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## Short-Term Investors, Long-Term Investments, and Firm Value:

### Evidence from Russell 2000 Index Inclusions\*

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#### **Abstract**

We document that an increase in short-horizon investors is associated with cuts to long-term investment and increased short-term earnings. This leads to temporary boosts in equity valuations that reverse over time. To estimate these effects, we use difference-in-differences regressions around firms' additions to the Russell 2000, comparing firms with large and small increases in short-term ownership. We proxy for the presence of short-term investors using ownership by transient institutions. Our results suggest that short-term pressures by investors can lead to myopic firm behavior.

*Keywords:* Short-term Investors; Long-term Investments; Russell 2000 Inclusions

JEL Classification: G31; G14; M40

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## 1. Introduction

Survey evidence by Graham, Harvey, and Rajgopal (2005) suggests that many executives are willing to take short-term actions that are detrimental to long-term firm value, such as cutting long-term investment, possibly in response to short-term pressures by investors. We show that an increase in short-horizon investors is associated with cuts to long-term investment and increased short-term earnings. This leads to temporary boosts in equity valuations that reverse over time. We estimate these effects through difference-in-differences regressions around firms' additions to the Russell 2000, comparing firms with large and small increases in short-term ownership.

Our tests are motivated by the theory in Bolton, Scheinkman, and Xiong (2006), which predicts that short-horizon investors pressure CEOs to cut investment to increase earnings, which subsequently leads to temporary boosts in stock prices. The model argues that CEOs, incentivized by short-horizon investors through short-term pay, take actions that increase the short-term speculative component in stock prices, at the expense of long-term firm value. Bolton, Scheinkman, and Xiong (2006) use the case of R&D cuts that boost short-term earnings as a specific example of actions that temporarily inflate stock prices. Stock prices overreact to positive earnings news because of investor overconfidence, which in their model generates disagreements regarding fundamental firm values, as in Scheinkman and Xiong (2003). Short-term investors benefit from this by selling stocks to other investors with more optimistic beliefs. Stock prices are then driven up to the valuations of the most optimistic investors, as short-sale constraints limit rational investors from eliminating any overvaluations. CEOs also benefit from temporary overvaluations as their short-term compensation is tied to short-term stock prices. Equity overvaluations reverse only gradually as it takes time for investors to understand that the higher earnings were due to R&D cuts that are detrimental to long-term firm value.

Other theories of short-termism also model CEOs' incentives to cut R&D. In Stein (1989) or Von Thadden (1995), reductions in R&D arise because CEOs want to avoid a decline in earnings, which may lead to lower stock prices if investor trading is sensitive to earnings news. CEOs are concerned about lower equity valuations because their incentives may be tied to short-term stock prices or because a decline in stock prices may trigger a takeover. Short-term institutional investors are particularly likely to exit over disappointing earnings as they hold stakes in numerous firms and trade frequently in and out of stocks (see Bushee 1998). While these models also explain myopic investment cuts, stock prices are unaffected by R&D cuts as markets see through CEOs' incentives to boost earnings.

We estimate the effects of short-term investors within a sample of stocks added to the Russell 2000 index from below. While the Russell 1000 includes the 1,000 largest U.S. stocks based on market capitalizations, the Russell 2000 includes the next 2,000, thereby representing the U.S. small cap segment.<sup>1</sup> A firm is added to the Russell 2000 from below when its market capitalization has sufficiently increased over the past year so that it ranks between 1,000 and 3,000. Our sample of small cap firms has the benefit that short-sale constraints are more binding for such stocks (Reed 2013), making it easier for temporary overvaluations to arise.

A firm's addition to the Russell 2000 might increase short-term ownership for three non-mutually exclusive reasons. First, index inclusion might lead to significant buying by active short-term institutions that benchmark their performance to the Russell 2000 (Chang, Hong, and Liskovich 2015; Boone and White 2015). Second, short-term institutions might increase their holdings if they expect more firm transparency after index inclusion, which can increase trading opportunities and reduce the price impact of trading (Bushee and Noe 2000). Third, membership in the Russell 2000 might increase

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<sup>1</sup> Membership in the two indexes is based market capitalization ranks at the last trading day in May. Each stock's index weight is then determined based on end-of-June float-adjusted market capitalizations.

firm visibility, for example because analyst coverage increases after index inclusion. Increased firm visibility in turn may lead to higher short-term institutional ownership.

Our proxy for the presence of short-horizon investors is ownership by transient institutions. Introduced by Bushee (1998, 2001), transient institutions are characterized by having high portfolio turnover and diversified portfolios. We document a large and persistent increase in ownership by such institutions after a firm is added to the Russell 2000 from below: transient ownership is 1.9 percentage points higher after index inclusion, an increase by 22% relative to the pre-inclusion average of 8.5%. The increase in short-term ownership does not reverse over subsequent years.

Transient ownership has several benefits over more trading-based proxies such as share turnover. First, much of the recent variation in share turnover comes from high-frequency traders that are unlikely to impact longer-term corporate policies. Second, while share turnover also increases around index inclusions because of portfolio rebalancing needs by passive institutions, this effect is only temporary (Chang, Hong, and Liskovich 2015). Rebalancing-motivated trading is therefore unlikely to have lasting effects on corporate policies.

We identify the effects of short-term investors by estimating difference-in-differences regressions around a firm's inclusion in the Russell 2000, comparing firms with large and small increases in transient ownership. While a large increase in transient ownership is unlikely to be random, our analysis makes the (relatively plausible) assumption that changes in transient ownership around index inclusion are not determined by the outcome variables that we study. Importantly, all of our outcome variables exhibit the same trends across firms with large and small increases in transient ownership in the years *prior to* index inclusion.<sup>2</sup> We do not look at index exclusions as these are often due to

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<sup>2</sup> We also explore the effects of the persistent increase in transient ownership on our outcome variables three and four years *into the future*. These tests are useful as future changes in R&D or earnings are less likely to be affected by simultaneity or reverse causality resulting from contemporaneous changes in transient ownership.

fundamental shocks such as bankruptcies or M&A that may directly affect our outcome variables (Shleifer 1986, or Harris and Gurel 1986). We focus on index inclusions from below, rather than from above, as such reconstitutions are more than three times as frequent and trigger significantly larger increases in short-term ownership.

A firm's addition to the Russell 2000 can also increase passive ownership and analyst coverage, and these changes may affect our outcome variables. For example, ownership by passive (long-term) investors may allow firms to make long-term investments without the short-term performance pressures that come from active traders (Beyer, Larcker, and Tian 2014). Wider analyst coverage may pressure managers to reduce R&D to meet or beat earnings expectations (Fuller and Jensen 2010).<sup>3</sup> To address the potentially confounding effects of these variables, we directly control for changes in both variables in our regressions.

Our analysis proceeds in three steps. In a first step, we examine whether firms that experience a large (above-median) increase in transient ownership spend less on R&D after index inclusion, relative to firms that only experience a small increase. We find that firms that experience a large transient-ownership increase reduce R&D rates by 1.3 percentage points after index inclusion, relative to firms that do not experience the same increase. This effect equals 11% of the R&D variable's standard deviation, and it is unaffected when we control for changes in passive ownership or analyst coverage. Results are also unaffected if we control for changes in short-term trading (rather than short-term ownership) or the general increase in institutional ownership around index inclusion. The decline in R&D is persistent and not reversed in the years after index inclusion.

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<sup>3</sup> The increase in firm visibility due to wider analyst coverage after index inclusion may also directly trigger the buying by short-term investors.

In the theory of Bolton, Scheinkman, and Xiong (2006), short-term investors pressure CEOs to cut R&D in order to report higher earnings. Survey evidence (Graham, Harvey, and Rajgopal 2005) indicates not only that CEOs can cut investments on short notice, but also that this can boost earnings even within the same quarter. If temporarily inflated earnings are misinterpreted by some investors, this can temporarily boost stock prices. Thus, linking the presence of short-term investors to current earnings (and later to equity valuations) is an important element in Bolton, Scheinkman, and Xiong (2006). We find that the earnings (EBIT over assets) of firms that experience a large increase in transient ownership rise by 4.7 percentage points after index inclusion, relative to those of firms that do not experience the surge. This effect equals 22% of the earnings variable's standard deviation. The higher earnings also do not reverse over time.

In a second step, we explore short-term and long-term equity valuations around index inclusions, conditional on changes in R&D and transient ownership. If short-term investors pressure managers to behave myopically, then Bolton, Scheinkman, and Xiong (2006) predict that the equity valuation of firms that reduce R&D around index inclusion should rise temporarily relative to those of other firms. This effect should be strongest among firms with a large, recent increase in short-term ownership, as the decline in R&D at such firms should be most strongly attributable to the ownership change. Temporary boost in equity valuations would suggest that markets (initially) misinterpreted the higher earnings as a positive signal about firm fundamentals. To the contrary, equity valuations should not rise if markets anticipated managers' response to the inflow of short-term investors (Stein 1989).

In the year of index inclusion, we find that equity market-to-book ratios of firms that cut R&D are 1.5 units higher than those of other firm; this valuation difference corresponds to 39% of the equity valuation's standard deviation. Importantly, the effect of R&D cuts on equity valuations is strongly concentrated among firms that experienced a large increase in transient ownership.

While this result is consistent with myopia, an alternative explanation is that short-term investors pressure CEOs to optimally reduce investment that had previously been too high (Laux 2012). In that case, equity valuations would also increase in the short run at firms that undertake such cuts. We distinguish between these competing explanations by examining the effect of R&D cuts on long-term valuations. If R&D cuts are indeed myopic, then equity valuations should decline over time as the costs of the reduced investment are gradually revealed. Conversely, if R&D cuts are efficient, then valuations should not decline in the long run.

We find that R&D cuts have significantly negative effects on future valuation: market-to-book ratios of firms that cut R&D start to decline in first year after index inclusion and this effect accelerates in subsequent years. Again, the decline in valuation is strongest among R&D-cutting firms that also experienced a large increase in transient ownership around index inclusion. Overall, this reversal pattern is consistent with temporary price distortions caused by the effects of short-term investors on R&D.

Our findings raise the question of which mechanisms may cause the price corrections to occur in the years after index inclusion. One possibility is that it becomes easier to speculate against a possible overvaluation once a firm has been included in the Russell 2000 for a few years, for example as short-sale constraints gradually fade away once institutional ownership has sufficiently risen (e.g., Asquith, Pathak, and Ritter, 2005).<sup>4</sup> High institutional ownership after index inclusion may also lead to a more efficient processing of information about the negative long-term effects of R&D cuts (e.g., Piotroski and Roulstone 2004). There may be similar effects due the generally improved information environment once firms have been in the Russell 2000 for a few years (Boone and White 2015; Hong, Lim, and Stein 2000). For example, more analysts or analysts with higher reputation may start to speculate on the

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<sup>4</sup> Diamond and Verrecchia (1987) show that short-sale constraints can impede the adjustment of prices to bad news.



effects of the reduced R&D. It is also possible that firms gradually start missing analysts' earnings targets in the years after index inclusion (though earnings continue to grow), leading to declines in valuations.

In a last step, we explore whether firms with more short-term investors grant more short-term incentives to their CEOs. The channel in Bolton, Scheinkman, and Xiong (2006) holds that short-term investors incentivize CEOs to act myopically by providing them with short-term pay. This allows CEOs to personally benefit from temporary increases in equity valuation. Ideally, we would test this prediction among Russell 2000 inclusion firms, but comprehensive pay data on such firms is not available. Instead, we turn to ExecuComp firms for which we can link short-term ownership to short-term incentive pay. We find that firms with more transient investors grant their CEOs more options and restricted stock.

Our paper contributes to a growing empirical literature that links corporate policies to investor horizons. The first paper in this literature is Bushee (1998), who shows that more transient ownership leads to less R&D spending, especially among firms where R&D cuts can reverse an earnings decline ("small-decline firms"). We complement Bushee's work with more recent data, in a different setting, and with additional results for earnings and equity valuations, thereby testing predictions derived from Bolton, Scheinkman, and Xiong (2006). We also show that the effects of R&D cuts extend beyond small-decline firms, though we find stronger effects for such firms.

Our paper is further related to Derrien, Kecskes, and Thesmar (2015), who find that greater long-term ownership is associated with increased investments when firms have lower value than predicted by their fundamentals. Relatedly, Harford, Kecskes, and Mansi (2018) find that firms with more long-term shareholders exhibit less fraud and empire building. There is also evidence that firms with more short-term investors do worse in takeovers as targets or acquirers (Gaspar, Massa, and Matos 2005; Chen, Harford, and Li 2007). Two papers relate managerial horizons and investment. Ladika and Sautner (2019) show that a decrease in managerial horizon caused by accelerated option vesting leads

to investment cuts. Similarly, Edmans, Fang, and Lewellen (2017) document that imminent vesting of equity incentives is associated with lower investment spending.

The next section summarizes studies that look at the effects of index inclusions on corporate policies. The section shows that most prior research focuses on Russell 2000 inclusion from above, rather than from below, and on the role of institutional and passive ownership, rather than of short-term ownership.

## **2. Related Literature on the Effects of Index Inclusions**

### **2.1. Firm Policies and Index Inclusions**

Research on index inclusions can broadly be classified into studies that examine the effects of ownership changes around index inclusions, and studies that consider how stock prices change around the time that stocks are added to an index. Within the first group, most papers exploit ownership variation around the cutoff used to calculate membership in the Russell 1000/2000. As portfolio weights within these two indexes are value-weighted, the smallest stocks in the Russell 1000 have small index weights, while the largest stocks in the Russell 2000 are given large weights (larger by a factor of about ten). As a result, for every dollar invested in the two indexes, very little is invested in stocks at the bottom of the Russell 1000, but a lot is invested in stocks at the top of the Russell 2000.

Several studies exploit the fact that these differences in index weights lead to higher (lower) institutional and passive ownership at firms at the top of the Russell 2000 (bottom of the Russell 1000), using either a regression-discontinuity design (RDD) or instrumental variables (IV). The RDD framework compares firms just above (i.e., at the bottom of the Russell 1000) and below the threshold (i.e., at the top of the Russell 2000), assuming that firms around the threshold are identical except for the assignment to a different index (Boone and White 2015). As an instrument for ownership, some studies

use an indicator capturing whether firms switch between the two indexes (Fich, Harford, and Tran 2015; Schmidt and Fahlenbrach 2017), and others use an indicator of whether firms are assigned to the Russell 2000 (Appel, Gormley, and Keim 2016, Crane, Michenaud, and Weston 2014).

In terms of results, Boone and White (2015) show that higher institutional ownership due to inclusion in the Russell 2000 leads to greater management disclosure, analyst following, and liquidity. Fich, Harford, and Tran (2015) document that higher institutional ownership, especially by institutions whose holding value is in the top 10% of their portfolio, leads to better M&A decisions. Higher institutional ownership is also associated with increased CEO incentive pay (Mullins 2014) and higher dividends (Crane, Michenaud, and Weston 2016). Aghion, van Reenen, and Zingales (2013) exploit S&P 500 additions to show that greater institutional ownership improves innovation.

Two papers focus on passive ownership. Schmidt and Fahlenbrach (2017) find that higher ownership by index funds or ETFs leads to more CEO power, fewer independent directors, and worse M&A decisions. In contrast, Appel, Gormley, and Keim (2016) find that an increase in ownership by passive mutual funds leads to more independent directors, the removal of antitakeover defenses, and more equal voting rights. Schmidt and Fahlenbrach (2017) reconcile these findings by arguing that passive ownership affects governance positively when it comes to low-cost governance activities such as voting, and negatively for high-cost governance such as monitoring of M&A decisions.

## **2.2. Stock Market Reactions and Index Inclusions**

Several studies analyze the short-term market reaction when firms get added to important indexes, initially to answer whether demand curves for stocks slope down or are horizontal. Shleifer (1986) examines price reactions when firms get added to the S&P 500, which does not provide new information about fundamentals to the market. Nevertheless, he documents an index addition effect of around 3% in the days around the inclusion, which he explains with downward-sloping demand curves

caused by index tracking.<sup>5</sup> Further evidence for a positive S&P 500 inclusion effect is provided by Harris and Gurel (1986) and Lynch and Mendenhall (1997). Petajisto (2011) and Biktimirov, Cowan, and Jordan (2004) provide similar evidence for the Russell 2000, and Greenwood (2005) for the Nikkei 225.

Chang, Hong, and Liskovich (2015) argue that it is difficult to separate index-tracking effects from confounding factors such as the investor recognition associated with index membership. To isolate indexing effects, they use an RDD framework and compare firms around the Russell 1000/2000 threshold (rather than comparing firms added to an index with those that are not). As explained, this design exploits that firms added to the Russell 2000 from above (i.e., from the Russell 1000) have disproportionately higher ownership by indexing institutions. Using this framework, they find a 5% stock price increase for firms added to the Russell 2000 from above; this effect is smaller (around 3%) and noisier for firms added from below. Index addition is further associated with more trading, as indexing investors need to rebalance their portfolios.

A few papers study whether the initial rise in stock prices around index inclusions is persistent. While Lynch and Mendenhall (1997) find that large parts of the S&P 500 price effect are permanent, Petajisto (2011) documents for Russell 2000 stocks that the effect largely reverses within two months, though standard errors are large. Greenwood (2005) finds for Nikkei 225 stocks that most of the initial price increase reverses over time.

### **3. Data and Methodology**

#### **3.1. Sample and Measures**

Our sample consists of stocks added to the Russell 2000 from below between 1990 and 2016. We analyze the two-sided four-year window around each firm's addition to the index, covering the four

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<sup>5</sup> As firms are added to the index, index tracking funds buy newly-added shares (implying an outward shift in the demand curve), which reduces the stocks available for non-indexing investors and increases the price. If demand curves were horizontal, one should not expect such a price increase around the index inclusion.

years before and the four years after a firm's inclusion year. This event window allows us to study whether trends exist for our outcome variables in the pre-inclusion years, and whether any reversals arise in the post-inclusion years. Firms are newly added to the Russell 2000 from below when they were previously outside of the Russell 1000 and 2000, but their market capitalization ranks have increased over the past year so that they are now ranked between 1,000 and 3,000. Firms added to the index from below tend to be smaller than the other Russell 2000 firms.

Unlike for passive investors such as index funds or ETFs, the addition to the Russell 2000 does not mechanically force active short-term investors to buy newly added shares. However, Russell 2000 additions are accompanied with significant buying by active short-term institutions that benchmark their performance to the Russell 2000 (Chang, Hong, and Liskovich 2015; Boone and White 2015) or expect greater firm transparency (Bushee and Noe 2000).<sup>6</sup> Short-term ownership also rises if index inclusion increases firm visibility, which in turn may lead to buying by short-term active institutions. Indeed, we document a large increase in ownership by short-term (transient) investors after a stock is added to the Russell 2000 from below.

We restrict our tests to only the first inclusion of a firm to the Russell 2000 during our sample period, to avoid problems with overlapping event windows.<sup>7</sup> This restriction leaves us with 57% of all firms that were added to the Russell 2000 during the sample period. We show that results are unaffected if we use all inclusion events instead of only the first inclusions. The number of inclusion events in our regressions is further reduced as we require data on short-term ownership and corporate policies for the years around index inclusion. Nevertheless, our final sample has sufficient power to identify the effects of short-horizon investors as it contains 841 unique inclusion events.

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<sup>6</sup> The amounts of money benchmarked to the Russell 2000 are of similar magnitude than those benchmarked to the Russell 1000 (Chang, Hong, and Liskovich 2015).

<sup>7</sup> For example, if a firm is added twice to the index over a short horizon, then changes in our outcomes variables may be confounded by the changes caused by the second inclusion. We verify that inclusion firms in the early years of the sample were not added to the Russell 2000 in the five years before the sample period starts.

Our measure for the presence of short-term institutional investors is a firm's ownership by transient investors (*Transient IO*), introduced by Bushee (1998, 2001). Bushee identifies "transient" investors as institutions with high portfolio turnover and diversified portfolios. He differentiates these investors from "quasi-indexer" institutions with low turnover and diversified portfolios, and from "dedicated" institutions with low turnover and more concentrated portfolios. Table 1, Panel A, reports that ownership by transient investors averages around 13% across our sample. Table 1, Panel B, shows how key variables are correlated with transient ownership.

### 3.2. Empirical Model

To capture the effects of short-term ownership, we estimate the following difference-in-differences model for the two-sided four-year window around a firm's inclusion in the Russell 2000:

$$Firm\ Outcome_{ft} = \pi_1 Post\ Inclusion_{ft} \times Large\ Increase\ Transient\ IO_{ft} + \pi_2 Post\ Inclusion_{ft} \quad (1) \\ + \pi_3 Large\ Increase\ Transient\ IO_{ft} + \pi_4 X_{ft} + \lambda_f + \mu_{ft} + \epsilon_{ft}$$

where *Firm Outcome* is *R&D/Assets* or *EBIT/Assets* for firm *f* in year *t*, depending on the hypothesis being tested. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000, and zero otherwise. Some of our tests estimate modifications of this baseline model in which we replace *Post Inclusion* with year dummies that measure time relative to the inclusion year (e.g., *Year +1*).

*Large Increase Transient IO* captures a large increase in transient ownership around index inclusion. We identify such events with an indicator that equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise.<sup>8</sup>

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<sup>8</sup> As transient ownership is stable in both time-directions away from the year of index inclusion, results are unaffected if we define the rise in short-term ownership over the [-3, +3] or [-4, +4] year periods. However, this

Our main coefficient of interest is  $\pi_1$ . A negative (positive)  $\pi_1$ -coefficient for R&D (earnings) would indicate that firms that experience a large increase in transient ownership reduce (increase) R&D spending (earnings) after index inclusion, relative to firms that only experience a small increase.

The vector  $X_{ft}$  contains firm-level control variables that may affect changes in short-term ownership and our outcome variables. Similar to Schmidt and Fahlenbrach (2017), we control for a firm's market capitalization, the change in market capitalization rank, and the past stock return. Next to these variables, we account for the overall changes in institutional ownership around a firm's index inclusion. Following Bushee and Noe (2001), we also control for dividends, leverage, idiosyncratic risk and a firm's equity beta. We account for these variables as they have been shown to affect transient ownership and they may also affect R&D and earnings. As Russell 2000 membership temporarily leads to more trading volume, we control for *Share Turnover* for robustness. In R&D regressions we set missing values of R&D to zero and add a control variable that equals one for observations with missing R&D data.  $\lambda_f$  are firm fixed effects that account for any systematic differences in our outcome variables across firms, and  $\mu_{ft}$  are industry-by-year fixed effects that control for economic shocks that affect all firms within an industry in a given year.

### 3.3. Russell 2000 Inclusions and the Presence of Short-term Investors

Table 2, Columns (1) and (2), examine the effect of index inclusion on short-term ownership, measured using *Transient IO*. Column (1) identifies the effect of index inclusion by comparing average short-term ownership in the four years before and after a firm's addition to the Russell 2000. We find a highly statistically significant and economically large increase in short-term ownership after a firm is assigned to the index. The estimates imply that transient ownership is 1.9 percentage points higher once a firm gets added to the Russell 2000, which reflects an increase by 22% relative to the pre-inclusion

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refinement reduces the number of observations, as more data on *Transient IO* is available in years closer to index inclusion.

average of 8.5%. The magnitude of this effect increases slightly when we account for firm fixed effects (not reported). Column (2) explores whether the increase in *Transient IO* is persistent. We replace the post-inclusion dummy with indicators that measure short-term ownership in each year after index inclusion, relative to the pre-inclusion average. We find that short-term ownership remains high over the four-year period after index inclusion, indicating that there is no reversal in transient ownership.

In terms of control variables, Table 2, Columns (1) and (2), show that short-term ownership is larger among bigger firms, among firms that moved up more the market capitalization rank (for them  $\Delta$  *Market Cap Rank* is negative), and among firms with higher past returns. Consistent with Bushee and Noe (2001), firms with higher transient ownership pay lower dividends, have higher leverage, have lower idiosyncratic risk, and exhibit more share turnover.

As explained above, we restrict our tests to the first time a firm is added to the Russell 2000. Internet Appendix Table 1 relaxes this restriction and uses all inclusions from below. Within this larger sample we continue to find that index inclusion significantly increases short-term ownership.

### **3.4. Confounding Effects: Passive Ownership and Analysts Coverage**

Index inclusion has a strong positive effect on short-term ownership. This change is unlikely to occur in isolation and a firm's Russell 2000 assignment may affect other variables that influence firm outcomes. We consider two variables in particular, namely changes in passive ownership and analyst coverage.

An increase in passive ownership could be beneficial for long-term investment, as passive investors tend to be long-term owners interested in long-term performance. Passive investors are also less likely to use voice (too expensive given the low-cost business model) or the threat of exit (not available given their explicit index tracking) to pressure managers to act myopically. We capture the



effects of passive holdings using firm ownership by quasi-indexers (*Quasi-Indexer IO*) (Bushee 1998).

Quasi-indexers include purely passive index funds that track the Russell 2000 and more actively managed funds that closely mimic the index.

Increases in analyst coverage may have the opposite effect, as wider following by analysts may pressure CEOs to act myopically, so they can meet or beat analyst expectations (Fuller and Jensen 2010). Additionally, wider analyst following may have feedback effects if increased firm visibility due to larger analyst coverage triggers some short-term investors into buying newly-added stocks. We measure analyst coverage using the number of analysts issuing earnings forecasts for a firm (*Analyst Coverage*).

Table 2, Column (3), shows that it is potentially important to account for the role of quasi-indexers, as the ownership by such investors significantly increases when a firm gets added to the Russell 2000. The point estimate in the column implies that *Quasi-Indexer IO* increases by 2.2 percentage points after index inclusion. This equals 15% of the variable's pre-inclusion average of 15%. With regard to changes in analyst coverage around index inclusion, Table 2, Column (4), indicates that analyst following increases also once a firm gets added to the Russell 2000, though this effect is marginally insignificant (*t*-statistic of 1.52). We will account for the potential effects of passive ownership and analyst coverage on our outcome variables by directly controlling for changes in these variables.

## 4. Main Results

### 4.1. Short-term Investors and R&D Expenditures

Bolton, Scheinkman, and Xiong (2006) predict that short-term investors pressure CEOs to reduce R&D to surprise markets with higher earnings. We first examine whether firms spend less on R&D when short-term ownership increases due to index inclusion. As in Bushee (1998), we focus on R&D to capture long-term investments as these are discretionary expenditures that contemporaneously depress reported earnings. At the same time, R&D projects can take years to complete and the benefits from R&D may occur only years into the future. R&D is particularly susceptible to myopia because managers generally have broad leeway to reduce or postpone R&D in order to increase current earnings. Cutting R&D can boost a firm's stock price in the short term if differences of opinion exist and if investors misinterpret the higher earnings that result from R&D cuts (e.g., if some investors naïvely use earnings-based multiples to derive their estimate of equity values). These assumptions are plausible as stock markets seem unable to properly value R&D (Cohen, Diether, and Malloy 2013), implying that investors may not fully incorporate the consequences of R&D cuts. Valuing R&D is likely to be more challenging for small firms, such as those for which we identify the effects of short-horizon investors.

In Table 3, we examine in Columns (1) through (4) whether firms that experience a large increase in transient ownership reduce R&D spending after index inclusion, relative to firms that only experience a small increase. The estimates in Column (1) show that the R&D rates of firms that experience a large rise in transient ownership decrease by 1.3 percentage points after index inclusion, relative to those of firms that do not experience the same short-term ownership increase.<sup>9</sup> This effect is large economically as the decline in R&D equals 11% of the variable's sample standard deviation.<sup>10</sup>

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<sup>9</sup> The individual effects of the transient ownership variable are absorbed by the firm fixed effect.

<sup>10</sup> For the full sample of firms added to the Russell 2000 we continue to find that a large increase in transient ownership is associated with less R&D (Internet Appendix Table 1).

Next, Column (2) additionally controls for the increase in ownership by quasi-indexers around a firm's index inclusion. While a large increase in transient ownership continues to have a negative effect on R&D, we do not find that a large rise in ownership by quasi-indexers is associated with changes in R&D spending. Within our sample, we therefore have little evidence that higher passive ownership better allows firms to make long-term investments. Column (3) additionally controls for the potentially confounding role of the rise in analyst coverage around index inclusion. While the effect of transient ownership is unaffected when we control for changes in analyst coverage, we find that the increase in analyst coverage itself has a negative effect on R&D. However, this effect is statistically insignificant. Finally, we also control in Column (4) for share turnover to account for changes in short-term trading. In this regression, we continue to find that an increase in transient ownership leads to less R&D spending.

Table 2 documented that the increase in *Transient IO* after index assignment is persistent. This raises the question of whether the decline in R&D is also lasting, or whether R&D reverses in subsequent years. For example, some CEOs may reduce R&D in the year of index inclusion but then increase it again in subsequent years. To explore this possibility, we replace in Table 3, Column (5) *Post Inclusion* with indicators for each year after index inclusion, and interact these indicators with *Large Increase Transient IO*. The resulting interaction terms allow us to estimate the effects of the increase in transient ownership for each post-inclusion year separately. We find that the estimates for all interaction terms are negative, of similar magnitude, and statistically different from zero. Hence, there is no evidence that the decline in R&D reverses at firms that experience a large increase in transient ownership.

Bushee (1998) documents in his sample that the negative effect of transient ownership on R&D is concentrated among firms whose earnings before R&D and taxes (EBTRD) declined relative to the prior year, but by an amount that can be reversed by cutting R&D. This raises the question of whether our results are also concentrated among such firms, or whether R&D cuts are more widespread. To

explore this question, we create a sample of firms for which R&D cuts can reverse an earnings decline from year  $t-1$  to year  $t$ . We consider the index-inclusion year as year  $t$  and call the resulting set of firms the “small-decline sample”, following Bushee (1998).<sup>11</sup> A limitation of this analysis is that only 187 firms meet this requirement, which reduces the power of our tests. Internet Appendix Table 2 replicates our analysis for the small-decline sample. Consistent with Bushee (1998), the estimate of *Post Inclusion \* Large Increase Transient IO* is much larger than in the corresponding Table 3, Column (1), roughly by a factor ten.

#### 4.2. Short-term Investors and Earnings

Short-term investors in Bolton, Scheinkman, and Xiong (2006) pressure managers to reduce R&D with the objective to report higher earnings. If temporarily inflated earnings are misinterpreted by some investors, this can lead to temporary boosts in the stock price. To test for the effects of short-term investors on earnings, Table 4 provides regressions similar to those in Table 3, but using measures of earnings instead of R&D. Our main earnings variable in Columns (1) through (5) is EBIT, while results are similar if we use net income in Column (6) instead. We scale both earnings variables by total assets.

Column (1) shows that firms that experience a large increase in transient ownership report higher earnings after index inclusion, relative to firms that only experience a small increase. The estimates imply that *EBIT/Assets* of firms that experience a large transient-ownership increase rise by 4.7 percentage points after index inclusion, relative to firms that do not experience such a surge. The effect is large economically, equal to 22% of the variable’s standard deviation. As the coefficient

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<sup>11</sup> Formally, the small-decline sample consists of all inclusion firms for which  $-R\&D_{t-1} < (EBTRD_t - EBTRD_{t-1}) < 0$ .

estimate on *Post Inclusion \* Large Increase Transient IO* is larger than the corresponding estimate for R&D in Table 3, reductions in other expenses likely also contribute to the rise in earnings.<sup>12</sup>

Columns (2) and (3) show that transient ownership continues to have a positive effect on earnings after controlling for the change in ownership by quasi-indexers and in analyst coverage. The same holds in Column (4) where we account for changes in short-term trading. Column (6) illustrates that results are unaffected if we use net income instead of EBIT.

We showed that the effects of changes in transient ownership on R&D around index inclusions are persistent. Column (5) documents the same pattern for earnings, which also continue to be persistently higher after index inclusions, thereby mirroring the lasting effect of the decline in R&D.

#### **4.3. Short-term Investors and Equity Valuations**

If short-term investors pressure managers to behave myopically, then Bolton, Scheinkman, and Xiong (2006) predict that the equity valuation of firms that reduce R&D should rise temporarily relative to the valuation of other firms. Such temporary price effects would suggest that markets (initially) misinterpreted the higher earnings as a positive signal about firm fundamentals. The alternative (null) hypothesis is that markets correctly anticipated managers' response to the inflow of short-term investors, in which case equity valuations should not rise (Stein 1989).

Table 5, Panel A, considers whether R&D reductions are associated with temporary distortions to the valuation of a firm's equity, which we capture using the equity market-to-book ratio in the year of index inclusion. Specifically, we examine whether short-term equity valuations are higher among firms that cut R&D, and how this effect varies with short-term ownership. As explained in Section 2, firms

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<sup>12</sup> The surge in earnings is not the result of higher sales, as we find no evidence that firms that experience a large increase in transient ownership have lower *Sales/Assets* after index inclusion, relative to firms that only experience a small increase (not reported).

added to the Russell 2000 generally experience an increase in equity valuations upon index inclusion relative to prior years. Our regressions therefore attempt to examine whether valuations are affected *differentially* depending on whether or not firms cut investment. Column (1) estimates the effect for all firms, while Column (2) and (3) separate the sample based on whether firms experienced a large increase in *Transient IO* around index inclusion.

Column (1) shows that inclusion-year equity valuations are substantially higher among firms that cut R&D. Such firms trade at equity valuations that are 1.5 units higher than those of other firms, a difference that equals 39% of the equity multiple's standard deviation. A comparison of Columns (2) and (3) shows that the effects of R&D cuts are strongly concentrated among firms that also experienced a surge in transient ownership.

While these results are consistent with managerial myopia, an alternative explanation holds that short-term owners pressure CEOs to optimally reduce investment that has previously been too high (Laux 2012), in which case equity valuations would also increase at firms that undertake R&D cuts. We distinguish between these competing views by examining the effect of R&D cuts on long-term equity valuations. If investment cuts are myopic, then equity valuations should decline as the costs of the reduced investment are gradually revealed. Conversely, if investment cuts are efficient, then equity valuations should not drop in the long run.

Table 5, Panel B, reports market-to-book ratios for each year over the four-year period after a firm's index inclusion, comparing effects between firms with and without R&D cuts. We estimate all effects relative to equity valuations in year 0, the year of index inclusion. The estimates reveal that R&D cuts have significantly negative effects on future equity valuation. Among all firms in Column (4), valuations start to decline in first year after inclusion (-0.6), with the decline accelerating in the second (-1.1), and the valuations bottoming in the third (1.7) and fourth (-1.8) year. Importantly, Columns (5) and

(6) show that the valuation decline is strongest among R&D-cutting firms that experienced a large increase in transient ownership; these are precisely the firms that also saw the biggest surge in short-term valuations at index inclusion. The long-term decline in valuations after index inclusion is similar to (or even slightly exceeds) the short-term surge in the inclusion year (see Table 5, Panel A).

#### **4.4. Parallel-Trends Assumption**

A key identifying assumption for our tests is the parallel-trends condition. This condition requires that our outcome variables follow the same trends across firms with large and small increases in transient ownership prior to index inclusion. In other words, our strategy assumes that the evolution of the outcomes of firms with a large transient-ownership increase after index inclusion represents the counterfactual for firms with a small increase. This condition cannot be tested directly, but we provide evidence in Table 6 that R&D, earnings, and equity valuations are not diverging in the years before index inclusion: Columns (1) through (3) show that these variables exhibit the same trend across firms with large and small increases in transient ownership prior to index inclusion. Columns (4) through (6) further show that both sets of firms have statistically indistinguishable R&D rates, earnings, and equity valuations prior to index inclusion.

#### **4.5. Short-term Investors and CEO Incentives**

The channel underlying Bolton, Scheinkman, and Xiong (2006) is that short-term investors incentivize managers to act myopically by granting short-term incentives. This allows managers to personally benefit from any temporary increases in equity valuation. Ideally, we would test this prediction among our Russell 2000 inclusion firms. Unfortunately, comprehensive data on CEO pay for such firms is not available in standardized data sets. To still provide some suggestive evidence, we use data on CEOs in ExecuComp to link proxies for short-term incentives to short-term ownership:

$$\text{Short-term Incentives}_{ft} = \pi_1 \text{Transient IO}_{ft} + \pi_2 X_{ft} + \lambda_f + \mu_{ft} + \varepsilon_{ft} \quad (2)$$

where *Short-term Incentives* measures new grants of *Option Pay* or *Equity Pay*. We either include these variables directly or scale them by total pay. We use these measures to capture short-term incentives, as more pay in the form of options or restricted stock provides CEOs with greater incentives to increase the stock price by boosting short-term earnings (Cheng and Warfield 2005). CEOs can profit from such behavior by subsequently exercising options and selling equity. As before, *Transient IO* measures ownership by transient investors,  $X_{ft}$  is a vector of firm-level controls,  $\lambda_f$  are firm fixed effects, and  $\mu_{ft}$  are industry-by-year fixed effects.

Internet Appendix Table 3 documents a positive correlation between short-term ownership and short-term incentives: firms with more transient investors grant their CEOs more options and restricted stock. We interpret these results as associative rather than evidence of any causal effects. The finding that transient ownership is positively related to short-term incentives is consistent with Dikolli, Kulp, and Sedatole (2009). It is also related to Cadman and Sunder (2014), who document this relation in the context of venture capital investments.

## 5. Conclusion

We provide evidence that the presence of short-term investors is associated with cuts to long-term investment in order to generate higher earnings, leading to temporary boosts in the stock price. Our findings extend the work by Bushee (1998) and are consistent with the model in Bolton, Scheinkman, and Xiong (2006). We estimate the effects of short-term ownership within a sample of stocks added to the Russell 2000 from below. Such Russell 2000 additions are accompanied with a large and persistent increase in firm ownership by short-term institutions.



In a first step, we showed that firms that experience a large increase in transient ownership around index inclusion reduce R&D spending and increase earnings, relative to firms that do not experience the same increase. In a second step, we documented that short-term equity valuations are higher in the year of index inclusion at firms that cut R&D, an effect that is strongest among those firms that also experienced a large increase in transient ownership. At the same time, such firms experience a long-term decline in equity valuations once the costs of the reduced investment are gradually revealed. This reversal pattern is consistent with temporary price distortions caused by the effects of short-term investors on R&D. In a last step, we showed that short-term investors incentivize CEOs to act myopically by granting short-term incentives.

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## Data Appendix

Variable	Definition	Data Source
<i>Post Inclusion</i>	Indicator that equals one for firm-year observations after a firm gets added to the Russell 2000 from below, and zero otherwise.	FTSE Russell
<i>Year 0</i>	Indicator that equals one in the firm year in which a firm gets added to the Russell 2000 from below, and zero otherwise. <i>Year -4</i> to <i>Year +4</i> are indicators that are defined accordingly and reflect the firm year relative to the firm year of index inclusion.	FTSE Russell
<i>Transient IO</i>	Percentage ownership of transient institutional investors. The measure was introduced by Bushee (1998, 2001). Transient investors have high portfolio turnover and diversified portfolios. We obtain the institutional investor classification data from Brian Bushee's website and calculate the percentage of a firm's ownership by transient institutional investors. Winsorized at 1%.	Brian Bushee's webpage
<i>Large Increase Transient IO</i>	Indicator that equals one in all firm years for firms that experience an increase in <i>Transient IO</i> that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise.	Brian Bushee's webpage
<i>Quasi-Indexer IO</i>	Percentage ownership of quasi-indexers. Quasi-indexers have low turnover and diversified portfolio holdings. The measure was introduced by Bushee (1998, 2001). We obtain the institutional investor classification data from Brian Bushee's website and calculate the percentage of a firm's ownership by quasi-indexer institutional investors. Winsorized at 1%.	Brian Bushee's webpage
<i>Large Increase Quasi-Indexer IO</i>	Indicator that equals one in all firm years for firms that experience an increase in <i>Quasi-Indexer IO</i> that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise.	Brian Bushee's webpage
<i>IO</i>	Percentage ownership of institutional investors.	Thomson Financial
<i>Large Increase IO</i>	Indicator that equals one in all firm years for firms that experience an increase in <i>IO</i> that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise.	Thomson Financial
<i>Analyst Coverage</i>	Number of analysts making an earnings forecast for a stock (IBES data item NUMEST).	IBES
$\Delta$ <i>Analyst Coverage</i>	Change in <i>Analyst Coverage</i> over the two-year period around a firm's inclusion in the Russell 2000.	IBES
<i>Share Turnover</i>	Number of a firm's shares traded throughout the year, divided by the number of shares outstanding. Winsorized at 1%.	CRSP
<i>R&amp;D/Assets</i>	R&D expenditures (Compustat data item XRD) over total assets (Compustat data item AT). Missing values are set to zero. Winsorized at 1%.	Compustat
<i>R&amp;D Missing</i>	Indicator that equals one if data on R&D expenditures (Compustat item XRD) is missing, and zero otherwise	Compustat
<i>Decrease R&amp;D</i>	Indicator that equals one in all firm years for firms that reduce <i>R&amp;D/Assets</i> from two years before to two years after inclusion in the Russell 2000 from below, and zero otherwise.	Compustat
<i>EBIT/Assets</i>	EBIT (Compustat data item EBIT) over total assets (Compustat data item AT). Winsorized at 1%.	Compustat
<i>Income/Assets</i>	Net income (Compustat data item NI) over total assets (Compustat data item AT). Winsorized at 1%.	Compustat
<i>Log(Market)</i>	Logarithm of the market capitalization of a firm's equity in million \$.	Compustat/CRSP

<i>Cap)</i>	Winsorized at 1%.	
<i>Δ Market Cap Rank</i>	Year-on-year change in a firm's market capitalization rank.	Compustat/CRSP
<i>Market-to-Book Ratio</i>	Market value of equity ( <i>Market Cap</i> ) over the book value of equity (Compustat data item CEQ). Winsorized at 5%.	Compustat/CRSP
<i>Stock Return</i>	Annual stock return. Winsorized at 1%.	CRSP
<i>Dividends/Net Income</i>	Dividends (Compustat data items DVC + DVP) over net income (Compustat data item NI). Winsorized at 1%.	Compustat
<i>Debt/Assets</i>	Debt (Compustat data items DLTT + DLC) over total assets (Compustat data item AT). Winsorized at 1%.	Compustat
<i>Idiosyncratic Risk</i>	Standard deviation of residuals calculated by regressing excess stock returns on the Fama and French 3-factors using the last 12 months of daily return data before the fiscal end month. Winsorized at 1%.	CRSP, Ken French's webpage
<i>Equity Beta</i>	Equity CAPM beta calculated by regressing stock returns on the excess return on the market using the last 60 months of monthly return data before the fiscal end month (with a minimum of 24 non-missing observations). Winsorized at 1%.	CRSP

**Table 1. Summary Statistics**

Panel A: Summary Statistics						
	Mean	Median	Std. Dev.	25th	75th	Obs.
<i>Transient IO</i>	13.1	9.5	12.1	3.4	19.3	5425
<i>Large Increase Transient IO</i>	0.51					5524
<i>Quasi-Indexer IO</i>	23.3	19.5	17.2	10.1	32.7	5492
<i>Large Increase Quasi-Indexer IO</i>	0.52					5469
<i>IO</i>	45.6	44.0	26.2	23.8	65.3	5499
<i>Large Increase IO</i>	0.53					5524
<i>Analyst Coverage</i>	2.90	2.00	3.18	0.00	4.00	5524
<i>Δ Analyst Coverage</i>	2.03	1.00	3.20	0.00	4.00	5524
<i>Share Turnover</i>	1.75	1.15	1.75	0.57	2.34	5523
<i>R&amp;D/Assets</i>	0.05	0.00	0.12	0.00	0.05	5524
<i>R&amp;D Missing</i>	0.48					5524
<i>Decrease R&amp;D</i>	0.26					5478
<i>EBIT/Assets</i>	0.02	0.06	0.21	0.01	0.11	5481
<i>Income/Assets</i>	-0.03	0.02	0.23	-0.02	0.07	5524
<i>Market-to-Book Ratio</i>	3.82	2.36	3.82	1.36	4.60	5370
<i>Log(Market Cap)</i>	5.20	5.19	0.99	4.54	5.80	5524
<i>Δ Market Cap Rank</i>	-131	-101	593	-425	172	5524
<i>Stock Return</i>	0.27	0.11	0.76	-0.20	0.52	5520
<i>Dividends/Net Income</i>	0.11	0.00	0.39	0.00	0.10	5524
<i>Debt/Assets</i>	0.19	0.12	0.21	0.01	0.29	5524
<i>Idiosyncratic Risk</i>	0.03	0.03	0.02	0.02	0.04	5524
<i>Equity Beta</i>	1.12	1.03	0.76	0.54	1.57	5524

Panel B: Correlations														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
<i>Transient IO</i>	(1)	1.00												
<i>Large Increase Transient IO</i>	(2)	0.31	1.00											
<i>Quasi-Indexer IO</i>	(3)	0.26	0.11	1.00										
<i>Large Increase Quasi-Indexer IO</i>	(4)	0.18	0.15	0.20	1.00									
<i>IO</i>	(5)	0.67	0.23	0.78	0.20	1.00								
<i>Large Increase IO</i>	(6)	0.30	0.45	0.17	0.57	0.28	1.00							
<i>Analyst Coverage</i>	(7)	0.37	0.16	0.34	0.16	0.44	0.20	1.00						
<i>Δ Analyst Coverage</i>	(8)	0.22	0.24	0.12	0.30	0.19	0.35	0.44	1.00					
<i>Share Turnover</i>	(9)	0.41	0.15	0.20	0.13	0.34	0.20	0.31	0.19	1.00				
<i>R&amp;D/Assets</i>	(10)	-0.01	0.00	-0.14	0.00	-0.10	0.00	0.03	-0.01	0.14	1.00			
<i>R&amp;D Missing</i>	(11)	-0.12	-0.08	0.02	-0.01	-0.05	-0.09	-0.05	-0.06	-0.22	-0.45	1.00		
<i>Decrease R&amp;D</i>	(12)	0.06	0.09	0.00	0.08	0.03	0.10	0.03	0.07	0.14	0.26	-0.52	1	
<i>EBIT/Assets</i>	(13)	0.13	0.09	0.20	0.05	0.23	0.08	0.07	0.05	0.00	-0.68	0.18	-0.10	1.00
<i>Market-to-Book Ratio</i>	(14)	0.20	0.09	-0.05	0.11	0.05	0.12	0.11	0.12	0.33	0.29	-0.22	0.17	-0.11

*Notes.* Panel A reports summary statistics for the variables used in the analysis, and Panel B correlations for key variables. The sample consists of firms added to the Russell 2000 from below. We report firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 from below. The sample period is 1990 to 2016. Variables are defined in the Data Appendix. The table contains observations included in the regression sample in Table 3, Column (1).

**Table 2. Short-term Ownership, Analyst Coverage, and Passive Ownership around Russell 2000 Inclusions**

Dependent variable:	<i>Transient IO</i>	<i>Transient IO</i>	<i>Quasi-Indexer IO</i>	<i>Analyst Coverage</i>
	(1)	(2)	(3)	(4)
<i>Post Inclusion</i>	1.908*** (3.71)		2.154*** (3.47)	0.224 (1.52)
<i>Year 0</i>		1.499*** (3.45)		
<i>Year +1</i>		1.786*** (3.73)		
<i>Year +2</i>		1.456*** (3.01)		
<i>Year +3</i>		1.401*** (2.70)		
<i>Year +4</i>		1.560*** (2.81)		
<i>Log(Market Cap)</i>	2.609*** (8.68)	2.658*** (9.93)	7.214*** (15.67)	1.402*** (11.36)
$\Delta$ <i>Market Cap Rank</i>	-0.144*** (-5.24)	-0.157*** (-5.28)	0.276*** (9.10)	0.034*** (4.41)
<i>Stock Return (t-1)</i>	-0.548*** (-2.88)	-0.468** (-2.30)	-1.429*** (-6.87)	-0.242*** (-4.51)
<i>Dividends/Net Income</i>	-0.121 (-0.37)	-1.777*** (-4.84)	-1.059 (-1.45)	-0.358*** (-2.78)
<i>Debt/Assets</i>	-2.090 (-1.45)	1.843* (1.68)	1.938 (1.22)	0.066 (0.19)
<i>Idiosyncratic Risk</i>	-0.504*** (-4.91)	-0.848*** (-8.08)	-1.625*** (-10.67)	-0.123*** (-3.95)
<i>Equity Beta</i>	-0.673** (-2.08)	0.064 (0.20)	-1.417*** (-3.21)	0.058 (0.64)
<i>Share Turnover</i>	1.609*** (9.93)	2.064*** (13.22)	1.040*** (4.89)	0.372*** (6.41)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	No
Obs.	5424	5424	5491	5523
Adj. R-sq.	0.651	0.431	0.472	0.281

*Notes.* We report regressions using firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 (in year 0). The sample period is 1990 to 2016. The regressions contain observations included in the regression sample in Table 3, Column (1). *Transient IO* is the percentage ownership of transient institutional investors. *Quasi-Indexer IO* is the percentage ownership of quasi-indexers. *Analyst Coverage* is the number of analysts covering a firm. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000 from below, and zero otherwise. *Year 0* equals one in the firm year in which a firm gets added to the Russell 2000 from below, and zero otherwise. The coefficient on  $\Delta$  *Market Cap Rank* is multiplied by 100 and the coefficient on *Idiosyncratic Risk* is divided by 100. Variables are defined in the Data Appendix. *t*-statistics are based on robust standard errors clustered at the firm level.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.



**Table 3. Effect of Short-term Ownership on R&D Expenditures around Russell 2000 Inclusions**

Dependent variable:	<i>R&amp;D/Assets</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Post Inclusion * Large Increase Transient IO</i>	-0.013** (-2.29)	-0.014** (-2.40)	-0.013** (-2.33)	-0.012** (-2.18)	
<i>Year 0 * Large Increase Transient IO</i>					-0.010* (-1.93)
<i>Year +1 * Large Increase Transient IO</i>					-0.013** (-2.17)
<i>Year +2 * Large Increase Transient IO</i>					-0.017** (-2.45)
<i>Year +3 * Large Increase Transient IO</i>					-0.014* (-1.80)
<i>Year +4 * Large Increase Transient IO</i>					-0.015** (-2.00)
<i>Post Inclusion * Large Increase Quasi-Indexer IO</i>		0.000 (0.01)	0.001 (0.16)	0.001 (0.20)	0.000 (0.02)
<i>Post Inclusion * Δ Analyst Coverage</i>			-0.001 (-0.97)	-0.001 (-0.89)	
<i>Share Turnover</i>				-0.004*** (-2.84)	
<i>Post Inclusion</i>	0.007 (1.50)	0.006 (1.35)	0.007 (1.38)	0.006 (1.33)	
<i>Year 0</i>					0.002 (0.39)
<i>Year +1</i>					0.010* (1.86)
<i>Year +2</i>					0.011* (1.81)
<i>Year +3</i>					0.007 (0.94)
<i>Year +4</i>					0.009 (1.07)
<i>Post Inclusion * Large Increase IO</i>	0.002 (0.36)	0.002 (0.33)	0.004 (0.50)	0.004 (0.57)	0.002 (0.33)
<i>Log(Market Cap)</i>	-0.009*** (-3.77)	-0.009*** (-3.68)	-0.008*** (-3.75)	-0.005*** (-2.62)	-0.009*** (-3.48)
<i>Δ Market Cap Rank</i>	0.000 (0.31)	0.000 (0.21)	0.000 (0.34)	0.000 (0.03)	-0.000 (-0.60)
<i>Stock Return (t-1)</i>	-0.002 (-1.61)	-0.002 (-1.64)	-0.002* (-1.65)	-0.001 (-0.93)	-0.002* (-1.80)
<i>Dividends/Net Income</i>	-0.000 (-0.04)	-0.000 (-0.09)	-0.000 (-0.13)	-0.000 (-0.09)	-0.000 (-0.16)
<i>Debt/Assets</i>	-0.017 (-1.09)	-0.014 (-0.91)	-0.014 (-0.92)	-0.013 (-0.88)	-0.014 (-0.91)
<i>Idiosyncratic Risk</i>	0.158* (1.71)	0.156* (1.68)	0.157* (1.70)	0.226** (2.40)	0.156* (1.68)
<i>Equity Beta</i>	0.001 (0.40)	0.000 (0.12)	0.001 (0.22)	0.001 (0.33)	0.000 (0.14)
<i>R&amp;D Missing</i>	-0.027** (-2.40)	-0.026** (-2.31)	-0.026** (-2.29)	-0.025** (-2.25)	-0.026** (-2.30)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Obs.	5524	5469	5469	5468	5469
Adj. R-sq.	0.833	0.834	0.834	0.835	0.834

*Notes.* We report regressions using firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 from below (in year 0). The sample period is 1990 to 2016. *R&D/Assets* is R&D expenditures over assets. *Large Increase Transient IO* equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000 from below, and zero otherwise. *Year 0* equals one in the firm year in which a firm gets added to the Russell 2000 from below, and zero otherwise. The coefficient on *Δ Market Cap Rank* is multiplied by 100. *t*-statistics are based on robust standard errors clustered at the firm level.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

**Table 4. Effect of Short-term Ownership on Earnings around Russell 2000 Inclusions**

Dependent variable:	EBIT/Assets					Net
	(1)	(2)	(3)	(4)	(5)	Income/Assets
<i>Post Inclusion * Large Increase Transient IO</i>	0.047*** (4.04)	0.048*** (4.06)	0.046*** (3.96)	0.044*** (3.75)		0.040*** (3.02)
<i>Year 0 * Large Increase Transient IO</i>					0.033*** (2.80)	
<i>Year +1 * Large Increase Transient IO</i>					0.055*** (4.11)	
<i>Year +2 * Large Increase Transient IO</i>					0.059*** (4.16)	
<i>Year +3 * Large Increase Transient IO</i>					0.051*** (3.35)	
<i>Year +4 * Large Increase Transient IO</i>					0.068*** (4.35)	
<i>Post Inclusion * Large Increase Quasi-Indexer IO</i>		0.010 (0.83)	0.008 (0.65)	0.007 (0.57)	0.008 (0.68)	0.006 (0.38)
<i>Post Inclusion * Δ Analyst Coverage</i>			0.003 (1.50)	0.003 (1.34)		
<i>Share Turnover</i>				0.013*** (4.73)		
<i>Post Inclusion</i>	-0.028** (-2.29)	-0.029** (-2.26)	-0.030** (-2.31)	-0.029** (-2.25)		-0.027** (-2.15)
<i>Year 0</i>					-0.040*** (-2.88)	
<i>Year +1</i>					-0.076*** (-3.95)	
<i>Year +2</i>					-0.105*** (-4.25)	
<i>Year +3</i>					-0.125*** (-4.40)	
<i>Year +4</i>					-0.155*** (-4.60)	
<i>Post Inclusion * Large Increase IO</i>	-0.023* (-1.96)	-0.029** (-2.19)	-0.032** (-2.32)	-0.034** (-2.42)	-0.028** (-2.12)	-0.023 (-1.37)
<i>Log(Market Cap)</i>	0.031*** (5.49)	0.030*** (5.36)	0.028*** (5.10)	0.020*** (3.44)	0.030*** (5.00)	0.029*** (4.26)
<i>Δ Market Cap Rank</i>	-0.002*** (-4.36)	-0.002*** (-4.45)	-0.002*** (-4.52)	-0.002*** (-4.15)	-0.001*** (-2.80)	-0.002*** (-3.99)
<i>Stock Return (t-1)</i>	0.015*** (5.35)	0.015*** (5.23)	0.015*** (5.25)	0.012*** (4.27)	0.013*** (4.44)	0.014*** (3.98)
<i>Dividends/Net Income</i>	0.012*** (2.65)	0.013*** (2.80)	0.013*** (2.80)	0.013*** (2.78)	0.013*** (2.91)	0.014*** (2.89)
<i>Debt/Assets</i>	-0.143*** (-3.86)	-0.155*** (-4.17)	-0.154*** (-4.14)	-0.157*** (-4.29)	-0.144*** (-3.95)	-0.267*** (-6.68)
<i>Idiosyncratic Risk</i>	-1.121*** (-5.61)	-1.101*** (-5.45)	-1.104*** (-5.48)	-1.313*** (-6.33)	-1.003*** (-5.26)	-1.703*** (-5.94)
<i>Equity Beta</i>	-0.005 (-0.69)	-0.003 (-0.44)	-0.004 (-0.54)	-0.005 (-0.66)	-0.002 (-0.24)	-0.002 (-0.22)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	5481	5426	5426	5425	5426	5469
Adj. R-sq.	0.740	0.741	0.741	0.745	0.746	0.633

*Notes.* We report regressions using firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 from below (in year 0). The sample period is 1990 to 2016. *EBIT/Assets* is EBIT over assets. *Net Income/Assets* is net income over assets. *Large Increase Transient IO* equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000 from below, and zero otherwise. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000 from below, and zero otherwise. *Year 0* equals one in the firm year in which a firm gets added to the Russell 2000 from below, and zero otherwise. The coefficient on *Δ Market Cap Rank* is multiplied by 100. *t*-statistics are based on robust standard errors clustered at the firm level.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

**Table 5. Short-term and Long-term Valuations around Russell 2000 Inclusions**

Dependent variable: Sample:	Panel A: Short-term Valuations			Panel B: Long-term Valuations		
	<i>Market-to-Book Ratio</i>			<i>Market-to-Book Ratio</i>		
	All	Large Increase Transient IO	No Large Increase Transient IO	All	Large Increase Transient IO	No Large Increase Transient IO
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Decrease R&amp;D</i>	1.507*** (3.54)	2.043** (2.77)	0.846 (1.23)			
<i>Year +1 * Decrease R&amp;D</i>				-0.609 (-1.56)	-1.195** (-1.99)	-0.005 (-0.01)
<i>Year +2 * Decrease R&amp;D</i>				-1.118*** (-2.79)	-1.578** (-2.52)	-0.380 (-0.64)
<i>Year +3 * Decrease R&amp;D</i>				-1.653*** (-3.71)	-2.199*** (-3.14)	-1.122** (-2.06)
<i>Year +4 * Decrease R&amp;D</i>				-1.771*** (-3.70)	-2.520*** (-3.30)	-1.013 (-1.65)
<i>Year +1</i>				1.329** (2.05)	-2.470** (-2.44)	1.407*** (3.60)
<i>Year +2</i>				1.991 (1.59)	-5.927*** (-3.24)	2.301*** (3.59)
<i>Year +3</i>				2.762 (1.47)	-9.669*** (-3.58)	3.830*** (4.24)
<i>Year +4</i>				3.384 (1.36)	-13.233*** (-3.69)	4.743*** (4.05)
<i>Log(Market Cap)</i>	0.545 (1.67)	0.815 (1.30)	0.956** (2.64)	0.009 (0.06)	0.084 (0.33)	-0.184 (-0.64)
<i>Δ Market Cap Rank</i>	-0.232*** (-4.96)	-0.275*** (-3.16)	-0.176* (-1.85)	-0.164*** (-12.73)	-0.196*** (-8.93)	-0.142*** (-8.04)
<i>Stock Return (t-1)</i>	-0.036 (-0.18)	-0.406 (-0.87)	0.114 (0.24)	0.118 (1.21)	0.066 (0.52)	0.035 (0.24)
<i>Dividends/Net Income</i>	-0.660 (-1.67)	-2.047 (-1.66)	-0.534 (-0.86)	-0.066 (-0.44)	-0.167 (-0.80)	0.007 (0.03)
<i>Debt/Assets</i>	-2.259** (-2.35)	-2.313 (-1.65)	-3.670* (-1.88)	0.357 (0.43)	0.444 (0.34)	0.022 (0.02)
<i>Idiosyncratic Risk</i>	0.101 (0.73)	0.111 (0.51)	0.084 (0.23)	-0.130** (-2.34)	-0.092 (-0.84)	-0.246*** (-3.35)
<i>Equity Beta</i>	0.400 (1.55)	0.463 (0.80)	-0.198 (-0.47)	-0.395** (-2.43)	-0.496* (-1.72)	-0.327 (-1.37)
<i>Share Turnover</i>	0.213** (2.45)	0.102 (0.53)	0.249 (1.34)	0.279*** (4.02)	0.164* (1.77)	0.471*** (4.10)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	Yes	Yes	Yes
Obs.	826	363	372	4063	1789	1750
Adj. R-sq.	0.454	0.449	0.399	0.667	0.642	0.696

Notes. Panel A reports regressions for the year (year 0) in which a firm gets added to the Russell 2000 from below, while Panel B reports regressions for the [0; +4] year window around a firm's inclusion in the Russell 2000 from below. The sample period is 1990 to 2016. Columns (2) and (3) as well as (5) and (6) separate the sample based on whether a firm experiences a large increase in *Transient IO* around the index inclusion. *Market-to-Book Ratio* is the market value of equity over the book value of equity. *Decrease R&D* equals one in all firm years for firms that reduced *R&D/Assets* from two years before to two years after the inclusion in the Russell 2000 from below, and zero otherwise. *Large Increase Transient IO* equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000 from below, and zero otherwise. *Year +1* equals one in the first firm year after a firm gets added to the Russell 2000 from below, and zero otherwise. The coefficient on *Δ Market Cap Rank* is multiplied by 100 and the coefficient on *Idiosyncratic Risk* is divided by 100. *t*-statistics, calculated in Panel A (Panel B) based on robust standard errors clustered at the year (firm) level, are reported in parentheses. \*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

**Table 6. Evaluation of Parallel-Trends Assumptions**

Dependent variable:	<i>R&amp;D/Assets</i>	<i>EBIT/Assets</i>	<i>Market-to-Book Ratio</i>	<i>R&amp;D/Assets</i>	<i>EBIT/Assets</i>	<i>Market-to-Book Ratio</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Year -1 * Large Increase Transient IO</i>	0.002 (0.22)	0.015 (0.74)	0.810 (0.59)			
<i>Year -2 * Large Increase Transient IO</i>	-0.005 (-0.62)	0.011 (0.54)	-0.013 (-0.01)			
<i>Year -3 * Large Increase Transient IO</i>	-0.001 (-0.07)	0.012 (0.67)	-0.268 (-0.32)			
<i>Year -1</i>	-0.016 (-0.75)	0.148 (1.35)	-1.223 (-0.45)			
<i>Year -2</i>	-0.001 (-0.07)	0.080 (1.08)	-1.512 (-0.82)			
<i>Year -3</i>	0.000 (0.01)	0.032 (0.81)	-0.845 (-0.78)			
<i>Large Increase Transient IO</i>				0.005 (0.54)	-0.005 (-0.30)	0.128 (0.20)
<i>Large Increase IO</i>				-0.008 (-0.89)	0.036** (2.23)	-0.339 (-0.53)
<i>Log(Market Cap)</i>	-0.001 (-0.14)	-0.014 (-1.06)	-0.249 (-0.38)	-0.001 (-0.31)	0.013* (1.82)	-0.029 (-0.09)
<i>Δ Market Cap Rank</i>	0.000 (0.18)	-0.002* (-1.88)	-0.109** (-2.11)	-0.000 (-0.42)	-0.001 (-1.18)	-0.196*** (-4.28)
<i>Stock Return (t-1)</i>	-0.001 (-0.38)	0.013** (2.03)	0.946* (1.76)	-0.005 (-1.33)	0.025*** (3.30)	1.520*** (3.23)
<i>Dividends/Net Income</i>	0.002 (0.61)	0.017 (1.15)	-0.015 (-0.04)	-0.003 (-0.68)	0.016* (1.72)	0.019 (0.05)
<i>Debt/Assets</i>	0.040 (1.60)	-0.203*** (-2.65)	-4.061 (-1.57)	-0.078*** (-4.11)	0.050 (1.14)	-3.268** (-1.97)
<i>Idiosyncratic Risk</i>	-0.001 (-0.58)	-0.000 (-0.04)	0.005 (0.03)	0.011*** (5.25)	-0.035*** (-6.61)	0.663*** (3.78)
<i>Equity Beta</i>	0.002 (0.26)	0.013 (0.91)	0.867 (1.05)	0.019*** (3.34)	-0.033*** (-3.12)	0.472 (1.30)
<i>R&amp;D Missing</i>	-0.009 (-0.80)			-0.086*** (-9.47)		
<i>Share Turnover</i>			1.376*** (3.80)			0.681*** (2.70)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	No	No	No
Obs.	1855	1838	1795	1855	1838	1795
Adj. R-sq.	0.898	0.795	0.602	0.347	0.236	0.222

Notes. We report regressions using firm-year observations for the [-4; -1] year window before a firm's inclusion in the Russell 2000 (in year 0). The sample period is 1990 to 2016. *R&D/Assets* is R&D expenditures over assets. *EBIT/Assets* is EBIT over assets. *Market-to-Book Ratio* is the market value of equity over the book value of equity. *Large Increase Transient IO* equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise. *Year -1* equals one in the firm year before a firm gets added to the Russell 2000, and zero otherwise. The coefficient on *Δ Market Cap Rank* is multiplied by 100 and the coefficient on *Idiosyncratic Risk* is divided by 100. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

Internet Appendix

for

**Short-Term Investors, Long-Term Investments, and Firm Value:**

**Evidence from Russell 2000 Index Inclusions**

**Internet Appendix Table 1. Short-term Ownership, R&D Expenditures, and Earnings: Using All Inclusions from Below**

Dependent variable:	<i>Transient IO</i>	<i>R&amp;D/Assets</i>	<i>EBIT/Assets</i>
	(1)	(2)	(3)
<i>Post Inclusion * Large Increase Transient IO</i>		-0.008**	0.035***
		(-2.31)	(4.54)
<i>Post Inclusion</i>	1.699***	0.007**	-0.023***
	(4.96)	(2.48)	(-2.88)
<i>Post Inclusion * Large Increase IO</i>		-0.005	-0.008
		(-1.57)	(-1.02)
<i>Log(Market Cap)</i>	3.515***	-0.011***	0.034***
	(16.17)	(-5.89)	(7.82)
<i>Δ Market Cap Rank</i>	-0.158***	0.000	-0.003***
	(-8.12)	(0.66)	(-7.62)
<i>Stock Return (t-1)</i>	0.150	-0.002**	0.012***
	(1.10)	(-2.29)	(6.06)
<i>Dividends/Net Income</i>	-0.282	-0.000	0.007***
	(-1.44)	(-0.06)	(2.60)
<i>Debt/Assets</i>	-2.542***	-0.005	-0.145***
	(-2.60)	(-0.47)	(-5.86)
<i>Idiosyncratic Risk</i>	-20.689***	0.182***	-1.196***
	(-3.08)	(2.75)	(-7.26)
<i>Equity Beta</i>	-0.086	-0.000	-0.009**
	(-0.38)	(-0.24)	(-1.97)
<i>R&amp;D Missing</i>		-0.030***	
		(-4.16)	
Industry-by-Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Obs.	12264	11835	11734
Adj. R-sq.	0.619	0.839	0.731

*Notes.* We report regressions for all firms that are added to the Russell 2000 from below and include all inclusion events. We report regressions using firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 (in year 0). The sample period is 1990 to 2016. The regression in Column (1) contains observations included in Column (2). *Transient IO* is the percentage ownership of transient institutional investors. *R&D/Assets* is R&D expenditures over assets. *EBIT/Assets* is EBIT over assets. *Large Increase Transient IO* equals one in all firm years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000, and zero otherwise. Variables are defined in the Data Appendix. The coefficient on *Δ Market Cap Rank* is multiplied by 100. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

**Internet Appendix Table 2. Short-term Ownership and R&D Expenditures: Firms With Earnings Close to Zero**

Dependent variable:	<i>R&amp;D/Assets</i>
Sample:	Small-decline Firms
	(1)
<i>Post Inclusion * Large Increase Transient IO</i>	-0.130* (-1.96)
<i>Post Inclusion</i>	0.021 (0.55)
<i>Post Inclusion * Large Increase IO</i>	0.107 (1.63)
<i>Log(Market Cap)</i>	-0.058** (-2.32)
$\Delta$ <i>Market Cap Rank</i>	-0.002 (-1.22)
<i>Stock Return (t-1)</i>	-0.012 (-1.25)
<i>Dividends/Net Income</i>	0.007 (0.32)
<i>Debt/Assets</i>	-0.059 (-1.00)
<i>Idiosyncratic Risk</i>	0.109 (0.21)
<i>Equity Beta</i>	0.005 (0.22)
<i>R&amp;D Missing</i>	-0.182** (-2.13)
Industry-by-Year Fixed Effects	Yes
Firm Fixed Effects	Yes
Obs.	433
Adj. R-sq.	0.665

*Notes.* We report a regression using firm-year observations for the two-sided four-year window around a firm's inclusion in the Russell 2000 (in year 0). We report results for firms whose earnings before R&D and taxes have declined in Year 0 relative to the prior year but by an amount that can be reversed by a reduction in R&D (small-decline firm, see Bushee 1998). The sample period is 1990 to 2016. *R&D/Assets* is R&D expenditures over assets. *Large Increase Transient IO* equals one in all years for firms that experience an increase in *Transient IO* that is above the sample median, measured over the two-year period around a firm's inclusion in the Russell 2000, and zero otherwise. *Post Inclusion* equals one for firm-year observations after a firm gets added to the Russell 2000, and zero otherwise. *Year 0* equals one in the firm year in which a firm gets added to the Russell 2000, and zero otherwise. The coefficient on  $\Delta$  *Market Cap Rank* is multiplied by 100. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.

**Internet Appendix Table 3. Effect of Short-term Ownership on Short-term Compensation**

Dependent variable:	<i>Log(Option Pay)</i>	<i>Log(Equity Pay)</i>	<i>Option Pay/Total Pay</i>	<i>Equity Pay/Total Pay</i>
	(1)	(2)	(3)	(4)
<i>Transient IO</i>	0.727** (2.30)	1.359*** (5.19)	0.068*** (2.91)	0.060** (2.47)
<i>Log(Market Cap)</i>	0.672*** (11.42)	0.577*** (12.10)	0.054*** (13.10)	0.060*** (13.82)
$\Delta$ <i>Market Cap Rank</i>	0.025*** (3.17)	0.012 (1.54)	0.003*** (5.12)	0.003*** (4.34)
<i>Stock Return (t-1)</i>	0.057 (1.26)	0.085** (2.01)	0.007* (1.73)	0.007* (1.82)
<i>Dividends/Net Income</i>	-0.012 (-0.26)	-0.002 (-0.06)	-0.000 (-0.08)	0.005 (1.45)
<i>Debt/Assets</i>	0.113 (0.38)	-0.188 (-0.84)	-0.005 (-0.23)	0.011 (0.53)
<i>Idiosyncratic Risk</i>	3.731 (1.45)	-1.573 (-0.71)	1.057*** (5.51)	0.852*** (4.17)
<i>Equity Beta</i>	0.143** (2.25)	0.033 (0.69)	0.030*** (6.60)	0.011** (2.47)
Industry-by-Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Obs.	32030	32028	31987	31987
Adj. R-sq.	0.421	0.429	0.429	0.409

*Notes.* We report regressions for firms in ExecuComp. *Equity Pay* is the value of a CEO's new restricted stock grants. *Option Pay* is the value of a CEO's new option grants. *Total Pay* is the value of a CEO's total compensation, which includes salary, bonuses, restricted stock grants and option grants. *Transient IO* is percentage ownership of transient institutional investors (in %). The coefficients on *Transient IO* and  $\Delta$  *Market Cap Rank* are multiplied by 100. The sample period is 1992 to 2016. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses.

\*\*\*, \*\*, and \* indicate significance levels of less than 1%, 5% and 10%, respectively, based on a two-tailed test.