text{DOWN}} R_{j,w}^2 / (n_d - 1)\sum_{\text{UP}} R_{j,w}^2\}, \quad (3)$$

where n_u and n_d are the number of UP and DOWN weeks of the fiscal year *t*.

The *ESIGMA* stock price crash risk measure is the negative of the minimum difference between the firm-specific weekly returns and the average firm-specific weekly return, divided by the standard deviation of firm-specific weekly returns. We compute *ESIGMA* for a given firm in a fiscal year as follows:

$$ESIGMA_{j,t} = -\min\frac{R_{j,w} - \bar{R}_j}{\sigma_{R_j}}, \quad (4)$$

where $\bar{R}_j$ and σ_{R_j} are the mean and standard deviation of the firm-specific weekly returns $R_{j,w}$ for firm *j* over the fiscal year *t*.

The *NCSKEW* stock price crash risk measure is defined as the negative of the third moment of firm-specific weekly returns for each firm-year divided by the standard deviation of firm-specific weekly returns raised to the third power, and is computed as follows:

$$NCSKEW_{j,t} = -\left(n(n-1)^{\frac{3}{2}}\sum R_{j,w}^3\right) / \left((n-1)(n-2)\left(\sum R_{j,w}^2\right)^{3/2}\right), \quad (5)$$

where *n* is the number of observations of firm-specific weekly returns during the fiscal year *t*. The denominator in Eq. (5) is a normalization factor.

Following the definitions in Eq.'s (3)-(5), larger values of *DUVOL*, *ESIGMA*, and *NCSKEW* signify greater crash risk.

2.5 Control Variables

We carefully select control variables for our empirical analyses based on the extant literature that considers similar relationships to those explored here (see, for example, Bushee, 2001; Chen et al., 2001; Cheng and Warfield, 2005; Elyasiani and Jia, 2010; Hutton et al., 2011; Callen and Fang, 2013;

Fiordelisi and Ricci, 2014; Crane et al., 2015). We include in all specifications controls that capture firm-specific characteristics, as follows: the number of years since the firm was first included in the CRSP database, *AGE*; financial leverage as indicated by total liabilities to total assets, *LEV*; market value of equity to book value of equity, *MTB*; return on total assets, *ROA*; and the natural logarithm of market value of equity, *SIZE*.

Further, in our specifications that include either thrust to compete or crash risk as dependent variables, we control for investor heterogeneity since it is argued that this construct influences both variables. We control for investor heterogeneity by including the de-trended average weekly stock trading volume, *DTURN*, average weekly returns, *RET*, and volatility of weekly returns, *STDEV*, over the fiscal year (Hong and Stein, 2003; Bushman et al., 2016).

2.6 Descriptive Statistics and Correlations

Table 2 presents descriptive statistics of the variables used in our empirical analysis.[7] The mean value of our thrust to compete measure, *TC*, is 0.49. The institutional ownership variables *TRA* and *DED* and *TRA* have respective mean values of 0.15 and 0.06, while those of stock price crash risk measures *DUVOL*, *ESIGMA*, and *NCSKEW* have mean values of –0.04, 2.61, and 0.04, respectively. We observe that the summary statistics for the latter variables are largely comparable to the values reported in previous studies using these data (e.g., Bushee, 2001; Callen and Fang, 2013; Andreou et al., 2016).

[Insert Table 2 here]

Further, Table 3 offers average annual transition probabilities by deciles of thrust to compete (*TC*) (Panel A), transient institutional ownership (*TRA*) (Panel B), and dedicated institutional ownership (*DED*) (Panel C). We present these since the competing values framework suggests that a firm's corporate culture persists over time because such organizational attributes form the core traits of the firm (Cameron et al., 2014). As a result, based on the extant literature (Guiso et al., 2006, 2015a, 2015b; Hartnell et al., 2011; Popadak, 2013; Cameron et al., 2014), we would expect thrust to compete to be a slow-moving, i.e., sluggish, variable, and if our measure is valid it should reflect this. Furthermore, previous works suggest that transient (dedicated) institutional ownership should change rather slowly from year-to-year (Bushee, 1998, 2001).

In Table 3 we observe that firms in the lowest (1st) decile of *TC*, in any one year, have a 67% chance of remaining in the lowest TC decile the following year, while firms in the highest (10th) decile remain in that decile in the following year with a probability of 66%. Similarly, firms in the lowest decile of *TRA* have a 49% probability of remaining in that decile the following year; meanwhile, firms

[7] To mitigate the effects of outliers, all continuous variables are winsorized at the 1% and 99% levels.

in the highest decile of *TRA* remain in that decile the following year with a probability of 47%. In addition, those firms in the lowest decile of *DED* have a 45% likelihood of remaining in the lowest decile the following year, and firms in the highest decile of *DED* remain in that decile the next year with a probability of 58%. High persistence is also observed for the other diagonal deciles in each case. These results suggest that observed *TC*, *TRA* and *DED* are rather persistent over time.

[Insert Table 3 here]

We compute Pearson correlation coefficients for the variables used in our empirical analysis and report these in Table 4. Some of the more interesting correlations include the relation between *TC* and *TRA* (*DED*), where we find a positive and significant correlation between *TC* and *TRA* (correlation = 0.0858) and a negative and significant correlation between *TC* and *DED* (correlation = –0.0621). These results are consistent with our expectations that transient institutional ownership intensifies thrust to compete, while dedicated institutional ownership diminishes it.

Pearson correlation results consistent with our expectations are also found for the relationship between *TC* and the crash risk measures *DUVOL*, *ESIGMA*, and *NCSKEW*. Specifically, we find positive and significant correlations between *TC* and the various measures of crash risk, with 0.0179 correlation coefficient for *DUVOL*, 0.0278 correlation coefficient for *ESIGMA* and 0.0250 correlation coefficient for *NCSKEW*, all indicating that higher intensity of *TC* is associated with higher crash risk.

Finally, since a central tenet of the thrust to compete is that such firms should achieve increased revenue growth, the Pearson correlation results provide us with an opportunity to investigate the validity of our measure of thrust to compete by examining whether our measure loads on an important factor predicted by the Cameron et al.'s (2014) CVF. Consistent with the CVF and our expectations, we find positive and significant correlation (correlation = 0.0278) between *TC* and *SGROWTH*.

[Insert Table 4 here]

3 EMPIRICAL RESULTS

In this section, we report our main multivariate results based on empirical approaches adopted to deal with the practical challenges associated with our research design. To diminish potential endogeneity concerns we utilize instrumental variables, two-stage least squares (2SLS) analysis and dynamic panel generalized methods of moments (GMM) estimation to investigate the relation between thrust to compete and transient (dedicated) institutional ownership. In addition, to examine the relationship between thrust to compete and stock price crash risk, we estimate generalized least squared random effects (GLS-RE) regressions since this estimator is able to provide valid estimates of

parameters for slow-moving variables such as thrust to compete. We also present 2SLS estimates of this relation. [8]

3.1 Thrust to Compete and Institutional Investors Ownership

First, we investigate whether transient and dedicated institutional ownership are related to firms' thrust to compete. We expect that since transient institutional owners emphasize short-term performance and demand *results-right-now* (see for example, Bushee, 1998, 2001), these investors should intensify firms' thrust to compete as managers might succumb to their pressures for immediate superior performance (see Barton et al. 2016). For instance, managers at a firm with a large proportion of transient investors will be wary that these investors could forcefully exit the firm by selling shares, thereby suppressing the firm's stock price and undermining management's ability to raise capital (Bernardo and Welch, 2004; Fos and Kahn, 2015). Meanwhile, since dedicated institutional investors are more likely to stress long-term performance (Gaspar et al., 2005; Chen et al., 2007; Harford et al., 2017), we expect that these investors will lessen firms' thrust to compete. This is likely since managers at such firms are less concerned by investor actions brought about by initial signals of underperformance that can precipitate large stock price drops (Cella et al., 2013; Giannetti and Yu, 2017).

To empirically investigate whether transient (dedicated) institutional ownership is positively (negatively) related to thrust to compete, we adopt an IV approach to identify the causal effect of transient (dedicated) institutional ownership on the firms' thrust to compete based on the composition of the popular Russell indexes. In principle, each May 31st, Russell 1000/2000 indexes are formed based on firms' market capitalization rankings, where the largest thousand firms constitute the Russell 1000, while the next two thousand firms comprise the Russell 2000. Since firms are unable to control small variations in their market capitalization, and thus Russell rankings at the cutoff point, assignment to Russell 1000 or Russell 2000 is practically random. This random assignment to Russell 1000 or Russell 2000 near the threshold leads to large differences in index weights for firms around the Russell 1000/2000 cutoff point. Prior literature has noted that the discontinuity in the Russell 1000/2000 indexes drives a substantial difference in institutional ownership, since institutional investors are known to benchmark against the Russell 1000/2000 indexes, and hence are more likely to hold big positions in components that are assigned the largest index weights to reduce index-tracking error. Further, these differences in institutional ownership are likely to be unrelated to firm characteristics, since near the

[8] For our analysis, we refrain from choosing firm fixed-effect estimation as the main method. As it depends solely on within-firm variations, it is thus inapplicable in our case due to the persistency and slow-changing behavior of some of main variables. Such behaviors resemble, for example, the well-known stickiness nature of the corporate governance attributes, in which, following the intuition in Wintoki et al. (2012), the firm fixed-effects approach is not the optimal choice. Despite this, and for the sake of completeness, the firm fixed-effects results when regressing the institutional ownership variables on thrust to compete are reported in a supplementary online appendix.

cutoff point observed differences in market capitalization are a small proportion of return variance (Crane et al., 2015; Appel et al., 2016).

Thus, our identification strategy is to use inclusion in the Russell 1000 or Russell 2000 as a source of exogenous variation in the institutional ownership structure of the firm. Consistent with prior literature, we posit that our instrument is correlated with variations observed in the transient and dedicated institutional ownership composition and that it meets the exclusion requirement, in that it should only affect the intensity of firms' thrust to compete via changes in transient and dedicated institutional ownership. We take advantage of this exogenous variation to test whether transient (dedicated) institutional investors have a positive (negative) influence on a firm's thrust to compete. To do this, we estimate the following:

$$TC_t = \alpha_1 + \alpha_2 \widehat{TRA}_t(\widehat{DED}_t) + \alpha_3 R2000_t \times RANK_t + \alpha_4 MRKCAP_t + \alpha_5 FLOAT_t + \varepsilon_t, \quad (6a)$$

$$TRA_t(DED_t) = \gamma_1 + \delta_1 R2000_t + \beta_1 R2000_t \times RANK_t + \beta_2 MRKCAP_t + \beta_3 FLOAT_t + \mu_t, \quad (6b)$$

where *R2000* is a dummy variable equal to one if the firm is assigned to the Russell 2000 index and is zero if the firm is assigned to the Russell 1000 index, *RANK* is the firm's ranking order within the Russell index, measuring the distance from the index cutoff each year, which is based on firm's market capitalization, *MRKCAP* is firms' market capitalization on May 31st each year, and *FLOAT* is the difference between rank implied by the observed market capitalization and the rank assigned by Russell in June.

The estimates of the two-stage model Eq.'s (6a) and (6b) are presented in Table 5. The coefficient of interest is α_2, of Eq (6a) is expected to be positive (negative) in the case of the relationship between *TRA* (*DED*) institutional ownership and thrust to compete. Consistent with our expectations, in model (2) and (4) we find that the coefficient term on the TRA_t (DED_t) is 0.039 (–0.064) and statistically significant (*p*-values<0.05). Further, the results of Stock and Yogo's (2005) test for weak instruments (Table 5 Panel B) indicate that *R2000* is a valid instrument. Thus, our results suggest a causal relationship between transient (dedicated) institutional ownership and firms' thrust to compete in the direction that we argue.

[Insert Table 5 here]

In further support of our IV approach, we also estimate the following 2SLS model:

$$TC_{t+1} = \alpha_1 + \alpha_2 \widehat{TRA}_t(\widehat{DED}_t) + \alpha_3 AGE_t + \alpha_4 DTURN_t + \alpha_5 LEV_t + \alpha_6 MTB_t + \alpha_7 ROA_t + \alpha_8 SIZE_t + \alpha_9 STDEV_t + \varepsilon_t, \quad (7a)$$

$$TRA_t(DED_t) = \gamma_1 + \delta_1 DYIELD_t + \delta_2 RET_t + \delta_3 SGROWTH_t + \delta_4 SP500_t + \beta_1 AGE_t$$

$$+ \beta_2 DTURN_t + \beta_3 LEV_t + \beta_4 MTB_t + \beta_5 ROA_t + \beta_6 SIZE_t$$

$$+ \beta_7 STDEV_t + \mu_t, \quad (7b)$$

where, consistent with prior work in this area (see, for example, Bushee, 2001; Callen and Fang, 2013), we use dividend yield (*DYIELD*), stock return performance (*RET*), sales growth (*SGROWTH*), and inclusion in the S&P 500 index (*SP500*) as instruments for dedicated and transient institutional ownership (refer to Table 1 for detailed variable definitions). Compared to our prior instrumental variable estimation in Table 5, where we instrument institutional ownership using inclusion in the Russell 2000 index, this approach allows us to conserve more of the main sample data and thereby increase the power of the analysis. Further, the results of Stock and Yogo's (2005) test for weak instruments indicate that these instruments are appropriate for our analysis.

These estimates are provided in Table 6, where the sign and significance of the fitted values of *TRA* and *DED* are presented in models (2) and (4) respectively. The results are consistent with those presented in our IV analysis, according to which we find a positive (negative) relationship between thrust to compete and transient (dedicated) institutional ownership. Thus, these instrumental variable results provide additional evidence in support of the relation between thrust to compete and institutional ownership in the manner that we have argued.

[Insert Table 6 here]

Furthermore, we estimate a dynamic panel GMM model, since it is plausible that the relationship between *TC* and *TRA* (*DED*) is dynamically endogenous. It is possible that causation runs both ways and that current values of thrust to compete could affect both future institutional ownership and thrust to compete. Hence, to control for this kind of endogeneity, we follow Wintoki et al. (2012) by adopting the dynamic panel GMM model as proposed by Arellano and Bover (1995) and Blundell and Bond (1998). This approach allows us to explicitly control for lagged values of *TC*. What is more, we can use firm information within our dataset as instruments. We estimate the following empirical model:

$$TC_t = \alpha_1 + \alpha_2 TRA_t(DED_t) + \gamma_1 TC_{t-1} + \gamma_2 TC_{t-2} + \beta_1 AGE_t + \beta_2 DTURN_t + \beta_3 LEV_t$$

$$+ \beta_4 MTB_t + \beta_5 RET_t + \beta_6 ROA_t + \beta_7 SIZE_t + \beta_8 STDEV_t + \eta_t + \varepsilon_t, \quad (8)$$

where we first-difference Eq. (8) to eliminate unobserved heterogeneity and potential omitted variable bias. Next, we estimate the first-differenced model by GMM using lagged values (and differences) of thrust to compete and other firm characteristics as instruments. By using lagged variables as instruments, we control for potential simultaneity and reverse causality.

The results of our system GMM estimates are presented in Table 7. We find results that are consistent with a positive (negative) relationship between thrust to compete and transient (dedicated) institutional ownership. Further to the previous analyses, the GMM approach allows us to treat all

independent and control variables as endogenous. In fact, in our empirical analysis we assume that only firm age and the year dummies are exogenous. The *AR*(1) and *AR*(2) serial correlation tests results suggest that we cannot reject the null hypothesis of no serial correlation. Further, we apply Hansen's (1982) test for overidentification, as in Arellano and Bond (1991) to assess the validity of our instruments, and based on the results we do not reject the null hypothesis that our instruments are valid. In addition, we conduct the difference-in-Hansen test of exogeneity in a manner similar to Bond et al. (2001) to determine whether the subset of instruments used in the level equation are exogeneous. Again, we do not reject the null hypothesis that our instruments are exogeneous. All told, the results of these specification tests lead us to conclude that our dynamic GMM regressions are valid.

In summary, we provide robust causal evidence that transient ownership positively influences a firm's thrust to compete. This finding suggests that transient institutional owners pressurize managers to propel their firms' corporate culture toward the thrust to compete in pursuit of short-term financial objectives that may be harmful to the long-term value of the firm. Furthermore, we demonstrate that dedicated ownership lessens a firm's thrust to compete, and this is suggestive of dedicated institutional investors acting as effective monitors of management, thereby pushing managers to adopt a less intensive thrust to compete. Additional estimates of these relations provide similar findings and support the main results (included in the supplementary online appendix).

[Insert Table 7 here]

3.2 Thrust to Compete and Stock Price Crash Risk

Next, we consider the relation between firms' thrust to compete and firm-specific stock price crash risk. Given our prior results, it is likely that firms with a heightened thrust to compete are more prone to stock price crashes when bad news that was once concealed is released to the market. Thus, to test whether thrust to compete is indeed positively related to one-year-ahead firm-specific stock price crash risk, we estimate the following model:

$$CRASH_{t+1} = \alpha_1 + \alpha_2 TC_t + \alpha_3 AGE_t + \alpha_4 DTURN_t + \alpha_5 LEV_t + \alpha_6 MTB_t + \alpha_7 RET_t + \alpha_8 SIZE_t + \alpha_9 STDEV_t + \varepsilon_t, \quad (9)$$

where *CRASH* is used to denote our stock price crash risk measures, *NCSKEW*, *ESIGMA*, and *DUVOL*. We account for the impact of other factors by including control variables that capture relevant firm-specific characteristics known to affect crash risk. The coefficient of interest, α_2, is predicted to be positive and significant.

Table 8 presents the empirical analysis conducted to assess the relationship between thrust to compete and crash risk. Particularly, we provide GLS-RE estimates of Eq. (9), as this estimator is well-suited to analysis that involves slow-moving variables. This is because, unlike fixed effects estimators,

this estimator allows for the inclusion of slow-moving covariates without destabilizing the estimates of the effect of these variables (Li, 2010a; Li, 2010b; Li et al., 2013; Loughran and McDonald, 2011; Clark and Linzer, 2015).

In Table 8, the coefficient terms 0.018 (p-value<0.05), 0.029 (p-value<0.01), and 0.024 (p-value<0.01) on the *TC* variable in models (1), (2) and (3) show a positive and significant relation between thrust to compete and future crash risk. We repeat the estimates of Eq. (9) using the OLS regressions, and by including explicit controls for managers' short-term incentives. In particular, we use cuts in firm R&D expenditure and R&D intensity change to proxy managerial myopia. We find similar results (included in the supplementary online appendix).

[Insert Table 8 here]

Further, we estimate models to allow for potential endogeneity in the relation between thrust to compete and stock price crash risk. To do this, we estimate the following:

$$CRASH_{t+1} = \alpha_1 + \alpha_2 \hat{TC}_t + \alpha_3 AGE_t + \alpha_4 DTURN_t + \alpha_5 LEV_t + \alpha_6 MTB_t + \alpha_7 ROA_t + \alpha_8 SIZE_t + \alpha_9 STDEV_t + \varepsilon_t, \quad (10a)$$

$$TC_t = \gamma_1 + \delta_1 HHI_t + \delta_2 STATE_t + \delta_3 SP500_t + \beta_1 AGE_t + \beta_2 DTURN_t + \beta_3 LEV_t + \beta_4 MTB_t + \beta_5 ROA_t + \beta_6 SIZE_t + \beta_7 STDEV_t + \mu_t, \quad (10b)$$

where *CRASH* denotes our stock price crash risk variables *DUVOL*, *ESIGMA*, and *NCSKEW*, while the variables *HHI*, *STATE*, and *SP500* instrument for thrust to compete. The Stock and Yogo's (2005) test suggests that our instruments are appropriate. Our empirical findings presented below in Table 9 support the notion that firms with more intensified thrust to compete tend to also be more prone to stock price crashes. Overall, the results are consistent with those presented in the previous analysis, where we argued and found that thrust to compete increases firm-specific stock price crash risk.

[Insert Table 9 here]

3.3 Thrust to Compete, Institutional Ownership and Stock Price Crash Risk

Finally, we investigate whether firms' thrust to compete is the channel through which institutional ownership affects crash risk. Our previous findings suggest that transient (dedicated) institutional ownership intensifies (lessens) firms' thrust to compete, and that such firms are more likely to experience stock price crashes. Consistent with these observations and prior work in this area (Bushee, 1998, 2001; An and Zhang, 2013; Callen and Fang, 2013; Andreou et al., 2016; Chen et al., 2017), we argue that since transient institutional owners exert pressures on the firm to achieve short-term performance objectives (at the expense of long-term value), this serves to distort a firm's thrust to compete, which in turn increases firm-specific crash risk. Further, since dedicated institutional investors

appear to serve as effective monitors of the firm, this scrutiny serves to dampen excessive thrust to compete and thereby firm-specific crash risk.

To explore this, we re-estimate Eq. (9) for subsamples of *TRA* and *DED* that are sliced into HIGH and LOW proportions of transient and dedicated institutional ownership. Firm-years with *TRA* values below the yearly median are classified in the LOW *TRA* subsample, whereas firm-years with *TRA* values above the yearly median are classified in the HIGH *TRA* subsamples; likewise, we separate the LOW *DED* and HIGH *DED* subsamples. Thus, if thrust to compete is a channel through of which transient institutional investors influence a firm's operating philosophy, we would expect to observe that the relationship between thrust to compete and crash risk is stronger in the HIGH *TRA* and LOW *DED* subsample. We expect this because a significant presence of transient institutional owners is likely to pressurize managers to emphasize short-term performance objectives. This coupled with an absence of dedicated investors, who tend to focus on long-term firm value, creates a less-than-effective counter to managerial myopia and short-termism behavior in firms with greater intensity toward the thrust to compete, which in turn triggers higher instances of stock price crashes for such firms.

The results of this subsample analysis are presented in Table 10, where we find that thrust to compete increases future firm-specific crash risk *only* for those firm-years where transient institutional ownership is above, and dedicated institutional ownership below, the yearly median values (i.e., first quadrant in Table 10 labeled "HIGH *TRA* & LOW *DED*"). This result suggests a strong interrelationship between institutional ownership, thrust to compete, and stock price crash risk. In addition to the GLS-RE estimates presented in Table 10, we provide OLS estimates of these relations (included in the supplementary online appendix). These estimates also suggest a statistically significant positive relationship between *TC* and stock price crash risk only when transient institutional ownership is above and dedicated ownership below, the yearly median. We find these results indeed striking, as they show that thrust to compete in and of itself is not value destroying; rather, these results suggest that thrust to compete becomes harmful only when it is associated with a high proportion of transient and a low proportion of dedicated ownership.

[Insert Table 10 here]

4 Is Thrust to Compete Different from Product Market Competition?

In this section we present further analyses aimed at supplementing the results and findings previously presented. In particular, we explore whether our measure of firm's thrust to compete is indeed distinct from a similarly constructed measure that seeks to capture product market competition.

Moreover, even though the *TC* measure is designed to capture firms' thrust to compete under the CVF it is plausible that it may have an association with measures relating to product market competition. This is because Li et al. (2013) measure the intensity of firms' product market competition is constructed in a manner that is seemingly close to our approach. Specifically,, they count the number of times the words "competition(s)", "competitor(s)", "competitive(s)", "compete(s)", "competing(s)", appear in the firm's 10-K filling minus those occasions when these words are proceeded by "not", "less", "few" or "limited" by three or fewer words. They then control for the length of the 10-K by scaling by the number of words in the report.

However, unlike Li et al. (2013) we compute *TC* using a more comprehensive bag of words that capture corporate values relevant to a firm's orientations under the CVF (i.e. *competition*, *creation*, *collaboration*, and *control* corporate cultures). We then scale the number of thrust to compete words by the total number of the words characterizing all four corporate cultures (as opposed to the total number of words in the 10-K). This approach allows us to construct an intensity measure of a firm's thrust to compete, which is consistent to the CVF that theorizes a context in which the four different corporate cultures vie with each other. Nevertheless, if our measure simply reflects variations in product market competition then it is possible the relation that we discover between *TRA* (*DED*) and *TC* is driven by the intensity of firms' product market competition as opposed to the intensity of firms' thrust to compete. To preclude the possibility that our results are driven by product market competition, we analyze in Table 11 the relations between *TRA* (*DED*), our measure of thrust to compete, *TC*, and product market competition, *PCTCOMP*, as computed in Li et al. (2013).[9]

[Insert Table 11 here]

Table 11 Panel A presents mean scores for *TRA* (*DED*) by deciles of *TC* and *PCTCOMP*, respectively, inclusive of the results of *t*-tests conducted to assess the significance of the difference in means between the highest (10^{th}) and the lowest (1^{st}) deciles. Panel B of Table 11 highlights Pearson correlations between *TC*, *TRA*, *DED*, and *PCTCOMP*. Interestingly, we find that while our prior results suggest that transient institutional ownership (*TRA*) is strongly positively related to thrust to compete as measured by *TC*, transient institutional ownership *is not* related to product market competition as measured by *PCTCOMP*.

In addition, to test the relationship between *TRA* (*DED)* and *PCTCOMP* directly we estimate the following instrumental variable model:

$$PCTCOMP_t = \alpha_1 + \alpha_2 \widehat{TRA}_t(\widehat{DED}_t) + \alpha_3 R2000_t \times RANK_t + \alpha_4 MRKCAP_t$$

[9] Li et al. (2013) product market data are obtained from: http://webuser.bus.umich.edu/feng.

$$+ \alpha_5 FLOAT_t + \varepsilon_t, \tag{11a}$$

$$TRA_t(DED_t) = \gamma_1 + \delta_1 R2000_t + \beta_1 R2000_t \times RANK_t + \beta_2 MRKCAP_t + \beta_3 FLOAT_t + \mu_t, \tag{11b}$$

where *R2000* is a dummy variable that is equal to one if the firm is a member of the Russell 2000 index and is zero if the firm is assigned to the Russell 1000 index, *RANK* is the firm's rank within the Russell index based on firm's market capitalization, *MRKCAP* is firms' market capitalization on May 31st each year, and *FLOAT* is the difference between rank implied by the observed market capitalization and the rank assigned by Russell in June.

The estimates of the two-stage model Eq.'s (11a) and (11b) are presented in Table 12. The coefficient of interest is α_2, of Eq (11a) is insignificant. Thus, we are unable to detect a relation between *TRA* (*DED*) institutional ownership and Li et al.'s (2013) measure of product market competition.

Taken altogether, our findings imply that the relationship between *TRA* (*DED*) and our measure of thrust to compete is not driven by managers' perception of firms' product market competition. Nevertheless, we acknowledge that Li et al. (2013)'s product market competition is empirically nested within our measure but, if our measure simply reflects the variation in product market competition then we would expect to detect a relation between Li et al. (2013)'s measure and *TRA* (*DED*). However, our findings cannot be explained under a product market competition viewpoint.

[Insert Table 12 here]

5 CONCLUSION

This paper investigates the important role that firms' thrust to compete plays for corporate policies and outcomes. More specifically, we investigate how a firm's thrust to compete intensity is influenced by institutional investors, and subsequently test whether this is associated to adverse outcomes such as increased firm-specific crash risk. Using a text-based intensity measure of firms' thrust to compete, we document robust casual evidence that dedicated institutional ownership diminishes a firm's thrust to compete, while transient institutional ownership intensifies it. In addition, we find that firms with greater thrust to compete are more prone to future stock price crashes. These results suggest that dedicated institutional ownership helps to soothe managements' thrust to compete, while transient institutional ownership reinforces it and hence works as a stimulus to engage in opportunistic behavior that negatively affects firm value.

Overall, our results primarily suggest that institutional investors with short-termism behavior have an exerting effect on a firm's thrust to compete endeavoring to quickly increase stock prices. This benefits such institutional investors, who have a high portfolio turnover and engage in momentum

trading. However, we document that firms with greater thrust to compete are more likely to experience large firm-specific declines in their stock prices, something that is overall harmful for shareholders.

Our results have important implications of interest to academics and the wider business community. This is because the effect of institutional ownership on thrust to compete has implications for the manner in which firms are governed and managed. Our main findings should be of interest to boards of directors, who have a responsibility to eliminate any pressures on managers from outside investors to increase their thrust to compete to overly achieve short-term financial objectives. At the same time, boards should be perceptive in designing strategies to attract institutional investors, since we observe that their investment horizons can have either a beneficial or detrimental impact on the firm. Further, the influence of thrust to compete on stock price crash risk has repercussions for investor activity. In this vein, our results can be used by investors to screen firms, reducing the likelihood of experiencing stock price crashes, and by regulators forming policies regarding firms' governance systems.

APPENDIX

Bags of Words

This appendix reports the bags of words with synonyms that best describe the four corporate cultures (competition, creation, collaboration, and control) as theorized by Cameron et al.'s (2014) Competing Value Framework (CVF). Words ending with "*" indicate that we utilize all suffixes for those words to count as many words as possible with a close meaning without reporting all of them. While conducting our count we exclude negation of the lexical items by ignoring occasions when the word is preceded by "no", "non", "not", "less", "few" or "limited" by three or fewer words.

Competition culture:

achiev*, acqui*, aggress*, attack*, budget*, challeng*, charg*, client*, compet*, customer*, deliver*, direct*, driv*, excellen*, expand*, fast*, goal*, growth*, hard*, invest*, market*, mov*, outsourc*, performanc*, position*, pressur*, profit*, rapid*, reputation*, result*, sale*, satisf*, scan*, signal*, speed*, strong*, succes*, superior*, target*, win*

Creation culture:

adapt*, begin*, chang*, creat*, discontin*, dream*, elabor*, entrepre*, envis*, experim*, fantas*, freedom*, futur*, idea*, init*, innovat*, intellec*, learn*, new*, origin*, pioneer*, predict*, radic*, risk*, start*, thought*, trend*, unafra*, ventur*, vision*

Collaboration culture:

boss*, burocr*, cautio*, cohes*, certain*, chief*, collab*, conservat*, cooperat*, detail*, document*, efficien*, error*, fail*, help*, human*, inform*, logic*, method*, outcom*, partner*, people*, predictab*, relation*, qualit*, regular*, solv*, share*, standard*, team*, teamwork*, train*, uniform*, work*, group*

Control culture:

capab*, collectiv*, commit*, competenc*, conflict*, consens*, control*, coordin*, cultur*, decentr*, employ*, empower*, engag*, expectat*, facilitator*, hir*, interpers*, involv*, life*, long-term*, loyal*, mentor*, monit*, mutual*, norm*, parent*, partic*, procedur*, productiv*, retain*, reten*, skill*, social*,tension*, value*

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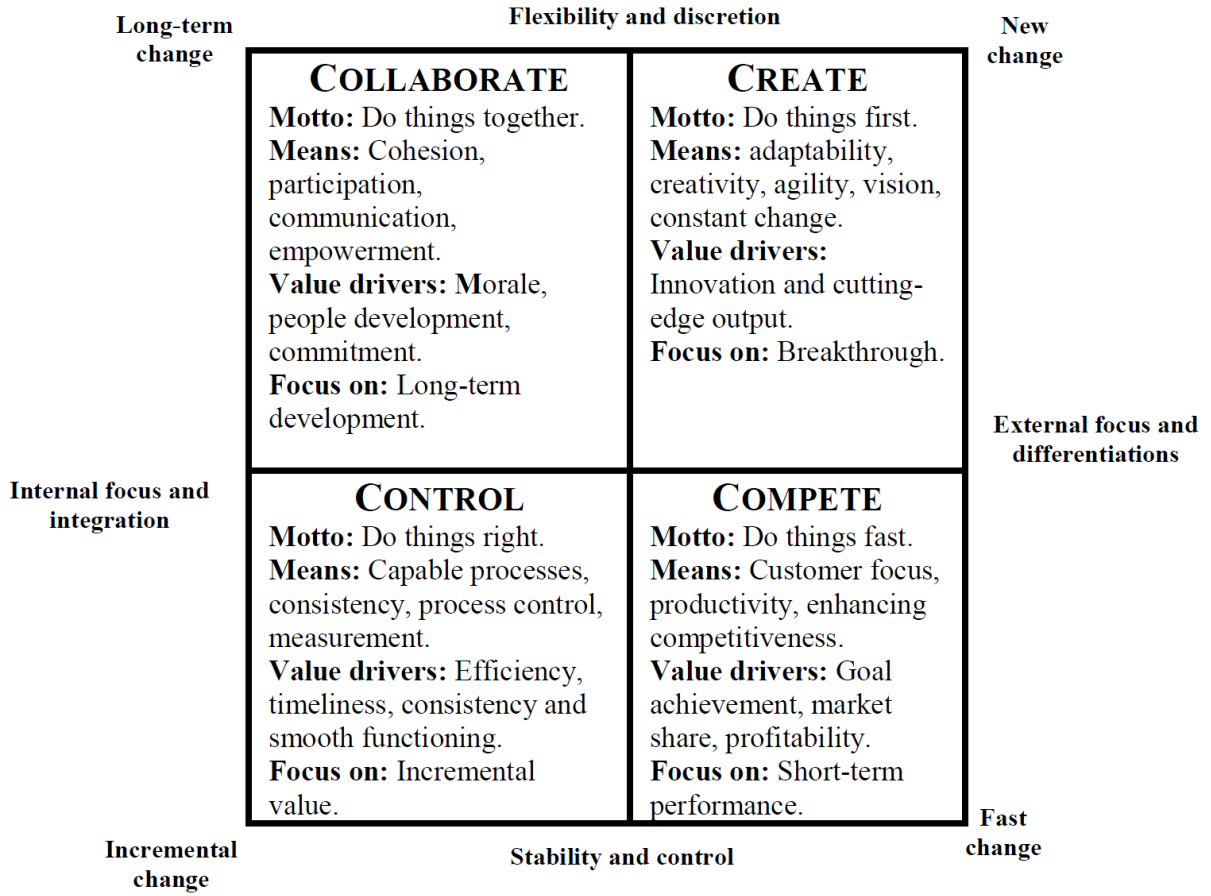
Figure 1
Types of Firm Corporate Cultures

Schematic Representation of the Four Corporate Cultures
Associated with the Competing Values Framework (CVF)



Source: Adapted from Cameron et al. (2014)

Figure 2
Keywords per 10-K Report for a Firm's Competition Culture

This figure presents the per 10-K report frequency of the keywords used to identify the competition culture.

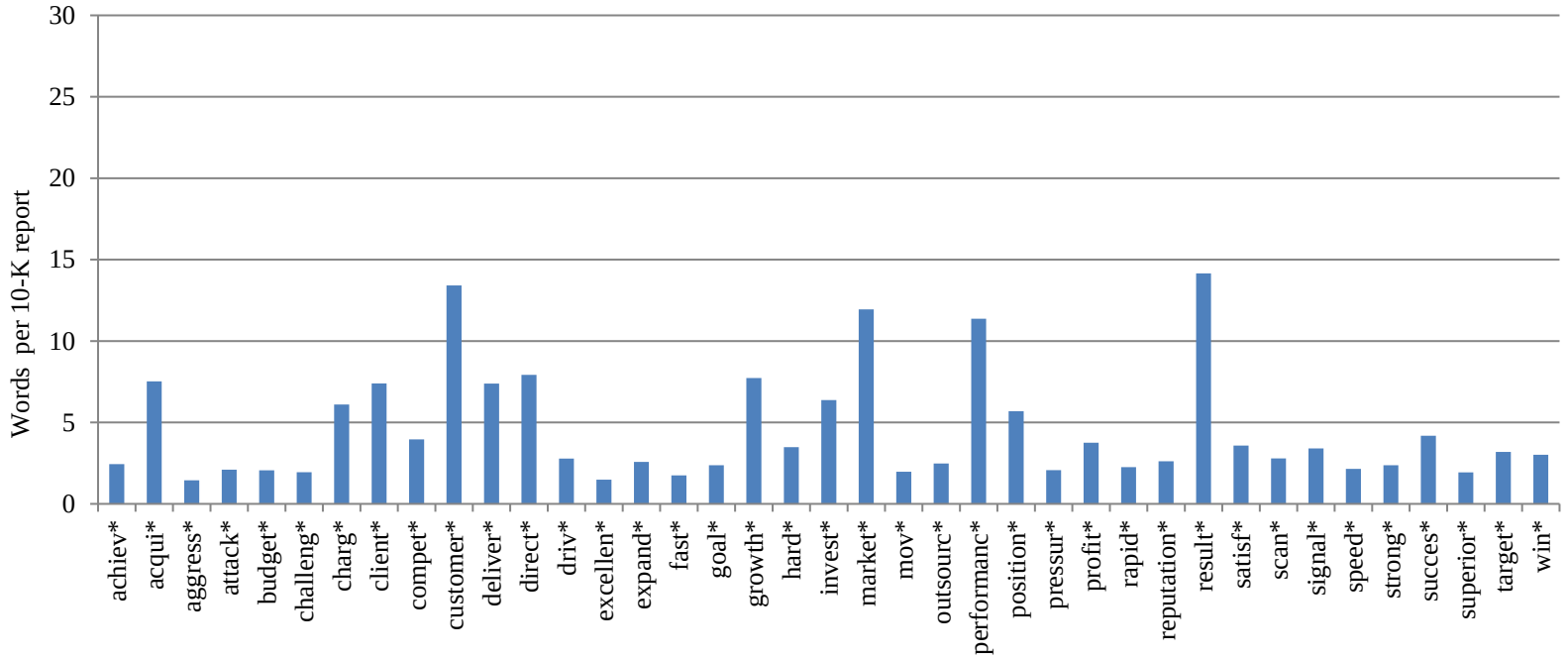


Figure 3
Classifications for Competition Culture Words

This graph highlights the competition culture keywords classified into the main tonal classes identified in Loughran and McDonald (2011) and Bodnaruk et al. (2015) computed as a percentage of total competition culture words. Loughran and McDonald (2011) develop a dictionary of words from all 10-Ks fillings during 1994 to 2008. After carefully examining all words occurring in at least 5% of the documents they classify each word according to its most likely usage and sentiment in financial documents. As such, those words classified as "Negative" are indicative of some adverse implication. Conversely, "Positive" words are those that carry a favorable connotation in business. Those words classified as "Uncertainty" are indicative of imprecision and/or risk, while those that reflect the potential for legal contestation are denoted at "Litigious". Those words that express either strong or weak levels of confidence (i.e. strong and weak modal words) are grouped and classified here as "Model". Adopting a similar methodology used by Loughran and McDonald (2011), Bodnaruk et al. (2015) classify "Constraining" words as those that suggest financial constraints.

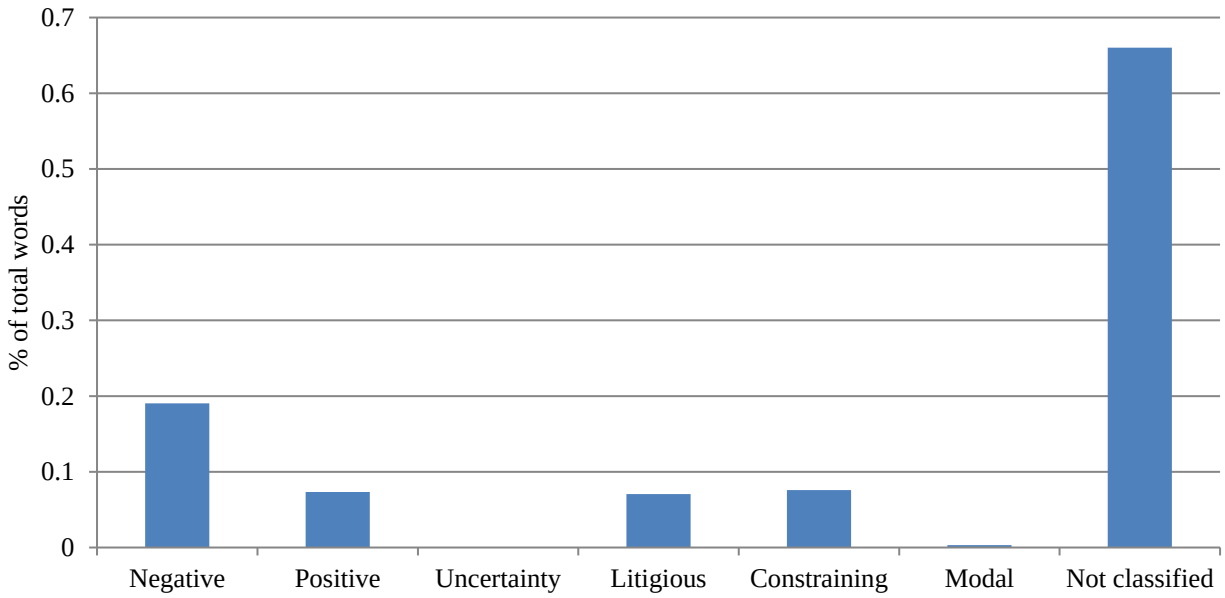


Table 1
Definition of Variables

	Symbol		Definitions
Thrust to Compete			
	TC	=	the intensity of a firm's thrust to compete estimated for each fiscal year using the text-analysis approach;
Institutional ownership			
	TRA	=	the percentage of stock ownership in the firm by transient institutional investors relative to total shares outstanding;
	DED	=	the percentage of stock ownership in the firm by dedicated institutional investors relative to total shares outstanding;
Crash risk			
	DUVOL	=	for each firm over a fiscal year, all the weeks with firm-specific returns below the annual mean are separated from those firm-specific weekly returns which are above the annual mean; we categorize these weeks as "down weeks" and "up weeks", respectively. *DUVOL* is the log of the ratio of the standard deviations of the two subsamples, the one for the "down weeks" over the standard deviation of the "up weeks";
	ESIGMA	=	the negative of the worst deviation of firm-specific weekly returns from the average firm-specific weekly return divided by the standard deviation of firm-specific weekly returns;
	NCSKEW	=	the negative of the third moment of firm-specific weekly returns for each firm and year by the standard deviation of firm-specific weekly returns raised to the third power;
Other variables			
	AGE	=	number of years since the firm first appears in CRSP;
	DTURN	=	average monthly turnover for the current fiscal year, minus the average monthly share turnover for the previous year;
	DYIELD	=	annual dividend yield;
	FLOAT	=	the difference between rank implied by the observed market capitalization and the rank assigned by Russell in June;
	HHI	=	the Herfindahl-Hirschman concentration ratio computed using total assets for each firm by FF 48 index and state;
	LEV	=	long-term debt by total assets;
	MKTCAP	=	natural logarithm of market capitalization at May 31 for each calendar year;
	MTB	=	market to book value of equity at the end of the fiscal year;
	PCTCOMP	=	annual intensity of firm's product market competition measured using Li et al.'s (2013) textual analysis approach;
	RANK	=	rank order of the Russell index based on market capitalizations at May 31 of each calendar year;
	RET	=	average weekly returns over the fiscal year;
	ROA	=	return on assets defined as income before extraordinary items divided by total assets;
	R2000	=	equal to 1 if the firm is in the Russell 2000 index and is 0 if firm is a member of the Russell 1000 index;
	SGROWTH	=	sales for the fiscal year divided by sales for the prior fiscal year;
	SIZE	=	natural logarithm of market value of equity at the end of the fiscal year;
	SP500	=	equal to 1 if the firm is included in the S&P 500 index, and is 0 otherwise;
	STATE	=	equal to 1 if firms in the state have above median thrust to compete, and is 0 otherwise; and
	STDEV	=	volatility of firm-specific weekly returns.

Table 2
Descriptive Statistics for the Variables used in the Empirical Analyses

This table presents the mean, median, 25th percentile, 75th percentile, and number of observations for the variables used in the study for the period 1994 to 2014.

Variable	Obs.	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
TC	31,223	0.49	0.06	0.45	0.49	0.54
TRA	31,223	0.15	0.12	0.06	0.13	0.22
DED	31,223	0.06	0.09	0	0.01	0.09
DUVOL	31,223	–0.04	0.37	–0.29	–0.05	0.19
ESIGMA	31,223	2.61	0.76	2.08	2.44	2.97
NCSKEW	31,223	0.04	0.84	–0.41	–0.01	0.42
AGE	31,223	23.64	12.98	14	20	32
DTURN	31,223	1.19	23.18	–5.97	0.4	7.76
DYIELD	31,223	0.01	0.05	0	0	0.01
FLOAT	2,608	103.45	132.92	-485	3	78
HHI	31,223	0.43	0.29	0.2	0.35	0.6
LEV	31,223	0.47	0.29	0.28	0.46	0.62
MKTCAP	2,900	20.66	1.57	16.91	19.53	20.41
MTB	31,223	3.38	55.44	1.32	2.13	3.58
PCTCOMP	15,352	0.52	0.45	0	0.21	0.38
RANK	2,900	413.88	830.87	-999	-314	415
RET	31,223	–0.2	0.21	–0.25	–0.12	–0.06
ROA	31,223	0.01	0.26	0	0.05	0.08
R2000	2,900	0.65	0.48	0	0	1
SGROWTH	30,910	1.37	21.47	1	1.09	1.23
SIZE	31,223	6.29	1.78	5.02	6.2	7.43
SP500	31,223	0.21	0.41	0	0	0
STATE	30,478	0.51	0.5	0	1	1
STDEV	31,223	0.06	0.03	0.04	0.05	0.07

Table 3
Transition Matrices

This table presents average annual transition matrices between current and future period deciles of thrust to compete [Panel A], transient institutional ownership [Panel B], and dedicated institutional ownership [Panel C]. The diagonals are presented in bold figures.

Panel A: Thrust to compete

			TC_{t+1}									
			1	2	3	4	5	6	7	8	9	10
	Least	1	**0.6712**	0.1907	0.0617	0.0301	0.0183	0.0092	0.0078	0.0034	0.0050	0.0026
		2	0.2148	**0.4020**	0.2124	0.0841	0.0414	0.0191	0.0135	0.0080	0.0032	0.0016
		3	0.0642	0.2418	**0.2990**	0.2031	0.1057	0.0449	0.0229	0.0091	0.0057	0.0036
		4	0.0234	0.0917	0.2232	**0.2876**	0.1903	0.1030	0.0490	0.0198	0.0080	0.0041
		5	0.0132	0.0435	0.1002	0.2175	**0.2519**	0.2007	0.0992	0.0471	0.0181	0.0085
TC_t		6	0.0066	0.0198	0.0505	0.0956	0.2225	**0.2666**	0.1886	0.0991	0.0425	0.0082
		7	0.0060	0.0081	0.0213	0.0489	0.1033	0.2074	**0.2793**	0.2087	0.0932	0.0237
		8	0.0047	0.0076	0.0105	0.0230	0.0424	0.0924	0.2241	**0.3142**	0.2241	0.0568
		9	0.0029	0.0032	0.0037	0.0107	0.0184	0.0377	0.0944	0.2251	**0.3889**	0.2149
	Most	10	0.0043	0.0024	0.0016	0.0037	0.0062	0.0112	0.0268	0.0677	0.2121	**0.6640**

Panel B: Transient institutional ownership

			TRA_{t+1}									
			1	2	3	4	5	6	7	8	9	10
	Least	1	**0.4942**	0.2250	0.1081	0.0600	0.0395	0.0249	0.0184	0.0118	0.0096	0.0086
		2	0.2079	**0.3168**	0.1814	0.1055	0.0658	0.0416	0.0300	0.0212	0.0172	0.0127
		3	0.0969	0.1810	**0.2493**	0.1690	0.1037	0.0728	0.0467	0.0355	0.0262	0.0189
		4	0.0502	0.0974	0.1732	**0.2113**	0.1542	0.1201	0.0797	0.0545	0.0373	0.0223
		5	0.0334	0.0617	0.1077	0.1666	**0.1913**	0.1481	0.1173	0.0838	0.0555	0.0346
TRA_t		6	0.0208	0.0406	0.0715	0.1152	0.1622	**0.1822**	0.1540	0.1205	0.0852	0.0477
		7	0.0130	0.0254	0.0453	0.0756	0.1193	0.1675	**0.1918**	0.1647	0.1242	0.0731
		8	0.0089	0.0170	0.0273	0.0487	0.0794	0.1280	0.1789	**0.2055**	0.1892	0.1170
		9	0.0061	0.0101	0.0196	0.0312	0.0509	0.0757	0.1247	0.1973	**0.2645**	0.2200
	Most	10	0.0054	0.0087	0.0132	0.0178	0.0300	0.0442	0.0679	0.1158	0.2279	**0.4691**

Panel B: Transient institutional ownership

			DED_{t+1}									
			1	2	3	4	5	6	7	8	9	10
	Least	1	**0.4490**	0.1694	0.1078	0.0651	0.0589	0.0495	0.0317	0.0250	0.0255	0.0180
		2	0.1774	**0.3205**	0.1666	0.1107	0.0757	0.0458	0.0395	0.0285	0.0192	0.0161
		3	0.0881	0.1801	**0.2711**	0.1597	0.1087	0.0758	0.0490	0.0331	0.0208	0.0134
		4	0.0578	0.0991	0.1678	**0.2444**	0.1523	0.1056	0.0709	0.0490	0.0355	0.0177
		5	0.0406	0.0572	0.1028	0.1539	**0.2234**	0.1602	0.1085	0.0808	0.0476	0.0248
DED_t		6	0.0357	0.0361	0.0536	0.1028	0.1604	**0.2222**	0.1674	0.1134	0.0770	0.0314
		7	0.0262	0.0324	0.0414	0.0613	0.1046	0.1630	**0.2243**	0.1774	0.1138	0.0556
		8	0.0238	0.0233	0.0259	0.0422	0.0641	0.0953	0.1876	**0.2543**	0.1974	0.0862
		9	0.0210	0.0186	0.0169	0.0243	0.0335	0.0581	0.0992	0.1908	**0.3276**	0.2101
	Most	10	0.0150	0.0165	0.0150	0.0154	0.0213	0.0276	0.0410	0.0741	0.1905	**0.5836**

Table 4
Correlation Matrix

This table presents Pearson correlation coefficients for the variables used in the empirical analyses. The bold figures indicate significance at the 10 percent level and above.

	TC	*TRA*	*DED*	*DUVOL*	*ESIGMA*	*NCSKEW*	*AGE*	*DTURN*	*DYIELD*	*FLOAT*	*HHI*
TRA	**0.0958**										
DED	**-0.0621**	-0.0114									
DUVOL	**0.0179**	**0.1261**	0.0026								
ESIGMA	**0.0278**	**0.0832**	**-0.0188**	**0.7837**							
NCSKEW	**0.0250**	**0.1232**	0.0007	**0.9531**	**0.8308**						
AGE	**-0.1571**	**-0.1061**	**0.0644**	-0.0006	**-0.0343**	**-0.0241**					
DTURN	**-0.0259**	**0.1298**	-0.0062	**0.0465**	**0.0307**	**0.0469**	0.0112				
DYIELD	**-0.0286**	**-0.0468**	0.0052	0.0016	-0.0020	-0.0048	**0.0831**	0.0039			
FLOAT	0.0124	**0.1529**	**-0.0713**	0.0323	0.0054	0.0354	**-0.2818**	**0.1225**	**-0.0747**		
HHI	**-0.0776**	**-0.0928**	**-0.0228**	-0.0143	-0.0028	**-0.0235**	**0.1830**	0.0026	**0.0466**	-0.0369	
LEV	**-0.0876**	-0.0055	**0.0588**	**-0.0268**	**-0.0214**	**-0.0297**	**0.1012**	**0.0261**	**0.0409**	**-0.0665**	**0.0779**
MKTCAP	-0.0238	**-0.1210**	0.0323	-0.0069	-0.0164	-0.0119	**0.2523**	-0.0163	0.0152	**-0.1697**	**0.0826**
MTB	0.0019	0.0071	0.0039	0.0120	0.0132	0.0129	0.0032	0.0006	0.0011	-0.0177	-0.0040
PCTCOMP	**0.1389**	0.0012	**0.0651**	**-0.0251**	-0.0102	-0.0003	**-0.1616**	**-0.0315**	**-0.0575**	**0.0705**	**-0.0745**
RANK	**0.0532**	-0.0177	**-0.1236**	-0.0164	0.0013	0.0056	**-0.4013**	0.0181	0.0034	**0.5787**	**-0.0897**
RET	**-0.1054**	**-0.0803**	**0.0322**	**0.0610**	**0.0288**	**0.0148**	**0.2821**	**-0.1528**	**0.0776**	**-0.2513**	**0.1216**
ROA	**-0.0239**	**0.0465**	**0.0243**	**0.0827**	**0.0452**	**0.0539**	**0.1305**	**0.0498**	**0.0451**	**-0.0707**	**0.0702**
R2000	**0.0538**	**0.1221**	**-0.1499**	0.0075	0.0220	0.0217	**-0.3297**	**0.0778**	-0.0121	**0.4682**	**-0.0903**
SGROWTH	**0.0278**	-0.0028	-0.0046	0.0011	-0.0008	0.0032	-0.0109	0.0115	-0.0037	0.0040	-0.0075
SIZE	**-0.0512**	**0.2368**	**0.0241**	**0.1751**	**0.0876**	**0.1370**	**0.2867**	**0.0792**	**0.0151**	**-0.4069**	0.0122
SP500	**-0.1022**	**0.0626**	**0.0881**	**0.0365**	-0.0119	**0.0156**	**0.4053**	**0.0245**	**0.0330**	**-0.3701**	**0.0565**
STATE	**0.1467**	0.0141	**0.0393**	0.0103	**0.0219**	**0.0191**	**-0.1119**	**-0.0322**	**-0.0487**	0.0183	**-0.1998**
STDEV	**0.1141**	**0.1165**	**-0.0271**	**-0.0593**	**-0.0240**	-0.0090	-0.3387	**0.1427**	**-0.0965**	**0.2944**	**-0.1413**

	LEV	*MKTCAP*	*MTB*	*PCTCOMP*	*RET*	*ROA*	*R2000*	*SGROWTH*	*SIZE*	*SP500*	*STATE*
LEV											
MKTCAP	**0.0460**										
MTB	0.0035	0.0158									
PCTCOMP	**-0.2073**	**-0.0777**	-0.0005								
RANK	**-0.1815**	**-0.3372**	**-0.0445**	**0.1996**							
RET	**0.0512**	**0.1404**	-0.0085	**-0.2384**							
ROA	**-0.3109**	**0.0986**	-0.0032	**-0.0263**	**0.2943**						
R2000	**-0.1415**	**-0.2984**	**-0.0461**	**0.1634**	**-0.3223**	**-0.1942**					
SGROWTH	0.0004	-0.0025	0.0000	**0.0673**	-0.0045	-0.0057	-0.0230				
SIZE	**0.0994**	**0.4559**	**0.0205**	**-0.1996**	**0.3559**	**0.2017**	**-0.7712**	0.0068			
SP500	**0.1399**	**0.3268**	0.0046	**-0.1289**	**0.2191**	**0.1060**	**-0.6470**	0.0078	**0.6406**		
STATE	**-0.0973**	-0.0186	0.0136	**0.1464**	**-0.0735**	**-0.0606**	**0.0592**	-0.0056	**-0.0374**	**-0.0382**	
STDEV	**-0.0691**	**-0.1973**	0.0045	**0.2614**	**-0.9629**	**-0.2903**	**0.4077**	0.0055	**-0.4243**	**-0.2758**	**0.0883**

Table 5
Instrumental Variable Regressions of Institutional Ownership on Thrust to Compete

This table presents instrumental variable (IV) regressions of the relationships between transient (*TRA*) and dedicated (*DED*) institutional ownership and thrust to compete (*TC*) [Panel A], and the results of a Stock and Yogo (2005) weak instruments test [Panel B]. The regressions include year and industry fixed effects and the standard errors are clustered by firm.

Panel A. IV regression first and second stage results.

	1st stage: TRA_t	*TC_t*	*1st stage: DED_t*	*TC_t*
	(1)	(2)	(3)	(4)
TRA_t		0.039**		
		(2.41)		
DED_t				-0.064**
				(2.13)
$R2000_t$	0.263***		-0.161***	
	(6.91)		(3.78)	
$R2000_t \times RANK_t$	-0.350***	0.012**	-0.641**	-0.006
	(10.09)	(2.16)	(2.04)	(1.31)
$MRKCAP_t$	-0.068***	0.001	-0.007	-0.002
	(5.73)	(0.48)	(0.86)	(1.03)
$FLOAT_t$	0.957***	-0.005**	-0.039	-0.001
	(5.38)	(2.05)	(0.23)	(0.79)
R^2	0.18		0.08	
N	2,440	2,440	2,440	2,440

Panel B. Stock and Yogo (2005) Weak Instruments Test.

Instrumented variables	Instruments	First stage F – Statistic	Critical value
TRA_t	$R2000_t$	50.46	16.38
DED_t	$R2000_t$	60.21	16.38

*p<0.1; ** p<0.05; *** p<0.01

Table 6
2SLS Regressions of Institutional Ownership on Thrust to Compete

This table presents first and second stage 2SLS estimates used to investigate the relationship between dedicated and transient institutional ownership and thrust to compete. The regressions include year and industry fixed effects and the standard errors are clustered by firm.

	1st stage: TRA_t	TC_{t+1}	*1st stage: DED_t*	TC_{t+1}
	(1)	(2)	(3)	(4)
TRA_t		0.197***		
		(4.14)		
DED_t				–0.296*
				(1.79)
$DYIELD_t$	–0.106***		–0.029***	
	(12.57)		(3.78)	
$SGROWTH_t$	0.026***		–0.021***	
	(4.18)		(3.77)	
$SP500_t$	–0.252***		0.036	
	(7.27)		(1.24)	
RET_t	0.527***		0.152***	
	(21.12)		(6.64)	
AGE_t	–0.090***	–0.062***	–0.025**	–0.102***
	(7.94)	(3.77)	(2.31)	(6.45)
$DTURN_t$	0.090***	–0.031***	0.003	–0.013***
	(16.61)	(4.84)	(0.81)	(2.93)
LEV_t	0.016	–0.059***	0.035***	–0.047***
	(1.62)	(4.87)	(3.85)	(3.53)
MTB_t	0.002	–0.012	–0.026***	–0.020*
	(0.24)	(1.22)	(3.79)	(1.80)
ROA_t	0.041***	–0.019*	–0.007	–0.008
	(4.65)	(1.75)	(1.00)	(0.72)
$SIZE_t$	0.429***	–0.058***	0.105***	0.039*
	(29.24)	(2.59)	(9.23)	(1.78)
$STDEV_t$	0.599***	0.009	0.102***	0.012
	(22.03)	(0.74)	(3.85)	(0.76)
R^2	0.33		0.38	
N	30,910	30,910	30,910	30,910

Panel B. Stock and Yogo (2004) Weak Instruments Test

Instrumented variables	Instruments	First stage F – Statistic	Critical value
TRA_t	$DYIELD_t$; $SGROWTH_t$; $SP500_t$; RET_t	183.72	10.27
DED_t	$DYIELD_t$; $SGROWTH_t$; $SP500_t$; RET_t	18.33	10.27

*p<0.1; ** p<0.05; *** p<0.01

Table 7

Dynamic System GMM Regressions of Institutional Ownership on Thrust to Compete

This table presents dynamic fixed effects GMM panel estimates of the relationship between transient (dedicated) institutional ownership and thrust to compete. *AR*(1) and *AR*(2) are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test of over-identification is under the null that all instruments are valid. The Diff-in-Hansen test exogeneity is under the null that instruments used for the equations in levels are exogenous.

	TC_t	
	(1)	(2)
TRA_t	0.098**	
	(1.99)	
DED_t		–0.100*
		(1.68)
AGE_t	–0.031	–0.071**
	(1.62)	(2.53)
$DTURN_t$	–0.035	–0.014
	(0.96)	(0.42)
LEV_t	–0.096**	–0.064
	(2.18)	(0.96)
MTB_t	–0.038	0.025
	(0.93)	(0.51)
RET_t	–0.063	0.071
	(0.43)	(0.45)
ROA_t	–0.029	0.028
	(0.59)	(0.49)
$SIZE_t$	0.124**	0.063
	(2.54)	(0.79)
$STDEV_t$	–0.025	0.063
	(0.16)	(0.38)
TC_{t-1}	0.580***	0.428***
	(6.22)	(4.18)
TC_{t-2}	0.152**	0.121
	(1.98)	(1.61)
AR(1) test *p*–value	0.00	0.00
AR(2) test *p*–value	0.46	0.44
Hansen test for over–identification *p*–value	0.71	0.27
Diff–in–Hansen tests of exogeneity *p*–value	0.81	0.34
N	15,993	15,993

*p<0.1; ** p<0.05; *** p<0.01

Table 8
Random Effect Regressions of Thrust to Compete on Stock Price Crash Risk

This table presents generalized least squared random effects (GLS-RE) estimates used to investigate the relationship between thrust to compete and one-year-ahead stock price crash risk. All regressions include year fixed effects and the standard errors are clustered at the firm level.

	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$
	(1)	(2)	(3)
TC_t	0.018**	0.029***	0.024***
	(2.34)	(3.62)	(3.13)
AGE_t	–0.041***	–0.037***	–0.047***
	(4.85)	(4.29)	(5.63)
$DTURN_t$	0.024***	0.018**	0.021***
	(3.12)	(2.37)	(2.73)
LEV_t	–0.028***	–0.013*	–0.025***
	(3.54)	(1.70)	(3.13)
MTB_t	0.008	0.008	0.009
	(1.06)	(1.07)	(1.14)
RET_t	0.129***	0.079***	0.132***
	(4.75)	(2.89)	(4.88)
ROA_t	0.066***	0.041***	0.047***
	(7.90)	(4.57)	(5.33)
$SIZE_t$	0.188***	0.097***	0.178***
	(20.03)	(10.22)	(18.80)
$STDEV_t$	0.139***	0.089***	0.168***
	(4.62)	(2.93)	(5.56)
R^2	0.04	0.02	0.03
N	18,654	18,654	18,654

*p<0.1; ** p<0.05; *** p<0.01

Table 9
2SLS Regressions of Thrust to Compete on Stock Price Crash Risk

This table presents first and second stage estimates from 2SLS regressions used to investigate the relationship between thrust to compete and crash risk [Panel A], and the results of a Stock and Yogo (2005) weak instruments test [Panel B]. The regressions include year and industry fixed effects and the standard errors are clustered by firm.

Panel A. 2SLS regression second stage results.

	1st stage: TC_t	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$
	(1)	(2)	(3)	(4)
TC_t		0.167**	0.228***	0.187***
		(2.35)	(3.11)	(2.62)
HHI_t	0.028			
	(1.62)			
$STATE_t$	0.217***			
	(8.42)			
$SP500_t$	–0.108**			
	(2.18)			
AGE_t	–0.095***	–0.019	–0.008	–0.021*
	(5.58)	(1.61)	(0.64)	(1.77)
$DTURN_t$	–0.025***	0.029***	0.027***	0.027***
	(4.44)	(3.66)	(3.36)	(3.33)
LEV_t	–0.040***	–0.015	0.013	–0.007
	(2.79)	(1.57)	(1.36)	(0.71)
MTB_t	–0.019**	0.005	0.001	0.005
	(1.64)	(0.68)	(0.14)	(0.58)
RET_t	–0.010	0.145***	0.091***	0.154***
	(0.26)	(5.16)	(3.20)	(5.50)
ROA_t	0.001	0.069***	0.055***	0.052***
	(0.11)	(7.57)	(5.61)	(5.57)
$SIZE_t$	0.051**	0.173***	0.089***	0.160***
	(2.38)	(16.74)	(8.39)	(15.35)
$STDEV_t$	–0.001	0.153***	0.099***	0.189***
	(0.03)	(4.85)	(3.09)	(5.98)
R^2	0.19			
N	18,654	18,654	18,654	18,654

Panel B. Stock and Yogo (2005) Weak Instruments Test.

Instrumented Variables	Instruments	First stage F – Statistic	Critical value
TC_t	HHI_t; $STATE_t$; $SP500_t$	25.31	9.08

*p<0.1; ** p<0.05; *** p<0.01

Table 10
Subsample Analyses of Thrust to Compete on Stock Price Crash Risk

This table presents generalized least squared random effects (GLS-RE) estimates to investigate the relationship between thrust to compete and one-year-ahead stock price crash risk for subsamples of firms. All regressions include year and the standard errors are clustered at the firm level.

Panel A. The effect of thrust to compete on crash risk for subsamples of high transient and low (or high) dedicated ownership firms.

	HIGH *TRA* & LOW *DED*			HIGH *TRA* & HIGH *DED*		
	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
TC_t	0.047***	0.061***	0.053***	0.006	0.013	0.013
	(2.83)	(3.48)	(3.15)	(0.34)	(0.69)	(0.70)
AGE_t	–0.029	–0.012	–0.036*	–0.048**	–0.036*	–0.053***
	(1.54)	(0.67)	(1.95)	(2.57)	(1.81)	(2.80)
$DTURN_t$	0.042***	0.034**	0.041***	0.040**	0.021	0.038**
	(2.77)	(2.16)	(2.66)	(2.38)	(1.24)	(2.31)
LEV_t	–0.036**	–0.038**	–0.037**	–0.031*	–0.001	–0.028
	(2.17)	(2.11)	(2.16)	(1.71)	(0.05)	(1.50)
MTB_t	0.009	0.016	0.011	0.035**	0.025	0.034**
	(0.46)	(0.81)	(0.56)	(2.49)	(1.58)	(2.23)
RET_t	0.057	–0.034	0.034	0.125*	0.104	0.118
	(0.87)	(0.49)	(0.52)	(1.67)	(1.33)	(1.60)
ROA_t	0.039**	0.032	0.027	0.043*	0.016	0.016
	(2.06)	(1.50)	(1.28)	(1.86)	(0.58)	(0.64)
$SIZE_t$	0.165***	0.093***	0.136***	0.141***	0.067**	0.122***
	(5.90)	(3.23)	(4.82)	(5.72)	(2.47)	(4.83)
$STDEV_t$	0.083	0.006	0.089	0.158**	0.140*	0.165**
	(1.16)	(0.08)	(1.27)	(2.06)	(1.71)	(2.16)
R^2	0.04	0.03	0.03	0.04	0.02	0.04
N	4,011	4,011	4,011	3,575	3,575	3,575

(continued on the next page)

Table 10 cont'd.

Panel B. The effect of thrust to compete on crash risk for subsamples of low transient and low (or high) dedicated ownership firms.

	LOW *TRA* & LOW *DED*			LOW *TRA* & HIGH *DED*		
	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$	$DUVOL_{t+1}$	$ESIGMA_{t+1}$	$NCSKEW_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
TC_t	0.012	0.012	0.016	0.008	0.031*	0.01
	(0.80)	(0.81)	(1.07)	(0.46)	(1.73)	(0.58)
AGE_t	–0.014	–0.018	–0.018	–0.043**	–0.048**	–0.046**
	(0.86)	(1.12)	(1.10)	(2.24)	(2.49)	(2.43)
$DTURN_t$	–0.005	–0.011	–0.02	–0.037	–0.037	–0.044*
	(0.31)	(0.71)	(1.21)	(1.54)	(1.43)	(1.82)
LEV_t	–0.007	0.009	0.001	–0.02	–0.023	–0.02
	(0.45)	(0.63)	(0.09)	(1.04)	(1.23)	(1.03)
MTB_t	–0.001	0.002	0.002	0.018	0.016	0.01
	(0.06)	(0.11)	(0.10)	(0.99)	(0.86)	(0.53)
RET_t	0.053	0.056	0.059	0.134*	0.019	0.146**
	(1.06)	(1.15)	(1.20)	(1.82)	(0.26)	(2.06)
ROA_t	0.066***	0.039***	0.049***	0.073***	0.048**	0.051**
	(4.46)	(2.64)	(3.36)	(3.54)	(2.26)	(2.36)
$SIZE_t$	0.214***	0.130***	0.205***	0.119***	0.047**	0.117***
	(10.35)	(6.35)	(9.85)	(5.60)	(2.26)	(5.53)
$STDEV_t$	0.053	0.047	0.092*	0.103	–0.007	0.152**
	(0.94)	(0.86)	(1.65)	(1.33)	(0.10)	(2.01)
R^2	0.07	0.04	0.05	0.04	0.02	0.03
N	4,505	4,505	4,505	3,088	3,088	3,088

*p<0.1; ** p<0.05; *** p<0.01

Table 11
Univariate Analyses of the Relationships between Institutional Ownership, Thrust to Compete, and Product Market Competition

This table presents univariate analyses of the relationships between transient (*TRA*) and dedicated (*DED*) institutional ownership, thrust to compete (*TC*), and product market competition (*PCTCOMP*). Panel A shows the results by deciles of thrust to compete, and product market competition. The significance of the difference between means in deciles 10 and 1 are indicated in the last row where, "*", "**", and "***" indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Panel B highlights Pearson's correlation results between the institutional ownership, thrust to compete, and product market competition. The bold figures indicate significance that the 10 percent level and above.

Panel A. Deciles analysis.

		TC		*PCTCOMP*	
		TRA	*DED*	*TRA*	*DED*
Lowest	1	0.1287	0.0501	0.1422	0.0402
	2	0.1306	0.0392	0.1396	0.048
	3	0.1333	0.038	0.1458	0.0502
	4	0.1329	0.0366	0.1453	0.0525
	5	0.1409	0.0354	0.1405	0.0535
	6	0.1451	0.0373	0.1447	0.0559
	7	0.1463	0.0367	0.137	0.0652
	8	0.1449	0.0357	0.1385	0.0616
	9	0.149	0.034	0.1368	0.0592
Highest	10	0.145	0.0406	0.1448	0.0643
Diff (10) - (1)		0.0164	-0.0095	0.0026	0.0241
t–stat		6.18***	-5.69***	0.77	11.14***

Panel B. Pearson's correlations.

	PCTCOMP
TC	**0.1389**
TRA	0.0012
DED	**0.0651**

Table 12
Instrumental Variable Regressions of Institutional Ownership on Product Market Competition

This table presents instrumental variable (IV) regressions of the relationships between transient (*TRA*) and dedicated (*DED*) institutional ownership and product market competition (*PCTCOMP*) [Panel A], and the results of a Stock and Yogo (2005) weak instruments test [Panel B]. The regressions include year and industry fixed effects and the standard errors are clustered by firm.

Panel A. IV regression first and second stage results.

	1st stage: TRA_t	*$PCTCOMP_t$*	*1st stage: DED_t*	*$PCTCOMP_t$*
	(1)	(2)	(3)	(4)
TRA_t		0.013		
		(0.53)		
DED_t				0.005
				(0.18)
$R2000_t$	0.263***		-0.161***	
	(6.91)		(3.78)	
$R2000_t \times RANK_t$	-0.350***	0.152***	-0.641**	0.152***
	(10.09)	(4.45)	(2.04)	(4.44)
$MRKCAP_t$	-0.068***	-0.031***	-0.007	-0.031***
	(5.73)	(4.11)	(0.86)	(4.06)
$FLOAT_t$	0.957***	0.005	-0.039	0.005
	(5.38)	(0.29)	(0.23)	(0.29)
R^2	0.18		0.08	
N	2,440	1,808	2,440	1,808

Panel B. Stock and Yogo (2005) Weak Instruments Test.

Instrumented variables	Instruments	First stage F – Statistic	Critical value
TRA_t	$R2000_t$	50.46	16.38
DED_t	$R2000_t$	60.21	16.38

*p<0.1; ** p<0.05; *** p<0.01