UNDER PRESSURE: THE CAUSAL EFFECT OF FINANCIAL ANALYST COVERAGE ON LONG-TERM CAPITAL INVESTMENTS

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Abstract

This study examines whether coverage from financial analysts causes corporate short-termism by affecting the horizons of firms' capital investments. Financial analysts evaluate the performance of firms in order to develop and distribute opinions about a firm's stock. I hypothesize and empirically illustrate that greater analyst coverage leads to more pressure on firms to perform in the short-term, which biases firms away from making longer-term capital investments. To establish causality, I use a difference-in-differences technique that exploits a series of quasi-natural experiments provided by 52 brokerage closures and brokerage mergers that occurred between 1994 and 2008. I find that firms that lose a covering analyst from a brokerage disappearance extend their attention further into the distant future and invest more in longer-term capital, compared to similar firms that do not lose an analyst. I also find that this effect is stronger for firms in fast-moving industries, and for those with stronger corporate governance policies, poorer financial health, and lower initial analyst coverage.

Key words: Short-termism; Capital investment horizons; Analyst coverage; Time horizons; Difference-in-differences

“If we think long term, we can accomplish things that we couldn’t otherwise accomplish.”
-- Jeff Bezos, CEO of Amazon

There is growing concern that companies are failing to invest in the long term. Researchers and practitioners argue that managers are forgoing investments in long horizon projects in favor of investments that pay off more quickly (Laverty, 1996; Marginson and McAulay, 2008). In fact, almost 80 percent of managers admit they are willing to forgo capital investments in order to meet short-term earnings targets (Graham, Harvey, and Rajgopal, 2005), resulting in lower spending in areas such as sustainability and research and development (Derrien and Kecskés, 2013). In 2014, the average age of industrial equipment in the U.S. rose above 10 years to its highest level since 1938 (Hagerty, 2014). A heavy reliance on older capital can undermine the competitiveness of firms and the health of society (Hayes and Abernathy, 1980; Porter, 1992), and so identifying what causes firms to forgo investments in long-term capital is of central concern to management research.

In this paper, I explore whether financial markets influence the horizons of firms’ investments. Specifically, I ask: Does financial analyst coverage deter firms from investing in capital with longer horizons? Analyst coverage refers to the number of analysts that track and publish opinions on a firm’s stock. Analysts act as information intermediaries between firms and markets by engaging regularly with managers, setting short-term external performance benchmarks, and evaluating firms’ performance and future prospects (Brennan, Jegadeesh, and Swaminathan, 1993; Hong, Lim, and Stein, 2000; Yu, 2008). There is considerable evidence that analysts’ opinions and evaluations of firms strongly influence general market and public sentiment, as well as investors’ and other stakeholders’ actions (Francis and Soffer, 1997; Womack, 1996). Consequently, a growing body of work has documented that the pressures to meet analysts’ expectations ultimately affect firm behaviors (Benner, 2010; Benner and

Ranganathan, 2012). Yet, in spite of analysts' role in influencing corporate strategy, the effect of analysts on firms' capital investment horizons has not been studied, and, more broadly, "there is a dearth of direct evidence on the real effects of analysts" (Derrien and Kecskés, 2013: 1410).

Pressures to perform in the short term and long term are relevant to strategy since corporate managers must regularly balance the trade-offs between short-term and long-term investments and performance (March, 1991). For instance, many strategies that create value in the long term, such as investments in employee development, sustainability, or innovation, require forgoing returns in the short term (Bansal and DesJardine, 2014). And yet, generating insufficient short-term performance can jeopardize a firm's survival in the long term (Souder and Shaver, 2010). Peter Drucker (2013: 54) explains that the "specific task of managers is to harmonize in every decision and action the requirements of the immediate and long-range future. Managers cannot sacrifice either without endangering the enterprise."

This paper contributes to two related areas of research. First, previous studies have examined how managers' incentives affect the temporality of firms' behaviors (Flammer and Bansal, 2014; Souder and Bromiley, 2012; Souder and Shaver, 2010). Whereas this work focuses on organizational-level antecedents of time horizons, my study shifts the focus to environmental-level antecedents. Second, previous studies have found that analyst coverage negatively affects firm innovation (He and Tian, 2013) and R&D spending (Derrien and Kecskés, 2013). The belief is that analyst pressures cause firms to neglect longer-term investments, namely innovation and R&D. However, the relationship between analyst coverage and firms' investment horizons is equivocal. Innovation and R&D do not clearly capture firms' investment horizons since: a) innovation and R&D can produce short-term benefits; b) investments in innovation can be radical (long-term) or incremental (short-term), which analysts perceive differently (Benner, 2010); c) firms may invest in innovation and R&D for reasons not related to investment horizons, such as socioemotional reasons (Chrisman and Patel, 2012); and d) R&D spending has little association with long run value indexes (Laverty, 1993). For these reasons, more research is needed to understand how analysts affect the temporality of firms' investment horizons.

Endogeneity concerns have constrained empirical studies from establishing a causal link between analyst coverage and capital investment horizons. To establish causality, I study the effect of analyst coverage on capital investment horizons using two types of quasi-natural experiments, brokerage closures (Kelly and Ljungqvist, 2012) and brokerage mergers (Hong and Kacperczyk, 2010), in a difference-in-differences methodology. Both closures and mergers cause analysts to be terminated, resulting in lower analyst coverage for firms previously covered by these analysts. I match firms that were affected by the brokerage disappearances to similar firms that were not affected, and compare the difference in the horizons of each group's capital investments in the years following the events. Using this methodology allows me to control for time invariant variables and study the causality between analyst coverage and capital investment horizons. I also examine the role of numerous industry- and firm-level contingencies.

THEORETICAL DEVELOPMENT

Capital investment horizons

Capital investments have varying time horizons. While all investments, by definition, incur immediate costs to produce benefits later (Maritan, 2001), investments differ in how quickly those benefits are realized. On one hand, firms can choose to forgo profits today to invest in strategies that build future competitive advantages, such as innovation or sustainability (Barnett, 2007). On the other hand, firms can opt to maximize short-term profits by investing in incremental capital projects that produce smaller but faster returns (Laverty, 1996).

To illustrate the difference between short- and long-term capital, consider the dilemma that many manufacturing firms face. Manufacturers can choose to either continue using their current machinery, effectively increasing their short-term profits by delaying any cash outflow, or incur the expense of buying new equipment in hopes of increasing their future productivity and competitiveness. In 2014, Toyota was scorned by investors for accumulating $40 billion in cash while failing to invest in new plants and machinery. Instead of investing in long-term capital, Toyota chose to invest incrementally in its already stretched plants, which could be done by adding additional shifts and working hours (Jie and Horie, 2014).

Over time, managers will choose capital investments with different horizons depending on their goals. In making these decisions, managers do not always select investments based on their own merits, but on the pressures and priorities of the firm (Ocasio, 1997). Highly prioritizing short-term goals and objectives can result in managers favoring exploitative investments with faster payoffs (March, 1991). Souder and Shaver (2010), for instance, argue that managers who have more exercisable stock options will try to boost their firm's share price in the short-term by investing less in long-term capital. In this paper, I explore how pressures created in the external environment, namely those caused by analyst coverage, affect firms' investments in short- and long-term capital.

The role of financial analysts

Managers care considerably about maintaining elevated stock prices. First, managers' own stock options that tie their personal compensation to their firms' equity price, so lower (higher) equity prices decrease (increase) managers' compensation (Finkelstein, Hambrick, and Cannella, 2009; Puffer and Weintrop, 1991). Second, managers' job security increases when equity prices rise (Farrell and Whidbee, 2003). Higher equity prices decrease the likelihood of hostile takeovers and increase the satisfaction of investors and board members so managers face less risk of being fired.

Signals that convey weak short-term performance adversely affect firms' equity prices. Investors have imperfect information about managerial capabilities, so they rely heavily on quarterly earnings or analysts' recommendations to infer these capabilities. As a result, receiving stock downgrades from analysts and missing a single quarterly earnings target can signal incompetent management and declining competitiveness, causing investors to flee and stock prices to drop (Bartov, Givoly, and Hayn, 2002; Kasznik and McNichols, 2002). In support of this view, it is well documented that investors often overreact to short-term news about a firm's financial performance (Chopra, Lakonishok, and Ritter, 1992; De Bondt and Thaler, 1985).

The emphasis that markets and managers place on these signals highlights the importance of effectively managing them in ways that communicate a positive image. Hence, managers work hard to send positive signals to shareholders about a firm's outlook.

Analysts play a key role in formulating and transmitting signals about a firm's financial performance. They gather information about firms to form investment opinions and recommendations about those firms' stock. As such, analysts act as information intermediaries between firms and investors (Brennan and Subrahmanyam, 1995; Kelly and Ljungqvist, 2012) and are widely trusted as financial experts due to their perceived superior analysis and evaluation abilities and privileged access to information (see Yu, 2008). In this capacity, analysts act as advisors for investors, highlighting the best stocks with "Buy" recommendations and demoting others with "Hold" and "Sell" recommendations. Analysts' opinions are so highly valued by investors that analysts have attracted the moniker 'prophets' (e.g., Barber *et al.*, 2001). As a result of their influence, analysts can drastically change a firm's stock price through the information they distribute (Jegadeesh *et al.*, 2004; Loh and Stulz, 2011; Womack, 1996), with 36 percent of managers believing analysts are the most important economic agents in setting the stock price of their firm (Graham *et al.*, 2005). The power analysts relish as information gatekeepers highlights the pressure managers face in maintaining a favorable image in the eyes of this group.

Greater analyst coverage positively affects firm publicity and the pressures managers face to please analysts. Analyst coverage refers to the number of analysts that evaluate a firm's performance and publish their opinions through research reports to investors. First, each analyst expands the number of investors who follow firms. For example, Morgan Stanley clients might only pay attention to firms that are covered by a Morgan Stanley analyst. Investors who lack such information about a firm are less likely to follow and invest in its stock. In fact, some investors rely so much on analysts' opinions that they generally only invest in stocks that are covered by analysts (O'Brien and Bhushan, 1990). Second, each analyst expands the media coverage a firm receives. Specifically, analysts are regularly quoted in the media, which can cause stock prices to respond within seconds following televised pronouncements from analysts (Busse and Clifton Green, 2002). In sum, analysts draw attention to the firms they cover, so the pressures firms experience to please analysts intensify with greater analyst coverage.

The impact of analyst coverage on capital investment horizons

The flexibility managers feel in selecting capital investments increases when they are less pressured to sustain high levels of performance. One way managers control short-term performance is through the selection of capital investments with varying horizons (Stein, 1989). In particular, managers can temporarily increase (decrease) their firm's financial performance by selecting capital investments with shorter (longer) horizons. Managers have flexibility over capital investments (Bromiley, 1986) because they can either continue operating longer with current equipment and facilities (i.e., delaying replacement), purchase new equipment that is less substantial (i.e., make incremental investments), or forgo new capital purchases altogether. For example, an airline that is considering replacing its fleet could temporarily reduce its expenditures and increase its short-term performance by delaying or forgoing the purchase of new aircraft, leasing new aircraft, or refurbishing its existing aircraft.

Relieving earnings pressure from analysts encourages managers to invest more in longer-term capital. When analysts stop covering a firm, then the attention of the market decreases and investors become less responsive to the firm's immediate financial performance. This release of pressure grants managers more freedom to accept larger expenditures in the short term and slower revenues that come from investment in longer-term capital. For example, Aggarwal and Hsu (2013) find that a public ownership structure, relative to a private structure, dampens firm innovation. Exploring analysts as the source of concern, He and Tian (2013) find that firms that lose coverage from analysts become more innovative by generating more patents and patents with greater impact. He and Tian (2013: 856) reason that "Analysts exert too much pressure on managers to meet short-term goals, impeding firms' investment in long-term innovative projects." I extend this theory: overall, reducing analyst coverage will decrease the market's scrutiny of and responsiveness to information about a firm's immediate financial performance, which will provide firms with more leeway in investing in longer-term capital.

> *Hypothesis 1: An exogenous decrease in analyst coverage causes firms to invest more in capital with longer horizons.*

Capital investment horizons and industry clockspeed

Speed of industry change affects the capital investment decisions of managers. Fast clockspeed industries are characterized by rapid changes in products, processes, and competitors' strategic actions, which makes building sustainable competitive advantages difficult (Fines, 1998). Firms in these industries are required to make investments in new products and process technologies quickly and regularly (Nerkar and Roberts, 2004), as well as frequent strategic and organizational changes (Eisenhardt and Martin, 2000). In comparison, slow clockspeed industries permit firms to build competitive advantages by making slow and persistent investments in existing core competencies (Fines, 1998). Extant research shows that industry clockspeed is an important factor in assessing company management strategies (Nadkarni and Narayanan, 2007).

In comparison to firms in fast clockspeed industries, firms in slow clockspeed industries do not benefit significantly from investing in short-term capital, and so are less responsive to changes in analyst coverage. First, firms are often well-established in slow moving industries and have high levels of efficiency that make building competitive advantages through capital investments difficult. Short-term capital often does not provide the efficiencies required to compete in these environments and overcome barriers to entry. Second, in slow moving industries, premature investments can erode a firm's existing competitive advantages (Ferrier, 2001) and produce smaller returns overall. For instance, technological and competitive changes are rare in these industries, so smaller, more frequent investments can shorten the lifespan of existing capital. Third, slow moving industries may not always provide firms with short-term opportunities to exploit (Garg, Walters, and Priem, 2003). Instead, the slow moving environment dictates firms to focus on long-term investments that build stability and isolating mechanisms that protect their existing investments (Eisenhardt and Martin, 2000). For these reasons, firms in slow changing industries are more likely to invest in longer-term capital, regardless of analyst pressures.

In contrast, firms in fast clockspeed industries benefit from investing in both short- and long-term capital, which increases their responsiveness to changes in analyst coverage. On one hand, firms in fast-moving industries must invest in short-term capital to keep up with frequent changes in products and process technologies (Nerkar and Roberts, 2004) and industry dynamics. On the other hand, investments in long-term capital can produce sustainable competitive advantages that set these organizations apart in the long run (March, 1991). In support of this view, Garg *et al.* (2003) found that even in fast-moving and uncertain environments, firms that attend to innovation building have higher performance than those that neglect innovation. For example, despite operating in the rapidly changing retail industry, Wal-Mart has been able to remain competitive by continuing to invest large amounts of capital in building its distribution system over the long term. These investments have provided Wal-Mart with efficiencies that cannot be replicated through short-term capital. Due to the advantages provided by long-term capital, firms in fast-moving industries will rely more on these investments when short-term pressures from analysts are suppressed.

> *Hypothesis 2: The positive impact of a decrease in analyst coverage on firms' investment horizons is greater in fast clockspeed industries than in slow clockspeed industries.*

Capital investment horizons and corporate governance

How capital is allocated is central to the conflict between managers and shareholders (Jensen, 1986). The moral hazard (or agency) view purports that self-interested managers will use capital to serve their own interests when they can avoid being disciplined by shareholders.

Building on the primary line of reasoning in this paper, pressures from analysts may cause managers to invest capital in ways that are suboptimal for shareholders. Whereas managers benefit from pleasing analysts in the short term, shareholders profit when managers make longer-term investments. For example, Benner (2010) finds that analysts discount long-term, radical innovation, leading He and Tian (2013) and Gentry and Shen (2013) to find a negative relationship between analyst coverage and firm innovation and R&D spending. However, innovation is a major driver of economic growth that can set firms apart in the long run (Romer, 1987; Solow, 1957) and generate more significant profits and returns for shareholders overall. A growing body of work argues that shareholders benefit when managers make longer-term investments (Laverty, 1996; Porter, 1992).

Corporate governance provisions help align the interests of managers and shareholders. Specifically, strong corporate governance policies mitigate the moral hazard problem by redistributing greater rights and responsibilities to shareholders, granting them power to make decisions in corporate affairs and reward or punish managers for any undesirable behaviors. Thus, managers who succumb to analyst pressures and invest in incremental capital that produces faster payoffs but lower overall value to shareholders will be punished in firms with strong corporate governance (i.e., when firms have no or few shareholder rights-decreasing provisions). The threat of punishment will cause such vulnerable managers to invest in capital that more closely aligns with shareholders' interests when analyst pressures subside.

> *Hypothesis 3: The positive impact of a decrease in analyst coverage on firms' investment horizons is greater for firms with stronger corporate governance than for firms with weaker corporate governance.*

Capital investment horizons and firm financial health

The financial condition of firms affects how they allocate capital. Both prospect theory and the behavioral theory of the firm predict that decision-makers take greater risks when performance is below their aspirational levels. Underperformance triggers the need to improve, leading to greater risk-taking in an effort to turnaround failures (Cyert and March, 1963; Kahneman and Tversky, 1979). One way that firms assume greater risk is by making longer-term investments in capital (Audia and Greve, 2006).

Despite the suggestions of behavioral theory, existing research provides contradictory evidence about how organizations' risk preferences change under conditions of underperformance (Audia and Greve, 2006). For example, Miller and Chen (2004) find lower performance increases organizational risk-taking, whereas Wiseman and Bromiley (1996) find it decreases risk-taking. Building on the central tenant of the behavioral theory of the firm, that firms will solve the *most* pressing problems first, I hypothesize that analyst pressures suppress organizational risk-taking when performance is low. Underperforming firms attempt to address performance failures while striving to maintain a favorable image in the eyes of analysts by avoiding risky bets on radical solutions that analysts tend to discount (Benner, 2010; Benner and Ranganathan, 2012). Losing the confidence of analysts jeopardizes a firm's ability to raise financial capital and solve the underlying performance issue altogether.

Once analyst pressures are relieved, however, underperforming firms will make riskier bets to solve performance issues, as suggested by prior theory (Chrisman and Patel, 2012; Cyert and March, 1963; Kahneman and Tversky, 1979). Higher risk-seeking will translate into bigger bets on long-term investments that offer opportunities to catch up to competitors and survive. In contrast, financially healthy firms reduce risk-taking and seek stability (Bromiley, Miller, and Rau, 2001; Nickel and Rodriguez, 2002), which is better done by maintaining a steady investment trajectory and avoiding bigger bets on long-term capital.

Hypothesis 4: The positive impact of a decrease in analyst coverage on firms' investment horizons is greater for firms with lower financial health than for firms with higher financial health.

Capital investment horizons and analyst coverage

Lastly, a reduction in analyst coverage should have a stronger effect on firms with lower initial coverage (i.e., the effect is proportional). Using Google as one example, the company received coverage from 43 distinct analysts in early-2015 so losing a single analyst (2.33% of total coverage) would have had a limited impact on how capital was allocated. In comparison, many firms are covered by only a small handful of analysts so losing a single analyst is more profound (e.g., Derrien and Kecskés, 2013; Hong and Kacperczyk, 2010).

> *Hypothesis 5: The positive impact of a decrease in analyst coverage on firms' investment horizons is greater for firms with lower analyst coverage than for firms with higher analyst coverage.*

METHODOLOGY

In this section, I explain how I: 1) measure each variable; 2) identify a list of brokerage closures and brokerage mergers to use as exogenous treatments; and, 3) compile the final sample.

Construction of the dependent variable

To capture the horizons of firms' new capital investments, I follow Souder and Bromiley (2012) to compute *Asset durability* as:

$$\textit{Asset durability}_{it} = \textit{CAPEX}_{it} / [\textit{Depreciation expense}_{it} - (\textit{Gross PP\&E}_{it} - \textit{CAPEX}_{it}) \times \textit{Depreciation rate}_{i,t-1}]$$

Gross PP&E represents the total value of all property, plant, and equipment a company owns without any accumulated depreciation. Capital expenditures, or CAPEX, represents the funds a company uses each year for new additions to gross PP&E, excluding amounts arising from acquisitions (e.g., fixed assets of purchased companies). Depreciation rates and expenses are determined by managers who estimate the useful lives of capital assets (in years) under the oversight and approval of auditors (Keating and Zimmerman, 1999). In the U.S., the IRS sets permitted useful life policies for different asset classes, which, in conjunction with auditors and accounting authorities, limit the ability of managers to manipulate depreciation expenses. Higher depreciation rates and expenses and lower capital expenditures decrease asset durability. A lower value for asset durability signals that a firm is making fewer investments in long-term capital. Similar to Souder and Bromiley (2012), I include only firms that apply straight-line depreciation, which is by far the most common policy, and restrict values of asset durability to one to 40 years.

Asset durability is unique in that it combines several pieces of accounting data to capture the horizons of firms' capital investments in each year (i.e., the expected life of the newly purchased capital), making the measure accessible for a wide number of firms. This offers an effective way to capture the temporality of firms' capital investments that is superior to more simplistic proxies (e.g., R&D or PP&E; Lee and O'neill, 2003). Most firms invest in a mix of capital equipment with a wide range of expected lives (i.e., durability), which helps ensure that there is sufficient variation in the dependent variable.

Souder and Bromiley (2012: 551) use asset durability to measure a firm's temporal orientation, defined by the authors as "the relative importance given in strategic choices to investments with differing distributions of costs and benefits over time." In contrast, extant literature in psychology, teams, and management and organizational studies defines temporal orientation as cognition rather than action (Ancona, Okhuysen, and Perlow, 2001; Bluedorn, 2002; Mohammed and Nadkarni, 2011). I use asset durability to measure the horizons of firms' capital investments, rather than their temporal orientations, which aligns with this research and makes sense given the inclusion of PP&E, depreciation, and CAPEX in the measure. Souder and Bromiley (2012) calculate asset durability for manufacturing firms only, whereas I include firms from other industries. In my robustness checks, I rerun my analyses using only manufacturing firms and find no material differences in the results.

Variable measurement

Industry clockspeed

Industry clockspeed refers to the rate of change in products, processes, and organizational factors. Specifically, it is "the velocity of change in the external business environment"

(Mendelson and Pillai, 1999: 1) that sets the pace of a firm's internal operations. The swifter the rate of change is, the higher the clockspeed.

I use Fines (1998) classification to identify fast- and slow-clockspeed industries for two reasons. First, Fines' classification is theoretically consistent with my definition of industry clockspeed. Second, as noted by Nadkarni and Narayanan (2007), recent research has established the convergent, discriminant, and nomological validity of Fines (1998) measures (Mendelson and Pillai, 1999). Consequently, recent studies have adopted this classification as a measure of industry clockspeed. Fines classifies industries as having fast- or slow-clockspeed based on nine items along three dimensions: product clockspeed, process clockspeed, and organizational clockspeed.[1] His measure captures the aggregate actions of all incumbent firms in an industry rather than the actions of any single firm.

In addition to Fines (1998) classification, I also require that an industry has been classified as fast or slow by other research. In terms of a fast clockspeed industry, Brown and Eisenhardt (1997: 2) remark that the computer industry is characterized by an "extraordinary rate of change" that has gone on for years. In terms of a slow clockspeed industry, Slawinski and Bansal (Forthcoming) comment that the oil gas industry is marked predominantly by long-term investments, which, in particular contexts, can reach upwards of 50 years. As well, Noke, Perrons, and Hughes (2008) provide case study evidence that the oil and gas industry is generally slow to change and the National Academy of Engineering (1992) classifies the computer industry and the oil and gas industry, respectively, as having fast- and slow-clockspeed.

[1] Fine's (1998) three categories include: *product clockspeed* (changes in product models, changes in design of dominant product model, and changes in optional product features); *Process clockspeed* (change in dominant processes, change in organizational paradigms i.e. from using lean production to using mass production, and purchases of new equipment and/or production plants); *Organizational clockspeed* (frequency of CEO transitions, frequency of ownership changes, and frequency of organizational restructurings).

Given this research, I classify computer equipment as a fast clockspeed industry and oil and gas as a slow clockspeed industry. In the computer equipment industry, new product technologies are typically introduced at least every 6 months, process technologies change every 2–4 years, and the sector tends to undergo a period of major organizational restructuring every 2–4 years. In the oil and gas industry, new product technologies are typically introduced every 10-20 years, process technologies change every 20–40 years, and the sector tends to undergo a period of major organizational restructuring every 20–40 years (Fines, 1998). I classify firms that have a two-digit SIC code of 35 ("Computer Equipment") as incumbent firms in a fast clockspeed industry, and firms that have a two-digit SIC code of 13 ("Oil and Gas") as incumbent firms in a slow clockspeed industry.

Corporate governance

I measure corporate governance using data from the Governance Legacy dataset provided by ISS (formerly RiskMetrics and IRRC) from 1990-2006. The methodology changed in 2007 and the data is provided every three years. I compute *G-Index* as the number of shareholder rights-decreasing provisions a firm has in the most recent year the data is available (Gompers, Ishii, and Metrick, 2003). The measure ranges from 0 (strong corporate governance indicated by zero shareholder-rights decreasing provisions) to 24 (weak corporate governance).

Firm financial health

I use *Altman's Z* to measure a firm's financial health. Altman's Z encompasses five financial ratios calculated using corporate income and balance sheet values to predict the probability of a firm's bankruptcy, making it a much more comprehensive measure than traditional financial performance measures.[2] A higher Altman's Z score indicates a lower risk of bankruptcy.

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[2] Z-Score = 1.2*(working capital/total assets) + 1.4*(retained earnings/total assets) + 3.3*(EBIT/total assets) + 0.6*(market value of equity/book value of total liabilities) + 0.99*(sales/total assets).

Analyst coverage

I compute *Analyst coverage* by identifying the number of unique analyst estimates in I/B/E/S for each firm-year. I/B/E/S provides an indicator for analyst coverage, but not every analyst is captured in this indicator, making a manual process more appropriate.

Empirical strategy: reductions in analyst coverage caused by brokerage disappearances

The simplest way to now examine the relationship between analyst coverage and capital investment horizons is to regress *Asset durability* on *Analyst coverage*. However, the resultant estimates would not infer a causal relationship because analyst coverage is likely to be endogenous with respect to firms' capital decisions. For instance, a negative relationship between *Analyst coverage* and *Asset durability* may occur if analysts prefer to cover firms that invest in shorter-term capital since these types of investments are easier to valuate.

To overcome this endogeneity problem, I consider a series of unexpected shocks that cause analysts to stop covering firms. Specifically, over the past several decades, many investment brokerage houses have been forced to retire their coverage of firms due to two events: brokerage closures and brokerage mergers. Brokerage closures occur because of adverse changes in business (e.g., lower investment banking activity). Each closure results in the letting go of its analysts so that firms that were previously covered by those analysts experience lower analyst coverage. For brokerage mergers, when two brokerages that cover the same firm merge, the new entity is left with two analysts covering that firm. To eliminate duplicate coverage, the new brokerage removes one analyst from the coverage universe so that firms that were previously covered by those analysts experience lower analyst coverage.

Both brokerage mergers and closures are methodologically desirable for two reasons. First, existing literature provides extensive support that the loss of analysts due to both forms of brokerage disappearances is exogenous to the policies and decisions of the firms they follow (Derrien and Kecskés, 2013; Hong and Kacperczyk, 2010; Kelly and Ljungqvist, 2012). That is, the coverage termination is not the choice of the analyst. Second, brokerage disappearances affect many firms from various industries over many years. These features of brokerage disappearances help alleviate the concern that time-series events that coincide with brokerage disappearances (e.g., economic recessions) drive the results. My empirical strategy uses these brokerage disappearances as exogenous treatments in a difference-in-differences methodology.

The difference-in-difference methodology I employ works by computing the difference between the average change in *Asset durability* from before the loss of an analyst to after the loss of an analyst for treated firms that experienced the shock (the treatment difference) and for control firms that did not (the control difference). This approach accounts for fundamental differences between the two groups as well as time series trends that could bias the results. A difference-in-differences approach requires two groups of firms, which I now explain.

Sample construction: treatment and control groups

I identify a sample of treated firms that experienced a decrease in analyst coverage due to a brokerage closure or brokerage merger between 1994 and 2008. I limit my sample to this 15-year timeframe because: a) the majority of brokerage disappearances identified in the past several decades fall within this window; b) I require five years of data before the first treatment and after the last treatment; and c) my auxiliary analysis requires firm 10-K reports, which are electronically available through EDGAR beginning in 1994. To construct my sample, I identify all brokerage disappearances that occurred in the 1994-2008 time frame, compile a list of treated firms that experienced a reduction in analyst coverage from one of the brokerage disappearances, collect data on these firms, and match each treated firm to one control firm.

To identify the treated firms I begin with tables provided by Hong and Kacperczyk (2010) and Kelly and Ljungqvist (2012) that outline brokerage closures and mergers over the past several decades. I complement these two lists of brokerage disappearances in two ways. First, I search for information on additional brokerage disappearances using press releases, Factiva, news archives, and other internet sources. As well, I search for information on additional brokerage mergers using Thomson's SDC Platinum database and the Yearbooks published by the Securities Industry Association. My list of brokerage disappearances includes 13 brokerage mergers and 39 brokerage closures, for a total of 52 brokerage disappearances.

Next, I use the Institutional Brokers' Estimate System (I/B/E/S)[3] Broker Translation File (BRAN) and the I/B/E/S Detail History File to identify the analysts working for the closed and merged brokerages and the firms covered by these analysts prior to the brokerage disappearance. I download all analyst estimates for every firm in I/B/E/S for the year before and after each brokerage disappearance date and manually check to see whether firms were covered by an analyst working for one of the brokerages that disappears. Similar to other studies, I record that an analyst covers a firm if there is at least one earnings estimate in I/B/E/S by the analyst for that firm during the twelve months before the brokerage disappearance date, and I record that an analyst disappears if there is no earnings estimate by the analyst in I/B/E/S during the twelve months after the broker disappearance date.

I take several steps to ensure that the event of losing a covering analyst is due to a brokerage disappearance. First, I check to make sure the estimate is not stopped in I/B/E/S before the brokerage disappearance date (Kelly and Ljungqvist, 2012).[4] Next, for brokerage closures

[3] I/B/E/S provides historical data on analyst coverage, analyst earnings estimates, and analyst recommendations.
[4] A faster way to compile these data involves using the I/B/E/S stop file, which identifies firms that lost analyst coverage and the date that coverage was stopped. However, analysts are not required to inform I/B/E/S when coverage is dropped so manually searching analysts' filings provides a more accurate measure of analyst coverage.

and similar to Derrien and Kecskés (2013), I retain only the firms for which the analyst disappears from I/B/E/S during the year after the brokerage disappearance date to ensure that analysts who transition to other brokerages do not continue coverage of those firms at those brokerages. For brokerage mergers, I record firms that were covered by both the target and acquirer brokerage prior to the merger and retain only the firms that lose one covering analyst following the merger. The two sets of firms that lose an analyst either due to a brokerage closure or merger constitute my treatment group.

I retain publicly listed U.S. firms that are not financials (two-digit SIC code 60-69) or utilities (two-digit SIC code 49), which is standard practice, because firms in these industries are highly idiosyncratic. For example, a high degree of leverage in a financial firm does not necessarily indicate financial distress, which is the case for non-financial firms (Fama and French, 1992). I require that firms use straight-line depreciation (for purposes of calculating *Asset durability*), have the necessary data to calculate asset durability for the years preceding and following the corresponding brokerage disappearance, and have non-missing matching variables in the year preceding the brokerage disappearance. In total, 1,231 treated firms are included in the sample and each is matched to a control firm, which I now explain.

Matching process for control group

A valid control group will satisfy two conditions. First, the treatment and control firms will share similarities across multiple important dimensions before the treatment occurs. This mitigates the concern that other firm characteristics drive the results. Second, there should not be a difference in the asset durability trend between treated and control firms before a brokerage disappearance. I now explain how I construct a sample that satisfies both of these conditions so that the results can be attributed to the changes in analyst coverage and not some other factor or trend.

Following a similar process as Flammer (2014), I match treated firms with control firms to help ensure that my tests are not confounded by various firm characteristics, all measured in the year preceding the treatment. The potential control group constitutes all firms in Compustat over the sample period that are not affected by a brokerage disappearance during the sample window (about 195,000 firm-year observations). I use a nearest neighbour Mahalanobis Distance Matching procedure on the basis of industry code and six firm-level characteristics.

Beginning the matching process, I require matched firms to have the same two-digit SIC code as their treated counterpart. In terms of firm-level characteristics, I first match on return-on-assets (ROA) to reduce the concern that differences in firms' asset durability are the result of differences in their profitability. Less profitable firms, for instance, may not make long horizon investments because they do not have the necessary resources (Souder and Shaver, 2010). Second, a firm's size may affect its asset durability. For example, larger firms may employ more technical capital budgeting tools that cause them to favor shorter- or longer-term capital. Third, firms with greater financial slack (cash holding) and/or debt capacity (financial leverage) may find it easier to invest in longer-term capital, so matching on these characteristics lessens the possibility that these variables drive my findings. Fourth, matching on asset turnover mitigates the concern that operating speed affects firms' capital investments. Lastly, I also match on asset durability to ensure the treated and control firms have similar capital investment horizons prior to the reduction in analyst coverage.

To find the most similar control firm for each treated firm, I calculate the Mahalanobis distance between each treated firm with all firms in the control pool using the matching characteristics and a one-to-one matching scheme without replacement. I select each pair with the lowest value, forming a final evenly split sample of 2,462 firms (1,231 in each group).

I now test the effectiveness of the matching process and provide the results in Table 1. First, the descriptive statistics in Panel A reveal that the matching process performed as expected and the treated and control firms are very similar in terms of the six characteristics. Results from equality of means tests reveal that any differences between the two groups are not statistically significant ($p>0.05$). Second, results in Panel B show that there is no statistically significant difference in the growth rates of asset durability between the treated and control firms in the three year period preceding a brokerage disappearance ($p=0.788$). Having conducted a tight matching process, I can now proceed with confidence that any results will be attributable to the exogenous reduction in analyst coverage.

--- Insert Table 1 about here ---

Estimation model

I observe the change in asset durability over four-, six-, and eight-year windows because capital investments are likely to be somewhat sticky and require some time to adjust. Further, having various observation windows allows me to more fully observe how asset durability changes over time following reductions in analyst coverage. To do this, I estimate the following regression:

$$\Delta \textit{Asset durability}_{it} = \alpha_i + \alpha_t + \beta \times \textit{Brokerage disappearance}_{it} + \gamma' \mathbf{X}_{it} + \epsilon_{it},$$

where Δ*Asset durability*$_{it}$ is the dependent variable and equals the difference in each firm's *Asset durability* following the brokerage disappearance minus the firm's *Asset durability* preceding the brokerage disappearance,[5] α_i are firm fixed effects, α_t are year fixed effects, *Brokerage disappearance*$_{it}$ is a dummy variable that equals one if the observation corresponds to a treated firm in the years after the brokerage disappearance and zero otherwise (i.e., zero for treated firms

[5] I use the last full calendar year preceding the disappearance to calculate all variables in year t-1 and the first full calendar year following the disappearance to calculate all variables in year t+1. For example, for a treated firm affected by a brokerage disappearance on March 11, 2002, the variables for t-1 are set to the year ending December 31, 2001 and the variables for t+1 are set to the year ending December 31, 2003. Hence, the actual treatment year when the analyst disappears (t=0) is dropped from the analysis, allowing for a cleaner difference-in-differences test.

before the brokerage disappearance and for control firms in all years during the sample window), the vector **X** controls for the matching characteristics used previously save asset durability, and ϵ is the error term. I am interested in the coefficient estimate on *Brokerage disappearance*, which captures the effect of losing one analyst on ΔAs*set durability*.

RESULTS

Before reporting my results, I first validate the relevance of the natural experiment, namely that treated firms lose analyst coverage relative to control firms following a brokerage disappearance. I replace Δ*Asset durability* with Δ*Analyst coverage* in equation (1) and observe the change in analyst coverage between the year preceding the brokerage disappearance (t-1) and the year after (t+1). Results from this analyis show that the coefficient on Δ*Analyst coverage* is -1.02 and significant at the 1 percent level, which indicates that the experiment is setup properly.

Regression results

Columns 1 through 6 in Table 2 report the results of the main difference-in-differences estimations. Two models are reported for each of the three observation windows (t+2, t+3, and t+4). In each case, the first model includes firm- and year-fixed effects and the second model adds the five control variables. Matching makes the results very similar regardless of whether control variables are included. In each model, the coefficient of interest is on the brokerage disappearance dummy, which is expected to be positive and statistically significant.

The coefficient on the brokerage disappearance dummy is 1.12 (1.14 with no controls), 1.42, and 1.39, respectively, for a four-, six- and, eight-year observation window and statistically significant in all cases. These results reveal that firms increase the durability of their assets by just over 13 months two years after losing an analyst and roughly 17 months another year later. By year four, the effect of the terminated analyst levels off. Given that the average asset durability prior to a brokerage disappearance for the entire sample is 9.18, this implies roughly a 12 to 16 percent increase in firms' capital investment horizons following the loss of an analyst.

Figure 1 provides further insight into the effects of lower analyst coverage on asset durability over time. The downward trend in asset durability prior to a brokerage disappearance (t<0) is interesting but not overly surprising since -- as reflected on in the opening of this paper -- regulators, practitioners, and academics have been observing firms making shorter-term capital investments for some time. The parallel slopes between the treatment and control group in the five years preceding a brokerage disappearance provides further support that the results are not driven by trends in asset durability. In line with the results reported above, the two curves diverge following the brokerage disappearance. The downward trend in asset durability continues for the control group, whereas it reverses and begins an upward trend for the treatment group before leveling off after the three year mark. Hypothesis 1 is supported.

--- Insert Table 2 and Figure 1 about here ---

Cross sectional analysis: what firms respond more strongly?

I now test the remaining hypotheses using a triple difference approach: I compute the mean difference-in-differences for each sub-group of firms using a six-year (t-3 to t+3) observation window and compare the results between groups. More specifically, I run separate analyses for firms in fast and slow clockspeed industries and compare the *Brokerage disappearance* coefficient to test Hypothesis 2. For Hypothesis 3, 4, and 5, I split firms into two groups based on the median value of the relevant conditioning variable in the year preceding the treatment (t-1). To ensure similarity between the upper and lower groups, treated and control firms are independently split based on the median value of the treatment and control group. Results for these hypotheses are presented in Table 3.

Hypothesis 2 stated that the positive impact of a decrease in analyst coverage on firms' investment horizons is greater in fast-moving industries than in slow-moving industries. As is shown in Column 1 of Table 3, the coefficient on the *Brokerage disappearance* term for the Computer Equipment industry is 3.09 and significant at the 5 percent level. In contrast, the equivalent coefficient is not significant for the Oil and Gas industry. Taken together, these results imply that analyst pressures affect capital investment horizons most severely in fast-moving industries and have little or no effect in slow-moving industries. These results hold with other fast and slow clockspeed industries, which I explain in the robustness checks section.

Hypothesis 3 predicted that firms with stronger corporate governance would be more strongly affected by reductions in analyst coverage than firms with weaker corporate governance. Column 3 shows that asset durability increases by 1.84 years for firms with strong corporate governance (*G-index* below the median). The *Brokerage disappearance* coefficient is statistically significant at the 1 percent level, whereas the change in asset durability is insignificant for firms with weak corporate governance. These results support the prediction that managers are less likely to respond to reductions in analyst pressure when they are less likely to be disciplined by shareholders for investing in incremental capital.

Hypothesis 4 stated that firms in worse financial shape will invest more in longer-term capital following an analyst termination than will firms in better financial shape. Results from Model 11 in column 5 support this hypothesis: firms closer to bankruptcy (*Altman-Z* below the median) increase the durability of their assets by 2.15 years following a reduction in analyst coverage and this change is statistically significant at the 1 percent level. In contrast, any change in asset durability is insignificant for firms that are further from bankruptcy.

Results in the final two columns provide support for Hypothesis 5, namely that reductions in analyst coverage have a stronger effect on asset durability for firms with lower initial coverage. Firms with coverage below the median respond to analyst terminations by increasing their asset durability by 1.86 years and this effect is statistically significant at the 5 percent level. In contrast, the change in asset durability is insignificant for firms with high analyst coverage.

In sum, these results reveal that reductions in analyst coverage have a significant positive impact on the horizons of firms' capital investments and this relationship is further affected by industry clockspeed, corporate governance, firm financial health, and initial analyst coverage.

--- Insert Table 3 about here ---

Auxiliary analysis: testing time horizon as a mechanism

I have argued and showed that the pressures analysts exert on firms to perform in the short term cause firms to make fewer investments in long-term capital. Here, I aim to provide empirical evidence for the mechanism that is at play in this relationship.

The same pressures from analysts that cause firms to invest less in longer-term capital will also shorten firms' time horizons. Time horizon, or temporal depth, refers to "the temporal distances into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen" (Bluedorn, 2002: 114). When managers experience pressures from analyst coverage, they will focus their attention on matters in the near future. In doing so, they are more likely to ignore the distant future in their thinking. Consequently, a decrease in analyst coverage will shorten a firm's time horizon.

To test this prediction, I conduct textual analysis of the Management Discussion and Analysis (MD&A) section of firms' 10-K filings (i.e., annual reports). The MD&A section is where managers discuss the firm's performance in ways that are designed to bring the market's expectations in line with the management's superior information (Kothari, Li, and Short, 2009). As such, it is an appropriate source to analyze time horizons, and has been used extensively in previous textual analysis research (Loughran and McDonald, 2011). I collect all available 10-K filings from the SEC website for treated and control firms in my sample for the five years preceding and following the treatment. Due to missing filings, I am left with 10,515 10-Ks. Next, I parse each document so that I can analyze only the MD&A sections. Since not all 10-K filings had MD&A sections, I am left with 4,005 documents to analyze.

I search the MD&A section of each 10-K filing for keywords pertaining to time horizons. In particular, I rely on an existing measure of time horizon that uses two lists of words: one list that signals a short time horizon, and one list that corresponds to a long time horizon (citation suppressed).[6] See Table 4 for a complete list of keywords. I use the software program Python to assess the number of occurrences ("bag of words") of each keyword in the MD&A sections of the 10-K filings. I use the output to calculate *Time horizon* for each firm-year as:

$$Time\ horizon = \frac{\#\ of\ long\ time\ horizon\ words}{\#\ of\ short\ time\ horizon\ words\ +\ \#\ of\ long\ time\ horizon\ words}$$

Using this new variable, I modify my main regression model using a six-year observation window by interchanging Δ*Asset durability* as the dependent variable with Δ*Time horizon*.

Table 5 reports the results. Model 15 includes firm and year fixed effects and Model 16 adds the five control variables. The coefficient on the brokerage disappearance dummy is highly statistically significant and ranges from 0.087 to 0.09, implying that following the loss of an analyst firms use 9 percent more words pertaining to the long term. Figure 2 illustrates the effect of analyst reductions on firm time horizons by plotting the time horizon of treated (black solid line) and control firms (gray dashed line) in the five year period preceding and following a

[6] A version of the study that created and validated the time horizon measure is currently under review. Therefore, a description of how the measure was constructed has been suppressed to uphold the integrity of the review process.

brokerage disappearance. As the graph shows, firms begin to extend their attention towards the distant future almost immediately following the loss of an analyst, and this effect remains fairly steady in the following years. In conjunction with Figure 1, these results imply that cognitively firms adapt fairly quickly to reductions in analyst coverage, but it takes more time for these adjustments to become apparent in their physical operations (i.e., their capital investments).

--- Insert Table 4, Table 5, and Figure 2 about here ---

Robustness checks

I conduct several checks to ensure that my findings are robust. First, I find that my results are similar if I consider brokerage mergers and brokerage closures separately. Second, in my original models, I account for serial correlation of the error term by clustering standard errors at the firm level. However, I obtain similar results if instead I cluster standard errors at the industry level, the year level, or if I use heteroskedasticity-robust standard errors. I also find no material differences in the results when industry and brokerage fixed effects are included. Moreover, the results hold using all possible combinations of year, firm, industry, and brokerage fixed effects. Third, I rerun each specification using a ten-year window and find the results do not substantially change; however, I do not find significant results using a two-year window, which, as noted earlier, is expected given that capital investments are sticky. Fourth, following Souder and Bromiley (2012) I calculate asset durability for manufacturing firms only (two-digit SIC code: 20-39) and find that the results remain consistent

I use additional industries to test Hypothesis 2. In particular, the NAE categorizes retail (two-digit SIC: 52-60) as a fast-moving industry and communications (two-digit SIC: 48) as a slow-moving industry. Interchanging firms from these industries in the estimation model, I find further support for Hypothesis 2: the brokerage disappearance coefficient for retail firms is 2.99 and significant at the 5 percent level and insignificant for communications firms.

DISCUSSION

This paper examined whether analyst coverage affects the horizons of firms' capital investments. Extending existing theory on financial markets and corporate decision making, I argued that lower analyst coverage relieves pressure on managers to perform in the short term, which encourages them to invest more in projects with longer horizons. To empirically test this prediction, I exploited 52 quasi-natural experiments provided by brokerage mergers and closures that occurred between 1994 and 2008. Using a matched difference-in-differences sample, I found that firms affected by brokerage disappearances significantly increased the horizon of their capital investments following the events. I also found that this relationship was stronger for firms in fast-moving industries, and for firms with stronger corporate governance, worse financial health, and lower initial analyst coverage. Lastly, I conducted textual analysis of the MD&A sections of 10-K filings and found evidence that time horizons mediate the relationship between analyst coverage and investment horizons. These results are robust under numerous conditions and consistent with the view that analyst coverage encourages corporate short-termism.

This study contributes to studies in management and finance that examine the effects of analyst coverage on managerial decision-making and organizational outcomes (Benner, 2010; Benner and Ranganathan, 2012; Derrien and Kecskés, 2013; Gentry and Shen, 2013; He and Tian, 2013). Analyst coverage has been shown to influence capital expenditures (Derrien and Kecskés, 2013), adoption of new technologies (Benner and Ranganathan, 2013), R&D spending (Gentry and Shen, 2013) and innovativeness (He and Tian, 2013). Throughout this literature, time is not applied as a theoretical mechanism to explain the relationship between analyst coverage and these outcomes. Arguably, however, investing in new capital, technologies, and innovation all require managers to balance short- and long-term outcomes. My findings help connect these studies by showing more broadly how analysts affect the temporality of managers' decisions and firm outcomes.

The results of this study shed light on the unclear relationship between financial markets and corporate short-termism (Laverty, 1996; Marginson and McAulay, 2008). On one hand, analysts are believed to encourage short-termism by exerting short-term pressures on managers; on the other hand, they can alleviate short-termism by helping markets account for the value of long-term investments. Consequently, the relationship between analysts and corporate short-termism remains "controversial" (Marginson and McAulay, 2008: 275) and filled with "much debate" (Kochhar and David, 1996: 73). By exploiting a difference-in-differences methodology, I was able to show that analyst coverage *causes* firms to favor capital with shorter horizons.

Third, the results from testing industry differences contribute to literature on industry clockspeed and strategic action (Bourgeois III and Eisenhardt, 1988; Brown and Eisenhardt, 1997; D'Aveni, 1994; Eisenhardt, 1989). Previous studies suggest that firms' strategic actions in fast clockspeed industries differ from those in slow clockspeed industries, but a limited number of studies explore or explain these differences (Nadkarni and Narayanan, 2007; Souza, Bayus, and Wagner, 2004). In particular, some research suggests that firms in fast clockspeed industries benefit from having strategic flexibility (Eisenhardt, 1989; Nadkarni and Narayanan, 2007), but the potential consequences of this flexibility remain underexplored. Souza *et al.* (2004) observe one consequence, finding that firms in fast-paced industries benefit by frequently introducing new, incrementally improved products, but profits in these industries are lower than those in slow-paced industries. In addition to introducing incremental products, my findings suggest that shorter-term, more incremental capital investments may be a consequence of the strategic flexibility espoused by firms in fast clockspeed industries.

The findings on firm financial health contribute to the literature on performance relative to aspirations and risk-taking (Cyert and March, 1963; Kahneman and Tversky, 1979). Previous studies offer contradictory evidence about how organizations' risk preferences change under conditions of underperformance (Audia and Greve, 2006). Grounding my arguments in the behavioral perspective, my findings offer some clarity to this relationship by identifying a boundary condition: risk preferences in the face of underperformance are affected by the external pressures facing managers. Under the more watchful eye of analysts and investors, managers may be less willing to accept large risks, regardless of their desire to quickly overcome failure.

Lastly, the auxiliary textual analysis contributes to literature on temporal perceptions and organizational outcomes (Ancona *et al.*, 2001; Bluedorn, 2002). Previous theory suggests that external pressures evoke temporal biases within managers, affecting the way firms allocate resources (Amit and Schoemaker, 1993).Yet, temporal processes are difficult to observe so little is understood about how perceptions of time manifest inside organizations (Mosakowski and Earley, 2000). To overcome measurement hurdles, I applied textual analysis of the MD&A sections of 10-K filings to show how pressures caused by analyst coverage shorten firms' time horizons, leading them to favor shorter-term capital investments.

In terms of future research, this study considered the relationship between one pressure in a firm's environment and one outcome. However, it would be helpful to understand whether other pressures have a similar effect on capital investment horizons. For example, future research could look at whether short-term investors also cause managers to invest less in long-term capital. Such findings would shed light on the unclear relationship between investor horizons and corporate short-termism. Furthermore, this work could also consider how market pressures affect the temporality of other organizational outcomes, such as marketing and advertising spending.

In conjunction with previous research, this paper provides puzzling information on how public ownership structures affect firms' capital investments. On one hand, previous research finds that analysts decrease the cost of capital for firms (Derrien and Kecskés, 2013; Doukas, Kim, and Pantzalis, 2008; Kelly and Ljungqvist, 2012). On the other hand, my findings reveal that analysts are deterring firms from investing capital in long-term projects. More research is needed to understand the extent to which analysts support and constrain capital investments. For instance, do analysts make it harder for firms to invest in particular types of strategies, such as employee development or environmental projects?

By using textual analysis to measure temporal perceptions, I was able to get at the mechanism that underlies the relationship between analyst coverage and firms' capital investment horizons. Previous research suggests that financial markets cause firms to forgo long-term investments, but has so far been unable to empirically test the theoretical mechanism underlying this relationship (Derrien and Kecskés, 2013; Gentry and Shen, 2013; He and Tian, 2013). Textual analysis of publicly-available corporate documents (e.g., 10-K filings, company press releases, CEO interviews) presents a unique opportunity to measure otherwise hard to capture temporal processes (Nadkarni and Chen, 2014). Thus, future studies could also expand on the textual approach used here to further understand temporality in organizations.

My findings have several managerial implications. First, the fact that firms respond to analyst coverage by decreasing their investments in long horizon capital suggests that analyst coverage could hinder the future competitiveness of firms. Hence, in a world where analysts are highly revered, managers should reconsider whether attracting greater analyst coverage is truly advantageous. Second, my findings suggest that capital investment horizons are more malleable to external pressures than often thought. Accordingly, managers could benefit from explicitly integrating strict policies and decision metrics into their existing capital budgeting processes to increase the likelihood that investments with optimal horizons are selected.

Finally, finding that market pressures impede long-term investments has potentially important policy implications. In the past several decades arguments have surfaced that the rising propensity of corporate managers to neglect long-term investments is crippling the competitiveness of economies and the general welfare of society. R&D, employee training, and CSR are just a few areas that benefit firms and society, but require long-term thinking and investment horizons. At the opening of this paper, I reflected on Jeff Bezos belief that, “If we think long term, we can accomplish things that we couldn’t otherwise accomplish.” If Bezos is right, and focusing on the long term is indeed beneficial, then considering the real effects of financial markets on corporate strategy demands further attention.

REFERENCES

Aggarwal VA, Hsu DH. 2013. Entrepreneurial exits and innovation. *Management Science* **60**(4): 867-887.

Amit R, Schoemaker PJ. 1993. Strategic assets and organizational rent. *Strategic Management Journal* **14**(1): 33-46.

Ancona DG, Okhuysen GA, Perlow LA. 2001. Taking time to integrate temporal research. *Academy of Management Review*: 512-529.

Audia PG, Greve HR. 2006. Less likely to fail: Low performance, firm size, and factory expansion in the shipbuilding industry. *Management Science* **52**(1): 83-94.

Bansal P, DesJardine MR. 2014. Business sustainability: It is about time. *Strategic organization* **12**(1): 70-78.

Barber B, Lehavy R, McNichols M, Trueman B. 2001. Can investors profit from the prophets? Security analyst recommendations and stock returns. *The Journal of Finance* **56**(2): 531-563.

Barnett ML. 2007. Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review* **32**(3): 794-816.

Bartov E, Givoly D, Hayn C. 2002. The rewards to meeting or beating earnings expectations. *Journal of accounting and economics* **33**(2): 173-204.

Benner MJ. 2010. Securities analysts and incumbent response to radical technological change: Evidence from digital photography and internet telephony. *Organization Science* **21**(1): 42-62.

Benner MJ, Ranganathan R. 2012. Offsetting illegitimacy? How pressures from securities analysts influence incumbents in the face of new technologies. *Academy of Management Journal* **55**(1): 213-233.

Benner MJ, Ranganathan R. 2013. Divergent reactions to convergent strategies: Investor beliefs and analyst reactions during technological change. *Organization Science* **24**(2): 378-394.

Bluedorn AC. 2002. *The human organization of time: Temporal realities and experience*. Stanford University Press.

Bourgeois III LJ, Eisenhardt KM. 1988. Strategic decision processes in high velocity environments: four cases in the microcomputer industry. *Management Science* **34**(7): 816-835.

Brennan MJ, Jegadeesh N, Swaminathan B. 1993. Investment analysis and the adjustment of stock prices to common information. *Review of Financial Studies* **6**(4): 799-824.

Brennan MJ, Subrahmanyam A. 1995. Investment analysis and price formation in securities markets. *Journal of Financial Economics* **38**(3): 361-381.

Bromiley P. 1986. Corporate planning and capital investment. *Journal of Economic Behavior & Organization* **7**(2): 147-170.

Bromiley P, Miller KD, Rau D. 2001. Risk in strategic management research. *The Blackwell handbook of strategic management*: 259-288.

Brown SL, Eisenhardt KM. 1997. The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*: 1-34.

Busse JA, Clifton Green T. 2002. Market efficiency in real time. *Journal of Financial Economics* **65**(3): 415-437.

Chopra N, Lakonishok J, Ritter JR. 1992. Measuring abnormal performance: do stocks overreact? *Journal of Financial Economics* **31**(2): 235-268.

Chrisman JJ, Patel PC. 2012. Variations in R&D investments of family and nonfamily firms: Behavioral agency and myopic loss aversion perspectives. *Academy of Management Journal* **55**(4): 976-997.

Cyert RM, March JG. 1963. *A behavioral theory of the firm*.

D'Aveni RA. 1994. *Hypercompetition: managing the dynamics of strategic maneuvering*. Free Press: New York.

De Bondt WF, Thaler R. 1985. Does the stock market overreact? *The Journal of Finance* **40**(3): 793-805.

Derrien F, Kecskés A. 2013. The real effects of financial shocks: Evidence from exogenous changes in analyst coverage. *The Journal of Finance* **68**(4): 1407-1440.

Doukas JA, Kim CF, Pantzalis C. 2008. Do analysts influence corporate financing and investment? *Financial Management* **37**(2): 303-339.

Drucker P. 2013. *People and performance*. Routledge.

Eisenhardt KM. 1989. Making fast strategic decisions in high-velocity environments. *Academy of Management Journal* **32**(3): 543-576.

Eisenhardt KM, Martin JA. 2000. Dynamic capabilities: what are they? *Strategic Management Journal* **21**(10-11): 1105-1121.

Fama EF, French KR. 1992. The cross-section of expected stock returns. *The Journal of Finance* **47**(2): 427-465.

Farrell KA, Whidbee DA. 2003. Impact of firm performance expectations on CEO turnover and replacement decisions. *Journal of accounting and economics* **36**(1): 165-196.

Ferrier WJ. 2001. Navigating the competitive landscape: The drivers and consequences of competitive aggressiveness. *Academy of Management Journal* **44**(4): 858-877.

Fines CH. 1998. *Clockspeed: Winning industry control in the age of temporary advantage*. Basic Books.

Finkelstein S, Hambrick DC, Cannella AA. 2009. *Strategic leadership: Theory and research on executives, top management teams, and boards*. Oxford University Press.

Flammer C. 2014. Does product market competition foster corporate social responsibility? Evidence from trade liberalization. *Strategic Management Journal*.

Flammer C, Bansal P. 2014. Does Long-Term Orientation Create Value? Evidence from a Regression Discontinuity *working paper*.

Francis J, Soffer L. 1997. The relative informativeness of analysts' stock recommendations and earnings forecast revisions. *Journal of Accounting Research* **35**(2): 193-211.

Garg VK, Walters BA, Priem RL. 2003. Chief executive scanning emphases, environmental dynamism, and manufacturing firm performance. *Strategic Management Journal* **24**(8): 725-744.

Gentry RJ, Shen W. 2013. The impacts of performance relative to analyst forecasts and analyst coverage on firm R&D intensity. *Strategic Management Journal* **34**(1): 121-130.

Gompers PA, Ishii JL, Metrick A. 2003. Corporate governance and equity prices. *Quarterly Journal of Economics*(118): 107-155.

Graham JR, Harvey CR, Rajgopal S. 2005. The economic implications of corporate financial reporting. *Journal of accounting and economics* **40**(1): 3-73.

Hagerty JR. 2014. U.S. Manufacturing Is Rolling on Aged Wheels. In *The Wall Street Journal*. Dow Jones & Company, Inc.: New York.

Hayes RH, Abernathy WJ. 1980. Managing our way to economic decline. *Harvard Business Review* **58**(4).

He JJ, Tian X. 2013. The dark side of analyst coverage: The case of innovation. *Journal of Financial Economics*.

Hong H, Kacperczyk M. 2010. Competition and bias. *Quarterly Journal of Economics* **125**(4): 1683-1725.

Hong H, Lim T, Stein JC. 2000. Bad news travels slowly: Size, analyst coverage, and the profitability of momentum strategies. *The Journal of Finance* **55**(1): 265-295.

Jegadeesh N, Kim J, Krische SD, Lee C. 2004. Analyzing the analysts: When do recommendations add value? *The Journal of Finance* **59**(3): 1083-1124.

Jensen MC. 1986. Agency cost of free cash flow, corporate finance, and takeovers. *American Economic Review* **76**(2).

Jie M, Horie M. 2014. Toyota Cash Nearing $40 Billion Draws Calls for Plants, Payouts. http://www.bloomberg.com/news/2014-02-03/toyota-cash-nearing-40-billion-draws-calls-for-plants-payouts.html

Kahneman D, Tversky A. 1979. Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*: 263-291.

Kasznik R, McNichols MF. 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research* **40**(3): 727-759.

Keating AS, Zimmerman J. 1999. Depreciation-policy changes: tax, earnings management, and investment opportunity incentives. *Journal of accounting and economics* **28**(3): 359-389.

Kelly B, Ljungqvist A. 2012. Testing asymmetric-information asset pricing models. *Review of Financial Studies* **25**(5): 1366-1413.

Kochhar R, David P. 1996. Institutional investors and firm innovation: A test of competing hypotheses. *Strategic Management Journal* **17**(1): 73-84.

Kothari S, Li X, Short JE. 2009. The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: a study using content analysis. *The Accounting Review* **84**(5): 1639-1670.

Laverty KJ. Year. How Valid Are R&D Measures in Empirical Tests of Short-Termism? In Proceedings of the Academy of Management Proceedings.

Laverty KJ. 1996. Economic "short-termism": The debate, the unresolved issues, and the implications for management practice and research. *Academy of Management Review* **21**(3): 825-860.

Lee PM, O'neill HM. 2003. Ownership structures and R&D investments of US and Japanese firms: Agency and stewardship perspectives. *Academy of Management Journal* **46**(2): 212-225.

Loh RK, Stulz RM. 2011. When are analyst recommendation changes influential? *Review of Financial Studies* **24**(2): 593-627.

Loughran T, McDonald B. 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance* **66**(1): 35-65.

March JG. 1991. Exploration and exploitation in organizational learning. *Organization Science*: 71-87.

Marginson D, McAulay L. 2008. Exploring the debate on short-termism: a theoretical and empirical analysis. *Strategic Management Journal* **29**(3): 273-292.

Maritan CA. 2001. Capital investment as investing in organizational capabilities: An empirically grounded process model. *Academy of Management Journal* **44**(3): 513-531.

Mendelson H, Pillai RR. 1999. Industry clockspeed: measurement and operational implications. *Manufacturing & Service Operations Management* **1**(1): 1-20.

Miller KD, Chen W-R. 2004. Variable organizational risk preferences: Tests of the March-Shapira model. *Academy of Management Journal* **47**(1): 105-115.

Mohammed S, Nadkarni S. 2011. Temporal diversity and team performance: the moderating role of team temporal leadership. *Academy of Management Journal* **54**(3): 489-508.

Mosakowski E, Earley PC. 2000. A selective review of time assumptions in strategy research. *Academy of Management Review* **25**(4): 796-812.

Nadkarni S, Chen J. 2014. Bridging yesterday, today, and tomorrow: CEO temporal focus, environmental dynamism, and rate of new product introduction. *Academy of Management Journal*: amj. 2011.0401.

Nadkarni S, Narayanan V. 2007. Strategic schemas, strategic flexibility, and firm performance: the moderating role of industry clockspeed. *Strategic Management Journal* **28**(3): 243-270.

National Academy of Engineering. 1992. *Time horizons and technology investments*. National Academy Press: Washington, DC.

Nerkar A, Roberts PW. 2004. Technological and product-market experience and the success of new product introductions in the pharmaceutical industry. *Strategic Management Journal* **25**(8-9): 779-799.

Nickel MN, Rodriguez MC. 2002. A review of research on the negative accounting relationship between risk and return: Bowman's paradox. *Omega--International Journal Management Science* **30**(1): 1-18.

Noke H, Perrons RK, Hughes M. 2008. Strategic dalliances as an enabler for discontinuous innovation in slow clockspeed industries: evidence from the oil and gas industry. *R&d Management* **38**(2): 129-139.

O'Brien PC, Bhushan R. 1990. Analyst following and institutional ownership. *Journal of Accounting Research*: 55-76.

Ocasio W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal* **18**(S1): 187-206.

Porter ME. 1992. Capital choices: Changing the way America invests in industry. *Journal of Applied Corporate Finance* **5**(2): 4-16.

Puffer SM, Weintrop JB. 1991. Corporate performance and CEO turnover: The role of performance expectations. *Administrative Science Quarterly*: 1-19.

Romer PM. 1987. Growth based on increasing returns due to specialization. *The American economic review*: 56-62.

Slawinski N, Bansal P. Forthcoming. Short on Time: Intertemporal Tensions in Business Sustainability. *Organization Science*.

Solow RM. 1957. Technical change and the aggregate production function. *The Review of Economics and Statistics*: 312-320.

Souder D, Bromiley P. 2012. Explaining temporal orientation: Evidence from the durability of firms' capital investments. *Strategic Management Journal* **33**(5): 550-569.

Souder D, Shaver JM. 2010. Constraints and incentives for making long horizon corporate investments. *Strategic Management Journal* **31**(12): 1316-1336.

Souza GC, Bayus BL, Wagner HM. 2004. New-product strategy and industry clockspeed. *Management Science* **50**(4): 537-549.

Stein JC. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The Quarterly Journal of Economics*: 655-669.

Wiseman RM, Bromiley P. 1996. Toward a model of risk in declining organizations: An empirical examination of risk, performance and decline. *Organization Science* **7**(5): 524-543.

Womack KL. 1996. Do brokerage analysts' recommendations have investment value? *The Journal of Finance* **51**(1): 137-167.

Yu FF. 2008. Analyst coverage and earnings management. *Journal of Financial Economics* **88**(2): 245-271.

Table 1. Descriptive statistics

Variable	Obs.	Mean: Treated	Mean: Control	25th percentile: Treated	25th percentile: Control	50th percentile: Treated	50th percentile: Control	75th percentile: Treated	75th percentile: Control	p-value (equality of means)
Panel A: Matching characteristics										
Asset durability	2,462	8.961	9.404	2.800	2.761	6.560	6.514	11.800	12.590	0.203
Log(assets)	2,462	3.731	3.730	3.193	3.206	3.695	3.683	4.214	4.228	0.975
ROA	2,462	0.082	0.081	0.042	0.062	0.111	0.119	0.169	0.170	0.887
Cash	2,462	0.192	0.195	0.006	0.021	0.092	0.086	0.321	0.308	0.763
Leverage	2,462	0.177	0.190	0.002	0.007	0.127	0.155	0.283	0.294	0.116
Asset turnover	2,462	0.991	1.025	0.479	0.516	0.833	0.876	1.299	1.296	0.266
Panel B: Parallel trend assumption										
ΔAsset durability	2,462	-1.346	-1.208	-	-	-	-	-	-	0.788

*All matching is done in the year immediately preceding the brokerage disappearance (t-1). The parallel trend assumption is tested by comparing the change in asset durability between t-3 and t-1 for the treatment and control group. Figure 1 provides further support for this assumption.

Table 2. The effect of lower analyst coverage on asset durability

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Δ Asset durability (t+2) Model 1	Δ Asset durability (t+2) Model 2	Δ Asset durability (t+3) Model 3	Δ Asset durability (t+3) Model 4	Δ Asset durability (t+4) Model 5	Δ Asset durability (t+4) Model 6
Brokerage disappearance	1.142*	1.120*	1.424***	1.418***	1.391***	1.392***
	(0.485)	(0.482)	(0.394)	(0.392)	(0.351)	(0.350)
Controls	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,344	8,344	11,886	11,886	14,952	14,952
R-squared	0.498	0.501	0.422	0.425	0.379	0.384

*Standard errors in parentheses. The matching process ensures that the changes in the dependent variable are caused by changes in analyst coverage, eliminating the need to control for cross-sectional effects (i.e., include control variables) in the analysis. Nevertheless, I also report models with the control variables included, but exclude the coefficient estimates and standard errors for brevity. *** p<0.001, ** p<0.01, * p<0.05

Table 3. Cross sectional results: what firms respond more strongly to lower analyst coverage?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	Δ Asset durability: Computer Equipment Model 7	Δ Asset durability: Oil and Gas Model 8	Δ Asset durability: Strong corporate governance Model 9	Δ Asset durability: Weak corporate governance Model 10	Δ Asset durability: Poor financial health Model 11	Δ Asset durability: Strong financial health Model 12	Δ Asset durability: Low analyst coverage Model 13	Δ Asset durability: High analyst coverage Model 14
Brokerage disappearance	3.086* (1.292)	1.199 (2.168)	1.844** (0.723)	1.552 (0.877)	2.153** (0.771)	0.587 (0.616)	1.856* (0.932)	0.960 (1.016)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	788	521	3,560	2,696	5,634	5,627	4,279	3,659
R-squared	0.386	0.365	0.432	0.402	0.466	0.499	0.487	0.534

*Standard errors in parentheses. All specifications use a six-year (t-3 to t+3) observation window. The number of observations differs between the bottom and top groups because companies are divided based on the median value of the relevant conditioning variable in the year preceding the treatment (t-1) and some companies are missing values for other years in the observation window. In columns 3-8, firms in the group below (above) the median are presented in the odd (even) numbered columns. *** p<0.001, ** p<0.01, * p<0.05

Table 4. Dictionary of keywords to measure time horizons

Words that signal a short time horizon	Words that signal a long time horizon	
CURRENT	AND_BEYOND	REMAINS
CURRENTLY	CENTURIES	REMAINED
DAILY	CENTURY	REMAINING
DAY	COMMIT	PERMANENT
DAYS	COMMITS	PERMANENTLY
IMMEDIATE_FUTURE	COMMITTED	PRESERVE
INSTANT	COMMITTING	PRESERVED
INSTANTANEOUS	COMMITMENT	PRESERVES
INSTANTLY	COMMITMENTS	PRESERVATION
MID-YEAR	DECADE	PRESERVING
MIDYEAR	DECADES	YEARS
MOMENT	DISTANT_FUTURE	LIFESPAN
MOMENTS	ETERNAL	ENDURING
MOMENTARILY	ETERNALLY	PERPETUAL
MONTH	ENDLESS	PERPETUALLY
MONTHLY	ENDLESSLY	PERPETUITY
MONTHS	ENDLESSNESS	UNENDING
NEAR-TERM	FOREVER	
QUARTER	HISTORY	
QUARTERLY	LASTING	
QUARTERS	LIFETIME	
SHORTER_LIFE	LONGER_LIFE	
SHORTER_PERIOD	LONGER_PERIOD	
SHORTER_RUN	LONGER_RUN	
SHORTER_TERM	LONGER_TERM	
SHORTER_TIME	LONGER_TIME	
SHORT_LIFE	LONG_LIFE	
SHORT_PERIOD	LONG_PERIOD	
SHORT_RUN	LONG_RUN	
SHORT_TERM	LONG_TERM	
SHORT_TIME	LONG_TIME	
TEMPORARY	MAINTAIN	
TEMPORARILY	MAINTAINED	
TODAY	MAINTAINS	
WEEK	MAINTAINING	
WEEKLY	OUTLOOK	
WEEKS	OVER_TIME	
YEAR	REMAIN	

Table 5. Results from auxiliary analysis

	(1)	(2)
Variable	Δ Time horizon Model 15	Δ Time horizon Model 16
Brokerage disappearance	0.090**	0.087**
	(0.036)	(0.036)
Controls	No	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Observations	4,005	4,005
R-squared	0.59	0.59

*Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

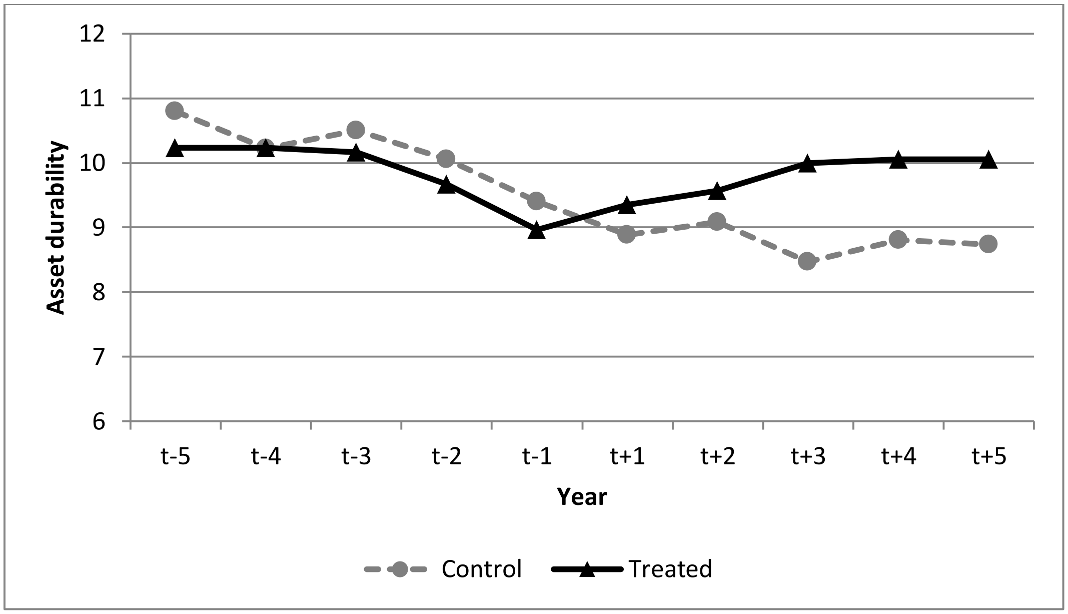

Figure 1. Change in asset durability in treated and control firms

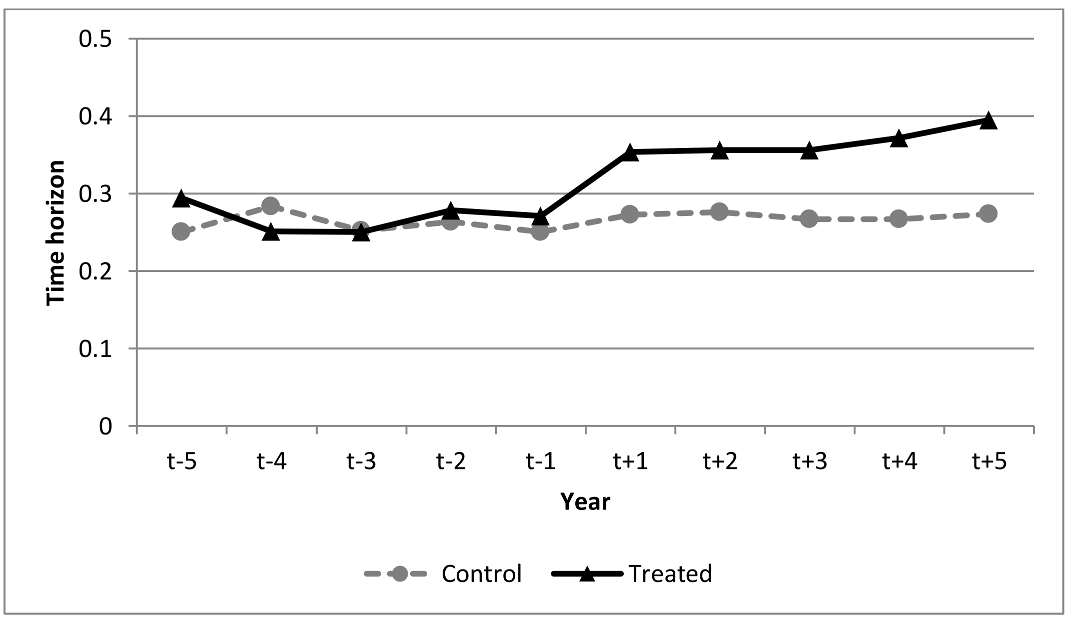

Figure 2. Change in time horizon in treated and control firms