The Journal of FINANCE
The Journal of THE AMERICAN FINANCE ASSOCIATION

THE JOURNAL OF FINANCE • VOL. LXXII, NO. 1 • FEBRUARY 2017

Ex-Dividend Profitability and Institutional Trading Skill

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ABSTRACT

We use institutional trading data to examine whether skilled institutions exploit positive abnormal ex-dividend returns. Results show that institutions concentrate trading around certain ex-dates, and earn higher profits around these events. Dividend capture trades represent 6% of all institutional buy trades but contribute 15% of overall abnormal returns. Institutional dividend capture trading is persistent. Institutional ex-day profitability is also strongly cross-sectionally related to trade execution skill. The relation between execution skill and profits disappears around placebo non-ex-days. Results suggest that skilled institutions target certain opportunities rather than benefiting uniformly over time. Furthermore, only skilled institutions can profit from dividend capture.

PRIOR LITERATURE SHOWS THAT TRADERS who are able to execute trades at favorable prices may earn abnormal profits (see, e.g., Perold (1988), Anand et al. (2012)). In this paper, we examine whether institutions that exhibit this type of skill ("trade execution skill") benefit from lower execution costs uniformly over time, or whether they target specific opportunities to exploit this skill. We identify a relatively unique opportunity for institutions with execution skill to realize abnormal profits: dividend capture.

Ex-day prices decline on average by an amount less than the dividend, generating positive pre-tax ex-day returns (e.g., Elton and Gruber (1970), Graham, Michaely, and Roberts (2003), Zhang, Farrell, and Brown (2008)). In this study, we use Abel Noser Solutions institutional trading data from 1999 to 2007 to examine whether skilled institutional investors are able to profit from abnormal ex-day returns, a strategy known as dividend capture. The database is unique in that it includes transaction-level purchases and sales with associated trading costs for two specific types of institutional traders.

*Tyler R. Henry is at Miami University. Jennifer L. Koski is at the University of Washington. The authors thank Kenneth Singleton (the Editor), an Associate Editor, and two anonymous referees. They also thank Vladimir Atanasov, Sinan Gokkaya, Jarrad Harford, Chris Hrdlicka, Gang Hu, Paul Koch, Jeff Pontiff, Andy Puckett, Ed Rice, Gautam Vora, and seminar participants at the 2014 FMA meetings, the 2013 FMA European Conference, Ohio University, the University of Toledo, and the University of Washington for helpful comments. Henry acknowledges financial support from the Frank H. Jellinek Jr., Endowed Assistant Professor Chair in Finance. Koski thanks the John B. and Delores L. Fery Fellowship for financial support. The authors have no conflicts of interest, as identified in the *Journal of Finance*'s disclosure policy.

DOI: 10.1111/jofi.12472

Based on these data, we study three closely related research questions. First, do institutions target ex-dividend events in ways predicted by the theory? Second, do institutional traders earn abnormal profits from ex-day pricing? And third, is ex-day profitability cross-sectionally related to measures of institutional trade execution skill?

Dividend capture presents a unique setting to examine the role of execution skill because traders are not picking stocks in the traditional sense. Ex-days are known in advance, and stocks are generally selected for dividend capture due to factors such as dividend yield, risk, or transaction costs rather than because they are undervalued. Ex-days for regular quarterly dividends are relatively predictable, recurring events. Although ex-day returns are small relative to transaction costs, they are large relative to abnormal returns on non-ex-days, and therefore present an opportunity for skilled, low-cost investors. Because ex-day returns are small, trade execution skill may be a particularly important determinant of cross-sectional variation in institutional dividend capture profitability. Furthermore, dividend capture trading represents a potential source of the abnormal profits realized by skilled institutional investors.

We begin by documenting significant abnormal institutional volume during the ex-dividend period. Consistent with our assertion that these institutions should execute dividend trading strategies, abnormal institutional volume is almost double overall abnormal volume as measured using CRSP data. Results show that trading volume for the institutions in our sample varies positively with dividend yield and negatively with idiosyncratic risk, as expected based on the ex-dividend literature.

Although average abnormal ex-day returns are positive, they become negative once we account for transactions costs. However, average ex-day returns may not accurately measure dividend capture profitability. First, ex-day returns do not consider whether an institution has a long or a short position over the ex-day. Furthermore, institutions may focus their trades on certain ex-day events, and profitable dividend capture strategies may include trades that are executed over a window surrounding the ex-dividend day.

We control for these factors to test whether institutions earn positive profits after transaction costs from dividend capture trading. To estimate profitability, we compare total cash outflows and inflows around the ex-dividend day using actual transaction prices after all commissions and related trading costs. When we calculate profitability averaged across institutions (or more specifically, across client-manager pairs), institutional profits to long positions are significantly positive even after incorporating all trading costs.[1] We show that institutions concentrate their trading around certain ex-days, and ex-day events with higher institutional buying intensity are associated with higher profits. Furthermore, institutional dividend capture buying intensity is persistent: active buyers one quarter continue to buy for at least the next several

[1] For this calculation, each observation is the collection of trades executed by a particular money management firm on behalf of a particular client during an individual ex-dividend event window. See Section III for more details.

quarters, and earn significantly higher profits two quarters later. Persistence is much weaker for selling intensity, implying that selling during the ex-day event window is more likely the result of general liquidity trading rather than (short) dividend capture. There is also less persistence in targeted stocks: institutions appear to select stocks for dividend capture each quarter and incorporate prior ex-day returns into their decision.

Are ex-days distinctive, or are dividend capture profits similar to profits earned by institutions during other periods? To address this question, we estimate abnormal returns for all buy trades in our sample, and compare abnormal returns from dividend capture buy trades to buy trades executed during other periods. Results show that abnormal returns after commissions from dividend buys are significantly positive (0.44%), but postcommission abnormal returns to other buy trades are significantly lower (0.23%) and insignificantly different from zero.[2] Furthermore, although buy trades immediately before the ex-day represent less than 6% of all buy trades in the sample we analyze, they constitute 15% of the overall abnormal returns realized by the average institution in our sample. Dollar profits from dividend capture trades by Abel Noser institutions total almost $4 billion. Dividend capture therefore contributes materially to the overall abnormal returns realized by these institutions.

Cross-sectionally, institutional dividend capture profitability is strongly related to more general (nondividend) measures of institutional trade execution skill (Anand et al. (2012)). Institutions that demonstrate prior trading skill are better able to implement profitable dividend capture strategies. The difference in profitability between institutions in the low-skill decile and those in the high-skill decile is approximately 40 bps. Importantly, we see no evidence of a relation between execution skill and profits when we repeat our experiment on a placebo non-ex-day. The relation between execution skill and returns is stronger for dividend capture trades than for other, nondividend trades. Our evidence suggests that trade execution skill may be as important in explaining dividend capture as some of the firm-specific characteristics (such as yield and risk) examined previously in the ex-day literature. Dividend capture traders also earn higher profits when they provide liquidity, and they do not specifically target undervalued stocks.

Our overall conclusion is that institutions profit from dividend capture when skilled institutions target certain ex-day events and execute trades at prices that are favorable relative to the market. We add to the ex-dividend literature by documenting that institutions do indeed practice profitable dividend capture, and abnormal dividend capture buying intensity is strongly related to transaction costs and prior ex-day returns. We also extend the ex-dividend literature by showing that only certain institutions—those with trade execution skill—are able to profit from short-term dividend capture trading. Finally, we contribute to the literature on skill-related trading profits by showing that

[2] These figures are based on abnormal returns using the method of Puckett and Yan (2011) in their interim trading performance calculation. We compare abnormal returns for buy trades made immediately before the ex-day with all other buy trades (see Section III.B).

skilled institutions do not benefit from trade execution skill uniformly over time; rather, they are able to identify specific events over which they can realize disproportionately higher profits.

The remainder of this paper is organized as follows. In Section I, we discuss the theoretical literature related to institutional ex-dividend trading. In Section II, we describe the sample and report descriptive statistics for ex-day returns and volume. In Section III, we present results related to the profitability of institutional ex-day trading. In Section IV, we relate ex-day profitability to trader skill. Section V concludes.

I. Theory and Related Research

Extensive prior literature examines whether institutional investors are skilled at picking stocks (e.g., Bollen and Busse (2005), Kacperczyk and Seru (2007)). Perold (1988) shows that traders may be unable to exploit stock selection skill due to an "implementation shortfall," the performance difference between a paper portfolio and a real portfolio, a key component of which is execution cost. Chan and Lakonishok (1995) and Keim and Madhavan (1997) show that institutions trade strategically to minimize their execution costs, which are economically significant. Conrad, Johnson, and Wahal (2001) link weak performance by institutional traders to poor trade execution. And Anand et al. (2012) document that institutional trading desks add value to portfolio performance through the trade implementation process, and that this trading-desk skill is persistent.

A logical question that arises is whether institutions with this type of skill benefit from lower execution costs uniformly over time, or whether there are specific opportunities over which they exploit this skill. We identify one such potential opportunity: dividend capture trading. In the Miller and Modigliani (1961) setting, a firm's stock price should decline by the amount of the dividend on the ex-dividend day. Extensive empirical research shows that on average the price decreases by less than the dividend, which Elton and Gruber (1970) attribute to differential tax rates on dividends and capital gains.[3] As Kalay (1982), Rantapuska (2008), and others note, however, if the pre-tax ex-day price decline differs from the dividend by more than transaction costs, short-term traders who are taxed equally on dividends and capital gains should enter the market. In this case, their "dividend capture" would involve buying the stock cum-dividend, receiving the dividend, and selling the stock ex-dividend.

Short-term capital gains are taxed as ordinary income, so short-term dividend capture trades are tax-neutral. The institutions in our sample (pension plan sponsors and investment managers) should be able to transact at very low

[3] The 2003 tax law changes equalized tax rates on dividend and long-term capital gains income for many investors. However, while dividends are taxed immediately, capital gains are not taxed until realized, so the effective tax rates on realized capital gains may still be smaller for a long-term tax clientele investor. Chay, Choi, and Pontiff (2006) show that \$1 of realized capital gains is equivalent to \$0.93 in unrealized gains.

cost. Therefore, these institutions closely approximate tax-neutral dividend capture traders. Although the marginal profits of capture traders should equal zero in equilibrium, on average dividend capture should be profitable. We predict that traders who can effectively minimize execution costs in general use their trade implementation abilities to realize dividend capture profits.

There are two main components of transaction costs: commissions and price impact (which includes the effect of bid-ask spreads). Prior ex-dividend studies have used bid-ask spreads or other proxies under the assumption that these measures are correlated with total trading costs. Although these proxies are useful for testing cross-sectional relations, they do not permit calculation of actual dividend capture profitability. With our data, we are able for the first time to calculate total profits net of all transaction costs to examine whether institutions can profit from dividend capture.

II. Sample and Descriptive Statistics

In our empirical tests, we use institutional trading data from Abel Noser Solutions as well as stock return and volume data from CRSP. In this section, we describe our sample selection criteria and provide descriptive statistics, including ex-day premiums, returns, and volume, for our sample.

A. Sample Description

Our transactions-level institutional trading data come from Abel Noser Solutions.[4] Abel Noser provides trading and transaction cost analysis for institutional investors. Institutions included in this database are either pension plan sponsors or investment managers. The database includes equity trades for a large sample of institutions. For each trade, we have the trade date, stock traded, execution price, number of shares and dollar principal traded, commissions, fees, and a buy/sell indicator.

We obtain dividend information, returns, and total volume data from CRSP. We include in our sample of ex-dividend events all ordinary, quarterly, taxable cash dividends paid in U.S. dollars (CRSP distcd = 1232). We include only dividends paid on ordinary common stocks (CRSP shrcd = 10 or 11) on the New York Stock Exchange (NYSE), and therefore exclude Real Estate Investment Trusts, closed-end funds, and American Depositary Receipts.[5] Our sample of institutional trading data extends from January 1999 to March 2008. We include ex-days between April 1, 1999 and December 31, 2007 to ensure that we have institutional trading data for $\pm$ 45 days relative to

[4] Abel Noser Solutions was formerly known as ANcerno. See Chemmanur, He, and Hu (2009), Goldstein et al. (2009), Chemmanur, Hu, and Huang (2010), Puckett and Yan (2011), Goldstein, Irvine, and Puckett (2011), and Anand et al. (2012), among others, for recent papers using these data.

[5] We focus on regular quarterly dividends, because they represent a recurring source of potential profits for skilled institutional traders. We examine ex-days for NYSE-listed firms to control for variation in microstructure across exchanges that might affect ex-day returns.

each ex-day. We require that the firm pays no other distributions on the ex-day. We also require that the announcement day precedes the ex-day by at least five trading days, so announcement effects do not show up in our event window. To minimize noise in our measures of ex-day premiums, we exclude observations with dividends less than or equal to \$0.01 per share or ex-day closing prices below \$5 per share. We are left with a sample of 24,741 ex-dividend events for 1,351 distinct firms.

Panel A of Table I provides firm and ex-day characteristics for this sample. The average annualized dividend yield for the full sample is 2.24%. Trading volume on CRSP averages 1.24 million shares per day versus 208,000 shares per day for the institutions in our sample. Our institutions therefore represent about 8% of CRSP daily trading volume.[6]

B. Abnormal Ex-Day Returns and Volume

To compare our sample with prior research and document ex-day premiums and returns in anticipation of our profitability tests, we compute summary premiums and ex-day abnormal returns at the event level using CRSP prices. To control for price movements within the ex-day, we also adjust the ex-dividend price for daily expected returns, calculated using a market model. The ex-day premium for ex-dividend event i adjusted for market movements is given by $\text{Premium}_i = [P_{cum,i} - P_{ex,i}/(1 + E(R_i))]/Div_i$, where $P_{cum,i}$, $P_{ex,i}$, and Div_i are the closing cum-day price, ex-day price, and dividend amount for a given ex-dividend event i, and $E(R_i)$ is the stock's expected return, estimated using the market model with CRSP value-weighted returns and daily data over the benchmark period. For each ex-dividend event, the benchmark period is days −45 to −6 and days +6 to +45 and the event window is days –5 to +5 relative to ex-day 0. Following Graham, Michaely, and Roberts (2003), we minimize concerns that outliers drive our results by winsorizing premiums at the upper and lower 2.5% levels. We analogously compute raw and abnormal ex-day returns.

In the Miller-Modigliani setting, ex-day premiums should equal one and ex-day abnormal returns should equal zero. Panel B of Table I reports results for premiums and returns with and without the market adjustment. Premiums are significantly less than one and abnormal returns are significantly positive.[7] The magnitude of premiums and returns is consistent with those found in previous

[6] In the remainder of this paper, when we refer to institutional trading volume we mean trading by the institutions in our sample. Our total institutional trading volume is calculated by aggregating institutional buys and sells. Thus, when we calculate institutional volume as a percentage of total volume, we divide institutional volume by two.

[7] Our sample period contains two major regime changes with respect to dividend-related taxes and transaction costs. First, the minimum tick size changed from 1/16ths to decimals between August 28, 2000 and January 28, 2001 for NYSE stocks (Graham, Michaely, and Roberts (2003)). Second, on May 23, 2003, Congress equalized the top marginal tax rates on dividends and long-term capital gains for individual investors, and lowered both tax rates to 15%. Both of these changes should drive premiums (abnormal returns) closer to one (zero). Changes in market-adjusted statistics across regimes are generally consistent with these predictions. However, even after decimalization and the tax law change, premiums are still statistically significantly below one,

Table I

Descriptive Statistics

Panel A of this table summarizes various firm and ex-day characteristics for our sample. Dividend yield is the annualized dollar dividend amount divided by the cum-dividend price. Market cap is the average market capitalization during the benchmark window. Beta is calculated from a market model regression over the benchmark period. Total risk is the standard deviation (*SD*) of returns for the ex-dividend firm divided by the *SD* of returns on the CRSP value-weighted index, calculated during the benchmark period. Idiosyncratic risk is the ratio of the *SD* of the residuals from a market model regression to the *SD* of the market during the benchmark period. Institutional ownership equals total institutional shares held at the end of the quarter prior to the ex-day as a percent of shares outstanding. Institutional trader volume and CRSP volume are the average daily trading volume calculated over the benchmark period. Bid-ask spreads are average closing percentage bid-ask spreads during days [– 5,+ 5] relative to the ex-day. Trading commissions are dollar commissions as a percent of the total dollar value of the trade. Panel B reports premiums and returns with and without the market adjustment and *p*-values testing whether premiums (returns) equal one (zero). We use a *t*-test for means and a signed-rank test for medians. We winsorize premiums at the 2.5% and 97.5% levels.

Panel A: Sample Firm and Ex-Day Characteristics

Variable	*N*	Mean	Median	*SD*	Minimum	Maximum
Dividend Yield	24,741	2.24%	1.83%	0.91%	0.04%	118.98%
Dividend Amount ($)	24,741	0.185	0.150	0.157	0.011	2.750
Cum-day Price ($)	24,741	37.75	32.46	33.37	4.56	916.79
Ex-day Price ($)	24,741	37.62	32.35	33.35	5.01	917.00
Market Cap ($B)	24,741	11.01	2.33	30.27	0.01	528.35
Beta	24,741	0.862	0.817	0.532	−1.179	4.819
Total Risk	24,741	2.05	1.86	0.88	0.04	12.04
Idiosyncratic Risk	24,741	1.80	1.63	0.84	0.04	11.49
Institutional Ownership	24,209	0.658	0.682	0.210	0.000	1.000
Institutional Trader Volume (000s)	24,741	207.84	55.31	498.74	0.00	22,260.51
CRSP Volume (000s)	24,741	1,236.55	402.99	2,799.47	0.01	115,347.22
Bid-Ask Spread	24,089	0.29%	0.15%	0.38%	0.02%	6.29%
Trading Commissions	24,122	0.12%	0.09%	0.13%	0.00%	6.07%

Panel B: Premiums and Returns

	Premiums	Returns
No Market Adjustment		
Mean	0.588	0.17%
(*p*-value)	(0.000)	(0.000)
Median	0.725	0.16%
(*p*-value)	(0.000)	(0.000)
With Market Adjustment		
Mean	0.820	0.10%
(*p*-value)	(0.000)	(0.000)
Median	0.863	0.08%
(*p*-value)	(0.000)	(0.000)
N	24,741	24,741

literature (e.g., Graham, Michaely, and Roberts (2003), Chetty, Rosenberg, and Saez (2007), Zhang, Farrell, and Brown (2008)). Abnormal returns are small but are significantly positive. We therefore examine empirically whether skilled institutions profit from targeted dividend capture.

To establish whether institutions trade during ex-dividend periods, we compute trading volume statistics (Lakonishok and Vermaelen (1986), Dhaliwal and Li (2006)). Following Michaely and Vila (1996), abnormal volume for trading day t relative to ex-dividend event i is defined as $AV_{i,t} = (TO_{i,t}/ATO_i) - 1$, where $TO_{i,t}$ is the daily turnover (shares traded relative to shares outstanding) and ATO_i is the average daily turnover during the benchmark period. To minimize the impact of extreme outliers, we winsorize AV statistics at the 99.9% level.[8]

From Panel A of Table II, we see that average daily institutional AV is 8.6% (t-statistic = 11.25) during the event window. Abnormal CRSP volume during the event window is 4.4%, which is also highly statistically significant. Abnormal institutional volume is almost double that of CRSP (and this difference is statistically significant), consistent with our expectations that the institutions in our sample should be active traders during the ex-dividend period.

According to Lakonishok and Vermaelen (1986), Karpoff and Walkling (1990), and Rantapuska (2008), potential dividend capture trading profits will be higher for high yield and low transaction cost stocks. Michaely and Vila (1996) and Michaely, Vila, and Wang (1996) develop models in which short-term ex-day trading is negatively related to the risk of dividend capture. We therefore expect that abnormal dividend trading volume should be positively cross-sectionally related to dividend yield, and negatively related to transaction costs and risk.

In Panel B of Table II, we report event window institutional AV for ex-dividend events sorted into quintiles by dividend yield, transaction cost, and risk. Consistent with prior literature, abnormal institutional trading volume is significantly positively related to dividend yield and negatively related to all of our risk measures. However, in contrast to prior literature, institutional AV is significantly positively related to our proxy for transaction costs, namely bid-ask spreads.[9] Our sample includes a more recent period during which transaction costs were much lower than in previous studies.[10] Also, transaction costs

and abnormal returns are significantly positive. Please see Table IA.I of the Internet Appendix, available in the online version of this article on the *Journal of Finance* website, for results from Table I by regime.

[8] Our expectation is that dividend capture trades may be very large. We choose to report results for this cutoff for winsorizing to balance the need to retain potential dividend capture trades against the desire to prevent a small number of extreme values from driving the results. Our main inferences hold if we do not winsorize, or if we winsorize at different levels.

[9] Similar results hold for CRSP AV, and when we form portfolios every quarter (see Table IA.II in the Internet Appendix). This result is robust to alternative definitions of transaction costs including several used in prior ex-dividend literature (see Table IA.III in the Internet Appendix): effective spreads (Graham, Michaely, and Roberts (2003)), the log of firm size (Naranjo, Nimalendran, and Ryngaert (2000)), the inverse of the cum-dividend price (Dhaliwal and Li (2006)), and the Amihud (2002) illiquidity measure.

[10] For example, percentage spreads were 1.53% for the full sample in Michaely and Vila (1996) versus 0.29% for our sample.

Table II

Institutional Abnormal Volume

This table reports mean event window abnormal volume, defined as $AV_{i,t} = (TO_{i,t}/ATO_i) - 1$, where $TO_{i,t}$ is the daily turnover (trading volume divided by shares outstanding) for day t relative to ex-dividend event i and ATO_i is the average daily turnover during the benchmark period. Panel A reports results for the full sample based on institutional volume and CRSP volume. We winsorize institutional *AV* at the 99.9% level. Panel B sorts institutional volume by yield, spread, and three risk measures. We use percentage bid-ask spreads to measure transaction costs. Total risk (σ_i/σ_m) is the *SD* of returns for the ex-dividend firm divided by the *SD* of returns on the CRSP value-weighted index, calculated during the benchmark period. Idiosyncratic risk and beta are estimated from a market model regression of daily returns on the CRSP value-weighted index during the benchmark period. Idiosyncratic risk is defined as ($\sigma_\varepsilon/\sigma_m$), the ratio of the *SD* of the residuals to the *SD* of market returns, and systematic risk is the beta from the market model. *t*-statistics are reported in parentheses.

Panel A: Abnormal Volume

Institutional abnormal volume	0.0860
	(11.25)
CRSP abnormal volume	0.0438
	(14.25)

Panel B: Institutional *AV*, Univariate Sorts

Quintile	Dividend Yield	Spread	Total Risk	Idiosyncratic Risk	Beta
Low	0.0616	0.0193	0.1686	0.1448	0.1522
	(4.22)	(1.94)	(7.44)	(7.03)	(6.16)
2	0.0509	0.0540	0.0846	0.1069	0.0961
	(3.79)	(4.81)	(5.28)	(6.25)	(5.41)
3	0.0954	0.0645	0.0537	0.0531	0.0498
	(5.63)	(4.82)	(3.74)	(3.64)	(3.66)
4	0.0740	0.1070	0.0857	0.0796	0.0553
	(4.24)	(6.13)	(5.21)	(4.84)	(4.59)
High	0.1482	0.1560	0.0374	0.0456	0.0766
	(6.80)	(5.86)	(2.57)	(2.83)	(5.36)
High – Low	0.0866	0.1367	−0.1312	−0.0991	−0.0757
	(3.30)	(4.81)	(−4.87)	(−3.79)	(−2.65)

are highly correlated with other relevant measures such as risk and dividend yield. To control for these correlations, we estimate regressions of institutional *AV* on yield, bid-ask spread, and risk. When we control for other factors (see Table IA.IV in the Internet Appendix), transaction costs as measured by bid-ask spreads are no longer significantly related to abnormal volume.

Overall, we document significant abnormal institutional ex-day volume, consistent with dividend capture trading by institutions. Volume increases with yield and decreases with idiosyncratic risk, as predicted by dividend capture theory. Controlling for other factors, there is no significant relation between abnormal volume and transaction costs as measured by bid-ask spreads.

C. Ex-Day Returns after Transaction Costs

Are average ex-day returns still positive after we incorporate transaction costs? Based on statistics provided earlier, although transaction costs are small, they are large relative to the magnitude of abnormal ex-day returns (e.g., bid-ask spreads of 0.29% and percentage commissions of 0.12% in Panel A of Table I, versus ex-day returns of 0.17% in Panel B of Table I). If skilled traders trade within the spread, bid-ask spreads may overstate transaction costs. However, full transaction costs include commissions, spreads, and price impact, and therefore may be larger than quoted bid-ask spreads. An advantage of the Abel Noser database is that we have actual trading data for the institutions in our sample that incorporate commissions, spreads, and price impact for each transaction.

Table III reports average ex-day returns calculated at the ex-day event level. This analysis supplements the results in Panel B of Table I, where ex-day returns are calculated with CRSP closing prices. Here, we also report average ex-day returns using actual execution prices realized by institutional investors. To compute ex-day returns, we calculate the volume-weighted average execution prices (VWAP) on the cum- and ex-days.[11] Returns computed with these VWAP prices can be interpreted as the ex-day return realized by the aggregate institutional traders in our sample. We report results based on CRSP closing prices, actual prices realized by our institutions (precommissions), and prices realized by our institutions after adjusting for commissions paid (postcommissions). Ex-Day Premium is the median ex-day premium across all ex-dividend events (Panel A) or the principal-weighted median (Panel B). To be included in this analysis, there must be at least one institutional purchase on the cum-day and at least one institutional sale on the ex-day. The resulting sample (15,932 ex-day events) is somewhat smaller than the full set of ex-days we analyze (24,741 events from Table I).

Results in Table III show that ex-day returns calculated using CRSP data are a significantly positive 0.17% (same as in Panel B of Table I). Returns calculated using precommission institutional prices are also significantly positive. When we incorporate commissions, however, institutional returns fall dramatically and become negative (significantly so with equal weighting). These results suggest that, although ex-day returns measured using CRSP are statistically significant, they are consistent with a costly arbitrage equilibrium in the sense that they are eliminated once all of the relevant transaction costs are incorporated. They also confirm our intuition based on summary statistics from Table I that average ex-day returns are very small relative to percentage bid-ask spreads and trading commissions. Positive ex-day returns disappear on average across all ex-days when we account for actual execution prices and costs. This finding is consistent with the notion of an

[11] More specifically, for the institutional trades the cum-dividend volume-weighted average price ($VWAP_{cum}$) is a volume-weighted average of purchases on the cum-dividend day, and the ex-dividend VWAP ($VWAP_{ex}$) is the volume-weighted average of ex-dividend sales. For CRSP, VWAP prices are just the cum- and ex-dividend closing prices.

Table III

Ex-Day Returns: Institutional Execution Prices and Trading Commissions

This table reports average ex-day returns calculated at the event level. We report results for ex-day returns computed with CRSP closing prices, with the volume-weighted average execution prices (VWAP) realized by our actual institutions (precommissions), and with the VWAP realized by our institutions after adjusting for commissions paid (postcommissions). $VWAP_{cum}$ represents the volume-weighted average price of all institutional buys on the cum-date, and $VWAP_{ex}$ represents the volume-weighted average price of all institutional sells on the ex-day. Ex-Day Premium is the median ex-day premium across all ex-dividend events. Results are reported by equally weighting the ex-day returns (Panel A) and by weighting each ex-day return by the value of the average share position accumulated by our institutions on the cum-divided date (Panel B). *t*-statistics calculated with standard errors two-way clustered by firm and date are reported in parentheses.

Panel A: Equal-Weighted

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
	Number of Ex-Day Events	Return	*t*-Statistic	Return	*t*-Statistic	Return	*t*-Statistic
Ex-day return	15,932	0.172%	(4.64)	0.123%	(3.93)	−0.069%	(−2.20)
$VWAP_{cum}$ ($)		41.93		41.92		41.95	
$VWAP_{ex}$ ($)		41.80		41.77		41.74	
Dividend ($)		0.194		0.194		0.194	
Ex-Day Premium		0.714		0.747		1.070	

Panel B: Principal-Weighted

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
	Number of Ex-Day Events	Return	*t*-Statistic	Return	*t*-Statistic	Return	*t*-Statistic
Ex-day return	15,932	0.178%	(3.42)	0.109%	(2.35)	−0.057%	(−1.21)
$VWAP_{cum}$ ($)		51.47		51.46		51.50	
$VWAP_{ex}$ ($)		51.34		51.30		51.26	
Dividend ($)		0.225		0.225		0.225	
Ex-day Premium		0.632		0.766		1.078	

implementation shortfall as discussed by Perold (1988)—there is an economically significant performance difference between the returns to a paper "portfolio" (using CRSP prices) and the returns to a real portfolio. The performance difference illustrates the difficulty in implementing profitable dividend capture strategies.

Next, we examine whether certain institutions can avoid this drag on performance, and whether institutional profitability is related to trader skill. Ex-days potentially present a unique opportunity for institutions to use their trade execution skill to implement a profitable trading strategy.

III. Profitability and Persistence of Institutional Dividend Capture

Average ex-day returns are no longer significantly positive after we incorporate transaction costs. However, average returns make no allowance for whether a specific institution has a net long or short position over the ex-day. Also, they do not account for the fact that institutions may not trade uniformly across ex-day events—certain institutions may be realizing profitable capture strategies for a subset of ex-dividend events. Finally, institutional ex-day trading strategies may involve trades that are spread out over several days in which case profits to this type of strategy would not be reflected in ex-day returns. Therefore, although average ex-day returns are not significantly positive after transactions costs, it is possible some institutions earn positive profits from dividend capture trading. In this section, we estimate the profitability of institutional ex-day trading strategies.

A. Ex-Day Profitability at the Client-Manager Level

Abel Noser provides data on trades executed by a particular money management firm on behalf of a particular client. We calculate profitability at the client-manager pair level, that is, each observation is the collection of trades executed by a particular money management firm on behalf of a particular client during an individual ex-dividend event window.[12] Our definition of profitability includes profits from positions held at the end of the ex-day window in addition to profits on round-trip trades.

To estimate profitability, we compare total cash outflows and inflows during the event window at the client-manager pair level. Cash outflows are the total amount spent to acquire shares, calculated using actual transaction prices after all commissions and related trading costs. Cash inflows consist of the sum of proceeds from shares sold net of commissions, total cash dividends paid on the cum-dividend position, and the dollar value of any remaining shares held at the end of the event window.[13] We include results for any client-manager combination that accumulates a nonzero net position from the start of the cum-dividend event window through day –1. We focus on the [– 5,+ 5] window for several reasons. First, this window is used by the ex-dividend literature to measure dividend capture trading.[14] Second, timing trades is one way that trading desks can add value to performance: Perold (1988) argues that

[12] See Jame (2012) for more details on the Abel Noser client-manager identification. Because an individual manager's trades across different clients are likely to be correlated, we use two-way clustered standard errors in our tests of statistical significance.

[13] We illustrate this calculation in Table IA.V in the Internet Appendix. In this calculation, we subtract estimated commissions (calculated as the total dollar commission paid on all trades for that client-manager pair during that event window, divided by the total dollar volume of trades) on the marked-to-market portion of the position, to reflect realizable proceeds if this position were sold on the last day of our event window at the market price. Our profitability calculation is similar to Irvine, Lipson, and Puckett (2007).

[14] Eades, Hess, and Kim (1984) report evidence of abnormal returns for several days during the ex-dividend window. Lakonishok and Vermaelen (1986) and Michaely and Vila (1996) examine

execution costs can be lowered by trading patiently over a longer window, and that low trading costs are an important component of profitable dividend capture. To compare profitability across positions of different size, we divide total net trading profits by the total investment on the cum-dividend day. We separately report profitability depending on whether the net cum-dividend position is long or short. To minimize the impact of outliers, we winsorize profitability at the upper and lower 2.5% levels.[15]

To examine whether institutions are able to earn positive profits after transaction costs from dividend capture trading, in Table IV we report results for the profitability of institutional trading. Results are reported for equal-weighted observations, observations principal-weighted by the cum-dividend value of the share position, and principal-weighted observations for which the weighting factor is winsorized at the 2.5% and 97.5% levels to reduce the influence of outliers.

Results in Table IV show that profitability calculated using CRSP prices when the cum-day position is long (Panel A) is statistically significantly positive. Institutional profits from long positions precommission (which incorporate bid-ask spreads and price impact for the actual institutional trades) are also significantly positive. Precommission institutional profits are significantly higher than CRSP profits, suggesting that institutions have trading skill (Puckett and Yan (2011)). When we incorporate commissions, institutional profits fall dramatically but are still positive (although statistically significantly so in only two of three specifications).[16] Principal-weighted profitability is generally smaller than equal-weighted profitability, consistent with Pástor, Stambaugh, and Taylor's (2015) argument that mutual funds face decreasing returns to scale. Profits to short positions (Panel B) are consistently negative, indicating that institutions do not execute profitable short dividend capture strategies. Our main focus is on institutions that follow dividend capture, and thus have a net long position on the cum-date. Below (see Section IV.C), we provide additional evidence regarding short positions.

We can think of several possible reasons that institutional profits to long positions are not driven to zero in equilibrium. First, as we show in

abnormal volume during an 11-day window surrounding ex-days to test for dividend-related trading strategies.

[15] We conduct several robustness checks of our profitability measures (see Table IA.VI in the Internet Appendix): not winsorizing the returns, including NASDAQ and Amex stocks in addition to NYSE, calculating profits at the manager level only (rather than for the client-manager pair), and eliminating the (round-trip) commission on the marked-to-market portion of the profit calculation. Inferences are very similar to those reported here. Results are also robust to alternative definitions of dividend capture; see Table IA.VII in the Internet Appendix. Table IA.VIII of the Internet Appendix reports results for subperiods separated by decimalization and the 2003 tax law change.

[16] Results reported in Table IV represent pre-tax profitability. Abel Noser separately classifies institutions as either pension funds or investment managers. Any taxes paid by investors in these funds would reduce overall profitability. Please see Table IA.IX in the Internet Appendix for a summary of the tax treatment of the institutions in our sample. Table IA.X of the Internet Appendix reports results from Panel A of Table IV separately for the pension plans and investment managers in our sample. Profitability measures are very similar for the two groups.

Table IV

Institutional Ex-Dividend Profitability

This table reports average dividend capture trading profits as defined in Section III.A. We report results for profits calculated with CRSP closing prices, with the actual institutional trading prices (precommissions), and with actual institutional trading prices postcommissions. Each observation represents trades by a client-manager pair around a specific ex-day. Results are reported for equal-weighted observations (EW), observations principal-weighted by the cum-dividend value of the share position (PW), and principal-weighted observations where the weighting factor is winsorized at the 2.5% and 97.5% levels to reduce the influence of outliers (PW-W). We calculate profitability over the [−5,+5] window relative to the ex-day. We report results separately depending on whether the net cum-day position is long (Panel A) or short (Panel B). Profitability is winsorized at the 2.5% and 97.5% levels. t-statistics calculated with standard errors two-way clustered by firm and date are reported in parentheses.

Panel A: Long Positions

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
Weighting Scheme	N	Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
EW	188,136	0.405%	(5.27)	0.445%	(5.74)	0.256%	(3.30)
PW	188,136	0.289%	(2.86)	0.357%	(3.50)	0.173%	(1.69)
PW-W	188,136	0.335%	(4.03)	0.388%	(4.64)	0.202%	(2.41)

Panel B: Short Positions

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
Weighting Scheme	N	Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
EW	183,235	−0.269%	(−3.60)	−0.280%	(−3.70)	−0.488%	(−6.44)
PW	183,235	−0.178%	(−1.64)	−0.174%	(−1.56)	−0.365%	(−3.29)
PW-W	183,235	−0.310%	(−3.72)	−0.325%	(−3.86)	−0.519%	(−6.17)

Section IV, profits concentrate among institutions with trade execution skill. It is possible that skilled institutions do not have enough investable capital to drive these profits to zero. Second, profits after transaction costs are not high, and institutions practicing dividend capture may face other frictions such as idiosyncratic risk (e.g., Pontiff (2006)). Finally, we report average profits, and marginal profits may be zero in equilibrium even though average profits are positive.

Results in Table IV suggest that some institutions are able to earn significant profits after all transaction costs. One potential reason is that many client-manager pairs trade in response to specific ex-day events, and they earn high profits around these events. The institutional trading process begins with the portfolio manager making investment decisions (Hu (2009)). For example, the portfolio manager may identify the ex-day events on which to focus dividend capture strategies, with the trading desk then implementing the optimal execution strategy.

To investigate this possibility further, we sort ex-dividend events into quintiles based on the abnormal number of buy trades by our institutions on the cum-day ("abnormal buy intensity").[17] Table V reports the institutional profitability of long positions for events by abnormal buy-intensity quintile, along with results of a statistical test comparing the high abnormal buy-intensity quintile with the low intensity quintile. Results show that institutional profitability is significantly higher both pre- and postcommission for the ex-day events with high buy intensity. The relation between abnormal buy intensity and postcommission profitability is in general nonlinear, with profitability concentrated in the highest buy-intensity quintiles.

In Panel C of Table V, we report summary ex-day characteristics based on buy intensity. Again, the relation is nonlinear. In general, yields, spreads, and idiosyncratic risk are highest for the high and low buy-intensity quintiles, with an opposite pattern for beta. Results show that both yields and spreads are significantly negatively related to abnormal buy intensity, which is in apparent contrast to the positive relations documented earlier in Panel B of Table II. However, these relations are highly nonlinear and are positive for the highest four quintiles. We note that the low buy-intensity quintile appears to be an outlier with respect to both yields and spreads—this quintile is characterized by high dividend yields, but also very high bid-ask spreads. Although we would expect institutions to concentrate their dividend capture buying in high yield stocks, the high transaction costs associated with some of these stocks may make profitable dividend capture prohibitively expensive to implement. Overall, these results confirm that some institutions earn significant ex-day profits by targeting certain ex-day events.

So far, we have shown that institutions that engage in abnormal buying on the cum-date earn significantly higher profits than those that do not. If this result reflects deliberate dividend capture trading by institutions with trade execution skill, we expect that it should continue. In other words, institutions that successfully practice dividend capture should continue to do so, and should continue to profit.

To test this prediction, in Panel A of Table VI, we report results testing whether abnormal cum-day buying intensity is persistent for certain managers. In this table, we sort all client-manager pairs into quintiles based on the abnormal number of buys in one quarter ($Q = 0$); Panel A reports results for the low and high buy-intensity quintiles. We calculate the average profitability (postcommissions), the average number of ex-day events traded per quarter, and the percentile rank of their abnormal cum-day purchases. There is a large and significant difference in both the number of cum-day purchases and average profitability between the high and low abnormal buy-intensity quintiles in the initial quarter. Panel A also shows that managers in the high buy-intensity quintile target an average of about 36 events per quarter.

[17] Abnormal cum-day buying is defined as the number of cum-day buy executions minus the daily average number of benchmark buy executions.

Table V

Institutional Profitability for Targeted Ex-Day Events

This table reports average dividend capture trading profits based on whether the ex-day event has high abnormal buy intensity on the cum-date. Abnormal cum-day buy intensity is defined as the number of cum-date buy executions for all managers minus the average number of daily benchmark buy executions. We sort ex-date events into quintiles based on the amount of abnormal buy trading by our institutions on the cum-date. We then average profits across client-manager pairs for the ex-date events in each of the quintiles. We report results for profitability calculated with CRSP closing prices, with the actual institutional trading prices (precommissions), and with actual institutional trading prices postcommissions. Results are reported by equally weighting these observations (Panel A) and by weighting each observation by the cum-dividend value of the share position (Panel B). We calculate profitability over the [– 5,+ 5] event window relative to the ex-date. Profitability is winsorized at the 2.5% and 97.5% levels. Individual t-statistics are calculated with standard errors two-way clustered by firm and date. In Panel C, we report characteristics of the ex-dates across the five quintiles.

Panel A: Equal-Weighted Profitability

Abnormal Cum-Day Buy Intensity	Number of Manager Positions	CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
		Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
Q1 = Low	14,638	0.393%	(2.89)	0.433%	(3.17)	0.204%	(1.50)
Q2	37,341	0.023%	(0.22)	0.026%	(0.24)	−0.156%	(−1.44)
Q3	43,516	0.299%	(2.92)	0.334%	(3.22)	0.153%	(1.49)
Q4	47,831	0.513%	(4.56)	0.561%	(4.91)	0.376%	(3.28)
Q5 = High	44,801	0.716%	(6.26)	0.782%	(6.75)	0.587%	(5.08)
High – Low		0.322%	(6.73)	0.349%	(7.19)	0.383%	(7.90)

Panel B: Principal-Weighted Profitability

Abnormal Cum-Day Buy Intensity	Number of Manager Positions	CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
		Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
Q1 = Low	14,638	0.233%	(0.70)	0.227%	(0.64)	0.022%	(0.06)
Q2	37,341	−0.437%	(−2.50)	−0.427%	(−2.40)	−0.606%	(−3.38)
Q3	43,516	0.146%	(0.81)	0.173%	(0.99)	−0.009%	(−0.05)
Q4	47,831	0.390%	(2.61)	0.475%	(3.12)	0.292%	(0.06)
Q5 = High	44,801	0.663%	(3.84)	0.783%	(4.57)	0.595%	(3.49)
High – Low		0.430%	(9.05)	0.556%	(11.40)	0.573%	(11.74)

Panel C: Ex-Day Characteristics

Abnormal Cum-Day Buy Intensity	Number of Ex-day Events	Dividend Yield	Spread	Total Risk	Idiosyncratic Risk	Beta
Q1 = Low	4,637	0.629%	0.448%	2.052	1.853	0.761
Q2	4,635	0.515%	0.176%	2.102	1.827	0.938
Q3	4,628	0.530%	0.181%	2.057	1.779	0.938
Q4	4,643	0.542%	0.200%	2.011	1.744	0.900
Q5 = High	4,635	0.548%	0.245%	2.058	1.796	0.902
High – Low		−0.082%	−0.203%	0.005	−0.058	0.142
(t-statistics)		(−9.01)	(−25.83)	(0.29)	(−3.25)	(12.74)

Table VI

Persistence of Abnormal Cum-Day Buying Intensity

In this table, we sort observations into quintiles based on the number of abnormal cum-day buy executions in the quarter. We also calculate the average equal-weighted profitability (postcommissions), the average number of observations per quarter, and the percentile rank of abnormal cum-day purchases for observations that have a net long position on the cum-day. We then track these variables over the following three quarters. In Panel A, the unit of analysis is a client-manager pair; abnormal cum-day buys are defined as the number of cum-day buy executions minus the average number of daily benchmark buy executions for a given manager. We include only client-manager pairs that buy on more than one cum-day in a given quarter. In Panel B, the unit of analysis is an ex-date event; abnormal cum-day buys are defined as the number of cum-day buy executions for all managers minus the average daily buy executions during the benchmark period. We include only events that have at least one cum-day purchase.

Panel A: Persistence at the Manager Level

		Quarters			
Sort by Abnormal Cum-Day Buy Intensity		Q = 0	Q + 1	Q + 2	Q + 3
Quint = Low	Abnormal cum-day buys	−0.28	0.04	−0.03	−0.10
	Profitability (postcommission)	0.07%	0.07%	0.11%	0.36%
	# Events per quarter	29.29	36.55	41.43	43.94
	% Rank	10.27	34.19	36.58	37.90
Quint = High	Abnormal cum-day buys	1.66	1.05	1.07	1.13
	Profitability (postcommission)	0.36%	0.37%	0.36%	0.27%
	# Events per quarter	35.58	54.98	62.46	65.90
	% Rank	90.55	64.68	66.54	67.35
Q(high) – Q(low)	Abnormal cum-day buys	1.94	1.01	1.10	1.24
	(*t*-statistics)	(17.79)	(6.33)	(5.26)	(4.96)
	Profitability (postcommission)	0.28%	0.30%	0.24%	−0.09%
	(*t*-statistics)	(2.30)	(2.70)	(2.22)	(−0.72)

Panel B: Persistence at the Firm Level

		Quarters			
Sort by Abnormal Cum-Day Buy Intensity		Q = 0	Q + 1	Q + 2	Q + 3
Quint = Low	Abnormal cum-day buys	−18.11	6.00	12.34	8.91
	Profitability (postcommission)	−0.19%	−0.07%	0.06%	−0.01%
	# Managers per quarter	22.78	24.04	24.64	26.01
	% Rank	10.12	47.07	49.46	50.44
Quint = High	Abnormal cum-day buys	40.83	9.41	6.93	12.06
	Profitability (postcommission)	0.07%	−0.03%	0.07%	0.16%
	# Managers per quarter	26.00	24.87	25.87	25.48
	% Rank	90.27	52.49	50.76	52.53
Q(high) – Q(low)	Abnormal cum-day buys	58.94	3.42	−5.42	3.15
	(*t*-statistics)	(37.17)	(1.44)	(−1.61)	(0.65)
	Profitability (postcommission)	0.26%	0.04%	0.00%	0.18%
	(*t*-statistics)	(3.56)	(0.44)	(0.02)	(0.86)

We next track these same variables, keeping client-manager pairs in the same quintiles, over the following three quarters. We find strong evidence that dividend capture trading is persistent. In particular, the difference in abnormal buying activity between high and low buy-intensity quintiles is statistically significant for each of the next three quarters. Profitability is also significantly higher for the high buy-intensity quintile in the next two quarters. Thus, active cum-day buyers one quarter continue to buy and earn abnormal profits over the two subsequent quarters.

In Figure 1, we compare persistence of abnormal cum-day buys with abnormal cum-day sells. This figure reports the percentile of abnormal buys or sells, sorted into quintiles one quarter and tracked over the following three quarters. By construction, there is a large difference in percentiles in $Q = 0$. For abnormal cum-day buys in Panel A, although the differences converge somewhat by $Q + 1$, they are significantly different by $Q + 3$. In contrast, quintiles based on cum-day sells converge immediately and are much closer by $Q + 1$. Persistence is much weaker for cum-day selling intensity. Taken together, these results suggest that dividend capture (cum-day buying) is a persistent strategy, but cum-day selling more likely reflects a nondividend motivation such as general liquidity selling. We discuss cum-day selling in more detail in Section IV.C.

So far we have focused on whether institutions that engage in dividend capture one quarter continue to do so in subsequent quarters. To complete this analysis, we also examine whether they continue to target the same stocks over time. Because firm characteristics that attract dividend capture (yield, risk, and liquidity) tend to be persistent, institutions that engage in ex-dividend trading strategies may continue to capture dividends of the same stocks over time. To test this prediction, in Panel B of Table VI, we report results on the persistence of abnormal cum-day buying intensity, where buying intensity is again measured at the ex-day event (e.g., firm) level as in Table V rather than by manager as in Panel A of Table VI. Abnormal buying and the difference in profitability between the high and low buy-intensity groups are strong during the initial quarter, but differences disappear by the next quarter. Institutions appear to select which firms to target for profitable dividend capture each quarter.

The lack of persistence in stocks subject to dividend capture is puzzling. One possibility is that traders look back on prior-quarter profitability and base their decisions on prior-quarter excess returns in addition to firm characteristics.[18] To explore this issue, in Table VII we report results of regressions of abnormal cum-day buy intensity on ex-day event characteristics and lagged ex-day returns (the ex-day return for the same stock during the previous quarter).

Results in column (1) of Table VII show that cum-day abnormal buying intensity is significantly negatively related to bid-ask spreads as expected, but is not significantly related to yields or idiosyncratic risk. As we note in our discussion of the results in Panel C of Table V, stocks in the low buy-intensity quintile are characterized by high dividend yields but also very high bid-ask spreads. Of the event-based characteristics, bid-ask spreads are the most

[18] We thank the Associate Editor for this suggestion.

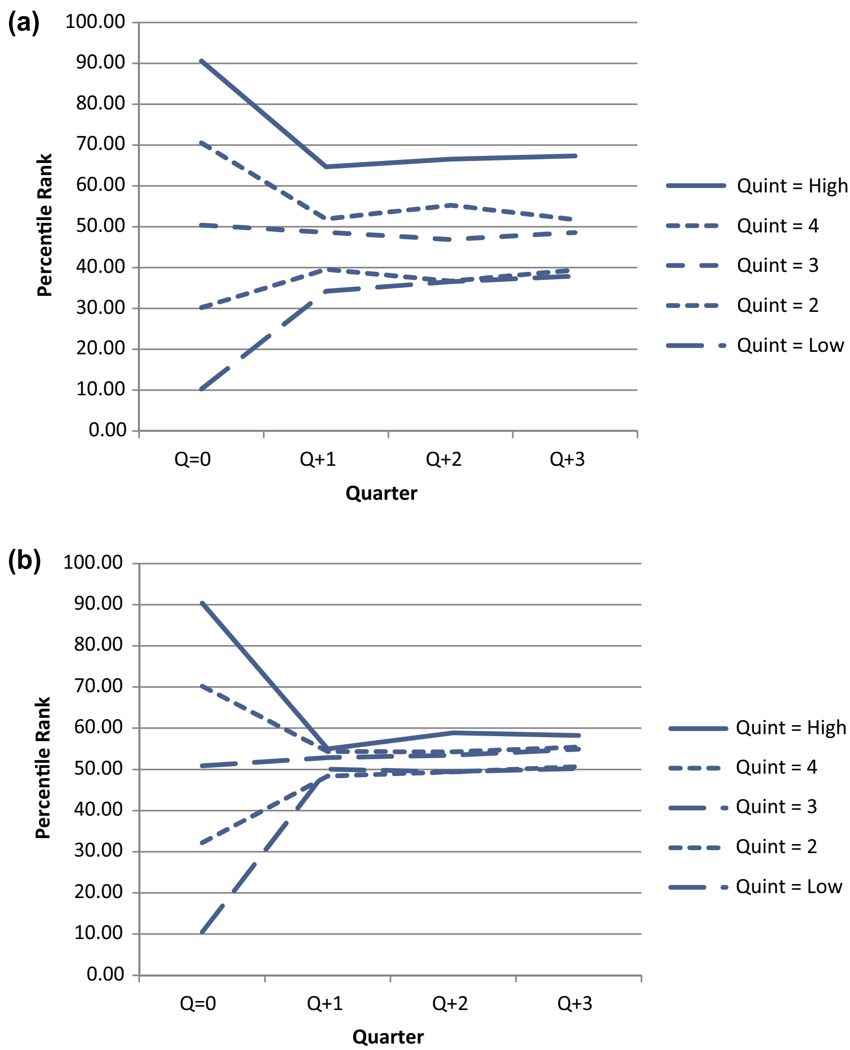

Figure 1. (a) Persistence of abnormal cum-day buys. This figure shows the percentile rank of abnormal cum-day buy trades across five quintiles, computed in quarter zero (Q = 0), and the average percentile rank of these Q = 0 quintiles over the next three quarters. Abnormal cum-day buy trades are calculated at the client-manager level. **(b) Persistence of abnormal cum-day sells.** This figure shows the percentile rank of abnormal cum-day sells across five quintiles, computed in quarter zero (Q = 0), and the average percentile rank of these Q = 0 quintiles over the next three quarters. Abnormal cum-day sells are calculated at the client-manager level.

important determinant, and transaction costs appear to overwhelm any effect of dividend yields.

In column (2), we show that cum-day buy intensity one quarter is significantly related to ex-day returns in the prior quarter. These results suggest that skilled institutions look back on prior-quarter profitability and base

Table VII

Regressions of Abnormal Cum-Day Buy Intensity on Event and Trader Characteristics and Lagged Ex-Day Returns

This table reports results of regressions of abnormal cum-day buying intensity on event and trader characteristics and lagged ex-day returns. Abnormal cum-day buys are defined as the number of cum-day buy executions minus the average number of daily benchmark buy executions. Event-based characteristics (defined in Table I) include dividend yield, idiosyncratic risk, and bid-ask spreads. Lagged return is the ex-day return for the same stock during the prior quarter. Trader characteristics (defined in Table X) are liquidity provision, trade execution skill, and interim performance. *t*-statistics are in parentheses.

	Abnormal Cum-Day Buy Intensity		
Dependent Variable:	(1)	(2)	(3)
Intercept	2.71	2.68	2.90
	(4.68)	(4.66)	(4.55)
Event-Based Characteristics			
Dividend Yield	−35.06	−35.15	−40.56
	(−0.96)	(−0.96)	(−1.08)
Idiosyncratic Risk	−0.19	−0.17	−0.17
	(−1.19)	(−1.08)	(−1.08)
Bid-Ask Spread	−251.50	−257.08	−267.23
	(−4.42)	(−4.40)	(−4.31)
Lagged Return			
Prior Quarter Ex-day Return		16.15	16.08
		(2.06)	(2.05)
Trader-Based Characteristics			
Liquidity Provision			2.44
			(2.53)
Trade Execution Skill			118.95
			(2.01)
Interim Performance			−11.21
			(−1.88)

their trading decisions on the prior quarter's excess returns rather than more persistent event characteristics such as dividend yield when selecting stocks for dividend capture. Perhaps institutional ex-day trading in a particular quarter affects prices in such a way as to make future profitability of such trading uncertain. Variations in ex-day returns for an individual stock appear to explain why we do not see more persistence in targeted stocks. In column (3) of Table VII, we show that these results are robust to the inclusion of trade execution skill and some trader characteristics that we define below in Section IV.

B. Contribution of Dividend Capture to Overall Institutional Returns

What is the economic magnitude of dividend capture profits? Although institutions are able to earn significant profits by targeting certain events, if dividend events are relatively infrequent or positions are small, dividend capture may represent a small fraction of overall institutional profitability.

To address this concern, we estimate trading profits for all buy trades executed by the institutions in our sample, and compare results for buys that take place immediately before the ex-day to all institutional buy trades in our sample. Because of our focus on dividends and our sample selection process, we limit the sample to institutional trades in firms that pay dividends at least once during our sample period.[19] These firms represent just over half (54.3%) of the population of NYSE firms over the same period.

The main profitability measure that we use so far is defined specifically for dividend trades. To obtain a more general measure applicable to all trades, we estimate abnormal returns using the same method as Puckett and Yan (2011) when they calculate their interim trading performance measure. This method calculates a holding period return by tracking the performance of each buy (or sell) trade from the execution date (using the actual execution price) until the end of the quarter. Abnormal returns subtract the Daniel et al. (1997) matched benchmark return over the same holding period.

Once returns are calculated for each Abel Noser trade, we assign an indicator to each trade depending on whether the trade occurs in our cum-dividend event window. Trades that are executed in the [– 5,– 1] window relative to the ex-day are classified as "Dividend Trades," and all other trades are "Nondividend Trades."[20] Following Puckett and Yan (2011), we then calculate the average (equal-weighted and principal-weighted) return for each manager (or more specifically, client-manager pair) each quarter.

Panel A of Table VIII reports principal-weighted results for the full sample of buy trades ("All Buys") and for trades sorted into Dividend Buys and Nondividend Buys. Results show that the overall principal-weighted abnormal return for buy trades of 0.54% before commissions falls to 0.25% after taking commissions into account.[21] However, postcommission abnormal returns are 0.44% for Dividend Buys and 0.23% for Nondividend Buys, with the difference statistically significant. Moreover, abnormal returns are significantly positive only for the subset of Dividend Buys; the institutions in our sample do not earn significant abnormal returns after transaction costs from their Nondividend

[19] Results are robust to including institutional trades in all firms in the Abel Noser database rather than just those that pay dividends at least once. Please see Table IA.XI in the Internet Appendix.

[20] Although we include all trades by our institutions in any firm that paid a dividend some time during our sample period, some firms initiate or omit dividends during our sample period, so the "dividend-paying firms" do not pay dividends every quarter. On average, dividend-paying firms pay a dividend in only about two-thirds (65.3%) of the quarters for which there is trading by Abel Noser institutions in our sample. Therefore, the nondividend trades include trades outside the [– 5,– 1] window for quarters in which a firm pays a dividend, as well as trades on all days for quarters in which the firm does not pay a dividend.

[21] Puckett and Yan (2011, table III) also report precommission principal-weighted returns for buy trades of 0.54%.

Table VIII

Contribution of Dividend Trading to Overall Institutional Returns

This table reports abnormal returns, calculated as a holding period return that tracks the performance of each buy trade from the execution date (using the actual execution price) until the end of the quarter (see Puckett and Yan (2011, p. 610)). Abnormal returns subtract the Daniel et al. (1997) benchmark return over the same holding period. The sample includes institutional trades in all stocks that pay a dividend at least once during our sample period. We assign a trade indicator to each trade depending on when the trade occurs. Buy trades during days [– 5,– 1] relative to an ex-day are classified as Dividend Buys, and all other buys are Nondividend Buys. In Panel A, we report average abnormal returns, *t*-statistics calculated with two-way clustered standard errors (in parentheses), and the average number of quarterly trades per manager for the full sample of Buys, Nondividend Buys, and Dividend Buys (as well as differences between the groups). In Panel B, we report the proportion of trades and the proportion of abnormal returns attributable to Dividend Buys. For a given manager-quarter, we weight results by the number of trades and the dollar volume of trades. Columns (1) and (2) report results for the full sample of buy trades analyzed in Panel A. In columns (3) and (4), we include results only for managers who make both a Dividend Buy and a Nondividend Buy during a particular quarter.

Panel A: Abnormal Returns by Type of Trade

	All Buys (1)	Nondividend Buys (2)	Dividend Buys (3)	Dividend – All (3) – (1)	Dividend – Nondividend (3) – (2)
Before Commissions	0.54%	0.53%	0.72%	0.31%	0.33%
	(3.25)	(3.19)	(3.70)	(2.62)	(2.57)
After Commissions	0.25%	0.23%	0.44%	0.28%	0.31%
	(1.60)	(1.52)	(2.48)	(2.58)	(2.55)
Number of Trades	230.20	208.46	13.45		

Panel B: Fraction of Trading Activity and Abnormal Returns Associated with Dividend Buys

	Full Sample		Manager-Quarters with Dividend and Nondividend Buy	
Weighting Scheme	# Trades (1)	Dollar Volume (2)	# Trades (3)	Dollar Volume (4)
% Dividend Trades	5.60%	5.67%	8.02%	8.12%
% Dividend Abnormal Returns	16.71%	14.21%	24.37%	20.70%
N	46,934		31,891	

Buys.[22] This analysis confirms that our finding of significant dividend capture profits is robust to alternative definitions of profitability.

We next try to quantify the contribution of dividend capture to overall institutional profitability. Specifically, for each client-manager we calculate the fraction of buys classified as Dividend Buys, and the proportion of total

[22] We repeat this exercise for sell trades. Postcommission returns to Nondividend Sells are insignificantly positive, and returns to Dividend Sells are insignificantly negative; the difference between these two groups is not statistically significant.

abnormal returns from Dividend Buys. Panel B reports results averaged across all managers, where the fractions are based on both the number and dollar value of buy trades. The first two columns correspond to the full sample of buy trades analyzed in Panel A. Results show that, although Dividend Buys constitute less than 6% of all buys in our sample, they contribute about 15% of the abnormal returns realized by the average manager. Therefore, the contribution of dividend buys to profitability is two to three times as great as the frequency of these trades would suggest. The overall magnitude of 15% suggests that dividend capture represents a nontrivial component of total returns for these institutions.

For robustness, in Panel B we repeat this analysis for those managers who make both a Dividend and a Nondividend Buy during a particular quarter (columns (3) and (4)). Results for this subsample are even more striking: Dividend Buys are only about 8% of overall buys, but they constitute 20% to 25% of overall abnormal returns. Dividend capture also represents a significant source of returns for the institutions in our sample that make both Dividend and Nondividend buys during a quarter.

We also compute the aggregate dollar profitability (postcommission) for dividend buys in all firms in the Abel Noser database and compare it to the profitability of nondividend buys. Aggregate profits for all buys in all firms (including those that do not pay dividends) total $67.1 billion, of which $3.99 billion (6%) come from dividend buys. For reference, there are 654,911 dividend buys, compared to almost 18.5 million total buy trades, so dividend buys represent only 3.5% of all trades. The average manager in the high buy-intensity quintile makes $2.5 million in abnormal profits from all buy trades during the quarter. Of this, about $440,000, or 17.5%, comes from dividend buys. These profits are especially meaningful for active dividend capture traders.

In summary, although average ex-day returns are insignificant or significantly negative after all transaction costs are incorporated, some institutions are able to earn significant profits. The same institutions engage in dividend capture transactions repeatedly, and they are able to continue making money. Institutions profit by targeting certain ex-days, but there is less persistence in the stocks that are targeted. Dividend capture contributes materially to the abnormal performance realized by institutions in our sample.

IV. Profitability and Trader Skill

Using Abel Noser data, Anand et al. (2012) show that some institutions have trade execution skill and that this skill is persistent. Specifically, they show that trading-desk skill is related to an institution's trade execution abilities, and trading desks can contribute to relative outperformance as a result of these abilities. This execution skill is separate from stock-picking skill and allows institutions to avoid an implementation shortfall due to their ability to achieve superior execution quality. Given the size of ex-day returns relative to bid-ask spreads and trading commissions, execution skill may be highly relevant for dividend capture profitability. In particular, although average abnormal ex-day returns are small relative to transaction costs, they are larger than abnormal returns on non-ex-days. Institutions with superior trade execution ability may be able to turn abnormal ex-day returns into profitable trading strategies. In this section, we focus on whether institutions use execution skill to implement trading strategies that successfully capture the well-known abnormal returns around ex-days.

A. Profitability by Trader Skill

Based on prior research, we expect institutions with high skill to earn higher ex-day profits than those with low skill. To test this prediction, we start with two different measures of execution skill. We note that both of these measures are exogenous in the sense that they are based on trade execution skill outside the ex-dividend event window rather than execution prices for the dividend capture trades themselves. We therefore test whether institutions that are skilled in general are also able to implement profitable dividend capture strategies.

We proxy for trade execution skill using measures of execution quality that we define using the general form

$$\text{Execution Quality} = \left[\frac{P_E - P_B}{P_B}\right] * Side, \tag{1}$$

where P_E is the execution price, P_B is a benchmark price, and *Side* is an indicator variable that equals one for a sell and minus one for a buy. Thus, sell trades that execute above the benchmark price and buy trades that execute below the benchmark price exhibit positive execution quality. Higher values of execution quality indicate higher trader skill. We use two different skill measures, one of which is based on a pretrade benchmark and an alternative that uses a VWAP (volume-weighted average price during the trading day) benchmark.[23]

Our first trader skill measure comes from Anand et al. (2012).[24] They compare a trader's execution price with a pretrade benchmark price that is observed when the trading desk submits the order. This trader skill measure is calculated monthly for each institution ("clientcode") by estimating institution fixed-effect regressions of execution shortfall on the economic determinants of trading cost (see p. 569 of Anand et al. (2012) for further details). Institutions are assigned a percentile value and then are sorted into deciles by trading skill (the Anand, Irvine, Puckett, and Venkataraman, or AIPV, trader skill measure). We use the AIPV skill in the month prior to the ex-day as our first measure of trade execution skill.

[23] There is a debate in the literature with respect to the choice of a benchmark price. Sofianos (2005) discusses two popular measures based on these two benchmarks. See also Berkowitz, Logue, and Noser (1988) and Hu (2009).

[24] We are extremely grateful to Andy Puckett for providing us with the trader skill measures.

Our second proxy for trader skill is in the spirit of the VWAP-based measure of Hu (2009).[25] We compute the average execution quality relative to the VWAP for all institutional trades during the trading day, calculated for all trades made during the 80-day benchmark period by a given client-manager around a given ex-day event (the ex-day benchmark trader skill measure). This measure of trading skill is based on trades during the benchmark period (rather than the ex-dividend window), so it also does not depend on execution skill for dividend capture trades.[26]

Table IX reports our original institutional ex-day profitability measure as defined in Section III.A for the high- and low-skill deciles when sorted by AIPV skill or by ex-day benchmark skill. Analogous to Table IV, we report results when profitability is equal-weighted (Panel A) and principal-weighted (Panel B). Results in Table IX show that the ex-day profitability of institutions in the high trader skill decile is statistically significantly greater than the profitability of low-skill institutions.[27] These differences are economically large, at approximately 40 bps.[28]

One potential concern is that our results relating ex-day profitability and trade execution skill merely reflect the more general relation between skill and profitability previously documented by Anand et al. (2012).[29] To determine whether this is the case, or whether there is something unique about the ex-dividend day, we replicate our analysis for a placebo non-ex-day. Specifically, we examine the relation between AIPV trader skill and the profitability measure that we use to calculate ex-day profits in Table IX, but we now calculate profitability on day –20 rather than ex-day 0. We find no evidence of a positive

[25] Hu (2009) formulates the measure as an implicit trading cost, with negative values indicating better execution quality. Our measure is constructed such that larger (positive) values indicate better execution quality and higher trader skill. See p. 422 of Hu (2009) for details.

[26] Anand et al. (2012, Table 2) show that their measure of trade execution skill is persistent. In Table IA.XII of the Internet Appendix, we verify that our ex-day benchmark skill measure is also persistent.

[27] In Table IA.XIII of the Internet Appendix, we verify that this finding holds in a multivariate setting that controls for firm-specific characteristics such as dividend yield and firm risk. We also report (Table IA.XIV in the Internet Appendix) results from Table IX separately for regimes that reflect decimalization and the 2003 tax law change.

[28] The AIPV skill measure is calculated at the client level, and our ex-day benchmark skill measure is calculated at the client-manager level. The similarity of results across these two measures in Table IX suggests that much of the skill occurs at the client level. In Table IA.XV of the Internet Appendix, we aggregate our ex-day benchmark client-manager skill measure at either the client or the manager level. Results show that, across most of our skill measures, the difference in profitability between high- and low-skill institutions is still about 40 bps. Our conclusion is that dividend capture trade execution skill is at least as strong at the client level as at the manager level.

[29] Another potential concern is that a client may be taking positions with multiple different managers during a given ex-day window. However, the average number of managers used by a given client per ex-day event is 1.02, and the maximum is 1.4. Similarly, the average number of clients served by a given manager per event is 1.25; the relation between client and manager, at least with respect to executing trades during ex-dividend event windows, is essentially one-to-one.

Table IX

Institutional Profitability by Trader Skill

This table reports average dividend capture trading profits based on two measures of trader skill. AIPV trader skill is the percentile trader skill ranking from Anand et al. (2012). Ex-day benchmark trader skill is the client-manager's average execution discount relative to a VWAP benchmark for all trades during the 80-day benchmark period for the given ex-day event. We average skill and profitability across each client-manager pair, and sort into client-manager skill deciles. We report results for profits calculated with CRSP closing prices, with the actual institutional trading prices (precommissions) and with actual institutional trading prices postcommissions. Profitability is winsorized at the 2.5% and 97.5% levels. t-statistics are calculated with standard errors two-way clustered by firm and date. Panel A reports equal-weighted results. Panel B reports principal-weighted results.

Panel A: Equal-Weighted Profitability

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Postcommissions)	
Skill Group	N	Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
AIPV Trader Skill							
Skill = Low	5,013	0.355%	(2.55)	0.404%	(2.84)	0.186%	(1.30)
Skill = High	5,362	0.677%	(5.11)	0.781%	(5.71)	0.518%	(3.81)
High – Low		0.322%	(3.18)	0.377%	(3.67)	0.332%	(3.24)
Ex-Day Benchmark Trader Skill							
Skill = Low	17,177	0.137%	(1.16)	0.176%	(1.48)	−0.050%	(−0.42)
Skill = High	17,177	0.494%	(4.02)	0.592%	(4.73)	0.352%	(2.81)
High – Low		0.357%	(5.98)	0.416%	(6.85)	0.402%	(6.62)

Panel B: Principal-Weighted Profitability

		CRSP Prices		Institutional Prices (Precommissions)		Institutional Prices (Precommissions)	
Skill Group	N	Profit	t-Statistics	Profit	t-Statistics	Profit	t-Statistics
AIPV Trader Skill							
Skill = Low	5,013	−0.159%	(−0.36)	−0.091%	(−0.19)	−0.246%	(−0.52)
Skill = High	5,362	0.689%	(2.31)	0.699%	(2.33)	0.418%	(1.41)
High – Low		0.848%	(8.31)	0.791%	(7.58)	0.664%	(6.38)
Ex-Day Benchmark Trader Skill							
Skill = Low	17,177	−0.095%	(−0.36)	−0.043%	(−0.17)	−0.270%	(−1.07)
Skill = High	17,177	0.232%	(0.64)	0.335%	(0.91)	0.102%	(0.28)
High – Low		0.327%	(5.21)	0.378%	(5.93)	0.372%	(5.84)

relation between execution skill and profits when we repeat our experiment on the placebo non-ex-day (see Table IA.XVI in the Internet Appendix).[30] This

[30] For robustness, we also compare the profitability of managers in the high and low AIPV skill deciles during the event window with the matched performance of these same managers during the window around the placebo day for the same event. We conduct this analysis using the original placebo day of –20 as well as an alternative placebo day of +11. Results in both cases show that profitability is significantly related to skill in the event window but not during the placebo window.

result suggests that dividend capture represents a particularly important component of the abnormal profits realized more generally by skilled investors. In other words, ex-days provide a relatively unique opportunity for institutions to exploit their trade execution skills.

Our results show that not all institutions can profit from dividend capture. The ability to earn ex-day profits is strongly cross-sectionally related to trade execution skill. Prior research in the ex-dividend literature focuses on firm-specific characteristics such as dividend yield, risk, or transaction costs as determinants of short-term dividend trading. Michaely and Vila (1995, 1996) and Dhaliwal and Li (2006) demonstrate that the heterogeneity of tax rates among investors also affects ex-day prices and volume. We extend this literature by showing that other investor characteristics such as trade execution skill also play a role. Regression results in Table VII (discussed in Section III.A) suggest that trade execution skill may be at least as important as firm characteristics such as yield and idiosyncratic risk in explaining dividend capture trading.

B. Types of Institutions: Cross-Sectional Characteristics

What are the economic incentives of the institutions in our sample, and why do these incentives lead to the trading strategies we observe? Although we do not have identifying information from Abel Noser about the institutions in our sample, we explore some cross-sectional characteristics of their trading activity to try to infer their identity and economic motives. As in Section III.B, in order to compare profitability of Dividend Buys to Nondividend Buys across these characteristics, we again rely on abnormal returns as calculated in Puckett and Yan (2011).

The specific institutional or stock characteristics we examine relate to fund manager skill and fund characteristics. Our measures of fund manager skill include the Puckett and Yan (2011) measure of interim performance, which compares abnormal returns for stocks that funds buy to those they sell; a fund with stock-picking skill will buy stocks that outperform those it sells. We also include two measures of execution skill. The first, trade execution skill, extends our ex-day benchmark trader skill measure to all trades. Specifically, this measure is the average execution price relative to the daily VWAP for all trades during the prior quarter. Finally, we use the AIPV trader skill measure, which compares a trader's execution price with a pretrade benchmark to estimate trade execution skill.

The first fund characteristic we consider is the Anand et al. (2013, p. 780) liquidity-provision trading style measure. This measure compares whether an institution tends to trade with returns (liquidity demanding) or against returns (liquidity supplying). We construct this measure so that low values correspond to liquidity-demanding institutions, while high values correspond to liquidity

The difference between high and low skill is significantly greater during the event window than the placebo window for placebo day –20; this difference is positive but not statistically significant for placebo day +11. Results are reported in Table IA.XVII of the Internet Appendix.

suppliers.[31] We also examine the total dollar volume traded of all trades (buy or sell) made by a client-manager during the prior quarter as a proxy for fund size.[32]

These trader identity variables are calculated for each client-manager pair each quarter. We apply the Puckett and Yan (2011) methodology to calculate abnormal returns, and we report results sorting all buy trades into quintiles based on each characteristic as of the prior quarter. Table X reports results for the low and high quintiles for the full sample as well as for the Dividend Buys versus Nondividend Buys subsamples.

Abnormal returns for the full sample of buy trades are significantly cross-sectionally related to all three measures of trading skill (interim performance, trade execution skill, and AIPV trader skill). In general, returns are higher for skilled institutions based on either stock picking or execution skill. Returns are also higher for funds that provide liquidity rather than those that demand it, and for institutions that trade lower volume (e.g., smaller funds), consistent with decreasing returns to scale (e.g., Pástor, Stambaugh, and Taylor (2015)). Results for the Nondividend Buys mirror those for the full sample closely.

There are some interesting differences for the subsample of Dividend Buys. First, abnormal returns from Dividend Buys are not cross-sectionally related to interim performance (a measure of stock-picking skill). This result is not surprising—stocks that are the target of dividend capture are presumably chosen for characteristics such as yield or transaction costs, rather than because they are undervalued. Second, the relation between abnormal returns and trade execution skill is significantly stronger for Dividend Buys than for Nondividend Buys. This result is consistent with our assertion that ex-days present a potentially important opportunity for skilled investors to earn abnormal returns. Third, abnormal returns to liquidity providers are significantly larger for Dividend Buys than for Nondividend Buys. This result suggests that one of the ways dividend capture traders realize profits is by providing liquidity to traders who demand immediacy, such as distressed sellers. Finally, although abnormal returns are significantly cross-sectionally related to dollar volume traded for the full sample and for Nondividend Buys, this relation is weaker for Dividend Buys, suggesting that fund size is less important for dividend capture trades.

To summarize, returns are significantly greater for institutions with high trade execution skill, and the role of execution skill is stronger for dividend capture buys than other types of buy trades. Dividend capture traders earn higher returns when they provide liquidity, and they do not specifically target undervalued stocks.

[31] We reverse the signs of this measure relative to Anand et al. (2013) for ease of interpretation in our setting.

[32] In addition, we examine fund turnover (to distinguish active from passive funds) and the fund's size, book-to-market, and momentum exposures. Results for these additional characteristics are reported in Table IA.XVIII of the Internet Appendix.

Table X

Cross-Sectional Characteristics and Abnormal Returns for Buy Trades

In this table, we report abnormal returns for all buy trades and for subsamples of Nondividend Buys and Dividend Buys. Dividend Buys are those that occur on days [– 5,– 1] relative to an ex-day and Nondividend Buys are all other buy trades. We report results for the high and low quintiles, sorted based on various institutional or stock characteristics. The characteristics are: interim performance (the difference in abnormal returns for stocks the fund buys and those it sells); trade execution skill (the average execution price relative to the daily VWAP for all trades during the prior quarter); AIPV trader skill (the difference between a trader's execution price and a pretrade benchmark); liquidity provision (whether an institution tends to trade with returns or against returns, see Anand et al. (2013, p. 780)); and dollar volume traded (dollar value of all buy and sell trades). Reported results are the Puckett and Yan (2011) abnormal returns, sorting all buy trades into quintiles based on each characteristic as of the prior quarter. We report t-statistics calculated with two-way clustered standard errors for whether the abnormal returns are significantly different from zero, and t-statistics comparing the high and low quintiles. We also report t-statistics for tests of differences between the different subsamples of buy trades.

Trader Characteristic	Quintile	All Buys (1)	Nondividend Buys (2)	Dividend Buys (3)	Dividend – All (3) – (1)	Dividend – Nondividend (3) – (2)
Interim performance	Low	−0.05%	−0.08%	0.42%	0.42%	0.47%
		(−0.29)	(−0.42)	(1.72)	(2.40)	(2.40)
	High	0.37%	0.37%	0.65%	0.34%	0.33%
		(1.60)	(1.64)	(2.11)	(1.55)	(1.40)
	H – L	0.42%	0.45%	0.23%	−0.09%	−0.14%
		(3.63)	(3.87)	(1.11)	(−0.47)	(−0.71)
Trade execution skill	Low	−0.17%	−0.17%	−0.10%	0.07%	0.06%
		(−0.89)	(−0.88)	(−0.42)	(0.53)	(0.39)
	High	0.65%	0.62%	1.10%	0.57%	0.63%
		(3.40)	(3.30)	(3.94)	(2.73)	(2.69)
	H – L	0.82%	0.79%	1.20%	0.50%	0.56%
		(7.06)	(6.71)	(6.67)	(3.09)	(3.18)
AIPV trader skill	Low	0.14%	0.14%	0.35%	0.26%	0.27%
		(0.51)	(0.51)	(1.46)	(1.96)	(1.82)
	High	0.66%	0.63%	0.84%	0.40%	0.43%
		(2.80)	(2.74)	(2.63)	(1.84)	(1.83)
	H – L	0.52%	0.49%	0.49%	0.14%	0.16%
		(2.21)	(2.09)	(2.74)	(0.85)	(0.90)
Liquidity provision	Low	−0.10%	−0.09%	−0.04%	0.11%	0.08%
		(−0.44)	(−0.37)	(−0.18)	(0.59)	(0.42)
	High	0.50%	0.47%	0.95%	0.50%	0.56%
		(2.29)	(2.20)	(3.21)	(3.20)	(3.16)
	H – L	0.60%	0.55%	0.99%	0.39%	0.48%
		(5.06)	(4.61)	(5.56)	(2.49)	(2.74)
Dollar volume traded	Low	0.32%	0.30%	0.51%	0.20%	0.30%
		(1.44)	(1.35)	(2.16)	(1.62)	(1.93)
	High	0.01%	0.02%	0.22%	0.30%	0.19%
		(0.07)	(0.11)	(1.12)	(1.93)	(1.44)
	H – L	−0.31%	−0.28%	−0.29%	0.10%	−0.10%
		(−3.06)	(−2.77)	(−1.80)	(−0.46)	(−0.65)

C. Profitability of Short Positions

Thus far, we focus most of our attention on institutional profitability from long positions. In Table IV, we show that institutions profit from long positions around ex-days, but that profits to short positions are negative. A question that naturally arises is why institutions accumulate short positions before the ex-day, since they are losing money on these positions.

To examine more fully institutional short positions, we examine the relation between skill and profitability for net short positions (see Table IA.XIX in the Internet Appendix). Profitability of net short positions looks very similar during the event window and the placebo period, suggesting that selling before the ex-day is not motivated by the dividend. Principal-weighted profitability is insignificant or only marginally significantly negative during both periods. Furthermore, there is no relation between AIPV skill and profits from net short positions.

One interpretation is that the net short positions come from traders who are selling for reasons unrelated to the dividend, such as for liquidity reasons. To investigate this possibility further, we examine how the order imbalance for short positions evolves after the cum-day. The cumulative net short position by Day +5 is over four times larger than the cum-day short position, with the percentage change statistically significant. This result is consistent with institutions that are exiting the market (e.g., because of redemptions due to large negative returns)—these institutions sell before the ex-day, but do not buy after.[33]

Our skill measure specifically captures trade execution skill; these results do not provide any evidence regarding the stock selection (or other) capabilities of institutional traders. However, our results suggest that some traders lose money on their sales during both ex-day and non-ex-day periods.

Overall, we show that institutions with trade execution skill that is unrelated to dividend capture are able to trade profitably around ex-days. Our results provide further evidence that institutional trading skill is persistent (Puckett and Yan (2011), Anand et al. (2012)). Furthermore, dividend capture profits represent an important source of the abnormal profits realized by skilled institutions.

V. Conclusions

We examine ex-dividend trading by institutional traders as reported by Abel Noser. With the Abel Noser data, we are able for the first time to calculate the

[33] We thank one of the referees for this suggestion. We also examine how the order imbalance for long positions evolves after the ex-date. Long positions become insignificantly larger by Day +5. Given the time trend of overall institutional buying during our sample period, the insignificant increase in order imbalance for net long positions after the cum-date may reflect the net of two offsetting factors: dividend capture selling and longer term buying. Also, the long-term buying trend makes the continuation of net short positions even more compelling; these institutions are selling during a period when other institutions are substantial buyers.

profitability of dividend capture trading using realized transaction prices and incorporating all related transaction costs.

Do institutions target ex-dividend events in ways predicted by the theory? We find explicit evidence of abnormal institutional volume around the ex-day, which is double that of overall CRSP abnormal volume. Abnormal institutional volume is positively related to yield and negatively related to idiosyncratic risk, as predicted by the ex-dividend literature. Institutions target certain ex-days. Institutional dividend capture trading is persistent, lasting at least two quarters after the current quarter. There is less persistence in stocks that are targeted for dividend capture. One potential interpretation is that institutional trading in a particular quarter affects prices, making the future profitability of such trading more uncertain.

Do institutional traders earn abnormal profits from ex-day pricing? Results show that abnormal returns averaged across all ex-days disappear once we account for actual execution prices and transaction costs. However, average ex-day returns do not account for the fact that institutions may focus their trades on some ex-days or optimal trade execution strategies may involve trading patiently over several days. Controlling for these factors, we report positive institutional dividend capture profits even after incorporating all trading costs. Although dividend capture trades represent less than 6% of overall trades in our sample, they contribute over 15% of abnormal returns.

Is ex-day profitability cross-sectionally related to measures of institutional trade execution skill? We find strong evidence of a relation between institutional trade execution skill and dividend capture profitability. Abnormal returns to dividend capture trades are not cross-sectionally related to stock-picking skill, but they are strongly related to trade execution skill. The difference in profitability between low- and high-skill institutions is economically significant, about 40 bps. We find no evidence of a relation between execution skill and profits during a placebo non-ex-day. We conclude that dividend capture profitability is an important source of previously documented institutional trade execution skill.

Overall, we show that institutions practice dividend capture, and only certain institutions—those with trade execution skill—can exploit positive ex-day abnormal returns to earn profits after all trading costs. Furthermore, skilled institutions profit disproportionately from certain events. A natural next step for future research is to identify other specific opportunities for these institutions to profit from their trade execution skill.

Initial submission: November 12, 2014; Accepted: March 26, 2016
Editors: Bruno Biais, Michael R. Roberts, and Kenneth J. Singleton

REFERENCES

Amihud, Yakov, 2002, Illiquidity and stock returns: Cross-section and time-series effects, *Journal of Financial Markets* 5, 31–56.

Anand, Amber, Paul Irvine, Andy Puckett, and Kumar Venkataraman, 2012, Performance of institutional trading desks: An analysis of persistence in trading costs, *Review of Financial Studies* 25, 557–898.

Anand, Amber, Paul Irvine, Andy Puckett, and Kumar Venkataraman, 2013, Institutional trading and stock resiliency: Evidence from the 2007-2009 financial crisis, *Journal of Financial Economics* 108, 773–797.

Berkowitz, Stephen A., Dennis E. Logue, and Eugene A. Noser, 1988, The total cost of transactions on the NYSE, *Journal of Finance* 43, 97–112.

Bollen, Nicolas P. B., and Jeffrey A. Busse, 2005, Short-term persistence in mutual fund performance, *Review of Financial Studies* 18, 569–597.

Chan, Louis K. C., and Josef Lakonishok, 1995, The behavior of stock prices around institutional trades, *Journal of Finance* 50, 1147–1174.

Chay, J. B., Dosoung Choi, and Jeffrey Pontiff, 2006, Market valuation of tax-timing options: Evidence from capital gains distributions, *Journal of Finance* 61, 837–865.

Chemmanur, Thomas J., Shan He, and Gang Hu, 2009, The role of institutional investors in seasoned equity offerings, *Journal of Financial Economics* 94, 384–411.

Chemmanur, Thomas J., Gang Hu, and Jiekun Huang, 2010, The role of institutional investors in initial public offerings, *Review of Financial Studies* 23, 4496–4540.

Chetty, Raj, Joseph Rosenberg, and Emmanuel Saez, 2007, The effects of taxes on market responses to dividend announcements and payments: What can we learn from the 2003 dividend tax cut? in A. Auerbach, J. Hines, and J. Slemrod, eds.: *Taxing Corporate Income in the 21st Century* (Cambridge University Press, New York).

Conrad, Jennifer S., Kevin M. Johnson, and Sunil Wahal, 2001, Institutional trading and soft dollars, *Journal of Finance* 46, 397–416.

Daniel, Kent, Mark Grinblatt, Sheridan Titman, and Russ Wermers, 1997, Measuring mutual fund performance with characteristic-based benchmarks, *Journal of Finance* 52, 1035–1058.

Dhaliwal, Dan, and Oliver Zhen Li, 2006, Investor tax heterogeneity and ex-dividend day trading volume, *Journal of Finance* 61, 463–490.

Eades, Kenneth M., Patrick J. Hess, and E. Han Kim, 1984, On interpreting security returns during the ex-dividend period, *Journal of Financial Economics* 13, 3–34.

Elton, Edwin J., and Martin J. Gruber, 1970, Marginal stockholder tax rates and the clientele effect, *Review of Economics and Statistics* 52, 68–74.

Goldstein, Michael A., Paul Irvine, Eugene Kandel, and Zvi Wiener, 2009, Brokerage commissions and institutional trading patterns, *Review of Financial Studies* 22, 5175–5212.

Goldstein, Michael A., Paul Irvine, and Andy Puckett, 2011, Purchasing IPOs with commissions, *Journal of Financial and Quantitative Analysis* 46, 1193–1225.

Graham, John R., Roni Michaely, and Michael R. Roberts, 2003, Do price discreteness and transactions costs affect stock returns? Comparing ex-dividend pricing before and after decimalization, *Journal of Finance* 58, 2611–2635.

Hu, Gang, 2009, Measures of implicit trading costs and buy-sell asymmetry, *Journal of Financial Markets* 12, 418–437.

Irvine, Paul, Marc Lipson, and Andy Puckett, 2007, Tipping, *Review of Financial Studies* 20, 741–768.

Jame, Russell E., 2012, Pension fund trading and stock returns, Working paper, University of Kentucky.

Kacperczyk, Marcin, and Amit Seru, 2007, Fund manager use of public information: New evidence on managerial skills, *Journal of Finance* 62, 485–528.

Kalay, Avner, 1982, The ex-dividend day behavior of stock prices: A re-examination of the clientele effect, *Journal of Finance* 37, 1059–1070.

Karpoff, Jonathan M., and Ralph A. Walkling, 1990, Dividend capture in NASDAQ stocks, *Journal of Financial Economics* 28, 39–65.

Keim, Donald B., and Ananth Madhavan, 1997, Execution costs and investment style: An interexchange analysis of institutional equity trades, *Journal of Financial Economics* 46, 265–292.

Lakonishok, Josef, and Theo Vermaelen, 1986, Tax-induced trading around ex-dividend days, *Journal of Financial Economics* 16, 287–319.

Michaely, Roni, and Jean-Luc Vila, 1995, Investors' heterogeneity, prices and volume around the ex-dividend day, *Journal of Financial and Quantitative Analysis* 30, 171–198.

Michaely, Roni, and Jean-Luc Vila, 1996, Trading volume with private valuation: Evidence from the ex-dividend day, *Review of Financial Studies* 9, 471–509.

Michaely, Roni, Jean-Luc Vila, and Jiang Wang, 1996, A model of trading volume with tax-induced heterogeneous valuation and transaction costs, *Journal of Financial Intermediation* 5, 340–371.

Miller, Merton H., and Franco Modigliani, 1961, Dividend policy, growth, and the valuation of shares, *Journal of Business* 34, 411–433.

Naranjo, Andy, M. Nimalendran, and Mike Ryngaert, 2000, Time variation of ex-dividend day stock returns and corporate dividend capture: A reexamination, *Journal of Finance* 55, 2357–2372.

Pástor, Ľuboš, Robert F. Stambaugh, and Lucian A. Taylor, 2015, Scale and skill in active management, *Journal of Financial Economics* 116, 23–45.

Perold, Andre F., 1988, The implementation shortfall: Paper versus reality, *Journal of Portfolio Management* 14, 4–9.

Pontiff, Jeffrey, 2006, Costly arbitrage and the myth of idiosyncratic risk, *Journal of Accounting and Economics* 42, 35–52.

Puckett, Andy, and Xuemin Sterling Yan, 2011, The interim trading skills of institutional investors, *Journal of Finance* 66, 601–633.

Rantapuska, Elias, 2008, Ex-dividend day trading: Who, how and why?: Evidence from the Finnish market, *Journal of Financial Economics* 88, 355–374.

Sofianos, George, 2005, Execution quality benchmarks: I can see clearly now . . . , *Street Smart*, Goldman Sachs Trading and Market Structure Analysis.

Zhang, Yi, Kathleen A. Farrell, and Todd A. Brown, 2008, Ex-dividend day price and volume: The case of 2003 dividend tax cut, *National Tax Journal* 61, 105–127.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Appendix S1: Internet Appendix.