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TAXI! Do Mutual Funds Pursue and Exploit Information on Local Companies?

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Abstract

We use New York City (NYC) taxi data to identify trips between mutual fund offices and local firm headquarters. NYC funds overweight the stocks of local firms they visit via taxi, and firm visits are associated with superior investment performance. Firm visits are elevated prior to earnings announcements, and mutual fund trades that are associated with firm taxi visits predict earnings surprises. The results are generally stronger when fund and firm executives share educational connections. Additional tests support the conclusion that funds' local bias and investment performance are driven by portfolio managers' efforts and ability to actively gather material information.

I. Introduction

> Well-connected people don't deserve any greater chance for success [in markets] than the average citizen. Nor do the friends and relatives of those well-placed people, who may reap unfair profits because they happen to know the news before it breaks. (Arthur Levitt, SEC Chairman, Feb. 27, 1998)

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The acquisition and exploitation of private information in capital markets have concerned market participants and regulators since the early days of Wall Street. In recent decades, regulators have enacted rules to curb and/or eliminate selective disclosure of material non-public information (e.g., Regulation Fair Disclosure). The value of this regulatory agenda is supported by numerous empirical studies showing that limits on the ability of market participants to exploit and profit from material non-public information encourage broader market participation, improve market quality, and positively impact capital formation (Fishman and Hagerty (1992), Khanna, Slezak, and Bradley (1994), and Bhattacharya and Daouk (2002)). However, convictions for illegal insider trading continue to occur, and a substantial body of empirical research suggests that private information is transferred between corporate insiders, sell-side analysts, investment banks, and investors (Coval and Moskowitz (2001), Irvine, Lipson, and Puckett (2007), Ivashina and Sun (2011), and Solomon and Soltes (2015), among others). An industry survey documents that 97% of public firm CEOs reported meeting privately with investors (Thomson Reuters (2009)), a practice that is potentially concerning in this context.

It is difficult to know how pervasive private communications are between firm executives and market participants, though evidence suggests that information may flow more easily within a local community. A number of studies show that investors (both institutional and individual) overweight local firms in their portfolios (Coval and Moskovitz (1999), Ivkovic and Weisbenner (2005)); and find that trades in local firms earn abnormal returns, suggesting local investors possess private information about these companies.[1] However, recent work suggests that local investors' advantages have faded over time. Bernile, Kumar, Sulaeman, and Wang (2019) find that both local institutional investors' holding bias and information advantage have disappeared in the post-2000 period, attributing this to changes in both regulation and the public information environment. We conjecture that any enduring advantages and preferences for local investing may be revealed with more targeted tests that focus on investors' information-gathering activities.

Our study investigates the prevalence and value of private communications between firm executives and market participants located in the same geographic area. Private communications are, by their nature, difficult to identify. Individuals trying to collect private information may prefer in-person meetings since electronic communications (such as phone or e-mail) records can be pivotal in insider trading litigation.[2] We use a novel measure to identify private information gathering: taxi trips between mutual funds and public companies' headquarters in New York City (NYC). Using these data, we find considerable evidence that mutual fund managers actively pursue and exploit information on local companies. Taxi trips between NYC mutual funds

[1]For evidence on institutional investors, see Coval and Moskovitz (1999), (2001), Baik, Kang, and Kim (2010), Pool, Stoffman and Yonker (2012), Bernile, Kumar, and Sulaeman (2015), and Kang, Stice-Lawrence, and Wong (2021). For individual investors, see Ivkovic and Weisbenner (2005).

[2]It appears, however, that those engaging in illegal insider trading are not always so discrete. One interesting example is the case of Sean Stewart, a JP Morgan healthcare banker who would e-mail his father about upcoming mergers in the healthcare industry. But the fact that they used "golf-related code" to communicate about the pending deals suggests that the riskiness of these electronic communications was not lost on the pair (see the SEC complaint in the matter, 2015).

and local firms are related to both the degree of mutual funds' overinvestment and the abnormal returns on their local firm trades.

Our identification strategy relies on data obtained from the NYC Taxi and Limousine Commission (TLC), containing records for every taxi ride that occurred in NYC from Jan. 2009 to June 2016. The data provide precise latitudes and longitudes associated with both the pick-up and drop-off locations, the time of service, the distance of the trip, and the associated fare. From more than 1.3 billion taxi rides in the database, we identify 506,298 trips that occur between 266 mutual fund offices and 244 public firm headquarters in NYC.[3]

A taxi trip from June of 2009 demonstrates the patterns we are able to uncover using this data. A single passenger was picked up by a yellow taxi at 8:11PM on June 27, 2009. The recorded latitude and longitude show that the pick-up location is 27 meters from the office of a lower-midtown mutual fund. Ten minutes later, the trip ends 25 meters from a public company's midtown Manhattan headquarters. The trip covers 1.31 miles, the fare is $6.50, and the passenger leaves a $2 tip. A few days after the trip, the fund purchases 71,000 of this company's shares for an average price of $31.79 per share. The company then announces its earnings on July 16, 2009, and the stock price increases to $36.98, a 16.33% increase relative to the price paid by the fund.

We begin our empirical investigation by testing whether NYC mutual funds overweight local firms in their portfolios (Coval and Moskowitz (1999), (2001)). Consistent with findings by Bernile et al. (2019), we find no evidence of significant local bias during our sample period; NYC firms account for 8.37% of the portfolios of NYC mutual funds compared to 8.20% for non-local funds (reflecting NYC biases of 0.31% and 0.13% relative to market-neutral weightings, respectively). However, when we sort NYC mutual fund and firm pairs into groups based on whether a taxi trip between the two occurs, a different reality emerges. NYC mutual funds overweight the firms they visit via taxi by 0.93 bps (t-stat = 6.24). Compared to the market-neutral weighting of NYC firms, our estimate represents an over-investment of 13%. In contrast, NYC mutual funds overweight the NYC firms that they do not visit via taxi by only 0.27 bps (t-stat = 1.42). The local bias among fund–firm pairs that are associated with a taxi visit is generally greater among funds thought to be more "agile" in their ability to monitor local firms and exploit private information (Coval and Moskowitz (2001)), including small funds (1.07 bps) and undiversified funds (2.12 bps). Our results provide support for our measure of local information gathering and demonstrate a link between NYC fund managers' holdings in NYC stocks and their efforts to gather information about those companies.

Our second line of investigation tests whether fund managers extract value-relevant information during visits to local companies. Using changes in quarterly holdings as a proxy for mutual fund trades, we find that, on average, NYC funds

[3]Although one may be skeptical about the use of taxi trips to measure local information gathering, we submit that it is a reasonable proxy for this type of activity, particularly in NYC. People working in NYC routinely use taxis to get around the city, and it is likely that fund managers or firm employees would feel comfortable using taxis to travel between their locations since this activity is commonplace and largely anonymous. In addition, other recent research provides evidence that NYC taxi rides can be similarly used to identify meetings between New York Federal Reserve employees and NYC bankers (Bradley, Finer, Gustafson, and Williams (2023)).

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do not earn abnormal returns from their NYC-firm trades. However, trades in close proximity to a firm taxi visit earn quarterly abnormal returns of 43.5 bps (1.74% per year).[4]

While one might reasonably conclude that NYC funds gain an informational advantage by visiting local firm headquarters, it is still unclear what kind of information is collected during those visits. To evaluate whether fund managers gain earnings-related information by visiting firms, we examine taxi visits and trades in the months prior to earnings announcements. Taxi visits to NYC firms are elevated starting 2 weeks before firms' earnings announcements. In addition, trades associated with firm visits in the month prior to the earnings announcements predict the subsequent-month earnings surprises, suggesting that fund managers learn about latent earnings by visiting firms.

There are several plausible alternative explanations for our findings. It is possible that taxi trips identify a durable social connection, and that material information is not actually exchanged during the time of the firm visit. We attempt to flesh out this competing explanation in two ways. First, we include fund–firm pair fixed effects in our primary regression. To the extent that taxi visits are perfectly autocorrelated or identify a durable (i.e., time-invariant) fund–firm relationship, we expect that fund–firm fixed effects will subsume our independent variable of interest. Our results indicate that after including fund–firm pair fixed effects, the coefficient of interest in our regressions remains largely unchanged. Second, we substitute lagged-quarter taxi visits for our taxi visit variable. If a taxi visit is the by-product of a durable relationship, then the timing of the trip should not matter, and we would expect lagged taxi trips to also predict future trading profits. We find no evidence that this is the case.

Another possible concern with our interpretation is that taxi visits to specific firms might simply reflect the strength of a fund manager's social network. A fund manager who is more socially active in the city might be more attuned to information and rumors about local public firms in general. While we believe that our analyses including fund–firm pair fixed effects and lagged taxi trips help minimize this concern, we also divide NYC funds into two groups based on the total number of taxi trips that occur between a fund and all NYC firms (connections) (irrespective of whether the fund holds those firms in its portfolio). "Connections" serves as a reasonable proxy for the strength of a fund manager's social network. Our results show that overinvestment in NYC firms and abnormal returns associated with trades in local firms are not driven by funds with high connections. Instead, our results continue to be significant only for those firms that fund managers actually visit.

While our tests paint a picture of direct information gathering by mutual funds, we attempt to sharpen the signal-to-noise ratio in our identification strategy along two dimensions: firm visits and the timing of fund trades. Because we do not know passengers' identities, taxi trips between the fund and firm locations may not actually carry individuals associated with these organizations. Although we cannot completely rule out the possibility that a taxi visit might involve a secondary set of

[4]Throughout the article, abnormal returns are computed by subtracting the DGTW benchmark return from the return to the traded stock.

individuals (e.g., a friend of a mutual fund manager who works in the same building), we augment our firm visit measure to maximize the probability that identified taxi trips include either mutual fund managers and/or firm employees.

We begin by separating funds into two groups based on whether the fund is located in the same building with other mutual fund families (i.e., stand-alone vs. co-located). The intuition behind this separation is that taxi visits from a stand-alone fund are more likely to involve individuals employed by the fund, whereas taxi visits associated with co-located funds are subject to significantly greater measurement error. Our estimates for abnormal performance in the stand-alone fund family group are 60% larger than full-sample results, while results for co-located fund families are insignificant. We also posit that taxi rides between the fund and firm locations are more likely to involve the two assumed parties when a fund manager and firm insider attended the same college. We find that local investing bias is greater among NYC funds that have both a school connection with local executives and/or board members, and that visit those firms by taxi. Further, post-visit trades by fund managers in firms to which they are connected earn a 1.06% quarterly abnormal return, which is approximately three times larger than the abnormal returns associated with firm visits on average.

Turning to the timing of funds' trades, we sharpen the identification by evaluating granular daily trading data for a subset of NYC mutual funds. While daily portfolio holdings and actual trades are not available for all funds in our sample, we obtain trading activities for a subsample of 14 NYC funds from Abel Noser. We find that over the 2 weeks following a taxi visit, fund managers are more than twice as likely to trade the visited firm's stock when compared to other periods. In addition, post-visit trades are highly profitable. For example, when also conditioned on proximity to earnings announcements (i.e., within a month), buy trades executed in the month following a taxi visit earn 10-day abnormal returns between 1.01% and 3.28%.

Identifying the mechanisms that drive local investors' returns is inherently difficult. On the one hand, it is possible that information is directly transferred from local firms/executives to investors. Alternatively, local investors might just be more attuned to a local company's information environment.[5] Location choices can be endogenous, and evidence of a local information advantage may be largely circumstantial. In addition, several studies question the finding of local investors' holding bias or ability to earn superior returns in more recent periods (Seasholes and Zhu (2010), Bernile et al. (2019)). We contribute to this dialogue by directly identifying travel between mutual funds and local firms. Our results weigh in favor of an information-driven explanation for local bias and investment performance in a recent time period, and suggest that fund managers actively (and successfully) seek out this advantage. Moreover, it appears that only fund managers who actively pursue such an advantage possess and trade on superior information

[5]Regulation Fair Disclosure prohibits selective disclosure of material information by corporate insiders. However, it is possible that investors could create a mosaic of material, yet nonpublic, information by interacting with local company constituents and observing things such as body languages, shifts in emphasis in describing the business strategy, or speech tones (Solomon and Soltes (2015)).

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about local firms, which helps explain cross-sectional variation in local bias among local investors (Coval and Moskowitz (2001)).

Our study contributes to a nascent literature that investigates the private or undisclosed interactions between institutional investors and firm executives. Ellis, Madureira, and Underwood (2020) use clever identification (the introduction of direct commercial flights between a mutual fund's and a firm's metropolitan areas) to approximate informal private channels. Private, but formal channels of communication that researchers have explored include non-deal road shows (Bradley, Jame, and Williams (2021)) and site visits by Chinese mutual funds (Chen, Qu, Shen, Wang, and Xu (2022)). Alternatively, we explore local interactions that are both more informal and frequent (and likely subject to less oversight by regulators or corporate officials) and show how these interactions relate to mutual funds' demand for local stocks. While our article differs from each of these studies by either region (e.g., China vs. United States), methodology, or type of institutional investors, our estimate of abnormal performance is comparable. For example, Bradley et al. (2021) find abnormal performance of 0.66% in the quarter following non-deal roadshows; Ellis et al. (2020) find annual abnormal performance of 1.79% following direct flight introductions; and Chen et al. (2022) find that mutual fund buys outperform sells by 0.83% in the month after company visits. Perhaps the closest related study to ours is Solomon and Soltes (2015), who analyze investors' private meetings with senior management at one particular NYSE firm. We complement this study by expanding the breadth of interactions and providing a more granular analysis of trading by some local investors.

These approaches to investigating private information gathering are unique from prior work that uses public corporate events, such as conferences and analyst/investor days (Green, Jame, Markov, and Subasi (2014a), (2014b), Kirk and Markov (2016), and Bushee, Jung, and Miller (2017)). Although those events may allow investors access to corporate insiders, they typically occur publicly and are scheduled in advance. Non-participants could know of their occurrence, and their more official nature makes it less likely that private information is shared. In contrast, the firm visits we identify are far more frequent, informal, unreported, and likely to facilitate the transfer of private information.

Finally, our study is one of three studies that we are aware of to use NYC Taxi logs to identify information transfer between parties. Bradley et al. (2023) use these taxi records to identify interactions between insiders at the Federal Reserve Bank of New York and insiders of major commercial banks, while Choy and Hope (2021) evaluate private information flow between firms and sell-side security analysts. Consistent with the inference in our study, Choy and Hope (2021) find that sell-side analysts procure an information advantage through these personal meetings that is reflected in more accurate earnings estimates. We are encouraged by the use of this novel data source and believe that it has the potential to provide insights concerning personal interactions in financial markets across a variety of settings.

II. Data

The data used in this article are drawn from numerous public sources. The stock data are obtained from CRSP. Data on firm characteristics and historical firm headquarter locations are from Compustat. We collect earnings announcement dates from IBES. Multiple sources are used to compile the data on mutual funds, and we describe below the nuances of constructing the mutual fund and taxi visit data sets.

A. Mutual Funds

Our analyses require several databases containing mutual fund information. We use the Thomson Reuters Mutual Fund Holdings database to identify the stock holdings of U.S. mutual funds. We use MFLinks to merge this database with the CRSP survivor-bias-free U.S. Mutual Funds database to obtain information on funds' total net assets, Lipper fund classification code, management company address, and other fund attributes. Because our focus is on actively managed domestic equity funds, we only include funds with the following Lipper fund classification codes: large-cap core, large-cap growth, large-cap value, mid-cap core, mid-cap growth, mid-cap value, multi-cap core, multi-cap growth, multi-cap value, small-cap core, small-cap growth, small-cap value, and equity income. Following Pool, Stoffman, and Yonker (2015), we exclude funds with fewer than 20 holdings or more than 500 holdings (that are likely to be index funds). In addition, we exclude funds with total net assets (TNA) less than $5 million and funds with an average investment in equities of less than 80% of TNA. Finally, we eliminate funds with missing management addresses in CRSP.

In each quarter, we define a mutual fund as a NYC fund if its management company is located in NYC, and a non-NYC fund otherwise. Because complete NYC Taxi records are available from Jan. 2009 to June 2016, we limit our mutual fund sample to this period. Our sample of mutual funds includes 346 NYC funds and 1,683 non-NYC funds. Out of our initial sample of 346 NYC mutual funds, we exclude 80 funds that outsource part or all of the portfolio management function to a sub-advisor. Sub-advisory agreements are identified from N-SAR filings, and the proportion of sub-advised funds in our sample is comparable to Chen, Hong, Jiang, and Kubik (2013). After excluding these funds, our final sample consists of 266 NYC mutual funds.

Table 1 compares the characteristics of NYC funds to non-NYC funds. While the average size of NYC funds is smaller than that of non-NYC funds, $1,018 million and $1,720 million, respectively, the difference is not statistically significant. The larger average size for non-NYC funds reflects the presence of a few extremely large funds located outside of NYC.[6] Other characteristics such as fund age, the average change in ownership, and quarterly DGTW-abnormal returns are all similar across the two groups. Both NYC funds and non-NYC funds hold around 90 stocks in their portfolios, of which 6 are headquartered in NYC (NYC firms).

B. Taxi Trips

The NYC TLC released information relating to more than 1.3 billion taxi trips occurring from Jan. 2009 onward, initially in response to a 2014 Freedom of

[6]For example, the TNAs of the Fidelity Contrafund, located in Boston, MA, and the Growth Fund of America, located in Los Angeles, CA, are $124 billion and $177 billion as of Dec. 31, 2017.

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TABLE 1

Descriptive Statistics

Table 1 presents summary statistics separately for mutual funds in New York City (NYC funds) and those not in NYC (non-NYC funds). We identify 266 NYC funds and 1,683 non-NYC funds during the period Jan. 2009 to June 2016. For each fund group, we report the average total asset under management ($ million), number of holdings, number of holdings in NYC firms, and fund age. Averages are calculated across all fund-quarter observations. For fund holding measures, we consider only common stock holdings (sharecode = 10 or 11) and report the average change in ownership (product of the change in shares and end-of-quarter stock price, scaled by its total net assets in the previous quarter), and the quarterly DGTW-abnormal return across all mutual fund holdings. For NYC funds, we also present the number of taxi rides where the pick-up location is within 30 meters of the mutual fund's office and drop-off location is within 30 meters of a NYC firm's headquarter (or vice versa). We present the average number of trips per quarter for all NYC mutual funds in our sample to i) a NYC firm held in the mutual fund's portfolio, and ii) any NYC firm.

	Mean	Median	Std. Dev.	P25	P75
NYC Funds (266 Funds)					
Asset under management ($ million)	1,018.89	395.40	1,672.95	126.10	1,198.88
No. of holdings	91.57	75	69.52	49	105
No. of NYC-firm holdings	6.13	5	4.60	3	9
Age (years)	19.90	16.30	14.19	11.42	22.50
ΔOWNERSHIP (%, scaled by TNA)	−0.08	0.00	0.62	−0.14	0.04
Quarterly DGTW-abnormal return (%)	0.14	0.102	12.74	−7.08	7.38
Taxi trips to NYC firms (per qtr.)	167.21	109	166.65	41	238
Taxi trips to NYC firms in port. (per qtr.)	12.81	7	17.46	3	15
Non-NYC Funds (1,683 Funds)					
Asset under management ($ million)	1,720.88	287.15	6,784.55	80.80	1,117.68
No. of holdings	90.39	65	78.90	44	101
No. of NYC-firm holdings	6.12	4	5.78	2	8
Age (years)	17.71	14.30	13.71	9.42	20.89
ΔOWNERSHIP (%, scaled by TNA)	−0.08	0.00	0.68	−0.11	0.03
Quarterly DGTW-abnormal return (%)	0.16	0.12	12.32	−6.80	7.16

Information Act (FOIA) request. The TLC data contain information for three types of vehicles: medallion (yellow) taxi, street hail livery (green) taxi, and for-hire vehicles (FHVs) such as Uber and Lyft. The records contain precise GPS coordinates for pick-up and drop-off locations, pick-up and drop-off times, trip distance, the number of passengers, fare, and tip amount.[7]

We use only yellow taxi records for our analysis because yellow taxis are licensed to pick up passengers anywhere in NYC. We exclude green taxis because they are only allowed to respond to street hails and calls in Manhattan north of East 96th Street and West 110th Street and in the outer boroughs (Bronx, Brooklyn, Queens, and Staten Island). Figure 1 shows the locations of all NYC funds and NYC public firms held by at least one equity fund. They are clustered in midtown and downtown Manhattan, an area where green taxis are not allowed to operate. In addition, we exclude FHV rides (e.g., Uber and Lyft) because they do not report detailed trip records to TLC. Excluding FHV rides during our sample period is not likely to affect inference since they represent a relatively small fraction of rides during the 2009–2016 period. Schneider (2018) estimates that as of June 2016, taxis accounted for at least three times as many pick-ups as Ubers in Manhattan.

We use pick-up and drop-off coordinates to identify trips that were likely to occur between fund managers and local companies. We draw from the work of

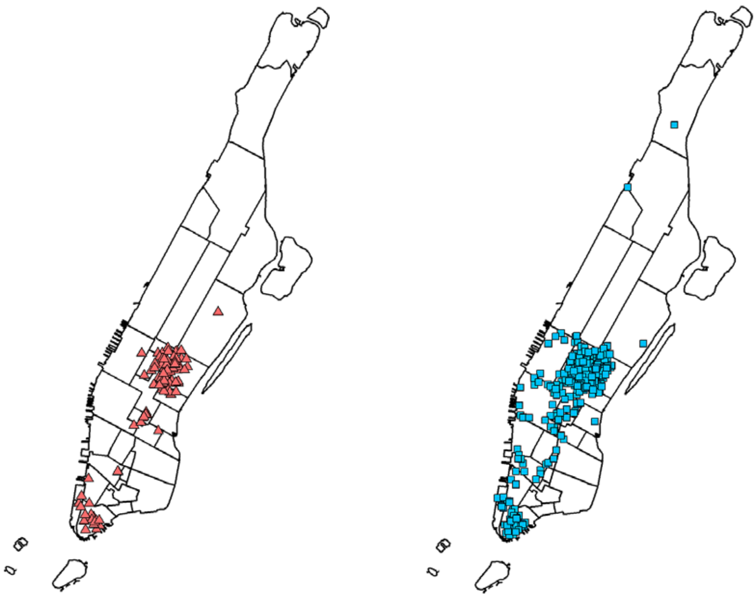
[7]Starting in July 2016, TLC provides only the pick-up and drop-off zone IDs instead of GPS coordinates.

FIGURE 1

Locations of NYC Institutions

Graphs A and B of Figure 1 map the unique locations of NYC equity mutual funds and NYC public firm headquarters during the sample period from 2009 to 2016.

Graph A. NYC Mutual Funds | *Graph B. NYC Public Firms*



Bradley et al. (2023), who use taxi records to identify interactions between insiders at the Federal Reserve Bank of New York and insiders of major commercial banks. According to their study, taxi GPS coordinates are accurate between 10 and 100 feet. Consequently, we require the pick-up or drop-off coordinates to be within 30 meters (approximately 100 feet) of a mutual fund management office or a firm headquarters to meet our identification criteria.[8] The resulting sample includes 506,298 taxi trips between 244 unique NYC firms and 266 NYC mutual funds.

Figure 2 summarizes taxi activity between mutual funds and publicly traded firms by the hour of the day and the day of the week. Graph A shows that there are fewer trips in the early morning, and that trip volume peaks in the evening between 5:00PM and 7:00PM. The hourly distribution of trips reveals an interesting pattern: approximately 60% of trips take place either before 9:00AM or after 5:00PM. To the extent that identified trips reflect information-gathering activity, the distribution of trip times suggests that these activities may be common outside of normal business hours. Graph B separates trips by the day of the week. There are generally more trips on weekdays than on weekends.

[8]To determine whether 30 meters is an appropriate distance for identifying fund–firm taxi trips, we perform a falsification test in Section IV.B.2 using trips that originate or end between 30 and 50 meters from these locations.

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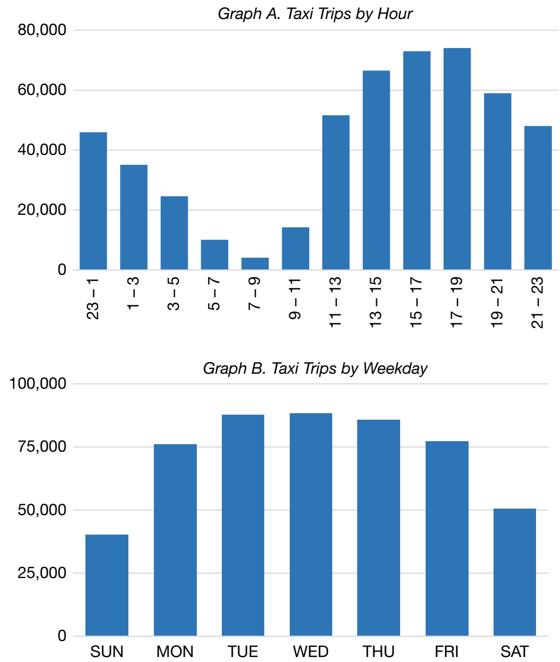
FIGURE 2

Distribution of Taxi Trips

The taxi trip sample is obtained from the NYC Taxi and Limousine Commission (TLC) for taxi trips that occur between Jan. 1, 2009 and June 30, 2016. We identify taxi trips where the pick-up and drop-off coordinates are within 30 meters of a mutual fund management office and 30 meters of a firm's headquarters. We count multiple trips between a fund and firm within the same day as a single taxi ride. Graph A of Figure 2 shows the distribution of taxi trips between NYC mutual funds and public firms across different hours of the day. Graph B shows the distribution of the frequency of taxi trips over the days of the week.



We aggregate the number of trips between each NYC fund and NYC firms and report summary information in Table 1.[9] Table 1 shows that in each quarter, a NYC fund takes an average of 167 taxi trips to public firms located in NYC, and that 13 of these trips involve local firms in the fund's portfolio. On average, a NYC fund visits 55% of its NYC holdings each quarter by taxi.

III. Empirical Tests

A. Local Investing Bias in NYC

We begin our empirical analysis by investigating holding bias associated with a local information advantage. To the extent that taxi visits facilitate information gathering by mutual fund managers for local NYC firms, one might expect these managers to overweight firms for which they have more precise information. This hypothesis is supported by a number of empirical studies that investigate

[9]We treat multiple taxi rides between a mutual fund and a firm on the same day as a single taxi visit.

whether mutual funds overweight their holdings of local stocks (Coval and Moskowitz (1999), Ivkovic and Weisbenner (2005)) and their conclusions that local mutual fund managers are able to extract more precise information about the publicly traded firms that are headquartered in close proximity. There are two reasons that we believe our study can help inform the current state of this debate. First, recent evidence by Bernile et al. (2019) suggests that this pattern has disappeared over time; and second, prior studies lack any identification of the channel through which information is conveyed.

We revisit the unconditional finding of local holding bias during our sample period using the methodology of Coval and Moskowitz (1999). During our sample period, both NYC and non-NYC funds invest, on average, in 6 NYC firms, and the portfolio weights of these positions are similar (8.37% in NYC funds and 8.20% in non-NYC funds). We calculate the portfolio bias for each fund group by subtracting the market-neutral weight of NYC firms from each fund and present our results in Table 2. While the holding bias is positive for both NYC funds (0.31%; *t*-stat = 1.96) and non-NYC funds (0.13%; *t*-stat = 1.83), the difference in holding bias is not

TABLE 2

NYC (Local) Firm Bias and Taxi Visits

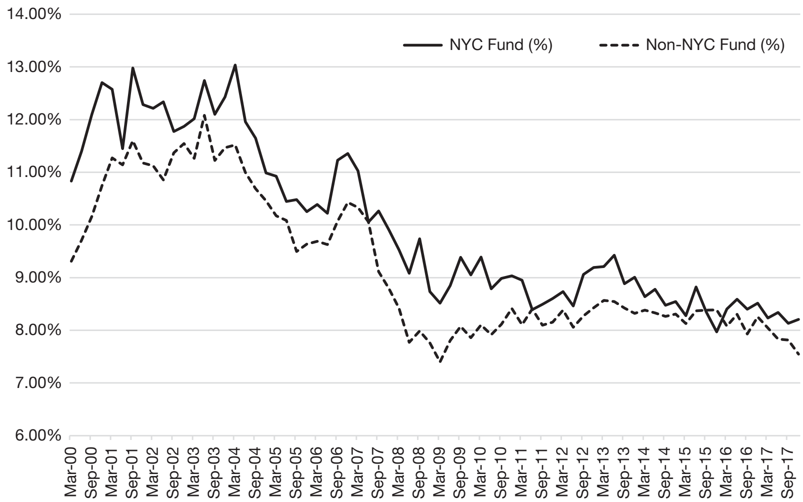
Table 2 reports the average NYC bias for NYC mutual funds across two groups of NYC firms (those that the fund visits (Taxi Trip) and those that the fund does not visit (No Trip)). The sample consists of 266 NYC funds from Jan. 2009 to June 2016. For each fund quarter, we separate NYC firms into "Taxi Trip" and "No Trip" groups based on whether there are any taxi trips between the fund and the firm during the quarter NYC_BIAS for each group is calculated by taking the portfolio weight of "Taxi Trip" (or "No Trip") firms minus the market-neutral portfolio weight of those same firms, divided by the number of firms in the group. We also calculate the average NYC_BIAS for "Taxi Trip" and "No Trip" groups after dividing funds by size, number of holdings, and fund age based on the sample median in each quarter. NYC_BIAS is in basis points (bps). *t*-statistics are constructed using the time series of quarterly cross-sectional averages and are based on the Newey–West standard errors. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	NYC Funds (%)	Non-NYC Funds (%)	NYC Minus Non-NYC
NYC_BIAS	0.31*	0.13*	0.17
	(1.96)	(1.83)	(0.82)
	Taxi Trip	No Trip	Trip – No Trip
All NYC Funds			
NYC_BIAS	0.93***	0.27	0.67***
	(6.24)	(1.42)	(3.31)
Fund Size			
Small funds	1.07***	0.07	1.00***
	(4.16)	(0.31)	(5.21)
Large funds	0.80***	0.47**	0.33
	(8.15)	(2.06)	(1.25)
Small minus large	0.26	−0.41	0.67**
	(0.97)	(−1.30)	(2.05)
# Fund Holdings			
Undiversified funds	2.12***	0.96***	1.16***
	(15.56)	(4.12)	(4.52)
Diversified funds	−0.26	−0.43**	0.17
	(−1.05)	(−2.30)	(0.70)
Undiversified minus diversified	2.38***	1.39***	0.99***
	(8.42)	(4.65)	(2.80)
Fund Age			
Old funds	0.53**	0.23	0.29
	(2.31)	(1.08)	(1.29)
Young funds	1.34***	0.30	1.04***
	(7.43)	(1.51)	(3.86)
Old minus young	−0.81***	−0.07	−0.74**
	(−2.79)	(−0.23)	(−2.11)

FIGURE 3

Time Series of NYC Firm Ownership

Figure 3 reports the average portfolio weight of NYC firms for two groups of mutual funds (NYC funds (NYC funds %) and non-NYC funds (Non-NYC funds %)). Average portfolio weights are calculated each quarter, and the time series of quarterly averages is presented for the period from 2000 to 2017.



significant between the two groups. As presented in Figure 3, the difference in portfolio weights of NYC firms between NYC funds and non-NYC funds appears to converge over time, consistent with the findings of Bernile et al. (2019).

B. NYC Bias and Taxi Trips

There are two possible conclusions from our initial investigation. One is that local fund managers no longer have the ability to extract additional information about the firms that operate around them. Alternatively, it is possible that some funds actively seek information about specific local firms while others do not, and pooling these diverse populations masks important heterogeneity in this relationship.

If taxi visits between mutual funds and firms facilitate information gathering, we expect funds to exhibit a greater holding bias in the specific firms they visit. Our identification of taxi visits as a channel of information transmission overcomes many of the limitations of prior studies in this area. To investigate whether taxi activity is associated with overweighting a NYC firm in a fund's portfolio, we partition NYC firms for each mutual fund into a "Taxi Trip" portfolio and a "No Trip" portfolio, based on whether the fund appears to visit the firm in that quarter. Our analysis of holding bias for different populations of NYC firms presents a measurement challenge when viewed in the context of the local bias measure proposed by Coval and Moskowitz (1999). Since, in a given quarter, a mutual fund is associated with taxi visits to some NYC firms but not others, we cannot construct our measure at the portfolio level. To solve this problem, we create a measure of holding bias in the spirit of mutual fund *active share* (Cremers and Petajisto (2009)). Specifically, we calculate the average firm-level holding bias for fund–firm pairs that are associated with a taxi visit and separately for fund–firm pairs that are not associated with a taxi visit. The holding bias for each pair is calculated as the portfolio weight for each firm that a fund manager visits (or does not visit) minus the market-neutral weight of that firm.[10] The equations that we use are as follows:

$$\text{NYC\_BIAS}_{i,t,v} = \left[\sum_{v\in V}\left[w^{v}_{i,t} - w^{v}_{M,t}\right]\right]/V, \tag{1}$$

and

$$\text{NYC\_BIAS}_{i,t,n} = \left[\sum_{n\in N}\left[w^{n}_{i,t} - w^{n}_{M,t}\right]\right]/N, \tag{2}$$

where i and t denote the NYC fund and quarter, respectively. V and N refer to the sets of NYC firms that fund i visits or does not visit in quarter t. $w^{v}_{i,t}$ and $w^{n}_{i,t}$ are the portfolio weights of NYC stock v and n held by fund i at quarter t. $w^{v}_{M,t}$ and $w^{n}_{M,t}$ represent the portfolio weight of NYC stock v and n in the market portfolio (using market capitalization). We focus on stock-level differences (i.e., scaling by V and N) because each fund visits a different number of NYC firms, which impedes our ability to make aggregate cross-fund comparisons. Intuitively, our measure of NYC_BIAS indicates the average stock-level difference between a NYC fund's ownership and the index weight of NYC firms in the market portfolio.

Table 2 presents the average NYC bias in firms that reside in mutual funds' "Taxi Trip" portfolios and "No Trip" portfolios. For each group, we calculate t-statistics based on the time series of the cross-sectional average in each quarter and adjust standard errors using the Newey–West correction with 3 lags. The average holding bias in visited companies is 0.93 bps per stock (t-stat = 6.24), while the bias in companies not visited is just 0.27 bps per stock (t-stat = 1.42). The difference of 0.67 bps is significant at the 1% level.[11] Considering the average market-neutral weight of a NYC firm in the "Taxi Trip" group is 7.14 bps, a NYC bias of 0.93 bps represents an overinvestment of approximately 13%. If we "gross up" these holdings using the average number of firms that a fund visits by taxi, we find that, on average, a fund holds 5.22% of its portfolio in firms that it visits by taxi compared to a market-neutral weight of 4.62% for those same firms. Thus, taxi trips appear to delineate an important heterogeneity in holding bias for local funds.

To the extent that taxi visits reflect information-gathering efforts by mutual fund managers, we posit that the incentives and potential associated benefits of gathering such information are likely to vary across mutual funds. Prior literature shows that small, undiversified, and old funds invest more heavily in local stocks and argues that these funds might be better able to gather and exploit information

[10] We note that all NYC firms are included in either the "Taxi Visit" or "No Visit" group. NYC firms that are not held in the fund's portfolio have a portfolio weight of 0.

[11] We repeat the analyses in Table 2 using the average portfolio weight in NYC firms across a fund's Lipper Peer Group (excluding NYC funds) as a benchmark and find similar and consistent results.

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about local companies (Coval and Moskowitz (2001)). Consistent with prior literature, we sort funds in each quarter by fund size, number of holdings, and fund age based on the sample median, and calculate our measures of NYC bias for each fund subsample. Similar to Coval and Moskowitz (2001), the overinvestment bias associated with taxi-visited firms is generally stronger for small and undiversified funds. For example, Table 2 shows that the difference in NYC funds' bias per stock across "Taxi Trip" and "No Trip" groups is 1.00 bps (t-stat = 5.21) and 1.16 bps (t-stat = 4.52) for small funds and undiversified funds, respectively. The difference is smaller in magnitude and is not statistically significant for large funds and diversified funds. However, in contrast with Coval and Moskowitz (2001), we find that both old and young funds overweight the NYC firms they visited, and that the bias is actually larger among young funds (1.34 bps vs. 0.53 bps).

We also consider whether a fund appears to visit a local firm more than once in a quarter. We present the results in Panel A of Appendix B. We find that the bias associated with multiple visits to a local firm is 61% larger than the bias associated with a single visit (1.11 bps vs. 0.69 bps), and the difference is 0.42 bps (t-stat = 1.48). This difference is similar for small funds: 0.62 bps (t-stat = 1.59), and undiversified funds: 0.66 bps (t-stat = 1.77). We also find that old funds have a significantly larger investment bias for local firms with multiple visits than those with a single visit (difference = 0.58 bps; t-stat = 2.41).

To summarize, the positive relation between taxi trips and funds' local investing bias is consistent with the conclusion that information gathering through firm visits plays a role in NYC funds' local investment decisions.

C. Information Gathering and Returns on Trades

The primary objective of our analyses is to investigate whether taxi visits provide a plausible channel for mutual fund managers to extract rents by exploiting an information advantage in local firms. As such, we investigate the abnormal performance of NYC mutual fund trades that are associated with a taxi visit.

Because we can only identify taxi visits to firms in NYC, we restrict our analyses to trades in NYC firms by NYC mutual funds (we cannot observe, for example, a taxi visit between a mutual fund in Omaha, Nebraska and an Omaha-based firm).[12] Specifically, we run the following regression:

$$\text{(3)} \qquad \text{DGTW}_{\text{RET}_{i,t+1}} = \alpha + \beta_1 \text{TAXI\_TRIP}_{i,j,t} + \beta_2 \Delta\text{OWNERSHIP}_{i,j,t} + \beta_3 \text{TAXI\_TRIP}_{i,j,t} \times \Delta\text{OWNERSHIP}_{i,j,t} + X + \varepsilon_{i,j,t},$$

where i, j, and t denote the firm, mutual fund, and quarter (time), respectively. The dependent variable is the DGTW-adjusted abnormal return during the quarter following portfolio disclosure for the mutual fund.[13] Independent variables of interest include TAXI_TRIP, which is an indicator variable that equals 1 if there are any taxi trips between NYC mutual fund j and firm i in quarter t, and

[12] In robustness test, we pool mutual fund trades in NYC firms with mutual fund trades in non-NYC firms and find results that are consistent with those presented in Table 3.

[13] DGTW abnormal returns are characteristic-adjusted returns where benchmark fractile portfolios are formed using size, BM, and momentum as in Daniel, Grinblatt, Titman, and Wermers (1997).

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ΔOWNERSHIP, which equals the number of shares purchased or sold by mutual fund j over quarter t multiplied by the stock price of firm i at the end of quarter t, divided by the fund j's total net assets in quarter (expressed as a percent).

To the extent that taxi visits cluster with certain NYC firms, or that fund managers associated with taxi visits are systematically different than other fund managers, our regression inference might be misleading. For example, one might posit that taxi visits are a proxy for a fund manager's overall efforts in gathering information, and as such, these managers are more generally skilled. To address these potential concerns, we include fund, firm, and time (year-quarter) fixed effects in different regression specifications (represented by the vector X in regression equation (3)).

We present the results of our regressions in Table 3. Our primary coefficient of interest is β_3, the coefficient on the interaction term TAXI_TRIP × ΔOWNERSHIP. This slope coefficient captures the marginal effect on the abnormal performance of a fund manager's trade that is associated with a taxi visit between a NYC fund and firm in quarter t. β_3 is positive and statistically significant in column 1 ($\beta_3 = 0.4243$, t-stat = 3.08) and remains significant after including fixed effects. In column 2, which contains both firm and year-quarter fixed effects, the coefficient on β_3 is 0.2854 (t-stat = 2.17); and in column 3, which additionally includes fund fixed effects, the coefficient on β_3 is 0.3095 (t-stat = 2.15). To assess the economic significance of our results, we focus on column 3. Here, a NYC fund that purchases a local NYC stock with 1% of its portfolio value is associated with subsequent-quarter abnormal returns of 0.31% (or 1.24% per year).

We provide additional results that condition on the frequency of taxi trips between funds and firms in Panel B of Appendix B. We find that only changes in holdings during quarters with multiple taxi visits are associated with subsequent-quarter abnormal returns. For example, in column 3, where we include fund, firm,

TABLE 3

Performance of NYC Firm Trades: Taxi Trips

Table 3 examines the performance of trades in NYC firms by NYC funds that visit the firms via taxi trips. The dependent variable is the cumulative DGTW-adjusted return for stock j over quarter $t+1$. $\Delta OWNERSHIP_{i,j,t}$ is the number of shares purchased or sold by fund i in stock j during quarter t multiplied by the stock price at the end of quarter t, and scaled by fund i's total net assets. TAXI_TRIP is a dummy variable that equals 1 if there is a taxi trips between NYC fund i and stock j in quarter t. We include firm and year-quarter fixed effects in column 2, fund, firm, year-quarter fixed effects in column 3, and fund–firm pair and year-quarter fixed effects in column 4. t-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	DGTW			
	1	2	3	4
TAXI_TRIP	−0.1371 (−0.43)	0.1005 (0.35)	0.0489 (0.15)	0.0694 (0.40)
ΔOWNERSHIP	−0.0774 (−0.57)	−0.0042 (−0.04)	−0.0399 (−0.35)	−0.0185 (−0.21)
TAXI_TRIP × ΔOWNERSHIP	0.4243*** (3.08)	0.2854** (2.17)	0.3095** (2.15)	0.4350* (1.99)
No. of obs.	27,589	27,580	27,577	26,890
Fund FE	No	No	Yes	No
Firm FE	No	Yes	Yes	No
Year-quarter FE	No	Yes	Yes	Yes
Fund–firm FE	No	No	No	Yes
Adj. R^2	0.0004	0.0834	0.0832	0.0503

and year-quarter fixed effects, the coefficient of MULTI_TRIP × ΔOWNERSHIP is 0.3532 (t-stat = 1.86), which is comparable in magnitude to the main result in Table 3. In contrast, the coefficient on SINGLE_TRIP × ΔOWNERSHIP is positive but insignificant across most specifications. It is possible that more firm visits indicate more information gathering; however, given the potential noise in our identification, it is also possible that the existence of more trips between locations increases the probability that an actual firm visit was identified.

Our results are consistent with NYC funds gaining an informational advantage through interactions facilitated by a taxi ride between the fund and firm. The finding is consistent with Baik et al. (2010), who show that local trades, on average, are associated with future abnormal returns. Our finding sharpens this inference and posits that this more general relation is driven by funds' intentional efforts to gather information on specific local firms.

D. Firm Visits and Earnings Surprises

Our previous analyses provide evidence that fund managers that visit local firms i) overweight those firms in their portfolios, and ii) trade in a manner that forecasts local firms' abnormal returns. While one might reasonably conclude that NYC funds gain an informational advantage by visiting local firms, it is still unclear what kind of information is collected during those visits. In this section, we provide additional evidence that fund managers obtain information about firm profitability through these interactions. To do this, we investigate whether fund managers' trades forecast earnings surprises, which is an important and salient signal of firm fundamentals (e.g., Yan and Zhang (2009), Baker, Litov, Wachter, and Wurgler (2010)).

1. Timing of Firm Visits Around Earnings Announcements

We begin by investigating the timing of taxi trips to local firms during the 8 weeks surrounding earnings announcements. We estimate the following regression:

$$\text{(4)} \qquad \#\text{TAXI\_TRIPS}_{i,t} = \alpha + \sum_{-4}^{4} \beta_t \, \text{WEEK}_t + \gamma \, \text{CONTROLS}_{i,t} + \varepsilon_{i,t}.$$

The dependent variable, $\#\text{TAXI\_TRIPS}_{i,t}$, is the natural logarithm of the total number of taxi trips that firm i receives from all NYC mutual funds in week t. Our independent variables of interest are weekly dummy variables that extend from 4 weeks before to 4 weeks following the earnings announcement day.[14] The regression includes a number of control variables following Bushee, Gerakos, and Lee (2018), such as firm size (log(MVE)), book-to-market ratio (BM), sales growth (SALES_GROWTH), leverage ratio (LEVERAGE), earnings per share scaled by price (EPS), change in net income (△EARN), and the number of analysts following a company (log(#ANALYST)). Precise definitions of these controls can be found in Appendix A. We also include both year-quarter and firm fixed effects.

[14]We use the fifth week prior to an earnings announcement date as the benchmark.

FIGURE 4

Timing of Taxi Trips Around Earnings Announcements

Figure 4 shows the abnormal taxi trips that a firm receives each week around an earnings announcement date. We estimate the following equation:

$$\#\text{TAXI\_TRIPS}_{i,t} = \alpha + \sum_{-4}^{4} \beta_t \text{WEEK}_t + \gamma \text{CONTROLS}_{i,t} + \varepsilon_{i,t}.$$

The dependent variable is log(1 + number of taxi trips that firm *i* receives from all NYC mutual funds in week *t*). We plot the coefficients of the time windows starting from the fourth week prior to earnings announcement date to the fourth week after earnings announcement date. Week 5 is used as the benchmark. Week 0 denotes the announcement day. We control for firm size (log(MVE)), book-to-market ratio (BM), sales growth (SALES_GROWTH), leverage ratio (LEVERAGE), earnings per share scaled by price (EPS), the change in net income (△EARN), analyst following (log(#ANALYST)). All control variables are lagged by 1 quarter. We also include both year-quarter and firm fixed effects. Standard errors are clustered by quarter. The dashed line plots the 95% confidence interval.

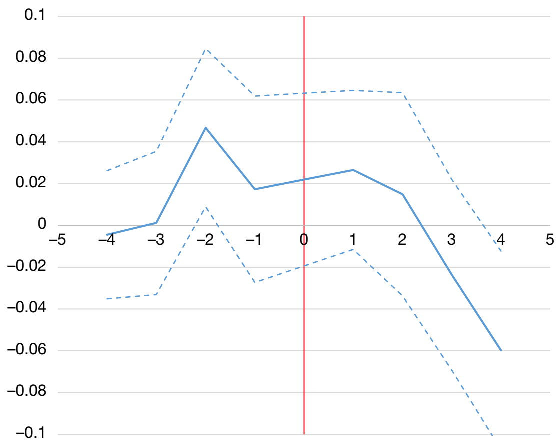

Figure 4 plots the coefficients on the weekly dummy variables from this regression. There is a significant increase in taxi trips between NYC funds and firms starting 2 weeks before firms' earnings announcements, and this activity declines significantly in the third week following announcements. These results are consistent with a rise in information-gathering efforts when information asymmetry (and, therefore, the expected benefit of information) is likely to be highest.

2. Fund–Firm Visits and Earnings Surprises

Given the elevated firm visits in the weeks preceding earnings announcements, we investigate whether changes in mutual funds' holdings predict subsequent earnings surprises. To do so, we run regressions like those presented in Table 3, except that the dependent variable is the earnings surprise following funds' holdings disclosures. We consider two measures of earnings surprises: i) the DGTW-adjusted cumulative abnormal return (CAR) over the [−1, 1] window around earnings announcements; and ii) the standardized unexpected earnings (SUE), defined as the difference between earnings per shares (EPS) and the median analyst forecast, scaled by stock price. We show the results of earnings surprises in Table 4.

The independent variable of interest continues to be the interaction term TAXI_TRIP × ΔOWNERSHIP, which indicates whether trades associated with taxi visits help predict the earnings surprise. We find positive but insignificant

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TABLE 4

Taxi Visits and Earnings Surprises

Table 4 examines whether trades by NYC funds that are associated with a taxi visit to NYC firms predict subsequent earnings surprises. Panel A evaluates quarterly changes in mutual fund holdings, while Panel B evaluates monthly changes in mutual fund holdings for a subsample of NYC mutual funds. The dependent variable in columns 1 and 2 is the DGTW-adjusted cumulative abnormal return (CAR) over the [−1, 1] window around the firm's earnings announcement in quarter $t+1$. The dependent variable in columns 3 and 4 is the standardized unexpected earnings (SUE), defined as the difference between earnings per share (EPS) and the median analyst forecast, scaled by stock price. ΔOWNERSHIP$_{i,j,t}$ in Panel A (Panel B) is the number of shares purchased or sold by fund i in stock j during quarter t (month t) multiplied by the stock price at the end of quarter t (month t), and scaled by fund i's total net assets. TAXI_TRIP is a dummy variable in Panel A (Panel B) that equals 1 if there is a taxi trips between NYC fund i and stock j in quarter t (month t). We include fund, firm, and year-quarter fixed effects in columns 1 and 3. We include fund–firm pair and year-quarter fixed effects in columns 2 and 4. t-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	CAR		SUE	
	1	2	3	4
Panel A. Quarterly Holdings Disclosure				
TAXI_TRIP	−0.0390	−0.0055	0.0493	0.0526
	(−0.28)	(−0.04)	(1.17)	(1.61)
ΔOWNERSHIP	0.0407	−0.0035	−0.0030	−0.1597
	(0.59)	(−0.04)	(−0.18)	(−1.03)
TAXI_TRIP × ΔOWNERSHIP	0.0791	0.1377	0.0111	0.1630
	(0.92)	(1.13)	(0.68)	(1.07)
No. of obs.	26,066	25,405	26,066	25,405
Fund FE	Yes	No	Yes	No
Firm FE	Yes	No	Yes	No
Year-quarter FE	Yes	Yes	Yes	Yes
Fund–firm FE	No	Yes	No	Yes
Adj. R^2	0.0714	0.0534	0.0790	0.2801
Panel B. Monthly Holdings Disclosure				
TAXI_TRIP	0.0097	0.0020	0.0171	0.0094
	(0.05)	(0.01)	(0.98)	(0.47)
ΔOWNERSHIP	−0.0445	−0.0565	−0.0007	−0.0056
	(−0.73)	(−0.76)	(−0.19)	(−1.52)
TAXI_TRIP × ΔOWNERSHIP	0.2290**	0.2266**	0.0084*	0.0119***
	(2.15)	(2.14)	(1.82)	(3.16)
No. of obs.	13,301	12,828	13,301	12,828
Fund FE	Yes	No	Yes	No
Firm FE	Yes	No	Yes	No
Year-quarter FE	Yes	Yes	Yes	Yes
Fund–firm FE	No	Yes	No	Yes
Adj. R^2	0.0808	0.0465	0.1968	0.1834

relations between this variable and subsequent earnings surprises across all specifications. We also continue our exercise of decomposing TAXI_TRIP into MULTI_TRIP and SINGLE_TRIP in Panel C of Appendix B. Again, in all specifications, we find that the coefficients on SINGLE_TRIP × ΔOWNERSHIP and MULTI_TRIP × ΔOWNERSHIP are positive yet insignificant.[15]

One potential issue with our earnings surprise results is that changes in quarterly holdings might be too noisy or distant from subsequent-quarter earnings

[15]In untabulated regressions, we divide earnings surprises into positive and negative subsamples and repeat regressions from Panel A of Table 4. We find that TAXI_TRIP × ΔOWNERSHIP is positive and statistically significant in almost all regressions that use the positive earnings surprise subsample. For example, the coefficient is 0.1841 (t-stat = 2.07) in the regression of earnings CARs that include fund, firm, and year-quarter fixed effects. Alternatively, the coefficient for TAXI_TRIP × ΔOWNERSHIP is statistically insignificant in all regressions that use the negative earnings surprise subsample.

announcements to capture taxi-related informed trades. Supporting this supposition is our finding in Figure 4, which suggests that taxi visits between funds and firms display a marked increase in the 2 weeks prior to earnings announcements. To help mitigate this issue, we collect portfolio holdings for a subsample of our NYC mutual funds that disclose their portfolios more frequently than quarterly.[16] We match our sample of NYC funds to mutual fund holdings disclosures from CRSP and obtain monthly holdings for 42% of our sample fund quarters. The fraction of monthly disclosures in our sample is consistent with Abis and Lines (2022) and Li, Ruan, Titman, and Xiang (2022), who find that monthly holdings are available for 42% and 50% of their samples, respectively.

We then replicate our regressions using changes in mutual fund ownership in the month prior to a firm's earnings announcement. For this subsample test, ΔOWNERSHIP equals the number of shares purchased or sold by mutual fund j over month t (normalized by the fund's total net assets), and TAXI_TRIP is an indicator variable that equals 1 if there are any taxi trips between NYC mutual fund j and firm i in month t. Our results are presented in Panel B of Table 4. In the first two specifications, the dependent variable is the CAR around the subsequent-month earnings announcement. Concentrating on column 2, which includes year-quarter and fund–firm fixed effects, the coefficient on TAXI_TRIP × ΔOWNERSHIP is 0.2266 (t-stat = 2.14), indicating that a 1% increase in ownership during a firm visit month is associated with a rise in the 3-day CAR around an earnings announcement in the following month of 0.23%. When investigating SUEs in column 4, the coefficient on TAXI_TRIP × ΔOWNERSHIP is 0.0119 (t-stat = 3.16).[17] Thus, it appears that when we are able to sharpen our signal-to-noise ratio and more precisely identify mutual fund trades prior to earnings announcements, we are able to conclude that taxi trips do provide information about latent fundamentals to mutual fund managers.[18]

Overall, our results suggest that firm visits provide fund managers with an information advantage concerning subsequent earnings announcements. As such, it appears unlikely that microstructure effects or other trading frictions explain our abnormal return results. Our findings also reinforce the legitimacy of our measure of firm visits as a channel through which funds actively collect information about firms' latent fundamentals. We further explore the relationship between taxi trips, earnings announcements, and trading using detailed transaction data in Section V.

[16]A number of studies supplement quarterly mutual fund holdings disclosures from Thomson Reuters with monthly holding data from CRSP (see, e.g., Elton, Gruber, Blake, Krasny, and Ozelge (2010), Evans, Prado, and Zambrana (2020), Abis and Lines (2022), and Li et al. (2022)).

[17]In untabulated tests, we investigate the relationship between the timing of taxi visits and the magnitude of the subsequent earnings shock. While our tests suggest that the probability of taxi visits between a fund and firm increases in the weeks prior to an earnings announcement, we do not find significant evidence that variation in the number of trips is related to the magnitude of the forthcoming surprise.

[18]We implement an analysis that is almost identical to Table 3, except that ΔOWNERSHIP is calculated at a monthly frequency (using the 42% of our sample that have monthly disclosure data in the CRSP database). The coefficient on the interaction term TAXI_TRIP × ΔOWNERSHIP remains significant after controlling for time and fund–firm pair fixed effects ((β_3 = 0.8823, t-stat = 2.03).

IV. Alternative Explanations

Our measure of local information gathering is subject to measurement error. Although we exercise a number of restrictions to minimize this error (e.g., restricting pick-up and drop-off coordinates to within 30 meters of mutual fund and firm offices) there are several plausible alternative interpretations of our results.

We posit that taxi trips between fund offices and firm headquarters involve fund managers and firm employees, and that during that meeting, material information is exchanged. However, it is possible that taxi trips reflect a durable social connection (fund managers and firm employees are friends) and that material information is not exchanged during the time of the taxi visit, but is gleaned through a myriad of other interactions (e.g., phone calls, texts, golf outings, etc.). Second, taxi visits to specific firms that the fund manager trades might be correlated with aggregate taxi activity. A fund manager who is more socially active in the city might be more attuned to information and rumors about local public firms. Finally, the taxi trip might involve a secondary set of individuals (e.g., a friend of the fund manager or firm employee), who obtain value-relevant information during their interaction and subsequently pass it on to a fund manager.[19] While these plausible alternative mechanisms may change the interpretation of our results, we do not believe that it diminishes the importance of our primary finding.

In this section, we investigate several of these alternative explanations to help refine the reasonableness of our interpretation.

A. Do Taxi Trips Proxy for Durable Social Connections?

Prior literature documents that fund managers invest more heavily in firms to which they have a social connection (Cohen, Frazzini, and Malloy (2008)). It is possible that firm visits reflect longstanding social relationships between the fund and firm managers, such that the specific trips we identify do not necessarily indicate purposeful attempts to gain an information advantage. We try to disentangle these alternate possibilities in two ways. First, we add fund–firm pair fixed effects to our primary regression in Table 3. To the extent that taxi visits are perfectly autocorrelated or identify a durable fund–firm relationship, we expect that fund–firm fixed effects will subsume our independent variable of interest. Our results presented in column 4 of Table 3 indicate that after including both year-quarter fixed effects and fund–firm pair fixed effects, the coefficient on the interaction term TAXI_TRIP × ΔOWNERSHIP remains positive and statistically significant ($\beta_3 = 0.4350$, t-stat = 1.99).

Our second attempt to flesh out these interpretations involves examining funds' trading performance in firms they appear to visit in earlier quarters. If a taxi

[19]Another possible explanation for our findings is that taxi meetings provide an opportunity to discuss governance-related issues, and the abnormal performance that we document is driven by governance-related improvements. If governance-related improvements are responsible, one might expect the abnormal returns that we document to be most evident in firms where mutual funds hold a large stake (see Ellis, Gerken, and Jame (2021)). In untabulated tests that separate our sample according to small and large ownership stakes in the firm, we do not find evidence that supports this explanation.

TABLE 5
Lagged Taxi Trips

Table 5 examines the performance of trades in NYC firms by NYC funds that visit the firms by taxi in a previous quarter. The dependent variable is the cumulative DGTW-adjusted return for stock *j* over quarter *t* + 1. ΔOWNERSHIP$_{i,j,t}$ is the number of shares purchased or sold by fund *i* in stock *j* during quarter *t* multiplied by the stock price at the end of quarter *t*, and scaled by fund *i*'s total net assets. LAGGED_TAXI_TRIP dummy equals 1 if there are any taxi trips between NYC fund *i* and stock *j* in quarter *t* − 1 but not in quarter *t*. We include firm and year-quarter fixed effects in column 2, fund, firm, year-quarter fixed effects in column 3, and fund–firm pair and year-quarter fixed effects in column 4. *t*-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	DGTW			
	1	2	3	4
LAGGED_TAXI_TRIP	−0.2298 (−0.91)	−0.3224 (−1.24)	−0.3060 (−1.18)	−0.3132 (−1.23)
ΔOWNERSHIP	0.2273** (2.14)	0.2033* (1.83)	0.1861 (1.65)	0.2140** (2.25)
LAGGED_TAXI_TRIP × ΔOWNERSHIP	−0.1060 (−0.42)	−0.0973 (−0.38)	−0.1079 (−0.41)	−0.2611 (−0.92)
No. of obs.	27,589	27,580	27,577	26,890
Fund FE	No	No	Yes	No
Firm FE	No	Yes	Yes	No
Year-quarter FE	No	Yes	Yes	Yes
Fund–firm FE	No	No	No	Yes
Adj. R^2	0.0002	0.0834	0.0831	0.0502

visit is a by-product of a durable relationship, then the timing of the trip should not matter, and we would expect lagged taxi trips to also predict future trading profits. We repeat our main analysis in Table 3 except that we replace the TAXI_TRIP dummy with LAGGED_TAXI_TRIP dummy, which equals 1 if there are any taxi trips between NYC fund *i* and stock *j* in quarter $t-1$ but not in quarter *t*. We present the results in Table 5.

Column 1 of Table 5 has no fixed effects, whereas columns 2–4 include firm, year-quarter, fund, and fund–firm fixed effects in different combinations. In all specifications, the coefficient on the interaction term LAGGED_TAXI_TRIP × ΔOWNERSHIP is negative and statistically insignificant, suggesting that information gathered during firm visits goes beyond what can be implied by an existing relationship between the firm and the fund.[20]

B. Local Network Density

1. General Local Information (Connections)

Our next investigation considers whether taxi visits to specific firms that a fund manager trades might be correlated with aggregate taxi activity. It is possible that firm taxi visits could just reflect the strength of fund managers' social networks (i.e., their exposure to the local rumor mill). To evaluate this possibility, we divide

[20]In Table 5, we identify taxi trips in the lagged quarter (but not the current quarter). We also decompose trips in the lagged and current quarter by creating three dummy variables: TRIP(t, not $t-1$), TRIP($t-1$, not t), and TRIP(t, $t-1$). The results can be found in Appendix C. The results are consistent with those in Table 5, and suggest that only trading that is associated with taxi trips in the current quarter predict subsequent abnormal returns.

NYC funds into two groups based on the median number of taxi trips between a fund and all NYC firms each quarter. Funds in the above-median group (HIGH_CONNECTIONS) may have stronger social networks and closer connections to the local rumor mill than those in the below-median group (LOW_CONNECTIONS).

We start by re-examining the local bias results in Table 2, controlling for a fund's exposure to the local rumor mill. Specifically, we sort mutual funds into HIGH and LOW_CONNECTIONS groups and then divide each fund's portfolio firms into TRIP and NO_TRIP groups. We calculate local bias for these double sorts in an identical manner to that presented in equations (1) and (2). If local bias is driven by general information gathering, we expect the HIGH_CONNECTIONS groups to have a greater local bias (in both the firms they visit and the ones they do not). The results, presented in Panel A of Table 6, show that the opposite is true. For visited firms, the NYC_BIAS is 0.67 bps (t-stat = 3.87) for the HIGH_CONNECTIONS group and 1.20 bps (t-stat = 5.93) for the LOW_CONNECTIONS group. For the firms they do not visit, the NYC_BIAS is −0.40 bps (t-stat = −1.65) for HIGH_CONNECTIONS versus 0.93 bps (t-stat = 5.18) for LOW_CONNECTIONS.

In Panel B of Table 6, we examine whether the performance of trades in NYC firms following taxi trips is a function of a fund's general local information advantage. In the first 3 columns, we augment the regressions in Table 3 by adding the HIGH_CONNECTIONS dummy and the interaction term HIGH_ CONNECTIONS × ΔOWNERSHIP. To the extent that a fund manager's connection to the local rumor mill drives our primary results, we should expect the interaction term HIGH_CONNECTIONS × ΔOWNERSHIP to subsume the information in TAXI TRIP × ΔOWNERSHIP. Instead, we continue to see a positive and significant coefficient on TAXI_TRIP × ΔOWNERSHIP, and the coefficient on HIGH_CONNECTIONS × ΔOWNERSHIP is small in economic magnitude and statistically insignificant. In the last 3 columns, we examine whether the predictability of taxi trips for subsequent trade performance is higher in the HIGH_CONNECTIONS group by including a triple interaction term HIGH_ CONNECTIONS × TAXI_TRIP × ΔOWNERSHIP. In all specifications, the coefficient on the triple interaction term is indistinguishable from 0. Overall, the evidence suggests that local taxi trips do not reflect merely a general information advantage that flows from a fund's local network density.

2. Pseudo Taxi Trips

Another possible explanation for our findings is that some funds and/or firms are located in central locations, such that taxi trips frequently originate and/or end at their locale. Perhaps centrally located managers are just more attuned to the pulse of business in the city, and taxi visits merely identify their centrality.

We submit that our fund–firm identification scheme addresses this concern (abnormal returns following trades are only present for firms that the NYC funds actually visit), not for all NYC firms. Nevertheless, we engage in an experiment to explore this possibility further. We identify pseudo taxi visits that originate or end at a distance greater than 30 meters, but less than 50 meters from a mutual fund office and a NYC firm. We then run the same regression from Table 3, but replace the taxi trip dummy (TAXI_TRIP) with a pseudo taxi trip dummy (PSEUDO_TRIP). If pseudo visits predict subsequent trading performance, then our results align with

TABLE 6

Taxi Trips Versus the Rumor Mill (Connections)

Table 6 compares the NYC bias and trade performance for mutual funds that have high social connections (HIGH_CONNECTIONS) versus those that have low social connections (LOW_CONNECTIONS). Panel A reports the results for NYC_BIAS (defined in Table 2). We define CONNECTIONS as the total number of taxi trips between a fund and all NYC firms, and divide funds into HIGH and LOW_CONNECTIONS groups based on the median number of CONNECTIONS each quarter. We then sort each fund–firm pair into "Taxi Trip" and "No Trip" groups. *t*-statistics are constructed using the time series of quarterly cross-sectional averages and are based on the Newey–West standard errors. Panel B reports the results for trade performance. HIGH_CONNECTIONS is a dummy variable that equals 1 if the fund has above median taxi trips to all NYC firms in a quarter. Other variables are defined in Table 3. We include firm and year-quarter fixed effects in columns 1 and 4, firm, fund, and year-quarter fixed effects in columns 2 and 5, and fund–firm pair and year-quarter fixed effects in columns 3 and 6. *t*-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. NYC Bias and Taxi Visits

	Taxi Trip	No Trip	Trip – No Trip
Rumor Mill Funds			
HIGH_CONNECTIONS	0.67***	−0.40	1.06***
	(3.87)	(−1.65)	(4.53)
LOW_CONNECTIONS	1.20***	0.93***	0.27
	(5.93)	(5.18)	(1.13)
HIGH – LOW	−0.53**	−1.32***	0.79**
	(−2.02)	(−4.41)	(2.34)

Panel B. Performance of NYC Firm Trades

	DGTW					
	1	2	3	4	5	6
TAXI_TRIP	0.0874	0.0420	0.1812	0.1983	0.1616	0.4043
	(0.30)	(0.13)	(0.53)	(0.64)	(0.47)	(1.06)
ΔOWNERSHIP	−0.0449	−0.0849	−0.1574	−0.0892	−0.1228	−0.0839
	(−0.28)	(−0.52)	(−0.91)	(−0.44)	(−0.58)	(−0.39)
TAXI_TRIP × ΔOWNERSHIP	0.2755**	0.3002**	0.4311*	0.3460*	0.3611*	0.3224
	(2.42)	(2.38)	(2.03)	(1.84)	(1.81)	(1.38)
HIGH_CONNECTIONS	0.0573	0.2499	0.2913	0.2183	0.4149	0.5932*
	(0.44)	(1.16)	(1.20)	(0.78)	(1.68)	(1.99)
HIGH_CONNECTIONS × ΔOWNERSHIP	0.0973	0.1042	0.0678	0.2078	0.2025	−0.0861
	(0.51)	(0.58)	(0.34)	(0.60)	(0.59)	(−0.25)
HIGH_CONNECTIONS × TAXI_TRIP				−0.2707	−0.2767	−0.5102
				(−0.62)	(−0.66)	(−0.99)
HIGH_CONNECTIONS × TAXI_TRIP × ΔOWNERSHIP				−0.1616	−0.1437	0.2212
				(−0.52)	(−0.46)	(0.75)
No. of obs.	27,580	27,577	26,890	27,580	27,577	26,890
Fund FE	No	Yes	No	No	Yes	No
Firm FE	Yes	Yes	No	Yes	Yes	No
Year-quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund–firm FE	No	No	Yes	No	No	Yes
Adj. R^2	0.0834	0.0831	0.0503	0.0834	0.0831	0.0503

the social network channel instead of the direct information channel. We present the results in the first 3 columns in Table 7.

For the specification that includes fund–firm pair and year-quarter fixed effects (column 3 of Table 7), the coefficient on the interaction term PSEUDO_TRIP × ΔOWNERSHIP is −0.1274 (*t*-stat = −0.54). The fact that the interaction is insignificant from 0 using *pseudo trips* is not consistent with what one would expect if the sample of taxi trips merely identifies funds that are more centrally located, and thus naturally more informed. In the last 3 columns, we include both TAXI_TRIP and PSEUDO_TRIP in the same regressions. The interaction term TAXI_TRIP × ΔOWNERSHIP is positive and significant in all regressions, whereas the interaction term PSEUDO_TRIP × ΔOWNERSHIP is insignificant or even

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TABLE 7

Performance of Pseudo Taxi Trips

Table 7 examines whether pseudo taxi trips predict superior trade performance. The dependent variable is the cumulative DGTW-adjusted return for stock *j* over quarter $t+1$. $\Delta\text{OWNERSHIP}_{i,j,t}$ is the number of shares purchased or sold by fund *i* in stock *j* during quarter *t* multiplied by the stock price at the end of quarter *t*, and scaled by fund *i*'s total net assets. TAXI_TRIP is a dummy variable that equals 1 if there are any taxi trips between NYC fund *i* and stock *j* in quarter *t*. PSEUDO_TRIP is a dummy variable that equals 1 if there are any taxi rides between NYC fund *i* and stock *j* in quarter *t* where the pick-up and drop-off locations are beyond 30 meters but less than 50 meters from fund offices and firm headquarters. We include firm and year-quarter fixed effects in columns 1 and 4, firm, fund, and year-quarter fixed effects in columns 2 and 5, and fund–firm pair and year-quarter fixed effects in columns 3 and 6. *t*-statistics are constructed with standard errors clustered by firm and year-quarter, and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	DGTW					
	1	2	3	4	5	6
PSEUDO_TRIP	−0.0109	−0.0103	−0.0197	−0.0436	−0.0262	−0.0461
	(−0.03)	(−0.03)	(−0.05)	(−0.13)	(−0.07)	(−0.12)
ΔOWNERSHIP	0.4741*	0.4247*	0.2829	0.3135	0.2554	0.0799
	(2.02)	(1.88)	(1.41)	(1.48)	(1.24)	(0.44)
PSEUDO_TRIP × ΔOWNERSHIP	−0.3490	−0.3100	−0.1274	−0.4830*	−0.4468	−0.3117
	(−1.35)	(−1.23)	(−0.54)	(−1.72)	(−1.64)	(−1.19)
TAXI_TRIP				0.1109	0.0566	0.1953
				(0.40)	(0.18)	(0.60)
TAXI_TRIP × ΔOWNERSHIP				0.3973**	0.4119**	0.5100**
				(2.58)	(2.53)	(2.06)
No. of obs.	27,580	27,577	26,890	27,580	27,577	26,890
Fund FE	No	Yes	No	No	Yes	No
Firm FE	Yes	Yes	No	Yes	Yes	No
Year-quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund–firm FE	No	No	Yes	No	No	Yes
Adj. R^2	0.0834	0.0831	0.0500	0.0836	0.0832	0.0503

negative. The evidence here suggests that predictability of trading performance only exists for actual trips, and thus our results are more likely driven by direct information transfers stemming from the firm visits.

V. Additional Analyses

In this section, we take several steps to sharpen the signal-to-noise ratio in our analyses. First, we separately analyze funds in locations with only one fund family versus those that share office buildings with other fund families. Second, we identify fund managers and corporate insiders who are more likely to know each other. Last, we investigate trades at a more granular (daily) frequency, which allows us to more precisely establish the link between firm visits and trades.

A. Stand-Alone Versus Co-Located Fund Families

One empirical challenge is that multiple funds or fund families can share the same office building in NYC. Almost 40% of the fund families in our sample are co-located. Linking a taxi trip to all fund families in the same building likely biases against identifying information gathering by specific funds. To mitigate this potential bias, we repeat all analyses in Table 3 after separating funds that do not share a location with another fund family from the rest of the sample.

We present the results in Table 8. Panel A includes NYC firm trades from all the NYC funds in stand-alone fund families, which represent two-thirds of the

TABLE 8

Stand-Alone/Co-Located Fund Families

Table 8 repeats the analysis in Table 3, but separately for fund families that do not share an office building with another mutual fund family (*Stand-alone fund family*) and those that do (*Co-located fund family*). Panel A reports the results for stand-alone fund families, and Panel B reports the results for co-located fund families. The dependent variable is the cumulative DGTW-adjusted return for stock *j* over quarter *t* + 1. $\Delta OWNERSHIP_{i,j,t}$ is the number of shares purchased or sold by fund *i* in stock *j* during quarter *t* multiplied by the stock price at the end of quarter *t*, and scaled by fund *i*'s total net assets. TAXI_TRIP is a dummy variable that equals 1 if there is a taxi trip between NYC fund *i* and stock *j* in quarter *t*. We include firm and year-quarter fixed effects in column 2, fund, firm, year-quarter fixed effects in column 3, and fund–firm pair and year-quarter fixed effects in column 4. *t*-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	DGTW			
	1	2	3	4
Panel A. Stand-Alone Fund Families				
TAXI_TRIP	−0.1550	0.0238	−0.0262	−0.0218
	(−0.42)	(0.10)	(−0.09)	(−0.06)
ΔOWNERSHIP	−0.1963	−0.1117	−0.1344	−0.2122
	(−1.22)	(−1.04)	(−1.12)	(−1.16)
TAXI_TRIP × ΔOWNERSHIP	0.5830**	0.4814**	0.5160**	0.7212**
	(2.36)	(2.16)	(2.23)	(2.33)
No. of obs.	18,216	18,208	18,207	17,671
Fund FE	No	No	Yes	No
Firm FE	No	Yes	Yes	No
Year-quarter FE	No	Yes	Yes	Yes
Fund–firm FE	No	No	No	Yes
Adj. R^2	0.0004	0.0821	0.0816	0.0459
Panel B. Co-Located Fund Families				
TAXI_TRIP	−0.0829	0.2390	0.1700	0.3886
	(−0.20)	(0.38)	(0.27)	(0.57)
ΔOWNERSHIP	0.2500	0.3181	0.3043	0.1742
	(0.89)	(1.13)	(0.88)	(0.48)
TAXI_TRIP × ΔOWNERSHIP	0.0607	−0.1432	−0.1431	−0.0237
	(0.21)	(−0.51)	(−0.43)	(−0.07)
No. of obs.	9,373	9,362	9,357	8,982
Fund FE	No	No	Yes	No
Firm FE	No	Yes	Yes	No
Year-quarter FE	No	Yes	Yes	Yes
Fund–firm FE	No	No	No	Yes
Adj. R^2	0.0004	0.0999	0.0980	0.0559

full sample. Comparing our results with those presented in Table 3, our coefficient of interest increases by more than 66% (from 0.3095 to 0.5160) when we include fund, firm, and year-quarter fixed effects. In column 4, where we add fund–firm pair fixed effects, the coefficient on the interaction term TAXI_TRIP × ΔOWNERSHIP increases to 0.7212 (*t*-stat = 2.33) from 0.4350 when using the full sample. Panel B includes NYC firm trades from all the NYC funds in co-located fund families. The coefficient on the interaction term TAXI_TRIP × ΔOWNERSHIP is not significant in any of the regressions. The stronger results for stand-alone funds suggest that our proxy for firm visits is valid, and that noise is introduced when mutual fund families operate in the same office building.

B. School Ties

Taxi trips between establishments in NYC may also be a noisy measure of information gathering because we do not know the identities of the passengers in the taxis. Although this type of noise should bias against finding results of abnormal holdings and informed trades, we nevertheless attempt a second way to refine our identification scheme.

We conjecture that taxi rides between establishments are more likely to identify actual visits between mutual fund managers and corporate insiders if they have pre-existing social relationships. We proxy for pre-existing social relationships by identifying fund managers and corporate insiders who share educational backgrounds, as in Cohen et al. (2008). We collect biographical information for NYC mutual fund managers from Morningstar, which provides managers' educational background and employment dates, and link it to background data on top executives and board members from BoardEx. Of the 266 NYC mutual funds in our sample, we obtain background information for the managers of 73 funds from Jan. 2009 to June 2016. Over the same period, we identify educational backgrounds for top executives and board members at 239 NYC firms. We classify NYC fund–firm pairs as having a "School Connection" if a fund manager and a top executive or a board member of the firm attended the same undergraduate or graduate school.[21]

We investigate whether the strength of funds' connections to NYC firms in aggregate are related to the size of their NYC holdings. For each fund-quarter, we divide NYC firms into groups that have a school connection (SCHOOL_TIE) or no school connection (NO_TIE). We then calculate the NYC bias for each group using the methodology employed in Table 2. Our results, presented in Panel A of Table 9, show that the NYC bias per stock is 0.70 bps (t-stat = 6.92) for funds in the SCHOOL_TIE group and 0.23 bps (t-stat = 1.23) for funds in the NO_TIE group. The significant difference of 0.48 bps (t-stat = 2.27) suggests that mutual fund managers in NYC hold larger positions in local firms to which they have more social connections.

Next, we examine whether the relationship between NYC bias and school connections is related to taxi visits. In each quarter, we further subdivide the fund–firm pairs in the SCHOOL_TIE group and NO_TIE group based on whether they visit the firm or not. The NYC_BIAS per stock for fund managers with school connections is significantly larger among firms they visit (1.01 bps) compared to those they do not visit (0.36 bps). The difference of 0.64 bps (t-stat = 2.94) suggests that firm visits combined with an existing social connection generate a significantly higher investment bias (i.e., almost three times larger) than that without any taxi visit. On the other hand, the NYC_BIAS for funds with no connections is 0.69 bps (t-stat = 2.50) among firms they visit and −0.11 bps (t-stat = −0.36) for those they do not visit. The difference is 0.79 bps is statistically significant at the 10% level. Therefore, it appears that an observable social connection allows us to identify more accurately those firm visits that are useful for information gathering.

More important than the level of portfolio holdings is whether information is transferred between portfolio managers and corporate insiders when they are socially connected. To investigate the profitability of trade, we restrict our sample to funds and firms where we have both school affiliation and taxi trip data. This restriction reduces the sample by 60% (from 27,589 observations to 10,976 observations), and thus the power of our tests.

[21]For team-managed funds, we define a school connection if at least one manager and a corporate insider is connected.

TABLE 9

School Ties and Taxi Trips

Table 9 examines the association between school ties, taxi trips, NYC bias, and trading informativeness. The sample includes NYC holdings of NYC funds. Panel A compares the NYC bias (calculated as in Table 2) for different categories of NYC firms. A NYC fund and NYC firm pair is classified as connected (SCHOOL_TIE) if the fund manager and a top executive or a board member of the firm attended the same school. For each NYC fund, we then classify NYC firms by school connections (SCHOOL_TIE versus NO_TIE) and taxi visits (TAXI_TRIP versus NO_TRIP) in each quarter. t-statistics are constructed using the time series of quarterly cross-sectional averages and are based on the Newey–West standard errors. Panel B shows the performance of fund "trades" conditional on school ties. The dependent variables are the cumulative DGTW-adjusted quarterly returns for stock j during quarter $t+1$. SCHOOL_TIE equals 1 if a fund–firm pair has a school connection, and 0 otherwise. $\Delta\text{OWNERSHIP}_{i,j,t}$ is the change in shares in stock j by fund i from the previous quarter and the stock price at the end of quarter t, scaled by fund i's total net assets in the previous quarter. We include fund, firm, and year-quarter fixed effects in columns 2 and 5, and fund–firm pair fixed effects in columns 3 and 6. t-statistics are constructed with standard errors clustered by firm and year-quarter, and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. NYC Bias and School Connections

	SCHOOL_TIE	NO_TIE	TIE – NO_TIE
NYC_BIAS	0.70***	0.23	0.48**
	(6.92)	(1.23)	(2.27)
TAXI_TRIP	1.01***	0.69**	0.32
	(5.39)	(2.50)	(0.96)
NO_TRIP	0.36***	−0.11	0.47
	(3.17)	(−0.36)	(1.48)
TRIP – NO_TRIP	0.64***	0.79*	−0.15
	(2.94)	(1.97)	(−0.33)

Panel B. Performance of Fund Trades – Abnormal Returns

	DGTW					
	1	2	3	4	5	6
TAXI_TRIP × ΔOWNERSHIP	0.7961***	0.6725***	0.7583***	0.3905	0.2667	0.2136
	(4.77)	(3.83)	(3.16)	(1.47)	(0.86)	(0.46)
SCHOOL_TIE × ΔOWNERSHIP				−0.7706	−0.7839	−1.0733
				(−1.25)	(−1.29)	(−1.50)
TAXI_TRIP × SCHOOL_TIE × ΔOWNERSHIP				1.0623*	1.0613*	1.3321*
				(1.95)	(1.96)	(1.80)
No. of obs.	10,976	10,971	10,696	10,976	10,971	10,696
Fund FE	No	Yes	No	No	Yes	No
Firm FE	No	Yes	No	No	Yes	No
Year-quarter FE	No	Yes	Yes	No	Yes	Yes
Fund–firm FE	No	No	Yes	No	No	Yes
Adj. R^2	0.0001	0.0778	0.0476	0.0001	0.0778	0.0478

We repeat our analyses from Table 3 (specifications 1, 3, and 4). However, in this analysis, we introduce the variable SCHOOL_TIE, which equals 1 if a fund manager and a firm top executive or board member went to the same school, and 0 otherwise. Our regression specification becomes:

$$\begin{aligned}(5)\quad \text{DGTW}_{\text{RET}_{i,t+1}} = {} & \alpha + \beta_1 \text{TAXI\_TRIP}_{i,j,t} + \beta_2 \text{SCHOOL\_TIE}_{i,j,t} + \beta_3 \Delta\text{OWNERSHIP}_{i,j,t} \\ & + \beta_4 \text{TAXI\_TRIP}_{i,j,t} \times \text{SCHOOL\_TIE}_{i,j,t} \\ & + \beta_5 \text{TAXI\_TRIP}_{i,j,t} \times \Delta\text{OWNERSHIP}_{i,j,t} \\ & + \beta_6 \text{SCHOOL\_TIE}_{i,j,t} \times \Delta\text{OWNERSHIP}_{i,j,t} \\ & + \beta_7 \text{TAXI\_TRIP}_{i,j,t} \times \text{SCHOOL\_TIE}_{i,j,t} \times \Delta\text{OWNERSHIP}_{i,j,t} + \varepsilon_{i,j,t}.\end{aligned}$$

The results are reported in Panel B of Table 9. For brevity, we only show the three interaction terms. Consistent with prior analyses, the coefficient on TAXI_TRIP × ΔOWNERSHIP remains positive and significant in columns 1–3.

For the subsample with school ties, we continue to find abnormal trading performance following taxi visits. Our variable of interest is the triple interaction term TAXI_TRIP × SCHOOL_TIE × ΔOWNERSHIP in columns 4–6. After controlling for the fund, firm, and year-quarter fixed effects, we find that this coefficient is 1.0613 (t-stat = 1.96). The coefficient indicates that a 1% (of a mutual fund's portfolio) change in ownership is associated with a 1.06% abnormal return over the subsequent quarter, provided that i) the portfolio manager and company insider went to the same school, and ii) there is a fund–firm taxi trip in the quarter. These abnormal returns are 60% larger than those apparent when not conditioning on school connections (1.06% vs. 0.67%), suggesting that the signal-to-noise ratio is improved.

C. Granular Trade Data

Our ability thus far to associate mutual fund manager actions with firm visits is limited by data availability, though the inference is strengthened by the results found when accounting for fund/firm social connections. To refine identification further, we obtain granular trade-level data for a subset of NYC mutual funds from Abel Noser between Jan. 2009 and Nov. 2011.[22] Using the algorithm proposed by Agarwal, Tang, and Yang (2012), we are able to match 14 NYC mutual funds from the Abel Noser trading data to the S12 mutual fund holdings data.[23] The funds we identify are responsible for 4,086 trades (2,703 buys and 1,383 sells) on 79 NYC public firms during this time period.[24]

If taxi visits facilitate the transfer of information, one should expect that fund managers are more likely to trade following these interactions. We begin this analysis by investigating whether NYC mutual funds are more likely to trade during a short window of time following a taxi ride between a NYC fund and a NYC firm. We construct a calendar-week time series of shares traded for each NYC fund-NYC firm pair. For each fund–firm week, we define a trade dummy that equals 1 if the fund trades the stock, and 0 otherwise. The independent variable of interest is POST_TAXI, which equals 1 if there was a taxi trip between the fund and the firm during the previous 2 weeks ($t-2$ to $t-1$). We also include PRE_ANN, an indicator variable that equals 1 if an earnings announcement falls in the 2 weeks following a potential trade week ($t+1$ to $t+2$), and the interaction between POST_TAXI and PRE_ANN. The first 3 columns in Panel A of Table 10 present linear probability regressions that include several other firm-level controls (each is defined in the Appendix A), as well as firm and year-quarter fixed effects. In each of these regressions, the slope coefficient on POST_TAXI is around 1.6 and the t-statistic is over 4.0, indicating that the odds of trading is about 1.6 percentage points higher in the 2 weeks following a taxi visit. Compared to the unconditional

[22]The Abel Noser data have been widely used in academic studies of institutional trading (see, e.g., Puckett and Yan (2011), Hu, Jo, Wang, and Xie (2018)).

[23]Agarwal et al. (2012) provide a data appendix that details the matching algorithm. This algorithm has been used in other articles such as Busse, Chordia, Jiang, and Tang (2021). Cohen, Lou, and Malloy (2016) also match Abel Noser trading data to mutual fund holdings data (S12) using their own methodology.

[24]We aggregate all transactions by a fund for a particular stock during a trading day and term the daily observation a trade.

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TABLE 10
Taxi Trips and Daily Mutual Fund Trades

Table 10 investigates taxi visits and daily mutual fund trading data. Data on mutual fund trading are obtained from Abel Noser. Panel A investigates the relationship between taxi visits and the probability and magnitude of subsequent mutual fund trading. We construct a calendar-week time series for each NYC fund–NYC firm pair and aggregate the weekly number of shares traded. Columns 1–3 present linear probability regressions where the dependent variable equals 100 if a mutual fund trades a stock during week *t*, and 0 otherwise. Columns 4–6 present OLS regressions where the dependent variable is the natural logarithm of 1 plus the number of shares traded by a mutual fund. POST_TAXI is an indicator variable that equals 1 if there is a taxi visit between the fund and the firm during the previous 2 weeks ($t-2$ to $t-1$). PRE_ANN is an indicator variable that equals 1 if the firm has an earnings announcement in the following 2 weeks ($t+1$ to $t+2$). FIRM_SIZE is the natural logarithm of the market value of the firm. BM is the ratio of the firm's book value to market value of assets. LEVERAGE is the ratio of the firm's total debt to total assets. EPS is earnings per share scaled by stock price. SALES_GROWTH is the percentage change in sales from the previous quarter. EARNINGS_GROWTH is the change in net income from the previous quarter scaled by total assets. We include year-quarter and firm fixed effects in all regressions. *t*-statistics are constructed with standard errors clustered by firm and year-quarter, and appear in parentheses. Panel B presents DGTW-adjusted buy-and-hold abnormal returns (BHARs) over 10 trading days following trades of mutual funds. Column 1 includes all trades in NYC firms in the Abel Noser sample that do not follow taxi visits within 20 trading days. Columns 2–4 include trades that are within 10 trading days after taxi visits, and columns 5–7 include trades that are within 20 trading days after taxi visits. In columns 2–7, we further divide the sample based on whether trades occur less than 10 trading days, less than 20 trading days, or more than 20 trading days before an earnings announcement. *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Probability of Trade Following a Taxi Visit

	Trade Dummy × 100			Trading Volume		
	1	2	3	4	5	6
POST_TAXI	1.56***	1.61***	1.58***	0.13***	0.13***	0.13***
	(5.08)	(4.22)	(4.24)	(5.07)	(4.27)	(4.33)
PRE_ANN		0.05	0.02		0.00	0.00
		(0.56)	(0.18)		(0.48)	(0.09)
POST_TAXI × PRE_ANN		−0.33	−0.30		−0.01	−0.01
		(−0.36)	(−0.32)		(−0.15)	(−0.11)
FIRM_SIZE			0.70			0.05
			(1.75)			(1.48)
BM			0.11			0.01
			(0.56)			(0.39)
LEVERAGE			0.63			0.05
			(0.55)			(0.49)
EPS			−0.49			−0.04
			(−0.98)			(−0.86)
SALES_GROWTH			−0.16			−0.01
			(−0.84)			(−0.57)
EARNINGS_GROWTH			0.34			0.03
			(0.34)			(0.30)
Year-quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	169,141	169,141	154,819	169,141	169,141	154,819
Adj. R^2	0.03	0.03	0.03	0.03	0.03	0.03

Panel B. Performance of Fund Trades – 10-Day Buy and Hold Abnormal Returns

	All Trades	Trades Within 10 Days After Taxi Ride			Trades Within 20 Days After Taxi Ride		
		Days Before Earnings Announcement			Days Before Earnings Announcement		
		≤10	≤20	>20	≤10	≤20	>20
Buys	0.46**	2.42***	1.01*	−0.51	3.28***	1.56**	−0.69
	(2.16)	(3.04)	(1.76)	(−1.07)	(2.84)	(2.14)	(−1.54)
Sells	0.17	0.74	0.19	−0.86	0.48	0.46	−1.12*
	(0.65)	(0.64)	(0.26)	(−0.97)	(0.55)	(0.71)	(−1.68)
Diff	0.30	1.69	0.82	0.35	2.79*	1.10	0.42
	(0.84)	(1.25)	(0.89)	(0.37)	(1.88)	(1.12)	(0.55)

probability in our data of trading a particular NYC firm during a week of 1.44%, this indicates that NYC mutual fund managers are more than twice as likely to trade a stock 2 weeks after visiting the firm. Columns 4–6 present OLS regressions where the dependent variable is the natural logarithm of 1 plus the number of shares traded

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by a mutual fund.[25] Across all regressions, the coefficient on POST_TAXI is large and highly statistically significant.[26]

Our final set of analyses investigates the profitability of these trades, using buy and hold abnormal return (BHAR) over the 10 or 20 trading days following transactions. Abnormal returns are computed by subtracting the DGTW benchmark return from the return to the traded stock. The results are presented in Panel B of Table 10. Unconditionally, buys are followed by abnormal returns of 0.46% (*t*-stat = 2.16), but sells are followed by insignificant abnormal returns. However, the profitability of funds' buy trades is a function of their proximity to taxi visits, especially when they precede earnings announcements.[27] The 10-day abnormal return following buy trades executed in the 10 (20)-day window following a taxi visit is 2.42% (3.28%) (*t*-stat > 2.8) when the trade also occurs in the 10 days preceding an earnings announcement. If we extend the window to include trades in the 20 days preceding an earnings announcement, the magnitude is slightly muted, but still economically significant. The profitability of buy trades disappears if the trade occurs after a taxi trip but out of the 20 trading days prior to the earnings announcements. Overall, these results are consistent with those in Table 4. Buy trades that follow a taxi visit and occur in the month before the earnings announcement are highly profitable.

VI. Conclusions

This study focuses on an important yet underexplored information-gathering activity, visits to local firms, to investigate whether and how institutional investors obtain information about local companies. We use taxi trips in NYC that occur between mutual funds and corporate headquarters to proxy for the extent to which local investors intentionally collect information about local firms. Though recent literature suggests that investors' local investing advantage has disappeared over time, we find that it persists among those mutual funds that actively gather information on local companies. The overinvestment bias of NYC mutual funds is concentrated in local firms that are visited, consistent with the hypothesis that fund managers obtain valuable information by visiting local companies.

Next, we turn to the value of information gathered through local firm visits by examining the performance of local trades. While NYC mutual funds do not unconditionally earn abnormal returns from their NYC-firm trades, we find that when a fund trade occurs in close proximity to a taxi trip between the fund and firm,

[25]In untabulated results, we implement negative binomial regressions with the same control variables and fixed effects to account for the large number of zeros in the dependent variable and find consistent results.

[26]In our daily trading sample from Abel Noser, we link a taxi trip to an establishment when the pick-up or drop-off location is within 30 meters of the address. To assess the validity of this identification strategy, we create falsified taxi visits by randomly assigning fund–firm trips to funds that do not actually visit the firms and re-estimate Panel A of Table 10. We replicate this procedure 500 times and report the average coefficient of the POST_TAXI dummy for the pseudo taxi visit sample in Appendix D. The results show no change in the probability of trade following pseudo taxi visits.

[27]If a fund makes multiple same-direction trades in a stock over 10 or 20 trading day window after a taxi visit, we collapse those trades into one observation by calculating the value-weighted BHAR using the dollar amount of each trade as the weight. Our methodology of aggregating trades over adjacent days is consistent with that employed by Anand et al. (2012) to "stitch" trade orders together.

fund managers earn quarterly abnormal returns of 43.5 bps (1.74% per year). Furthermore, fund trades associated with taxi visits predict subsequent-month earnings surprises, consistent with the conclusion that taxi visits facilitate fund managers learning about the latent fundamentals of a firm.

The relations identified in this article are generally stronger when we sharpen the signal-to-noise ratio. For example, the results prove stronger when we analyze funds in locations with only one fund family, or when NYC fund managers and corporate insiders at NYC-based firms share an educational background. In addition, among funds where we can identify actual trades, we find that trades in close proximity to firm visits better predict both future returns and earnings of the firm. Overall, these results suggest that fund managers' local advantage is driven by their intentional efforts to collect information about local companies.

We are left to question whether the evidence we uncover implicates trading on private information. The evidence presented in this article is consistent with this interpretation, but we are cautious not to jump fully to that conclusion. We do not present conclusive evidence of meetings between fund managers and corporate executives or employees, nor the direct sharing of private information. But the evidence that NYC fund managers visit local corporate headquarters is strong, as is the evidence that those who do so appear to benefit. It is possible that these visits merely reflect fund managers' searches for relevant but non-standard public information, and that they benefit from this practice, but the collection and exploitation of private information seem likely.

Appendix A. Variable Definitions

ΔOWNERSHIP: The product of the change in shares in stock j by fund i from the previous quarter and the stock price at the end of quarter t, scaled by fund i's total net assets in the previous quarter.

DGTW: DGTW-adjusted cumulative monthly returns for a stock over the 3 months following holdings disclosure.

CAR: DGTW-adjusted cumulative abnormal return (CAR) over the $[-1, 1]$ window around the firm's earnings announcement following holdings disclosures.

SUE: Standardized unexpected earnings (SUE), defined as the difference between earnings per share (EPS) and the median analyst forecast, scaled by stock price.

TAXI_TRIP: Indicator variable coded as 1 if a NYC fund visits a NYC firm by taxi during the quarter.

NO_TRIP: Indicator variable coded as 1 if a NYC fund does not visit a NYC firm by taxi during the quarter.

MULTI_TRIP: Indicator variable coded as 1 if a NYC fund visits a NYC firm by taxi twice or more during the quarter.

SINGLE_TRIP: Indicator variable coded as 1 if a NYC fund visits a NYC firm by taxi once during the quarter.

SCHOOL_TIE: Indicator variable coded as 1 if the fund manager and a top executive or a board member of the firm attended the same school.

NO_TIE: Indicator variable coded as 1 if the fund manager and a top executive or a board member of the firm never attended the same school.

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FUND_SIZE: Fund's asset under management in millions during the quarter

FUND_HOLDINGS: Number of stocks in the fund's portfolio during the quarter.

FUND_AGE: Number of years since the first offer date of the fund.

POST_TAXI: ($t-2$ to $t-1$). Indicator variable coded as 1 if there is a taxi visit between the fund and the firm during the previous 2 weeks

PRE_ANN: ($t+1$ to $t+2$). Indicator variable coded as 1 if the firm has an earnings announcement in the following 2 weeks

FIRM_SIZE: Natural logarithm of the market value of the firm during the quarter.

BM: Ratio of the firm's book value to market value of assets during the quarter.

LEVERAGE: Ratio of the firm's total debt to total assets during the quarter.

EPS: Earnings per share during the quarter scaled by stock price in the previous quarter.

EARNINGS_GROWTH: Change in net income from the previous quarter scaled by total assets in the previous quarter.

SALES_GROWTH: Percentage change in sales from the previous quarter.

log(#ANALYST): Natural logarithm of the number of analysts following the firm.

Appendix B. Multiple Trips Versus Single Trip

This table reports the average NYC bias for NYC firms with multiple taxi trips or a single taxi trip to a NYC firm. The sample consists of 266 NYC funds from Jan. 2009 to June 2016. In Panel A, for each fund quarter, we separate each mutual fund's "Taxi Trip" portfolio into "Multiple Trips" and "Single Trip" groups. NYC bias for each group is calculated by taking the portfolio weight of "Multiple Trips" (or "Single Trip") firms minus the portfolio weight of those same firms in the market portfolio (based on market capitalization weightings), divided by the number of firms in the group. We also calculate average NYC bias for "Multiple Trips" and "Single Trip" groups after dividing funds by size, number of holdings, and fund age based on the sample median in each quarter. Panel B examines the performance of trades in NYC firms by NYC funds that visit the firms with a single taxi trip and multiple taxi trips. The dependent variable is the cumulative DGTW-adjusted return for stock j over quarter $t+1$. $\Delta\text{OWNERSHIP}_{i,j,t}$ is the number of shares purchased or sold by fund i in stock j during quarter t multiplied by the stock price at the end of quarter t, and scaled by fund i's total net assets. SINGLE_TRIP (MULTI_TRIP) dummy equals 1 if there is one (more than one) trip between NYC fund i and stock j in quarter t. We include firm and year-quarter fixed effects in column 2, fund, firm, year-quarter fixed effects in column 3, and fund–firm pair and year-quarter fixed effects in column 4. Panel C presents earnings surprises following fund "trades" of NYC funds in NYC firms. The dependent variables in columns 1 and 2 are the DGTW-adjusted cumulative abnormal return (CAR) over the $[-1, 1]$ window around the stock j's earnings announcement in quarter $t+1$. The dependent variables in columns 3 and 4 are the standardized unexpected earnings (SUE) in quarter $t+1$, defined as the difference between EPS and the median analyst forecast, scaled by stock price. t-statistics in Panel A are constructed using the time series of quarterly cross-sectional averages and are based on the Newey–West standard errors. t-statistics in Panels B and C are constructed with standard errors clustered by firm and year-quarter and appear in parentheses.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. NYC Bias

	Multiple Trips	Single Trip	Multiple – Single
All NYC Funds			
NYC_BIAS	1.11***	0.69***	0.42
	(4.56)	(3.92)	(1.48)
Fund Size			
Small funds	1.40***	0.78**	0.62
	(4.85)	(2.54)	(1.59)
Large funds	0.81***	0.59***	0.22
	(3.03)	(3.47)	(0.59)
Small minus large	0.59	0.19	0.41
	(1.51)	(0.53)	(0.76)
# Fund Holdings			
Undiversified funds	2.34***	1.69***	0.66*
	(7.43)	(9.73)	(1.77)
Diversified funds	−0.14	−0.32	0.18
	(−0.40)	(−1.02)	(0.48)
Undiversified minus diversified	2.48***	2.01***	0.47
	(5.23)	(5.55)	(0.89)
Fund Age			
Old funds	0.90***	0.32	0.58**
	(3.65)	(1.44)	(2.41)
Young funds	1.31***	1.05***	0.26
	(3.72)	(6.60)	(0.66)
Old minus young	−0.41	−0.73***	0.32
	(−0.95)	(−2.67)	(0.70)

Panel B. Performance of NYC-Firm Trades

	DGTW			
	1	2	3	4
MULTI_TRIP	−0.4253	−0.0550	−0.1304	−0.1112
	(−1.06)	(−0.21)	(−0.44)	(−0.33)
SINGLE_TRIP	0.2926	0.2611	0.1989	0.3811
	(0.81)	(0.65)	(0.47)	(0.90)
ΔOWNERSHIP	−0.0774	−0.0050	−0.0398	−0.1289
	(−0.57)	(−0.05)	(−0.35)	(−0.98)
MULTI_TRIP × ΔOWNERSHIP	0.4674**	0.3243*	0.3532*	0.4589*
	(2.58)	(1.90)	(1.86)	(1.90)
SINGLE_TRIP × ΔOWNERSHIP	0.2295*	0.1255	0.1244	0.3314
	(1.74)	(0.80)	(0.79)	(1.06)
No. of obs.	27,589	27,580	27,577	26,890
Fund FE	No	No	Yes	No
Firm FE	No	Yes	Yes	No
Year-quarter FE	No	Yes	Yes	Yes
Fund–firm FE	No	No	No	Yes
Adj. R^2	0.0010	0.0835	0.0832	0.0504

Panel C. Earnings Surprises

	CAR		SUE (Median Forecast)	
	1	2	3	4
MULTI_TRIP	0.0135	−0.0169	0.0515	0.0705*
	(0.07)	(−0.09)	(1.15)	(1.87)
SINGLE_TRIP	−0.0860	0.0032	0.0476	0.0408
	(−0.60)	(0.02)	(1.14)	(1.27)
ΔOWNERSHIP	0.0406	−0.0035	−0.0030	−0.1595
	(0.59)	(−0.04)	(−0.18)	(−1.03)
MULTI_TRIP × ΔOWNERSHIP	0.0788	0.1322	0.0097	0.1624
	(0.89)	(1.05)	(0.63)	(1.07)
SINGLE_TRIP × ΔOWNERSHIP	0.0836	0.1634	0.0173	0.1660
	(0.60)	(1.15)	(0.81)	(1.06)
No. of obs.	26,066	25,405	26,066	25,405
Fund FE	Yes	No	Yes	No
Firm FE	Yes	No	Yes	No
Year-quarter FE	Yes	Yes	Yes	Yes
Fund–firm FE	No	Yes	No	Yes
Adj. R^2	0.0714	0.0533	0.0789	0.2800

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Appendix C. Do Taxi Trips Proxy for Existing Relationships? – Alternate Lagged Taxi Trips

This table examines the performance of trades in NYC firms by NYC funds that visit the firms via lagged taxi trips. The dependent variable is the cumulative DGTW-adjusted monthly returns for stock *j* over quarter $t+1$. $\Delta OWNERSHIP_{i,j,t}$ is the number of shares purchased or sold by fund *i* in stock *j* during quarter *t* multiplied by the stock price at the end of quarter *t*, and scaled by fund *i*'s total net assets. We decompose taxi visits in quarters $t-1$ and *t* into three mutually exclusive dummy variables: TRIP(t, not $t-1$) equals 1 if there is at least one trip in quarter *t* but not $t-1$, TRIP($t-1$, not t) equals 1 if there is at least one trip in quarter $t-1$, not *t*. TRIP(t, $t-1$) equals 1 if there is at least one trip in both quarter *t* and $t-1$. We include firm and year-quarter fixed effects in column 2, and fund, firm, and year-quarter fixed effects in column 3. *t*-statistics are constructed with standard errors clustered by firm and year-quarter and appear in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Three Types of Lagged Taxi Trips	DGTW		
	1	2	3
TRIP(t, not $t-1$)	−0.2298 (−0.91)	−0.3224 (−1.24)	−0.3060 (−1.18)
TRIP($t-1$, not t)	−0.4101 (−1.56)	−0.3655 (−1.47)	−0.4386 (−1.64)
TRIP(t, $t-1$)	−0.4288 (−0.93)	−0.1823 (−0.52)	−0.3382 (−0.77)
ΔOWNERSHIP	−0.2337 (−0.88)	−0.0933 (−0.37)	−0.1341 (−0.50)
TRIP(t, not $t-1$) × ΔOWNERSHIP	0.6487* (2.02)	0.5002* (1.74)	0.5227* (1.86)
TRIP($t-1$, not t) × ΔOWNERSHIP	0.3550 (0.83)	0.2009 (0.50)	0.2153 (0.52)
TRIP(t, $t-1$) × ΔOWNERSHIP	0.5643** (2.21)	0.3533 (1.46)	0.3839 (1.52)
No. of obs.	27,589	27,580	27,577
Fund FE	No	No	Yes
Firm FE	No	Yes	Yes
Year-quarter FE	No	Yes	Yes
Adj. R^2	0.0008	0.0836	0.0833

Appendix D. Random Assignment of Taxi Visits

This table investigates the relation between random taxi visits and the probability and magnitude of subsequent mutual fund trading. We create a random taxi visit sample by randomly assigning taxi visits to a fund that does not visit the firm. We re-estimate the trading probability and volume models with model specifications in columns 3 and 6 in Panel A of Table 10. We replicate the procedure 500 times and report the average coefficient of this random POST_TAXI dummy. We conduct a *z*-test on whether the mean coefficient is significantly different from the original estimated coefficient.

Estimation	Trading Probability	Trading Volume
Mean of random β	−0.0176	0.0014
Std. Dev. of random β	0.1187	0.0075
Original estimated β	1.58	0.13
No. of replications	500	500
p-Value of *z*-test	<0.0001	<0.0001

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