Local Institutional Investors, Information Asymmetries, and Equity Returns

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ABSTRACT

In this paper we examine the informational role of local institutional investors in stock markets. Using state identifiers as our primary measure of geographic proximity and geographically proximate institutions as a close approximation to informed investors, we show that both the level of and change in local institutional ownership predict future stock returns; in contrast, such predictive abilities are relatively weak for nonlocal institutional ownership. Moreover, the positive relation between local institutional holdings and stock performance is pronounced in firms with high information asymmetry, such as small firms, firms with high return volatility, firms with high R&D intensity, and young firms. Finally, we find that local, but not nonlocal, institutional investors begin to reduce their holdings prior to a break in a string of consecutive nonnegative quarterly earnings surprises. These findings suggest that geography proxies for the availability of information and allows local institutional investors to execute profitable trades based on their superior information.

1. Introduction

Academics and practitioners have long been interested in understanding institutional investors' informational advantages in stock investments and the impact of such advantages on stock returns. Yet, although a growing body of literature has examined these issues extensively, the results so far are not conclusive. For example, while several studies show that certain groups of institutional investors, such as mutual fund managers, are able to capitalize on their superior information (Grinblatt and Titman (1989, 1993), Daniel, Grinblatt, Titman, and Wermers (1997), and Wermers (1999, 2000)), another line of research documents that mutual fund managers underperform appropriate risk-adjusted benchmarks (Jensen (1968), Malkiel (1995), Gruber (1996), and Carhart (1997)).

In a related study, Gompers and Metrick (2001) find that aggregate institutional ownership is a strong and positive predictor for future returns, but the change in aggregate institutional ownership is not. They interpret these results as evidence that the return forecasting power of institutional ownership comes from demand shocks rather than informed trading of institutional investors. In contrast, Nofsinger and Sias (1999) find that institutional investors herd toward undervalued stocks and away from overvalued stocks and argue that institutional investors trade based on value-relevant information about the firm. Chakravarty (2001) and Sias, Starks, and Titman (2006) also show that institutional investors are better informed on average and that their information is incorporated into security prices when they trade. Finally, Benett, Sias, and Starks (2003) document that both demand shocks and informational advantages predict future returns, albeit the results for informational advantage are sensitive to how the changes in institutional demand are measured.

In this paper we provide new evidence on the controversy surrounding the link between institutional investors' informational advantages and stock returns using geographic proximity as a measure of information asymmetry between informed and uninformed investors. Specifically, using state identifiers as our primary measure of geographic proximity and geographically proximate institutions as a close

approximation to informed investors, we examine whether the effect of stock trading on future stock returns is different across local (in-state) and nonlocal (out-of-state) institutional investors.

Previous literature shows that investors located near firms have significant informational advantages over nonlocal investors and that geographic proximity can serve as a good proxy for the measure of the extent of private information held by investors (Coval and Moskowitz (1999, 2001), Ivkovic and Weisbenner (2005), Gaspar and Massa (2007), Malloy (2005), Kang and Kim (2007)). In particular, Coval and Moskowitz (2001) argue that geographic proximity offers a unique method to identify informed investors in the investor population.

This literature on geographic proximity provides the necessary theoretical background for a test of the informational role of institutional investors. First, it suggests that local (nonlocal) ownership is associated with strong (weak) return forecasting power. Institutional investors are likely to enjoy significant informational advantages with respect to local firms. For example, investors can follow geographically proximate firms through local media reports. They are also more likely to have informal access to information about local firms, through conversations with employees, managers, suppliers, and customers, and as locally located institutional investors, they can visit geographically proximate firms and meet CEOs of these firms face-to-face at lower cost. It is also possible that compared to remote investors, investors located near firms expend less time collecting information about their firms since they are on-the-spot. This value-relevant information about the firm allows local institutional investors to make more informed trades, resulting in a positive relation between future stock returns and local ownership.

Second, the literature on geographic proximity suggests that the informational advantages of local investors are particularly pronounced when firms have greater information asymmetries. This predicts that the positive relation between local ownership and future stock returns is stronger when firms are small, when they are risky, when they have a higher level of R&D investment, or when they are young.

Finally, the literature documents that local institutional investors have an advantage over nonlocal institutional investors with respect to collecting private information about firms and thus are able to predict firms' negative news. This indicates that local institutional investors trade actively surrounding

such negative news to exploit their private information. For example, local institutional investors are expected to reduce their holdings prior to negative earnings surprises in order to minimize losses associated with their stock holdings.

Defining local institutional investors as those investors who are located within the same state as the firm's headquarters, we find that during the 1990 to 2004 period the fraction of local stocks in the market portfolio (i.e., the fraction of the market of securities located within the same state) is only 7.8% while institutional investors on average invest about 11.3% of their assets in stocks located within the same state.[1]

The analysis of the determinants of institutional ownership shows that although both local and nonlocal institutional investors tend to prefer larger firms, firms with lower market to book, firms with higher turnover, and firms with lower return volatility, the magnitudes of the coefficients on these variables in nonlocal ownership regressions are several times larger than those in local ownership regressions. These results suggest that local institutional investors have a stronger preference for stocks that have greater information asymmetry than do nonlocal institutional investors. Moreover, unlike nonlocal institutional investors who prefer old firms and firms with low R&D investment, local institutional investors prefer young firms and firms with high R&D intensity. To the extent that young firms and firms with high R&D intensity are associated with greater information asymmetry and nonlocal institutional investors have difficulties in obtaining private information about these firms, the results suggest that local institutional investors choose firms in which they are better able to exploit their private information.

We also find that stocks in the highest quintile of local holdings outperform stocks in the lowest quintile of local holdings by a significant 5.4% (Daniel, Grinblatt, Titman, and Wermers (1997) risk-

[1] In comparison, in a study of local bias for mutual funds, Coval and Moskowitz (2001) report that while the fraction of the market of securities that are located within 100 kilometers is 6.16 percent, the fund managers, on average, invest about 6.95% of their assets in stocks located within 100 kilometers. Thus, the extent of local bias documented in our study is much larger than that in Coval and Moskowitz (2001), which sets the perimeter of locality at a distance of 100 kilometers.

adjusted return) per year, whereas stocks in the highest quintile of nonlocal holdings outperform stocks in the lowest quintile of nonlocal holdings by only 2.8% per year. Furthermore, when we separate stocks according to the change in local and nonlocal holdings, stocks in the highest quintile of the change in local holdings outperform those in the lowest quintile by a significant 2% per year. In contrast, the difference in risk-adjusted returns between the highest and lowest quintiles of the change in nonlocal holdings is not statistically significant. These findings indicate that informed trading by local institutional investors is a strong predictor of future returns.

The regression results also show that the level of local institutional ownership is positively and significantly related to one-quarter-ahead stock returns, while the relation is positive but relatively weak for nonlocal institutional ownership. More important, we find a significant positive relation between the change in local institutional ownership and future returns but no such relation between the change in nonlocal institutional ownership and future returns. To the extent that investors located near firms have better access to information than remote investors and the changes in institutional ownership proxy for informed trading of institutional investors, these results further highlight the importance of institutional investors' informational role in forecasting future stock returns. We also find that positive relations between local ownership and stock performance are manifested in firms with high information asymmetry, such as small firms, firms with high return volatility, firms with high R&D intensity, and young firms, supporting the view that information asymmetry between local and nonlocal investors is the important factor for local investors to earn superior returns from their investments.

Finally, consistent with informed trading of local institutional investors, we find that local institutional investors begin to reduce their holdings prior to a break in a string of consecutive non-negative quarterly earnings surprises. For example, for firms that meet or beat analysts' earnings expectations in the past 8 consecutive quarters but miss the consensus forecast in the current quarter, the median local institutional investor reduces her holdings by almost 9.4% during the 3 quarters prior to the current quarter's earnings announcement. In contrast, the median nonlocal institutional investor increases her holdings by 0.73%. The difference in these changes in holdings is statistically significant at the 1%

level, suggesting that local institutional investors possess private information about the future prospects of firms, which allows them to trade more actively than nonlocal institutional investors to exploit their informational advantages.

Our paper is related to several recent studies that examine the link between the informational role of different types of institutional investors and future returns. For example, Bushee (1998), Ke and Ramalingegowda (2005), and Ke, Ramalingegowda, and Yu (2006) classify institutional investors into transient, dedicated, and quasi-indexing institutions based on institutional investors' portfolio turnover and diversification, and document that transitory institutional investors have private information about future earnings and returns. Similarly, Yan and Zhang (2007) classify institutional investors into short- and long-term investors based on investors' past portfolio turnover and provide evidence that the positive association between institutional ownership and future returns documented in Gompers and Metrick (2001) is largely driven by short-term institutional investors.

These studies use institutional investors' stock trading style, such as portfolio turnover and diversification, as proxies for information advantage and show that certain types of institutional investors have a consistent information advantage over other types of institutional investors.[2] However, the approaches used in these papers to classify institutional investors into informed and uninformed investors are unclear in explaining the sources of information advantages that institutional investors have. Furthermore, their classifications of institutional investors themselves may simply identify some firm characteristics related to future stock returns. For example, the superior stock performance of high turnover investors may be a manifestation of the predictability of past trading volume for future returns (Lee and Swaminathan (2000)). Unlike the Bushee (1998) and Yan and Zhang (2007) classifications, our

[2] We examine whether the classification measures used in previous papers result in stable classifications over time. Surprisingly, we find that 38.1% (29.2%) of institutional investors who are classified into short-tern (transient) investors in the current quarter change their classification during next 4 quarters. The corresponding change during the next 12 quarters is almost 74.4% (56.9%). It is puzzling that many institutional investors change their investment horizon and trading styles in such a short period of time. We thank Xuemin Yan and Zhe Zhang for providing us with institutional classification (short-term and long-term) data.

classification attributes geographic proximity to be a major source of informational advantage and thus is less likely to be subject to an endogeneity problem.[3] To the extent that geographic proximity of investment is based on the informational characteristics of an investor's investment in each portfolio firm, our paper is similar to Bushee and Goodman (2007), who show that institutional investors are more likely to have private information in only certain portfolio firms.

Our study contributes to the literature in at least three areas. First, it contributes to the ongoing debate over whether institutional investors' informational advantages can predict future returns. Gompers and Metrick (2001) find that future returns are positively related to aggregate institutional ownership and that this positive relation is driven by institutional investors' demand shifts rather than their informational advantages. Using local institutional ownership as a measure of information advantages, we show that future returns are positively and significantly related to both the level of local institutional ownership and its change,[4] particularly for firms most susceptible to information asymmetry, such as small, risky, young, and R&D intensive firms. This relation is still positive but weak for nonlocal institutional ownership. These results suggest that for certain types of institutional investors, their return predictive ability is due to their informational advantages, extending prior research on the informational role of institutional investors (Nofsinger and Sias (1999), Benett, Sias, and Starks (2003), Yan and Zhang (2007)).

Second, unlike previous studies that use institutional investors' past trading behavior as a proxy for their informational advantage (Bushee (1998), Yan and Zhang (2007)), we use institutional investors' geographic proximity as a proxy for their private information and geographically proximate institutions as a proxy for asymmetrically informed investors. While Yan and Zhang (2007) document that only short-

[3] Gaspar and Massa (2007) and Kang and Kim (2007) document evidence on the exogeneity of local ownership.

[4] Using mutual fund data, Coval and Moskowitz (2001) also show a positive relation between the level of local mutual fund ownership and future returns. However, as we discuss in the next section, their local mutual fund ownership is more likely to measure local bias at the firm level rather than actual ownership (i.e., fraction of shares held by local mutual funds). Because of this limitation, their local mutual fund ownership measure cannot be used to calculate changes in ownership and thus does not allow one to examine whether local mutual fund trading (changes in local mutual ownership) impacts stock returns.

term institutional ownership forecasts future stock returns, we find that local institutional investors are able to predict future returns irrespective of their investment horizon, suggesting that it is the source of information (i.e., geographic proximity) that determines institutional investors' informational role rather than investor characteristics such as investment horizon and trading styles.

Finally, although several studies document that the home bias phenomenon in international portfolio selection exists even in domestic portfolio selection (Coval and Moskowitz (1999), Ivkovic and Weisbenner (2005)), few studies examine the extent of local institutional ownership in the U.S. and its determinants. Using the expanded data set that covers all types of institutional investors, we show that during our sample period the mean (median) local institutional ownership accounts for only 3.8% (0.8%) of firms' total ownership, whereas the corresponding number for nonlocal institutional ownership is almost 30.4% (25.4%). We also find that local institutional investors have strong preferences for stocks that have greater information asymmetry than do nonlocal institutional investors, suggesting that the extent of the local bias phenomenon in domestic portfolio selection is associated, at least in part, with information asymmetry between local and nonlocal investors. These results are generally consistent with those of Coval and Moskowitz (1999) and Ivkovic and Weisbenner (2005).

The rest of this paper proceeds as follows. In Section I, we review the literature on geographic proximity. Section II describes the data and summary statistics. In Section III, we provide empirical evidence on the determinants of local and nonlocal institutional ownership. In Section IV, we investigate the effect of local and nonlocal institutional ownership and trading on future stock returns. Section V presents the results from robustness tests. Finally, we present a summary and concluding remarks in Section VI.

2. Literature Review: Geographic Proximity and Informational Advantages

Several papers show that geographic proximity can serve as an important proxy for the information asymmetry faced by investors. For example, Coval and Moskowitz (1999) analyze the role of geographic

proximity in the portfolio choice of U.S. mutual fund managers and find that U.S. fund managers exhibit a strong bias toward locally headquartered firms, particularly small, highly leveraged firms that produce nontraded goods. In another paper, Coval and Moskowitz (2001) show that on average U.S. fund managers earn an additional return of 2.65% per year from their local investments compared to their nonlocal investments. They also find that the investment returns are particularly higher for funds that are small and old, and for those that operate out of remote areas.

In a study of the stock investments of U.S. households from 1991 to 1996, Ivkovic and Weisbenner (2005) find that individual investors exhibit a local bias to an even larger degree than professional money managers and that the average household realizes an additional return of 3.2% per year from its local holdings relative to its nonlocal holdings. Ivkovic and Weisbenner (2005) also show that investment returns to local holdings are larger for stocks in the non-S&P 500 index than for those in the S&P 500 index, suggesting that investment returns are higher when information asymmetries between local and nonlocal investors are severe.

In a related study, Gaspar and Massa (2007) investigate the relations among informed local shareholders, corporate governance, and stock liquidity. They find that firms with higher ownership by local mutual funds have a lower shareholder rights index (i.e., stronger shareholder protection) but more illiquid shares, suggesting that there is a trade-off between the costs and benefits of local investment. Similarly, Kang and Kim (2007) find that geographically proximate block acquirers are more likely to engage in post-acquisition governance activities in targets than are remote acquirers, and targets located near acquirers experience both higher abnormal announcement returns and better post-acquisition operating performance than do remote targets.

Several papers also investigate the relation between distance and analyst performance. Malloy (2005) shows that compared to other analysts, in the U.S., geographically proximate analysts issue more accurate earnings forecasts, update their forecasts more frequently, and have a greater impact on stock prices, suggesting that geographically proximate analysts possess an informational advantage over other analysts. These effects are strongest in small firms, in firms located in small cities, and in firms located in remote

areas. Orpurt (2004) and Bae, Stulz, and Tan (2007) also find evidence of local analysts' informational advantages for a sample of seven European countries and 32 non-U.S. countries, respectively.

These studies indicate that investors/analysts located near a firm are better informed than other investors/analysts, possibly due to relatively easier access to value-relevant information about the firm.

3. Sample Selection

3.1. *Data*

Our initial sample includes the set of all firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for the period 1990 to 2004. The CDA/Spectrum data are based on the SEC's Form 13-F, which requires institutions managing more than $100 million in equity to file a quarterly report of all equity holdings greater than 10,000 shares or $200,000 in market value. We then match our initial sample with Compact Disclosure to obtain locations of firm headquarters. We exclude cases in which either the firms or institutional investors are from foreign countries. To avoid distance outlier effects, we also exclude cases in which either the firms or institutional investors are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands. We also exclude those observations with total institutional ownership in 13f Holdings greater than 100%. Our final sample comprises of 195,534 firm-quarters. We collect locations of institutional investors' headquarters from Nelson's Directory of Investment Managers, Moody's Bank & Finance Manual, and SEC filings. We obtain stock return and financial data from CRSP and COMPUSTAT, respectively. Finally, we use analyst forecast data from I/B/E/S.

We adopt state identifiers as a measure of geographic proximity since the state represents the boundary of economic interactions and thus can serve as an appropriate geographical unit for measuring the informational advantage of local investors. Investors whose headquarters are located within the same state as the firms' headquarters are expected to have better access to information than nonlocal investors because they are geographically close to the firms and thus can more easily obtain valuable private

information about the firms through informal talks with CEOs, employees, and customers, or they can readily visit the firms and directly observe the firms' operations.[5] In addition, local investors are able to derive their information about local firms from statewide information sources. For instance, local media such as newspaper, radio, and TV stations occasionally provide coverage of the local events within the state. Kang and Kim (2007) argue that a firm's state serves as an important geographic constraint to information flows and use state identifiers as their primary measure of geographic proximity.

Furthermore, several papers show that social interaction is an important mechanism for information exchange and state-level sociability is an important source of private information. For example, Hong, Kubik, and Stein (2004) show that stock market participation is influenced by social interaction. Brown, Ivkovic, Smith, and Weisbenner (2007) document evidence of a causal relation between stock ownership of an individual's community and the individual's own portfolio choice. Ivkovic and Weisbenner (2007) also find that the level of sociability prevailing in the state to which the household belongs explains a significant portion of the overall information diffusion effect and such information diffusion effects are more pronounced among local investments. To the extent that the state is an important geographic boundary where social interactions take place, these arguments suggest that the state can serve as a good proxy for the measure of informational distance.

We compare institutional investors' headquarters from Nelson's Directory of Investment Managers, Moody's Bank & Finance Manual, and SEC filings with firm headquarters from Compact Disclosure.[6]

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[5] One would argue that out-of-state investors near a firm can also have information advantages over other investors with respect to the firm. For example, investment managers based just across the river in Jersey City, NJ might have superior information about New York, NY companies, relative to investment managers based in Syracuse, NY. However, we find that such cases represent a very small portion of our sample firms: Firms with out-of-state institutional investors who are located within 100 kilometers of a firm's headquarters account for only 0.5% of our sample and the mean equity ownership by these institutional investors is very small, 0.003%. Excluding these firms from our sample does not change the results reported in the paper.

[6] As in the previous literature, we use headquarters location to measure geographic proximity of institutional investors. However, it is possible that the institutional investors' headquarters is far away from the firm, but its major branch or division is close to the firm. In this case, the institutional investors can easily access private

Previous studies use a fund manager number (Id key = MGRNO) in CDA/Spectrum Institutional (13f) Holdings as the institution identifier. However, we find that the fund manager number is reassigned to a different institutional investor if the assigned institutional investor disappears. To identify the cases in which the same fund manager number is assigned to different institutional investors, and to fully utilize these cases in the analysis, we track fund manager numbers and name changes for all institutional investors during our sample period. We find 4,253 institutional investors with different fund manager numbers and names. Out of these 4,253 institutional investors, state location information is available for 4,190.

3.2. Descriptive statistics

Panel A of Table 1 shows local and nonlocal institutional ownership aggregated at the firm level by year. At the end of March of each year from 1990 to 2004, we compute fractional local and nonlocal institutional ownership by dividing the number of shares held by local and nonlocal institutional investors by total shares outstanding.[7] We find that in 1990, the mean local ownership is 4.1% and the mean nonlocal ownership is 23.7%. In 2004, the corresponding numbers are 4.4% and 43%, respectively. Thus,

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information about the firm. However, to the extent that the institutional investor's headquarters is located in its main business area, this is not likely to be an important concern. Furthermore, Kang and Kim (2007) show that headquarters provide an important base for the acquirers to obtain information about targets, but branches or divisions do not.

[7] Coval and Moskowitz (2001) and Gaspar and Massa (2007) define local ownership as the difference between the percentage of mutual fund dollars devoted to stock *j* that are provided by local mutual fund managers (within 100 km) and the percentage of total mutual fund assets that reside within 100 km of stock *j*'s headquarters. Therefore, their local ownership measure is likely to capture local bias rather than local ownership per se. Unlike Coval and Moskowitz (2001) and Gaspar and Massa (2007), we use actual ownership held by local institutions in the firm as a measure of local institutional ownership. Our ownership measure is also different from their ownership measure in that our measure includes equity ownership by all institutions whereas their measure includes only mutual fund holdings, which account for only 15% of total institutional holdings. In unreported tests, we examine the robustness of our results by replicating the key analyses below excluding mutual fund holdings. We obtain results that are qualitatively similar to those reported in the paper.

over the 15 years, the fraction of local ownership increased less than 10%, while the fraction of nonlocal ownership increased almost twofold. We also find that the mean local ownership over our sample period is much larger than the median local ownership (3.8% versus 0.8%), suggesting that the distribution of local ownership is highly skewed to certain firms.[8] The time-series average of Pearson correlation coefficients between local and nonlocal ownership from 1990 to 2004 is 0.119 with a *p*-value of 0.01 (not reported).

To examine the variation of local ownership across states, in Appendix, we report the distribution of local institutional ownership by state. New York has the highest mean local institutional ownership (8.81%), followed by California (7.17%) and Massachusetts (7.08%). In contrast, the mean local institutional ownership is 0% in New Mexico. Given the high local institutional ownership in the states of New York, California, and Massachusetts, our main findings may be driven by these states. Hence, in unreported tests, we examine the robustness of our findings by replicating the key regression analyses below including state dummies. We obtain results that are qualitatively similar to those reported in the paper.

In Panel B of Table 1, we break the mean local institutional ownership down according to 13f classification of manager types.[9] The mean local ownership over the sample period is the highest for investment advisors (3.9%), followed by banks (0.9%), insurance companies (0.5%), and mutual funds (0.4%). The mean local ownership by other institutional investors (pension funds and university endowments) is about 0.2%. From 1990 to 2004, mutual fund and investment advisor local holdings increased almost 290% and 45%, respectively, while banks and insurance companies decreased their local holdings by 70% and 20%, respectively.

[8] Following Gompers and Metrick (2001), we denote institutional ownership as zero for those firms that are not held by any institutions in the CDA/Spectrum data.

[9] In 1999, the 13f unexpectedly changed the classification of manger types. We find that for the 1999 to 2004 period, most of managers in the 13f are classified as "other" investors. To maintain consistency in the classification of manager types over the sample period, we classify institutional investors during the 1999 to 2004 period following the classification used in the 1990 to 1998 period

Thus far, we have computed local ownership at the firm level. To parsimoniously examine local holdings by institutions, in Panel A of Table 2 we also measure the fraction of local institutional holdings at the manager level, which is calculated as total market value of local equity held by each manager divided by the total market value of equity held by each manager. Banks show the largest fraction of local ownership in their portfolio holdings, a mean of 16.8% over the sample period. However, banks substantially reduced their local investment, from 19.6% in 1990 to 13.3% in 2004. During the same time, insurance companies, investment advisors, and fund managers invested about 11.7%, 11%, and 8.4% of their total investments in local stocks, respectively. Unlike banks that had reduced their holdings in local stocks over the sample period, fund managers known to trade based on information maintained relatively stable local investment in their portfolio holdings.

To measure the extent of local bias for institutional investors, we follow Coval and Moskowitz (2001). Specifically, we compute the actual fraction of local holdings by each institutional manager (i.e., total market value of local stocks held by each manager divided by total market value of stocks held by each manager) and compare it with the fraction of the market of available securities that is located within the same state (i.e., expected fraction of stocks invested within the same state if the institutional investor holds the market portfolio). The difference between these two fractions measures the extent of local bias for each manager. To estimate local bias for aggregate institutional ownership, we average the actual fractions of local holdings (the fractions of the market of available securities) across managers using the total market value of equity held by each manager as the weight. Panel B of Table 2 reports the time-series average of these value-weighted averages. The results show that the fraction of local stocks in the market portfolio is only 7.8% while the actual fraction of holdings by local institutional investors is on average 11.3%. Therefore, the extent of local bias is about 3.5%, which accounts for about 31% (=3.5/11.3) of the institutional investors' investment in local stocks. This extent of local bias is also statistically significant at the 1% level. In comparison, using mutual funds data, Coval and Moskowitz (2001) show that the extent of local bias for their sample is only 0.79%. Thus, the extent of local bias

seems to be much larger when other types of institutions are included and state identifiers are used as a measure of geographic proximity.

In Table 3, we provide summary statistics of institutional ownership, stock returns, and other firm characteristics. The table reports the time-series mean, median, standard deviation, first quintile, and third quintile of the quarterly cross-sectional averages of the 60 quarters from 1990 to 2004. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity for the current quarter. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. Turnover is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. S&P 500 inclusion is a dummy for S&P 500 index membership. Firm age is calculated as the number of months since a firm's first stock return appears in CRSP, and dividend yield is cash dividend divided by share price. All variables are estimated at the same quarter-end unless noted otherwise.

We find that the mean institutional ownership is 34%, with a median of 32.5%. Consistent with the results in Table 1, the mean (median) local ownership is small compared to the mean (median) nonlocal ownership, at 3.8% (3.8%) and 30.2% (29.1%), respectively. The mean one-quarter-ahead stock return is 3.7%, with a median of 2.2%. The mean and median market-to-book ratios are about 2.6. The mean (median) market capitalization is $1.8 billion ($1.6 billion). Return volatility has a mean (median) of 13.4 (12.6). The mean turnover is 10.2, with a median of 10.5. The mean and median stock prices are close to $33. The S&P 500 inclusion dummy shows that about 8% of our sample firms are included in the S&P 500 index. The mean (median) cumulative market-adjusted return for the preceding 6 months is 3.6% (3.3%), and the mean (median) cumulative market-adjusted return for the penultimate 6 months is 4.0% (3.9%). On average, our sample firms have 13 years of CRSP data. The mean and median dividend yields are close to 0.3%. Finally, R&D expense averages 1% of total assets.[10]

[10] We assign the value of zero for missing R&D. Excluding firms with missing R&D from the analysis does not change the results reported in the paper.

4. Determinants of Local Institutional Ownership

To examine the cross-sectional determinants of local institutional holdings, for each quarter from 1990 to 2005, we estimate cross-sectional regressions of fractional local (nonlocal) institutional ownership on firm characteristics. Similar to previous studies (Falkenstein (1996), Gompers and Metrick (2001)), we include ten stock characteristics: market-to-book, size (the log of market capitalization), return volatility, turnover, stock price, S&P 500 inclusion, cumulative market-adjusted return for the preceding 6 months, cumulative market-adjusted return for the penultimate 6 months, age, and dividend yield.[11] In addition, we include the ratio of R&D expenses to total assets as an explanatory variable. We use the Fama-MacBeth (1973) method to calculate standard errors for the time-series average of coefficients.

Table 4 presents the results. Rather than reproducing the coefficient estimates for each quarter, we average them for the entire sample quarters. We provide three different measures to help assess the statistical significance of the results: the average of time-series *t*-statistics for coefficients, the number of *t*-statistics for a coefficient that are significantly different from zero at the 10% level or better, and the *t*-statistic for the difference in coefficients between the two regressions (local versus nonlocal institutional ownership as the dependent variable).

The results show that the coefficients on all explanatory variables are significant in local and nonlocal ownership regressions except the one on the cumulative market-adjusted return for the preceding 6 months. The only variable that has a significant coefficient each quarter is firm size. During the entire 60-quarter sample period, both local and nonlocal institutional investors invest more in large firms controlling for ten other firm characteristics. The coefficient on turnover in local (nonlocal) ownership regression is significantly positive in 51 (60) quarters out of 60, consistent with the notion that

[11] Market-to-book is winsorized at the 1st and 99th percentiles. Using cumulative raw returns for the preceding 6 months and the penultimate 6 months instead of cumulative market-adjusted returns for the same time intervals does not change the results.

institutional investors prefer liquid stocks. In contrast, the coefficients on market-to-book and return volatility in the local (nonlocal) ownership regression are significantly negative in 39 (60) quarters out of 60 and 26 (48) quarters out of 60, respectively. These results indicate that both local and nonlocal institutional investors prefer firms with low market-to-book and firms with low risk. Although the time-series averages of these coefficients are significant in both local and nonlocal ownership regressions, their magnitudes in the nonlocal ownership regression are several times larger than those in local ownership regression, suggesting that nonlocal institutional investors have a stronger preference for stocks that have less information asymmetry than do local institutional investors.

We also find that nonlocal institutions prefer old firms and firms with lower R&D intensity. In contrast, local institutions show a preference for young firms and firms with high R&D intensity. To the extent that nonlocal institutional investors face greater difficulty in obtaining private information about young firms and firms with high R&D intensity, the results suggest that while local institutional investors choose stocks with higher information asymmetry in which they are better able to exploit their information advantage, nonlocal institutional investors avoid such firms.

Although institutional investors prefer low price stocks, non-S&P 500 index stocks, and stocks with a low dividend yield, the effects are stronger in the nonlocal ownership regression than in local ownership regression.

Overall, the results in Table 4 make it clear that local institutional investors have a stronger preference for firms that have greater information asymmetry, that is, for firms in which they are better able to exploit their private information.

5. Local Institutional Holdings and Future Stock Returns

5.1. Level of local institutional ownership and future returns

In this section, we examine the relation between the levels of local and nonlocal institutional ownership and future returns. Table 5 shows the results. Each quarter, we estimate a cross-sectional

regression of one-quarter-ahead returns on local and nonlocal ownership variables and ten stock characteristics used in Gompers and Metrick (2001). Instead of reporting coefficients for each quarter, we report the time-series average coefficients from 60 cross-sectional regressions along with their time-series *t*-statistics (Fama and MacBeth (1973)). Model (1) shows that future returns are positively and significantly related to total institutional ownership, indicating that the current levels of institutional ownership predict future stock returns. This result is consistent with that of Gompers and Metrick (2001). As discussed in Gompers and Metrick (2001), there are two possible explanations for the return forecasting power of the level of institutional ownership. First, if the level of institutional ownership reflects the accumulated purchase of undervalued stocks by institutional investors, the positive relation between institutional ownership and future returns suggests that institutional investors are informed investors. Second, the growth in institutional ownership generates a large demand for the stocks institutional investors prefer, so the positive relation between institutional ownership and future returns is evidence of institutional demand shocks.

To distinguish between these two possibilities, we decompose total institutional ownership into local and nonlocal institutional ownership and reestimate model (1) separately using local and nonlocal institutional ownership as explanatory variables. The results are reported in models (2) and (3). Because, as shown in Table 1, the growth rate in nonlocal institutional ownership is much higher than the growth rate in local institutional ownership during our sample period, if demand shocks associated with the growth in institutional ownership impact stock returns, we would expect nonlocal institutional ownership to predict stock returns better than local institutional ownership. Alternatively, to the extent that geographic proximity serves as a good proxy for the measure of private information held by investors, if informed trading of institutional investors is responsible for the positive relation between institutional ownership and future returns, we expect local institutional ownership to predict stock returns better than nonlocal institutional ownership. The results in models (2) and (3) show that local and nonlocal ownership variables have coefficients of 0.03 and 0.01, respectively, which are significant at the 1% and 10% levels. Therefore, although the significance of the coefficient on nonlocal institutional ownership

supports the view that the demand shocks impact stock prices, the strong significance of the coefficient on local institutional ownership is also consistent with the view that informational advantages of institutional investors have an effect on stock returns. In model (4), we include both local and nonlocal institutional ownership as explanatory variables and find similar results as those in models (2) and (3).

To more closely investigate the importance of the informational role of local institutional investors in forecasting future returns, we examine whether the return forecasting power of local institutional ownership is particularly pronounced in stocks with greater information asymmetry and hence in which value-relevant private information is relatively difficult to obtain by nonlocal institutional investors (Coval and Moskowitz (1999), Ivkovic and Weisbenner (2005), Malloy (2005), Kang and Kim (2007)). Specifically, using standard information asymmetry variables (size, return volatility, R&D, and age), we divide stocks into those with high information asymmetry and those with low information asymmetry based on the sample median of each information asymmetry variable and reestimate model (4) in Table 5 separately for these two groups.

Table 6 presents evidence consistent with the informational role of local institutional investors. The results show that the positive relation between the current levels of local institutional ownership and future returns is particularly strong among stocks that are small, stocks that are young, stocks that have high return volatility, and stocks that have high R&D intensity. Although local institutional ownership is positively and significantly related to future returns for both small and large stocks, the coefficient for small stocks is more than two times larger than that for large stocks. Furthermore, whereas the coefficients on local institutional ownership are positive and significant at the 1% level for stocks with high return volatility, stocks with high R&D intensity, and young stocks, the corresponding coefficients are not significant for stocks with low return volatility, stocks with low R&D intensity, and old stocks.

In contrast, nonlocal institutional ownership forecasts future returns only for stocks with low R&D intensity. In addition, it does not forecast future returns for both large and small stocks. Although the coefficients on nonlocal institutional ownership are positive and significant for stocks with high return

volatility and young stocks, the significance levels of these coefficients are weaker than those on local institutional ownership for the same stocks.

These findings suggest that although the current levels of local and nonlocal institutional ownership forecast returns, the forecasting power is stronger for local institutional ownership and is more pronounced for information-sensitive stocks for which local institutional investors have a relative information advantage.

5.2. Local institutional trading and future returns

Gompers and Metrick (2001) argue that because the institutional demand patterns are relatively stable over time, the level of lagged institutional ownership is a good proxy for future institutional demand. They also argue that the change in institutional ownership is a good indicator for an institutional information advantage because if institutional investors trade stocks on information, future stock returns should be related to changes in their ownership. Gompers and Metrick (2001) find a strong and positive relation between the level of lagged institutional ownership and future returns, but a weak relation between the change in institutional ownership and future returns. In this section, we use the Gompers and Metrick (2001) approach to disentangle these two different effects of institutional ownership on one-quarter-ahead returns. Specially, we divide the current level of institutional ownership (*Institutional ownership*$_t$) into the lagged level of institutional ownership in quarter t-2 (*Institutional ownership*$_{t-2}$) and the change in institutional ownership from quarter t-2 to t (*ΔInstitutional ownership)*. We focus on the change in institutional ownership over the previous two quarters rather than over the previous one quarter since local institutional ownership does not change markedly over a short period such as one quarter.[12]

[12] The mean change in local (nonlocal) institutional ownership over the previous one quarter is 0.003% (0.4%) and the mean change in local (nonlocal) institutional ownership over the previous two quarters is 0.008% (2.85%). The results from the change in local (nonlocal) institutional ownership over the previous three quarters are qualitatively similar to those reported in the paper.

The change in local institutional ownership from quarter t-2 to quarter t is also positively and significantly related to future returns while the change in nonlocal institutional ownership for the same period is not.

Table 7 reports the regression results. Similar to Gompers and Metrick (2001), in model (1) we find a positive relation between future returns and *Institutional ownership*$_{t-2}$ and little statistically discernable relation between future returns and *ΔInstitutional ownership*, supporting the view that the demand shock effect drives the return forecasting power of institutional ownership. When we break total institutional ownership down into local and nonlocal ownership, we find that the change in local institutional ownership is positively related to future returns (model 2), whereas the change in nonlocal institutional ownership has little effect on future returns (model 3). Thus, the informational role of institutional investors in predicting future returns is stronger for local institutional investors than for nonlocal institutional investors. We also find that although the coefficient on the level of local ownership is also positive and significant, its magnitude is much smaller than the magnitude of the coefficient on the change in local ownership (model 4).

To further examine the effects of informed trading of local institutional investors on stock returns, we repeat the regressions in Table 6 using the levels of lagged local and nonlocal institutional ownership and the changes in local and nonlocal institutional ownership as explanatory variables. Table 8 reports the results. We find that the positive relation between the change in local institutional ownership and future returns exists only for small stocks, young stocks, stocks with high return volatility, and stocks with high R&D intensity. These findings suggest that informational advantages of local institutional investors over nonlocal institutional investors in information-sensitive stocks are the driving source of their superior return forecasting ability. Furthermore, the effect of informed trading of local institutional investors on future returns is economically large and significant. For example, the coefficient on the change in local institutional ownership for stocks with high R&D intensity is 0.12. Evaluating the estimated coefficient at the mean indicates that all else being constant, a 10% increase in local institutional trading in stocks with high R&D intensity results in about 1.2% increase in one-quarter-ahead stock returns.

In sum, the results in Tables 5 through 8 support both the institutional demand shift and informed institutional trading explanations. Consistent with the institutional demand shock explanation, the levels of local and nonlocal institutional ownership forecast future returns (Gompers and Metrick (2001)). However, we find that future returns are positively related to changes in local institutional ownership, suggesting that informed institutional trading also predicts future returns. Moreover, this return forecasting power of local institutional trading is particularly pronounced in small stocks, young stocks, stocks with high return volatility, and stocks with high R&D intensity. To the extent that these stocks provide local institutional investors with better opportunities to exploit their private information, our findings suggest that local institutional investors buy stocks in which they have informational advantages and execute profitable trades on their private information.

5.3. Portfolio performance

To provide a robustness check on our previous results and gauge the economic significance of the effect of demand shocks and informed institutional trading on future returns, we use a portfolio approach. Each quarter, we sort stocks into quintiles on the basis of the level of local (nonlocal) ownership and its change, and we then compute annualized one-quarter-ahead value-weighted returns on the quintile portfolios. We also form a zero-cost investment (hedge portfolio) strategy that is long in portfolio Q5 (the quintile portfolio with the largest ownership holding (the largest ownership increase)) and short in portfolio Q1 (the quintile portfolio with the smallest ownership holding (the largest ownership decrease)), Q5 - Q1, and compute the average return on this hedge portfolio. To rule out the possibly that the hedge portfolio strategy simply captures the risk-premium, we also estimate the risk-adjusted return on the hedge portfolio as suggested by Daniel, Grinblatt, Titman, and Wermers (1997).

Panel A of Table 9 presents the time-series averages of annualized quarterly returns on the portfolios sorted according to the levels of local and nonlocal institutional ownership. The table shows that for the sort based on the level of local institutional ownership, the average annualized raw and risk-adjusted

returns on the hedge portfolio Q5-Q1 are 1.72%. and 5.40%, respectively, both of which are significant at the 1% level. The corresponding returns for the hedge portfolio based on the level of nonlocal institutional ownership are much smaller, 1.64% and 2.80%.

Previous studies use physical distance between the firm and the investor as a measure of informational advantages of local investors. For example, Coval and Moskowitz (1999, 2001), Malloy (2005), and Gaspar and Massa (2007) adopt 100 kilometers as a measure of locality. Therefore, we use 100 kilometers as an alternative measure of geographic proximity and report the results in the last column of Panel A.[13] We find that the results using this alternative distance measure are qualitatively similar to those using states as a measure of locality.

In Panel B of Table 9, we report the time-series averages of annualized quarterly returns on the portfolios sorted by the changes in local and nonlocal institutional ownership. When we use states as a measure of locality, for the raw returns, stocks in the highest quintile of local holding change (those stocks most heavily purchased by local institutional investors) outperform stocks in the lowest quintile of local holding change (those stocks most heavily sold by local institutional investors) by a significant 1.96%, while stocks in the highest quintile of nonlocal holding change underperform stocks in the lowest quintile of nonlocal holding change by an insignificant 1.28%. Similarly, the risk-adjusted return difference between the highest and lowest quintiles of local holding changes is a significant 2% and the risk-adjusted return difference between the highest and lowest quintiles of nonlocal holding changes is an insignificant 1.28%. The results using 100 kilometers as a measure of locality are similar to those using states as a measure of locality, suggesting that both measures of geographic proximity serve as important

[13] As in the previous literature, we use the standard formula for calculating the distance, $d_{i,j}$, between the firm and the investor as follows:

$$d_{i,j} = \arccos\{\cos(lat_i)\cos(lon_i)\cos(lat_j)\cos(lon_j) + \cos(lat_i)\sin(lon_i)\cos(lat_j)\sin(lon_j) + \sin(lat_i)\sin(lay_j)\}2\pi r/360,$$

where *lat* and *lon* are the latitudes and longitudes of the firm and the investor locations (headquarters), respectively, and *r* denotes the radius of the earth (approximately 6,378 kilometers).

geographic boundaries to information flows and thus can capture an important local-investor information advantage. [14]

Overall, the results in Table 9 suggest that stocks with the highest local institutional ownership or those purchased predominantly by local institutional investors consistently outperform stocks with the smallest local institutional ownership or those sold predominantly by local institutional investors. The evidence on stock-picking ability, however, is weak for nonlocal institutional investor. These results provide further support for the view that local institutional investors have a significant information advantage over nonlocal institutional investors.

5.4. Earnings surprise and institutional trading

Thus far, we have shown superior performance of local institutional investors, which suggests that local institutional investors have better information about firms' future prospects than nonlocal institutional investors. To provide further evidence on this issue, we investigate whether local institutional investors trade actively surrounding an important economic event to exploit their private information, using the break in strings of consecutive nonnegative earnings as an example of an important economic event. Skinner and Sloan (2002) and Conrad, Cornell, and Landsman (2002) find that a negative earnings surprise generates a large negative return when the positive news was anticipated. Thus, we expect that local institutional investors (i.e., informed investors) are more likely to decrease their holdings prior to negative earnings surprises than nonlocal institutional investors (i.e., uninformed investors).

Panel A of Table 10 presents the mean and median changes (percentage changes relative to the previous period) in institutional ownership prior to an earnings break for a sample of firms that meet or

[14] About 98.3% of institutional investors who are located within 100 kilometers of a firm's headquarters is classified as in-state institutional investors. Both the level of and change in ownership by these institutional investors, however, are not significantly related to future returns in Tables V and VII, respectively, possibly due to their small size. For example, the mean level of local ownership using 100 kilometers as a measure of locality is 0.6% and the mean change of such local ownership is only 0.002%.

beat analysts' earnings estimates over the past 4 consecutive quarters but miss the consensus forecast in the current quarter. We find that institutional investors start to sell their holdings prior to an earnings reversal, but the pattern of stock sales is more evident for local institutions than for nonlocal institutions. Specifically, at quarter *t*-2, the median change in local institutional ownership is -0.85% while the median change in nonlocal institutional ownership is 1.58%. These results suggest that local investors sold 0.85% of their holdings during quarter *t*-2, but nonlocal investors increased their holdings 1.58% over the same period. The difference in these holding changes is statistically significant at the 1% level. Similarly, the median change in local institutional ownership at quarter *t*-1 is -2.18%, whereas the median change in nonlocal institutional investors for the same period is only -0.43%. The difference in these changes is again significant at the 1% level. The mean (median) cumulative change in local ownership from quarter *t*-3 to quarter *t*-1 is -1.57% (-0.91%) while that in nonlocal ownership for the same period is 3.03% (4.62%).[15] These results clearly suggest that local institutions have predictive ability with respect to earnings disappointments and use such ability to avoid losses in their investments by reducing their holdings accordingly. We also find decreases in both local and nonlocal institutional ownership at the event quarter (quarter 0), but the difference is not statistically significant.

In Panel B of Table 10, we use a sample of firms with at least 8 consecutive nonnegative earnings surprises prior to a break. We obtain qualitatively similar results as those reported in Panel A.

In sum, these results suggest that local institutions can anticipate the break in strings of consecutive nonnegative earnings at least two quarters in advance and start to decrease their holdings to avoid the drop in stock price.[16] Although nonlocal institutional investors also appear to have foreknowledge about earnings reversal, they start to sell their stocks later than local institutional investors and the magnitude of

[15] Barber and Odean (2000) suggest that informed investors trade infrequently to avoid high transaction costs. Since, as shown in footnote 9, local institutional investors generally tend not to trade actively, active trading of local institutional investors prior to negative earnings surprises suggests that they trade actively only when they are able to exploit their private information about firms.

[16] Ke and Petroni (2004) show that transient institutional investors can predict the break in strings of consecutive earnings at least one quarter in advance.

their sales is much smaller than that of local institutional investors' sales. These findings corroborate the results from the previous section, and further support the view that local institutional investors have superior access to information relative to nonlocal institutional investors.

6. Additional Tests

To check the robustness of the results, we conduct four additional tests. Below, we briefly summarize the results of these tests.

6.1. Investment horizons (short-term versus long-term institutional investors)

Several studies document that short-term institutional investors are better informed than long-term institutional investors and argue that institutional investors' investment horizon reflect their information advantage (Ke and Ramalingegowda (2005), Ke, Ramalingegowda, and Yu (2006), Yan and Zhang (2007)). To the extent that our results so far indicate that local institutional investors are better informed than nonlocal institutional investors and that their informed trading impacts stock returns, it is possible that our results for the informational role of local institutional investors are mainly driven by local institutional investors with a short-term investment horizon.

To examine this issue, we divide institutional ownership into short- and long-term ownership according to Yan and Zhang's (2007) classification and regress one-quarter-ahead returns on institutional ownership variables and the ten control variables used in Table 5. The regression results are reported in the first two columns of Table 11. In the first regression, we replicate the findings of Yan and Zhang (2007) by disaggregating institutional ownership into short-term and long-term institutional ownership. Consistent with the results in Yan and Zhang (2007), we find that future returns are significantly and positively related to short-term institutional ownership, but are insignificantly related to long-term institutional ownership.

In the second regression, we further divide short- and long-term institutional ownership into short-term local and nonlocal institutional ownership, and long-term local and nonlocal institutional ownership. We find that that both short- and long-term local institutional ownership are positively and significantly related to future turns, indicating that both ownership variables predict future returns. These findings suggest that it is the source of information (e.g., geographic proximity) that mainly determines the informational role of institutional investors, not investor characteristics such as investment horizon and trading styles. We also find that the coefficient on short-term nonlocal institutional ownership is positive and significant, whereas the coefficient on long-term nonlocal institutional ownership is negative and insignificant. These results suggest that nonlocal institutional investors with a short-term investment horizon have a stronger return forecasting power than those with a long-term investment horizon.

6.2. Institutional investor types

The previous literature shows that mutual fund mangers have an informational advantage and actively trade based on their superior information (Grinblatt and Titman (1989, 1993), Daniel, Grinblatt, Titman, and Wermers (1997), Wermers (1999, 2000)). Furthermore, Coval and Moskowitz (2001) document that local mutual fund managers consistently earn positive abnormal returns from their local investments compared to their nonlocal investments, suggesting that they have significant informational advantages. These results imply that the return forecasting power of institutional ownership documented in the previous studies is primarily driven by the informed trading of mutual fund managers.

To test whether mutual fund ownership derives our results, we break total institutional ownership down according to manager type: banks, insurance companies, mutual funds, investment advisors, and other investors. The results are reported in the third column of Table 11. It shows that mutual fund ownership, investment advisor ownership, and other institutional ownership are positively and significantly associated with future returns. In contrast, bank ownership and insurance company ownership do not predict future returns.

In the fourth regression, we decompose local institutional ownership by manager type. The results show that the coefficient on local mutual fund ownership is positive but statistically insignificant. However, we find that local investment advisor ownership is positively and significantly related to future returns. This result is consistent with Bushee and Goodman (2007), who show that private information trading is most pronounced for investment advisers. Finally, we find a positive but insignificant relation between future returns and other institutional ownership.

6.3. Index funds

Index funds are known to be passive traders since they tend to replicate the movements of the market index with little input in portfolio decisions. Therefore, it is possible that the weak relation between the change in nonlocal institutional ownership and future returns shown in this paper is due to some nonlocal institutional investors who are specialized mainly in index funds. To address this issue, in untabulated tests, we exclude institutional investors who focus on index funds from our sample of institutional investors and reestimate regressions in Tables 4 through 10.[17] We obtain results that are qualitatively similar to those reported in the tables.

7. Summary and Conclusion

This study investigates the informational role of geographically proximate institutional investors in stock markets. Using a sample of 195,534 firm-quarters for the period 1990 to 2004, we find that about 12% of total institutional ownership corresponds to local institutional investors. Compared to nonlocal institutional investors, local institutional investors exhibit a stronger preference for firms that have greater information asymmetry, such as younger firms and R&D intensive firms.

[17] Following Yan and Zhang (2007), we define institutional investors specializing in index funds as those that either invest more than $1 billion in index funds or have more than 50% of their total net assets in index funds.

We also find that although the levels of both local and nonlocal institutional ownership forecast future returns, the return forecasting power of local institutional ownership is statistically and economically more significant than that of nonlocal institutional ownership. Moreover, the positive relation between the levels of local institutional ownership and future returns is particularly evident for stocks with high information asymmetry, such as small stocks, stocks with high return volatility, stocks with high R&D intensity, and young stocks. We further find that that the change in local institutional ownership predicts future returns, particularly those of stocks with high information asymmetry. However, we find little evidence that the change in nonlocal ownership is associated with future returns.

Finally, we find that local institutions can anticipate the break in strings of consecutive nonnegative quarterly earnings surprises at least two quarters in advance and as a result they start to decrease their holdings to avoid the drop in stock price.

Overall, these results provide strong support for the view that local institutional investors have a significant informational advantage over nonlocal institutional investors and that their geographic proximity allows them to execute profitable trades based on their superior information. Our results highlight the importance of informed trading in the relation between institutional ownership and stock returns.

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Table 1
Descriptive Statistics of Local and Nonlocal Institutional Ownership at the Firm Level by Year

This table summarizes local and nonlocal institutional ownership at the firm level by year. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for the period 1990-2004 for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. "Other" manager type includes pension funds and university endowments.

Panel A: Local and nonlocal institutional ownership by year (%)

Year	Local institutional ownership		Nonlocal institutional ownership	
	Mean	Median	Mean	Median
Mar-90	4.07	0.86	23.72	19.72
Mar-91	4.02	0.91	23.45	18.91
Mar-92	4.00	0.98	25.79	21.17
Mar-93	3.98	0.95	26.56	22.18
Mar-94	3.76	0.76	29.01	24.60
Mar-95	3.71	0.62	29.16	24.52
Mar-96	3.71	0.67	28.16	23.45
Mar-97	3.52	0.63	29.05	24.30
Mar-98	3.26	0.49	29.85	25.13
Mar-99	3.48	0.63	29.96	25.47
Mar-00	3.60	0.68	30.02	25.22
Mar-01	3.87	0.77	32.39	27.93
Mar-02	3.92	0.84	35.86	32.75
Mar-03	4.07	0.99	38.45	36.49
Mar-04	4.41	1.31	43.00	43.81
1990-2004	3.80	0.79	30.62	25.73

Panel B: Mean local institutional ownership by manager type (%)

Year	Banks	Insurance companies	Mutual funds	Investment advisors	Other
Mar-90	1.85	0.67	0.15	3.02	0.28
Mar-91	1.65	0.58	0.26	3.40	0.26
Mar-92	1.51	0.39	0.30	3.87	0.23
Mar-93	1.36	0.38	0.37	3.97	0.20
Mar-94	1.12	0.48	0.36	3.91	0.25
Mar-95	1.06	0.56	0.39	3.96	0.25
Mar-96	0.93	0.51	0.35	4.19	0.15
Mar-97	0.78	0.50	0.44	3.88	0.13
Mar-98	0.66	0.50	0.50	3.36	0.17
Mar-99	0.64	0.56	0.48	3.86	0.12
Mar-00	0.54	0.51	0.49	3.97	0.17

Mar-01	0.54	0.57	0.61	3.97	0.17
Mar-02	0.55	0.54	0.60	3.97	0.16
Mar-003	0.54	0.57	0.53	4.12	0.20
Mar-04	0.56	0.54	0.59	4.35	0.23
1990-2004	0.89	0.52	0.44	3.87	0.19

Table 2
Local Institutional Ownership at the Manager Level by Year and the Extent of Local Bias

This table summarizes local institutional ownership at the manager level. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for the period 1990-2004 for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local institutional ownership is equity holdings by institutional investors whose headquarters are located within the same state as the firms' headquarters. Local institutional ownership at the manager level is defined as the total market value of local equity held by each manager divided by the total market value of equity held by each manager. "Other" manager type includes pension funds and university endowments. The actual fraction of local holdings by each institutional manager is computed by the total market value of local stocks held by each manager divided by the total market value of stocks held by each manager. The fraction of the market of available securities that is located within the same state is the expected fraction of stocks invested within the same state if the institutional investor holds market portfolio. To estimate the fractions for aggregate institutional ownership, the actual fractions of local holdings (the fractions of the market of available securities) are averaged out using the total market value of equity held by each manager as the weight. The reported numbers are the time-series average of these value-weighted averages. *p*-value is in parenthesis.

Panel A: Local institutional ownership at the manager level by year (%)

	Banks		Insurance companies		Mutual funds		Investment advisors		Other	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Mar-90	19.63	16.36	11.25	6.17	8.43	6.23	11.39	8.74	16.13	6.95
Mar-91	18.11	16.08	12.42	6.05	8.64	5.76	11.19	7.99	16.91	7.07
Mar-92	18.78	16.24	10.40	5.18	8.21	6.29	10.94	7.84	13.19	7.56
Mar-93	20.13	17.48	11.10	6.55	6.97	5.56	10.79	8.69	13.62	6.97
Mar-94	18.73	15.52	10.90	7.24	6.17	3.78	10.40	7.92	13.66	7.07
Mar-95	18.71	15.11	11.05	6.33	6.83	3.70	11.27	8.02	12.88	6.54
Mar-96	19.46	16.23	11.84	6.13	8.51	4.91	10.84	7.30	12.11	4.38
Mar-97	17.45	14.28	10.94	6.03	8.23	4.98	11.00	7.22	11.78	4.46
Mar-98	16.53	13.27	12.25	6.24	8.57	5.13	10.91	7.89	11.74	5.28
Mar-99	13.56	11.29	13.08	6.62	9.15	5.33	11.66	7.90	11.63	3.22
Mar-00	11.23	9.39	11.04	5.04	9.54	5.88	11.75	6.83	13.68	4.98
Mar-01	13.39	9.74	13.08	5.99	9.01	5.27	11.16	7.15	11.34	3.64
Mar-02	13.72	11.64	11.54	5.04	9.43	5.72	10.46	7.06	12.12	4.16
Mar-03	13.37	9.60	13.19	7.22	9.52	6.02	10.47	7.18	10.29	4.25
Mar-04	13.33	9.11	11.94	4.80	9.22	6.04	10.39	6.92	10.93	4.24
1990-2004	16.84	13.78	11.68	6.04	8.42	5.42	10.97	7.53	12.77	5.29

Panel B: The extent of local bias

	Actual fraction of local holdings	Fraction of the market of available securities in the same state	Test-of-Difference
1990-2004	11.3%	7.8%	3.5% (<0.01)

Table 3

Descriptive Statistics of Local and Nonlocal Institutional Ownership, Future Returns, and Other Firm Characteristics

This table provides descriptive statistics for the quarterly cross-sectional averages during the period from 1990 to 2004 for institutional ownership, future stock returns, and other firm characteristics. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. $RET_{t,t+3}$ is one-quarter-ahead stock return. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity for the current quarter. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\,t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\,t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\,t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP, and dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise.

	Number of firm-quarters	Mean	Median	Standard deviation	Q1	Q3
Ownership and future returns						
Institutional ownership (%)	60	34.04	32.53	5.85	29.79	36.45
Local institutional ownership (%)	60	3.81	3.82	0.30	3.61	3.98
Nonlocal institutional ownership(%)	60	30.23	29.09	5.71	25.94	32.60
$RET_{t,t+3}$ (%)	60	3.71	2.18	10.81	-3.26	11.69
Other firm characteristics						
Market-to-book	60	2.62	2.57	0.46	2.28	2.93
Size: Market capitalization ($mil)	60	1,790.4	1,645.2	923.1	898.6	2,629.9
Return volatility (%)	60	13.38	12.57	2.85	11.19	15.12
$Turnover_{t-6,\,t}$(%)	60	10.19	10.47	2.53	8.51	11.62
Price ($)	60	32.43	33.51	9.83	23.73	37.91
SP500 (dummy)	60	0.08	0.08	0.01	0.07	0.09
$MRET_{t-6,\,t}$(%)	60	3.60	3.29	9.79	-2.81	7.12
$MRET_{t-12,\,t-7}$(%)	60	3.96	3.87	10.02	-2.84	8.07
Age (months)	60	161.33	156.18	16.56	149.31	169.74
Dividend yield	60	0.003	0.003	0.001	0.002	0.003
R&D	60	0.01	0.02	0.003	0.009	0.013

Table 4
Determinants of Local and Nonlocal Institutional Ownership

This table reports estimates from the time-series cross-sectional regressions of fractional local (nonlocal) institutional ownership on firm characteristics. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. $RET_{t,t+3}$ is one-quarter-ahead stock return. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\,t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\,t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\,t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution. Numbers in brackets are those of coefficients that are significantly positive and negative at least at the 10% level, respectively.

	Local institutional ownership		Nonlocal institutional ownership		Difference in coefficients
Independent variables	Coefficient (*t*-statistic)	Number of significance	Coefficient (*t*-statistic)	Number of significance	*t*-test
Intercept	-0.001 (-2.53)		-0.081 (-13.25)		
Market-to-book	-0.001 (-9.75)	[0, 39]	-0.007 (-26.89)	[0,60]	32.61
Size	0.008 (73.92)	[60, 0]	0.076 (41.67)	[60,0]	36.83
Return volatility	-0.018 (-6.02)	[2,26]	-0.123 (-10.75)	[1,48]	10.34
$Turnover_{t-6,\,t}$	0.000 (15.84)	[51,0]	0.003 (16.57)	[60,0]	15.58
Price	-0.000 (-9.86)	[0,0]	-0.000 (-11.06)	[0,42]	11.20
SP500	-0.002 (-1.66)	[9,16]	-0.050 (-8.11)	[0,60]	9.11
$MRET_{t-6,\,t}$	0.000 (0.75)	[10,7]	-0.004 (-1.20)	[15,25]	1.38
$MRET_{t-12,\,t-7}$	-0.001 (-2.50)	[1,15]	-0.009 (-2.85)	[11,25]	2.40
Age	-0.000 (-2.06)	[0,6]	0.000 (8.03)	[38,0]	9.10
Dividend yield	-0.139 (-3.66)	[2,12]	-2.978 (-7.68)	[0,48]	7.80
R&D	0.127 (18.57)	[50,0]	-0.144 (-6.10)	[2,18]	10.94
Average R^2	0.07		0.44		

Table 5
Regression of Future Returns on Local and Nonlocal Institutional Ownership

This table reports estimates from the time-series cross-sectional regressions of one-quarter-ahead returns on local (nonlocal) institutional ownership and other firm characteristics. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\,t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\,t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\,t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution.

	Total institutional ownership (1)	Local institutional ownership (2)	Nonlocal institutional ownership (3)	Local and nonlocal institutional ownership (4)
Intercept	0.07	0.06	0.06	0.06
	(4.85)	(4.74)	(4.83)	(4.84)
Institutional ownership	0.01			
	(2.27)			
Local institutional ownership		0.03		0.03
		(2.53)		(2.65)
Nonlocal institutional ownership			0.01	0.01
			(1.78)	(1.90)
Market-to-book	-0.00	-0.00	-0.00	-0.00
	(-3.18)	(-3.36)	(-3.28)	(-3.19)
Size	-0.01	-0.00	-0.00	-0.01
	(-3.00)	(-2.01)	(-2.74)	(-3.00)
Return volatility	-0.04	-0.04	-0.04	-0.04
	(-1.18)	(-1.22)	(-1.20)	(-1.17)
$Turnover_{t-6,\,t}$	0.00	0.00	0.00	0.00
	(0.02)	(0.16)	(0.09)	(0.02)
Price	0.00	0.00	0.00	0.00
	(3.61)	(3.11)	(3.46)	(3.63)
SP500	0.03	0.02	0.03	0.03
	(8.28)	(7.69)	(8.23)	(8.31)
$MRET_{t-6,\,t}$	0.02	0.02	0.02	0.02
	(2.79)	(2.80)	(2.77)	(2.76)
$MRET_{t-12,\,t-7}$	0.00	0.00	0.00	0.00
	(0.44)	(0.48)	(0.43)	(0.45)
Age	-0.00	-0.00	-0.00	-0.00
	(-1.74)	(-1.64)	(-1.72)	(-1.75)
Dividend yield	0.15	0.09	0.13	0.15
	(0.52)	(0.31)	(0.46)	(0.51)
Average R^2	0.07	0.07	0.07	0.07

Table 6
Regression of Future Returns on Local and Nonlocal Institutional Ownership by the Extent of Information Asymmetry

This table reports estimates from the time-series cross-sectional regressions of one-quarter-ahead returns on local (nonlocal) institutional ownership and other firm characteristics. Stocks are divided into those with high information asymmetry and those with low information asymmetry based on the sample median of each information asymmetry variable. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions for each subgroup from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\ t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\ t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\ t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution.

	Size		Return volatility		R&D		Age	
	Small	Large	Low	High	Low	High	Young	Old
Intercept	0.08	0.08	0.06	0.07	0.06	0.08	0.06	0.06
	(5.74)	(4.22)	(5.77)	(3.77)	(4.86)	(3.70)	(4.50)	(4.83)
Local institutional ownership	0.05	0.02	0.01	0.06	0.01	0.06	0.06	0.01
	(2.15)	(1.92)	(0.74)	(2.80)	(1.56)	(2.78)	(2.53)	(1.34)
Nonlocal institutional ownership	0.01	0.01	0.00	0.02	0.01	0.01	0.02	0.00
	(1.19)	(1.23)	(0.01)	(2.34)	(1.79)	(1.08)	(2.22)	(0.32)
Market-to-book	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(-4.64)	(-1.76)	(-2.21)	(-3.42)	(-5.58)	(-2.97)	(-2.29)	(-3.90)
Size	-0.01	-0.01	-0.00	-0.01	-0.00	-0.01	-0.01	-0.00
	(-2.53)	(-3.63)	(-2.52)	(-3.26)	(-2.11)	(-2.92)	(-3.42)	(-2.09)
Return volatility	-0.05	-0.04	0.01	-0.04	-0.02	-0.05	-0.05	-0.01
	(-1.78)	(-1.20)	(0.17)	(-2.20)	(-0.75)	(-2.18)	(-1.76)	(-0.49)
$Turnover_{t-6,\ t}$	-0.00	0.00	0.00	-0.00	-0.00	0.00	-0.00	0.00
	(-0.27)	(0.42)	(0.49)	(-0.05)	(-1.04)	(0.38)	(-0.32)	(0.82)
Price	-0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00
	(-1.24)	(3.45)	(0.61)	(-0.78)	(2.70)	(-0.23)	(0.35)	(2.33)
SP500	0.03	0.03	0.02	0.04	0.02	0.03	0.04	0.02
	(1.46)	(11.63)	(7.11)	(7.98)	(6.99)	(6.47)	(7.18)	(8.79)
$MRET_{t-6,\ t}$	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01
	(3.04)	(3.13)	(2.74)	(3.44)	(2.40)	(3.01)	(3.32)	(1.91)
$MRET_{t-12,\ t-7}$	0.00	0.00	0.01	0.00	0.01	-0.02	0.00	-0.00
	(0.47)	(0.68)	(2.24)	(0.01)	(1.46)	(-0.54)	(0.90)	(-0.07)
Age	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
	(-2.34)	(-1.37)	(-2.55)	(-0.25)	(-2.80)	(-0.65)	(2.73)	(-3.09)
Dividend yield	0.19	0.16	0.17	0.01	0.20	-0.40	-0.03	-0.03
	(0.88)	(0.27)	(0.71)	(0.02)	(0.79)	(-0.58)	(-0.06)	(-0.10)
Average R^2	0.06	0.10	0.06	0.06	0.06	0.08	0.08	0.07

Table 7

Regression of Future Returns on Changes in Local and Nonlocal Institutional Ownership

This table reports estimates from the time-series cross-sectional regressions of one-quarter-ahead returns on changes in local (nonlocal) institutional ownership from quarter *t*-2 to quarter *t*, levels of local (nonlocal) institutional ownership in quarter *t*, and other firm characteristics. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\,t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\,t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\,t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution.

	Total institutional ownership (1)	Local institutional ownership (2)	Nonlocal institutional ownership (3)	Local and nonlocal institutional ownership (4)
Intercept	0.07	0.07	0.07	0.07
	(5.16)	(5.06)	(5.14)	(5.14)
Institutional ownership	0.01			
	(2.29)			
Local institutional ownership		0.03		0.04
		(2.59)		(2.72)
Non-local institutional ownership			0.01	0.01
			(1.79)	(1.95)
Δ Institutional ownership	0.00			
	(0.23)			
Δ Local institutional ownership		0.06		0.06
		(2.33)		(2.34)
Δ Nonlocal institutional ownership			-0.00	-0.00
			(-0.02)	(-0.16)
Market-to-book	-0.00	-0.00	-0.00	-0.00
	(-3.08)	(-3.24)	(-3.17)	(-3.11)
Size	-0.01	-0.00	-0.00	-0.01
	(-2.95)	(-2.01)	(-2.68)	(-2.94)
Return volatility	-0.04	-0.04	-0.04	-0.04
	(-1.10)	(-1.14)	(-1.12)	(-1.08)
$Turnover_{t-6,\,t}$	0.00	0.00	0.00	0.00
	(0.22)	(0.35)	(0.29)	(0.21)
Price	0.00	0.00	0.00	0.00
	(3.31)	(2.77)	(3.07)	(3.31)
SP500	0.02	0.02	0.02	0.02
	(8.14)	(7.57)	(8.13)	(8.21)
$MRET_{t-6,\,t}$	0.01	0.01	0.01	0.01
	(2.58)	(2.48)	(2.57)	(2.54)
$MRET_{t-12,\,t-7}$	0.00	0.00	0.00	0.00
	(0.18)	(0.20)	(0.16)	(0.18)
Age	-0.00	-0.00	-0.00	-0.00
	(-1.97)	(-1.79)	(-1.95)	(-1.99)
Dividend yield	0.13	0.06	0.11	0.12
	(0.44)	(0.21)	(0.37)	(0.41)
Average R^2	0.08	0.07	0.08	0.08

Table 8
Regression of Future Returns on Changes in Local and Nonlocal Institutional Ownership by the Extent of Information Asymmetry

This table reports estimates from the time-series cross-sectional regressions of one-quarter-ahead returns on changes in local (nonlocal) institutional ownership from quarter *t*-2 to quarter *t*, levels of local (nonlocal) institutional ownership in quarter *t*, and other firm characteristics. Stocks are divided into those with high information asymmetry and those with low information asymmetry based on the sample median of each information asymmetry variable. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions for each subgroup from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6, t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6, t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12, t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution.

	Size		Return volatility		R&D		Age	
	Small	Large	Low	High	Low	High	Young	Mature
Intercept	0.08	0.08	0.06	0.08	0.06	0.09	0.07	0.06
	(6.00)	(4.51)	(6.22)	(3.99)	(5.28)	(3.86)	(4.69)	(5.13)
Local ownership$_{t-1}$	0.05	0.03	0.01	0.06	0.02	0.06	0.06	0.01
	(2.03)	(2.19)	(1.10)	(2.62)	(1.88)	(2.69)	(2.47)	(1.24)
Non-local ownership$_{t-1}$	0.01	0.01	0.00	0.02	0.01	0.01	0.02	0.00
	(1.58)	(1.13)	(0.21)	(2.29)	(1.89)	(1.17)	(2.28)	(0.39)
ΔLocal ownership	0.10	0.01	0.01	0.10	0.01	0.12	0.09	0.01
	(2.47)	(0.48)	(0.50)	(2.17)	(0.56)	(1.91)	(2.54)	(0.43)
ΔNon-local ownership	-0.00	-0.00	-0.01	0.01	-0.00	0.01	0.01	-0.01
	(-0.02)	(-0.60)	(-0.60)	(0.60)	(-0.15)	(0.40)	(0.46)	(-0.80)
Market-to-book	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(-4.39)	(-1.72)	(-2.26)	(-3.20)	(-5.37)	(-2.85)	(-2.00)	(-4.28)
Log(market cap.)	-0.01	-0.01	-0.00	-0.01	-0.00	-0.01	-0.01	-0.00
	(-2.52)	(-3.66)	(-2.50)	(-3.14)	(-2.04)	(-3.00)	(-3.14)	(-1.95)
Return volatility	-0.05	-0.04	0.01	-0.05	-0.03	-0.05	-0.05	-0.01
	(-1.69)	(-1.03)	(0.25)	(-2.31)	(-0.82)	(-1.99)	(-1.72)	(-0.34)
Turnover$_{t-6, t-1}$	-0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
	(-0.15)	(0.58)	(0.51)	(0.13)	(-0.82)	(0.43)	(-0.20)	(1.04)
Price	-0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00
	(-1.33)	(3.65)	(0.62)	(-0.90)	(2.40)	(-0.45)	(0.01)	(2.27)
SP500	0.04	0.03	0.01	0.05	0.02	0.03	0.04	0.02
	(1.80)	(11.24)	(6.47)	(8.14)	(6.87)	(6.29)	(6.86)	(8.23)
MRET$_{t-6, t-1}$	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.01
	(2.66)	(3.07)	(2.56)	(3.19)	(2.22)	(2.70)	(3.02)	(1.89)
MRET$_{t-12, t-7}$	0.00	0.00	0.01	-0.00	0.01	-0.00	0.00	-0.00
	(0.54)	(0.12)	(1.92)	(-0.26)	(1.21)	(-0.68)	(0.69)	(-0.46)
Age	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
	(-2.28)	(-1.72)	(-2.61)	(-0.47)	(-3.14)	(-0.55)	(2.27)	(-3.37)
Dividend yield	0.18	0.19	0.10	-0.00	0.16	-0.41	-0.11	-0.02
	(0.79)	(0.32)	(0.43)	(-0.00)	(0.65)	(-0.58)	(-0.23)	(-0.08)
Average R^2	0.06	0.10	0.06	0.06	0.06	0.08	0.08	0.08

Table 9
Returns to Local and Nonlocal Institutional Ownership Portfolios

This table presents the time-series average of annualized quarterly value-weighted returns on the portfolios sorted according to the levels of local and nonlocal institutional ownership (Panel A) and the changes in local and nonlocal institutional ownership (Panel B). Each quarter, stocks are sorted into quintiles on the basis of the level of local and nonlocal ownership in quarter *t* and the change in local and nonlocal ownership from quarter *t*-2 to quarter *t*, respectively, and annualized one-quarter-ahead value-weighted returns are computed on the quintile portfolios. High-Low is a zero-cost investment (hedge portfolio) strategy that is long in portfolio Q5 (quintile portfolio with the largest ownership holding (the largest ownership increase)) and short in portfolio Q1 (quintile portfolio with the smallest ownership holding (the largest ownership decrease)), Q5 - Q1. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available from 1990 to 2004. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (in-state) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same state as the firms' headquarters. Nonlocal (out-of-state) institutional ownership is equity holdings by institutional investors whose headquarters are located within the different state as the firms' headquarters. Local (within 100 kilometers) institutional ownership is equity holdings by institutional investors whose headquarters are located within 100 kilometers of firms' headquarters. Local (outside 100 kilometers) institutional ownership is equity holdings by institutional investors whose headquarters are located more than 100 kilometers of firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Risk-adjusted returns are benchmark-adjusted returns based on Daniel, Grinblatt, Titman, and Wermers (1997).

Panel A: Returns (%) on the portfolios sorted according to the levels of local and nonlocal institutional ownership

	Local (in-state) institutional ownership (*p*-value)	Nonlocal (out-of-state) institutional ownership (*p*-value)	Local (within 100 kilometers) institutional ownership (*p*-value)	Nonlocal (outside 100 kilometers) institutional ownership (*p*-value)
Low(Q1)	13.88	11.96	10.12	15.20
High(Q5)	15.60	13.60	14.16	14.00
High-Low (Raw)	1.72 (<0.01)	1.64 (<0.01)	4.04 (<0.01)	1.20 (0.16)
High-Low (Risk adjusted)	5.40 (<0.01)	2.80 (<0.01)	2.00 (<0.01)	3.2 (<0.01)

Panel B: Returns (%) on the portfolios sorted according to the changes in local and nonlocal institutional ownership

	Change in local (in-state) institutional ownership (*p*-value)	Change in nonlocal (out-of-state) institutional ownership (*p*-value)	Change in local (within 100 kilometers) institutional ownership (*p*-value)	Change in nonlocal (outside 100 kilometers) institutional ownership (*p*-value)
Low(Q1)	14.88	15.60	13.92	17.20
High(Q5)	16.84	14.32	14.96	16.00
High-Low (Raw)	1.96 (0.03)	-1.28 (0.98)	1.04 (0.02)	-1.20 (0.28)
High-Low (Risk adjusted)	2.00 (0.04)	1.28 (0.11)	2.00 (0.08)	-0.4 (0.59)

Table 10
Change in Local and Nonlocal Institutional Ownership Prior to Missing Analysts' Earnings Expectations

This table reports changes (percentage changes relative to the previous period) in local and nonlocal institutional ownership prior to an earnings break for a sample of firms that meet or beat analysts' earnings estimates over the past 4 (Panel A) and 8 (Panel B) consecutive quarters but miss the consensus forecast in the current quarter. The initial sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available from 1990 to 2004. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. ***, **, and * denote that the test statistics are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

Panel A: Firms that continue to meet or beat analysts' earnings estimates over the past 4 consecutive quarters (N=6,037)

	Mean Change (%)		Median Change (%)		Test-of-Difference (*p*-value)	
Quarter	Local institutional ownership	Nonlocal institutional ownership	Local institutional ownership	Nonlocal institutional ownership	*t*-test	Wilcoxon *z*-test
-4	2.31	2.42	6.75***	3.76***	0.60	<0.01
-3	0.84	2.56	2.12***	3.47***	0.66	<0.01
-2	-0.67	0.99***	-0.85**	1.58***	<0.01	<0.01
-1	-1.74***	-0.51	-2.18**	-0.43***	0.01	<0.01
0	-1.25***	-1.73***	-0.00***	-2.70***	0.25	0.35
-3 to -1	-1.57***	3.03***	-0.91**	4.62**	0.01	<0.01

Panel B: Firms that continue to meet or beat analysts' earnings estimates over the past 8 consecutive quarters (N=1,794)

	Mean Change (%)		Median Change (%)		Test-of-Difference (*p*-value)	
Quarter	Local institutional ownership	Nonlocal institutional ownership	Local institutional ownership	Nonlocal institutional ownership	*t*-test	Wilcoxon *z*-test
-4	0.80	2.20	4.80	2.92***	0.15	<0.01
-3	-0.50	1.70	0.00**	2.01***	0.28	<0.01
-2	-1.70*	0.40	-3.80	0.50***	0.10	<0.01
-1	-3.90***	-1.40***	-5.60***	-1.78	0.26	0.29
0	-2.16***	-2.32***	-1.32**	-3.49***	0.07	<0.01
-3 to -1	-6.10***	0.70	-9.40***	0.73***	<0.01	<0.01

Table 11
Types of Local Institutional Investors and Future Returns

This table reports estimates from the time-series cross-sectional regressions of one-quarter-ahead returns on ownership by different types of local and nonlocal institutional investors and other firm characteristics. The coefficients are the time-series average of coefficients estimated from quarterly cross-sectional regressions from 1990 to 2004. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is the computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Market-to-book is calculated as the ratio of the market capitalization to the book value of equity and is winsorized at the 1st and 99th percentiles. Size is the log of market capitalization. Return volatility is estimated as the standard deviation of monthly returns over the past 6 months. $Turnover_{t-6,\,t}$ is defined as the average monthly volume to number of shares outstanding over the past 6 months, and stock price is share price from CRSP. SP500 is a dummy variable that equals one if the firm is included in the S&P 500 index. $MRET_{t-6,\,t}$ is the preceding 6-month cumulative market-adjusted return and $MRET_{t-12,\,t-7}$ is the penultimate 6-month cumulative market-adjusted return. Age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash divided by share price. R&D is research and development expense (0 for missing values) divided by total assets. All variables are estimated at the same quarter-end unless noted otherwise. Institutions are decomposed into short- and long-term institutions according to Yan and Zhang (2007). Other institutional ownership includes ownership by pension funds and university endowments. Numbers in parentheses are *t*-statistics, which are computed as the ratio of the mean of the coefficients from quarterly cross-sectional regressions to the standard error of the coefficients' distribution.

	Short-term/long-term	Local short-term/local long-term	Institution type	Local institution type
Intercept	0.06 (4.85)	0.06 (4.83)	0.06 (4.85)	0.06 (4.82)
Short-term institutional ownership	0.03 (2.73)			
Long-term institutional ownership	0.007 (0.50)			
Bank ownership			-0.01 (-0.54)	
Insurance company ownership			-0.002 (-0.45)	
Mutual fund company ownership			0.03 (2.27)	
Investment advisor ownership			0.01 (1.83)	
Other institutional ownership			0.03 (1.99)	
Local short-term institutional ownership		0.05 (1.93)		
Local long-term institutional ownership		0.04 (2.22)		
Non-local short-term institutional ownership		0.03 (2.65)		
Non-local long-term institutional ownership		-0.00 (-0.02)		
Local bank ownership				-0.01 (-0.53)
Local insurance company ownership				-0.00 (-0.36)
Local Mutual fund company ownership				0.03 (0.66)
Local investment advisor ownership				0.02 (2.41)
Local other institutional ownership				0.10 (1.50)

Non-local institutional ownership				0.01 (1.70)
Market-to-book	-0.00 (-3.37)	-0.00 (-3.41)	-0.00 (-3.28)	-0.00 (-3.30)
Size	-0.00 (-2.67)	-0.00 (-2.65)	-0.00 (-2.89)	-0.00 (-2.95)
Return volatility	-0.04 (-1.15)	-0.04 (-1.15)	-0.04 (-1.16)	-0.04 (-1.16)
$Turnover_{t-6,\ t}$	-0.00 (-0.04)	-0.00 (-0.05)	-0.00 (-0.01)	-0.00 (-0.01)
Price	0.00 (3.62)	0.00 (3.64)	0.00 (3.69)	0.00 (3.66)
SP500	0.03 (8.15)	0.03 (8.16)	0.03 (8.48)	0.03 (8.41)
$MRET_{t-6,\ t}$	0.02 (2.72)	0.01 (2.70)	0.02 (2.75)	0.02 (2.74)
$MRET_{t-12,\ t-7}$	0.00 (0.39)	0.00 (0.37)	0.00 (0.45)	0.00 (0.48)
Age	-0.00 (-1.51)	-0.00 (-1.46)	-0.00 (-1.61)	-0.00 (-1.67)
Dividend yield	0.17 (0.59)	0.16 (0.58)	0.16 (0.57)	0.15 (0.55)
Average R^2	0.08	0.08	0.08	0.08

Appendix
Descriptive Statistics of Local and Nonlocal Institutional Ownership at the Firm Level by State

This table summarizes local and nonlocal institutional ownership at the firm level by state. The sample consists of firm-quarters with institutional ownership from CDA/Spectrum Institutional (13f) Holdings for the period 1990-2004 for which the locations of firm and institution headquarters are available. We exclude cases in which either the firms or institutional investors are from foreign countries, cases in which they are located in Alaska, Hawaii, Puerto Rico, or the Virgin Islands, and cases in which total institutional ownership in 13f Holdings is greater than 100%. Local (nonlocal) institutional ownership is equity holdings by institutional investors whose headquarters are located within the same (different) state as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding.

State	Number of firm-quarters	Mean (median) local institutional ownership (%)	Mean (median) nonlocal institutional ownership (%)
Alabama	1,855	1.84 (0.13)	31.74 (28.54)
Arizona	2,075	0.09 (0.00)	35.58 (31.48)
Arkansas	1,083	0.57 (0.00)	34.25 (31.34)
California	31,330	7.17 (5.71)	28.20 (23.54)
Colorado	4,363	0.89 (0.00)	27.31 (21.45)
Connecticut	5,871	1.41 (0.37)	38.09 (36.58)
Delaware	951	1.07 (0.00)	35.51 (31.49)
D. of Columbia	686	0.04 (0.00)	40.58 (39.38)
Florida	7,820	0.34 (0.00)	28.18 (20.80)
Georgia	5,134	1.02 (0.00)	33.95 (30.07)
Idaho	302	1.06 (0.00)	27.77 (27.48)
Illinois	9,253	4.65 (2.12)	36.09 (35.52)
Indiana	3,686	2.86 (0.00)	26.13 (17.99)
Iowa	1,182	0.56 (0.00)	28.03 (24.18)
Kansas	1,000	0.54 (0.00)	29.93 (23.44)
Kentucky	1,505	1.47 (0.00)	28.82 (15.19)
Louisiana	1,489	0.63 (0.00)	41.04 (37.94)
Maryland	3,355	1.55 (0.21)	29.63 (25.51)
Maine	527	0.05 (0.00)	22.34 (10.81)
Massachusetts	10,297	7.08 (4.73)	28.37 (24.05)
Michigan	4,804	1.79 (0.27)	32.37 (27.80)
Minnesota	5,358	4.66 (1.99)	28.72 (24.08)
Missouri	3,258	1.90 (0.46)	32.96 (26.88)
Mississippi	613	1.74 (0.00)	18.91 (10.69)
Nebraska	674	1.43 (0.23)	34.39 (28.35)
Nevada	1,460	0.05 (0.00)	26.27 (17.56)
New Jersey	8,829	1.30 (0.12)	29.05 (21.74)
New Mexico	337	0.00 (0.00)	25.89 (16.10)
New York	16,525	8.81 (7.51)	23.41 (18.37)
New Hampshire	1,125	0.21 (0.00)	25.64 (17.55)
North Carolina	3,675	2.00 (0.65)	27.33 (21.14)
Ohio	7,643	3.76 (1.34)	32.35 (29.04)
Oklahoma	1,504	0.52 (0.00)	32.89 (25.47)
Oregon	2,126	1.89 (0.00)	34.67 (32.69)
Pennsylvania	9,889	4.17 (2.37)	30.46 (26.64)
Rhode Island	619	0.66 (0.00)	35.75 (33.01)
South Carolina	1,317	0.34 (0.00)	30.44 (27.46)
Tennessee	2,144	0.72 (0.00)	40.50 (38.83)
Texas	15,117	1.36 (0.22)	37.16 (33.08)

Utah	1,567	1.08 (0.00)	25.04 (20.85)
Virginia	4,718	1.23 (0.04)	31.08 (25.30)
Vermont	571	0.63 (0.00)	25.33 (21.35)
Washington	3,292	1.55 (0.26)	30.83 (25.70)
West Virginia	658	2.95 (0.13)	15.14 (10.05)
Wisconsin	3,189	5.03 (2.51)	32.98 (27.64)
Other	758	0.07 (0.00)	20.62 (14.79)
Total	195,534	3.78 (0.82)	30.44 (25.39)