Individuals and Their Local Utility Stocks: Preference for the Familiar

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Abstract:

We find individuals are four times more likely to purchase stocks of their local direct utility company as opposed to utility companies operating outside their state of residence. Our tests reveal that individuals do not possess superior or private information about their local utilities. Indeed, individual preference for their local utility stocks seems to be driven by preference for familiar assets, even in the presence of a desire for high dividend yields. In addition, affluence and sophistication do not reduce local bias.

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1. Introduction

Investors often prefer assets they are familiar with, referred to as *familiarity bias*. This study explores familiarity bias in the geographic context, focusing on an individual's decision to purchase utility stocks. Our study contributes to the existing literature on local bias (Huberman, 2001; Massa and Siminov, 2006) in three aspects. First, we provide evidence of individuals preferring their local utility stocks to non-local utility stocks. Unlike other studies on U.S. markets (Coval and Moskowitz, 1999; Ivkovic and Weisbenner, 2005; Seasholes and Zhu, 2010), we do not study local bias explicitly based on headquarter location. Branch location and product distribution networks could have a significant impact on measuring geographic familiarity. Massa and Simonov (2006), in their study on Swedish investors, find that their results do not differ substantially when using a measure based on firm headquarters compared with a measure based on closest branch office or subsidiary. However, Sweden is not a geographically large country like the United States, where there are individual states larger than the size of Sweden and states can be separated from each other by distances greater than all of Europe. In our study, we hand-collected states of operation for utility firms from their SEC filings and found that 42% of firms in our sample supply utilities in more than one state.[1]

Second, our study shows that the information-based explanation to local bias proposed by Ivkovic and Weisbenner (2005) does not hold for utility stocks. We find evidence in favor of non-information-based pure geographic proximity driving demand for local utility stocks. In addition, we observe that individuals are marginally more likely to prefer purchasing utility stocks with higher dividend yields and this preference is accentuated for their local utilities.

[1] The median firm operates in a single state while the mean firm tends to operate in two states.

Third, we study actual round-trip (buy-to-sell) trade returns as opposed to portfolio returns. The round-trip trades show realized returns as opposed to the paper returns in the portfolio. Odean (1998) finds that individuals at a large brokerage house show a greater preference for realizing their winners than their losers, referred to as the *disposition effect* (Shefrin and Statman, 1985). Thus, a portfolio-return approach could understate returns for individuals continuing to hold their losing positions, potentially increasing the probability of rejecting the information-driven local bias hypothesis documented in prior studies. Studying the round-trip transaction return, compared to the portfolio, is a little more conservative because round-trip returns are likely to overstate performance by highlighting performance of winners being sold.

The utilities sector provides a unique setting for analyzing the impact of familiarity on investment decisions made by individuals. In the United States, most sectors of the economy have a significant number of firms with operations or products distributed throughout the country. For these sectors, familiarity associated with company geographic location of the firms would probably affect an individual's decision to purchase beyond the general non-geographic familiarity (by way of product distribution, branch locations, etc.) with such firms.[2] However, the utilities sector is unlike most sectors of the economy.[3] The operations of utility firms are usually more local or regional in nature. Thus, investors tend to be familiar with the utility firms in their region and not so familiar with distant utility firms. Furthermore, we study only those utility firms that directly interact with individuals through their distribution networks, referred to as *direct utility providers*. With less than 20% of the utility stocks in our sample being members of

[2] Coke could be considered a good example of product familiarity. Though it is headquartered in Atlanta, Georgia, it is likely that individuals located across all states are likely to feel familiar with it. Bank of America is also a good example of branch location familiarity. Bank of America is headquartered in New York City, but it would be far-reaching to conclude that New York state residents would feel more familiar with it than Washington state residents, who have access to a local branch office.

[3] The banking sector has many regional financial institutions that are relatively unknown beyond their geographic locations. However, most of these institutions are not publicly listed, making it difficult to study individual investor ownership with our brokerage-house data.

the S&P 500, most our utility stocks tend to have low analyst and media coverage. Because utility firms are highly regulated, have little competition, and tend to pay high dividend yields in comparison to the average stock, one could argue that they have a lower firm-specific information asymmetry. However, the geographic information asymmetries with such firms tend to be very high due to the regional nature of their operations. In addition, utility stocks are often referred to as "widow and orphan stocks" because they attract investors seeking safety by way of high dividend yields. Our study explores the effect of dividend yields in utility stock selection beyond local bias. We find that dividend yield does influence individual demand across utility stocks but plays a subordinate role to individual preference for local utilities.

The debate between whether individual investor stock purchases are influenced more by familiarity bias or by the presence of superior information is a contentious one. Huberman (2001) considers the geographic distribution of the shareholders of the seven U.S. Regional Bell Operating Companies (RBOCs) at the end of 1996 and finds that, in most states, more money is invested per investor in the local RBOC than in any other RBOC. He attributes this behavior to individuals being familiar with their local RBOCs. Chance, Shynkevich, and Yang (2011) asked student participants to pick stocks sequentially in their portfolios and observed a preference for large familiar stocks in students' initial stock selections. Further, Massa and Simonov (2006) find that Swedish investor stock holdings are driven by geographic and professional familiarity and that this familiarity is not a behavioral bias but is information driven. Ivkovic and Weisbenner (2005), using the same brokerage house data as ours, find that individual investment in local firms is information based for the entire cross-section of industries in the United States. However, Seasholes and Zhu (2010), using the same data, find that, after taking into consideration a calendar-time portfolio approach to account for cross-section independence and portfolio size and using passive geographic portfolio benchmarks, local portfolio returns do not outperform the trades of distant stocks. They conclude that investors do not have value-relevant information about the local stocks they hold.

The first part of this study provides evidence of the preference for local utility stocks. Our results show that individuals residing across all four major geographic divisions in the United States are likely to allocate significantly more than their market allocation (i.e., in the absence of any location bias) to their local utility stocks. Modeling the decision of utility-investing households to buy each of the 170 utility stocks in our data, we find that, after controlling for various other factors, households are more than five times likely to buy local rather than non-local utilities.

Preference for local utility stocks might not be driven by pure geographic familiarity but by the presence of private or superior information about local firms. Coval and Moskowitz (1999) find that U.S. investment managers in a setting with a single currency and relatively little geographic variation in regulation, taxation, political risk, language, and culture prefer to hold companies headquartered close to them. Their results indicate an information-based explanation for local equity preference because the firms preferred by the investment managers tend to be small and highly leveraged and tend to produce goods not traded internationally (i.e., firms with greater information asymmetry). If the local bias in utility stocks is information based, we would expect the following: (1) Local utility investments should outperform non-local investments, and (2) local utility investments should earn positive abnormal returns. We find that neither of these conditions holds true. Furthermore, to test any information advantages within local utility stocks, we compared non-S&P 500 with S&P 500 stocks and regional (i.e., firms operating in one state) with non-regional stocks (i.e., firms operating in multiple states). Non-S&P 500 stocks receive less attention from analysts and the press in general than S&P 500 stocks. If individuals can access private information about these firms due to their geographic proximity, investments in these stocks would probably yield positive abnormal returns and outperform their S&P 500 counterparts. An information-based explanation would have similar implications for the regional versus non-regional stock comparison. However, we find that the abnormal percentage return performance of round-trip trades does not reflect the presence of superior information.

Massa and Simonov (2006) find that Swedish investors do not hedge but, instead, invest in stocks closely related to their non-financial income. Investing in local utilities could be motivated by households hedging themselves against an increase in utility prices only if there is evidence of a positive correlation between returns on utility stocks and the percentage changes in utility prices. However, utility firms are heavily regulated, and it is unlikely that utility price increases reflect any kind of windfalls or monopolistic profiteering by utility firms, making the hedging argument untenable.[4]

In general, a familiarity bias contradicts traditional portfolio theory. Investors should invest less in local firms that may be serving them to diversify into regions with lower economic correlation with their home region. Shiller (2006) mentions that combining behavioral insights with neoclassical models would lead to better outcomes. In addition, Chen, Kim, Nofsinger, and Rui (2007) show that investor sophistication and wealth has some effect on behavioral biases. One could argue that individuals who buy their local utility stocks are simply the less affluent or unsophisticated investors. In such cases, our findings provide us with little understanding of individual investor behavior because we could be showing the behavior of "noise" traders.

[4]In unreported results, for each state, we conducted an empirical test of correlation between the returns on utility stocks and the percentage change in gas or electricity prices. The data on electricity and natural gas prices for residential customers in each state from Jan 1991 to Nov 1996 was obtained from the U.S. Department of Energy, Energy Information Administration website. Our results did not show any economically or statistically significant positive correlations between stock returns and changes in energy prices.

Contrary to expectation, we find that the average local utility stock investor is as or is marginally more affluent and sophisticated than the average individual investing solely in non-local utility stocks, suggesting that sophistication and affluence might have little to do with preference for familiar assets.

2. Data

The data covers the holdings and trading activity of households at a large discount brokerage house from January 1991 to November 1996, details of which are provided in Odean (1999) and Table 1. In these accounts, 38,872 ($339 million) were purchases made in the utilities sector by 16,578 households in the data set. These households represented 26.34% of households that traded in stocks during that period. The purchase trades in the utility sector represented 3.78% (2.93% in value terms) of all the purchases made at the discount brokerage house. There were 35,689 transactions made by 11,343 households involving almost all (except three) direct utility stocks. Infobase, Inc., compiles self-reported demographic data that have been provided to us by the brokerage house. The Infobase data provides the zip codes for about 60% of the households that traded in utility stocks. Our analysis is restricted to only households for which zip codes are available. The demographic information containing the exact zip code is available for 7,149 households, allowing us to analyze 21,794 utility stock purchases. Of these, 6,183 purchases were made of stocks that provided utility services in the investors' states of residence.

[Place Table 1 here]

The NYSE/AMEX/NASDAQ listed 239 utility firms during 1991-1996. These firms are classified into two categories: (1) direct utility firms and (2) indirect utility firms. The former includes 177 firms involved in direct distribution of utilities while the latter includes 62 firms that supply utilities to other marketing and distribution firms. This study focuses solely on purchases made in direct utility firms for two reasons. First, direct utility providers directly interact with households residing in their areas of operation. Second, direct utility providers, with their limited areas of operation, are likely to face high geographic-information asymmetry. Approximately 90% of direct utility providers consist of electricity and gas providers. Hereafter, we use the term *utility* as synonymous with *direct utility*.

To capture the extent of a utility provider's interaction with households, we use the firm's areas of operation, information not available in any financial database. The data on the areas of operation and type of business operations (i.e., direct or indirect utility provider) for these firms were hand collected from Form 10K and Annual Report to Shareholders filings with the U.S. Securities and Exchange Commission (SEC). We refer to either the last statement filed prior to the last time a stock is traded or the last statement filed for a fiscal year prior to 1997, whichever one is earlier. The Form 10K and Annual Report to Shareholders follow a fixed format laid out by the SEC. However, the descriptions of businesses vary, with most companies providing information that does not go beyond their specific states of operation. Given the constraints, we confine our data to the states of operation for all direct utility firms.

We find that the households at the discount brokerage made 28% of their direct utility stock purchases in utility companies operating within their state of residence. The United States has 50 states, so for investors to concentrate such a large portion of their purchases within their local utility stocks is surprising. Figure 1 shows a distribution of purchase transactions based on the distance between the area where an individual resides and the closest area of operation for the utility stock purchased by the individual.[5] To illustrate distances involved, the distances between

[5] For every transaction, we measure the great circle distance (in miles) between the centroid of the household's zip code and the centroid of the nearest state of operation for the direct utility stock purchased. The data on latitude and location of each zip code and states' centroids are available on the SAS website, a statistical software provider. The great circle distance is often used in geographic and aviation studies and is calculated as follows:

four major cities in the United States are as follows: (1) The distance between Seattle, WA, on the west coast to New York City, NY, on the east coast is 2,401 miles; (2) The distance between Minneapolis, MN, in the midwest and San Antonio, TX, in the south is 1,107 miles. We find that 37% of purchases in direct utility stocks are made within a 300-mile radius. Nearly half the purchases are made within a 600-mile radius. The distribution based on the value of purchases is also very similar so has not been presented to conserve space. Because we do not know the exact counties or zip codes for areas of operations for direct utility firms, we do not use distance as a measure of local bias, thereby avoiding introducing noise into the distance measure.

[Place Figure 1 here]

3. Methodology

3.1 Return and performance measurement

The household trading records provide the prices at which trades take place and the commission costs. We use these prices to calculate round-trip trade returns. A round-trip transaction is defined as a buy and subsequent sale of a particular stock. We prefer the use of round-trip trade returns to returns based on month-end utility portfolio holdings for a variety of reasons. The households in our data set generally hold a position in only one utility stock, and these positions exist only for a few months during the 71-month span, hindering calculation of factor-based abnormal returns using the month-end portfolio approach. Furthermore, the round-trip trade returns provide the exact realized returns on trades, unlike the portfolio returns. Though each method has its drawbacks, using portfolio returns is likely to bias the results toward concluding a lack of superior or private information driving investor trades. For example, the

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Great Circle Distance (miles) = 3949.99 × {acos ((sin(Y_2) sin(Y_1)) + (cos(Y_2)cos(Y_1)cos (X_2-X_1)))}, where Y_1,Y_2, X_1, and X_2 refer to radian measures of the latitude for location 1, latitude for location 2, longitude for location 1, and longitude for location 2, respectively.

disposition effect introduced by Shefrin and Statman (1985) predicts that investors are likely to hold their losers too long and sell their winners too soon. Odean (1998) finds evidence of the disposition effect in individual investors. Even sophisticated professional investors show similar behavior (Coval and Schumway, 2005). Locke and Mann (2005) find no evidence of costs associated with this behavior in professional traders. The presence of the disposition effect magnifies the effect of unrealized losses while analyzing portfolio returns, leading to rejecting the information-based trading hypothesis. The disposition effect would predict that round-trip trade returns, contrary to portfolio returns, would bias the results towards the information hypothesis. Thus, rejection of the information-based trading explanation (supported in Ivkovic and Weisbenner, 2005) using the round-trip trade returns further strengthens the existing local familiarity-based explanations for trading (Seasholes and Zhu, 2010) because it is a more conservative test of non-information-based familiarity.

The return computations are made in three steps. First, the gross returns for a round-trip transaction j on security i purchased on day 1 and sold on day T is calculated as

$$R_j^{Gr} = \left[\prod_{t=1}^{T} (1 + R_{i,t}^{Gr}) \right] - 1, \tag{1}$$

where the daily returns for all days except t = 1 and t = T are obtained from CRSP. The gross and net returns on day of purchase ($R_{i,1}$) and day of sale ($R_{i,T}$) are calculated as

$$R_{i,1}^{Gr} = P_{i,1} / P_{i,b} \quad \text{and} \quad R_{i,T}^{Gr} = P_{i,s} / P_{i,T}, \tag{2}$$

where $P_{i,1}$ is the closing price on day of purchase, $P_{i,b}$ is the purchase price, $P_{i,s}$ is the sale price, and $P_{i,T}$ is the opening price on day of sale. Second, after obtaining the round-trip trade returns, we convert each realized return to a monthly return. Third, the gross (R_h^{Gr}) monthly returns for round-trip trades made by a household h from January 1991 to November 1996 is calculated as

$$R_h^{Gr} = \sum_{j=1}^{n_h} w_j R_j^{Gr}, \tag{3}$$

where R_j^{Gr} refers to the gross monthly return on round trip transaction j, n_j refers to the number of round-trip transactions, and w_j refers to the dollar value of transaction j scaled by the dollar value of all transactions made by household h. In the last step, gross returns (R_k^{Gr}) for all households assigned to a particular category are calculated as

$$R_k^{Gr} = \frac{1}{n_k} \sum_{h=1}^{n_k} R_h^{gr}, \tag{4}$$

where n_k is the number of households in a particular category k. The method for calculating value-weighted returns for each household and the average returns for households is similar to that in Barber and Odean (2000).

3.2 Abnormal return performance

Six measures of abnormal returns for round-trip trades are considered. The first measure is the market-adjusted return, obtained by subtracting the market return from the round-trip trade return. The CRSP value-weighted NYSE/AMEX/NASDAQ index is used as proxy for market returns, and the return on this index is measured over the duration of each round-trip trade.

The second measure is the utility industry adjusted return, obtained by subtracting the utility industry return from the round-trip trade return. The utility industry return is calculated as the value-weighted return of the utility industry, excluding the utility stock being analyzed, and is measured over the duration of each round-trip trade. This measure reflects the performance of a utility stock trade relative to other utility stocks. For calculating the utility industry return, we use the definition under the 49 industry classification, available on Kenneth French's (2005) website.

The third measure used is Jensen's alpha (α):

$$\alpha_{j,t} = (R_{j,t} - R_{f,t}) - \hat{\beta}_1 (R_{m,t} - R_{f,t}), \qquad (5)$$

where $\alpha_{i,t}$ is the market model abnormal return for a round-trip transaction j that is conducted over t calendar days, $R_{i,t}$ is gross or net return on the round-trip transaction, $R_{f,t}$ is the one-month Treasury-bill rate scaled to time t. $R_{m,t}$ is the market return on the CRSP value-weighted NYSE/AMEX/NASDAQ index measured over time duration of t calendar days, and $\beta_{i,t}$ is the beta in the CAPM, estimated using the Scholes and Williams (1977) procedure.

The fourth measure uses the Fama and French (1993) 3-factor abnormal return and is calculated as

$$\alpha_{j,t} = (R_{j,t} - R_{f,t}) - \hat{\beta}_1 (R_{m,t} - R_{f,t}) - \hat{\beta}_2 (SMB) - \hat{\beta}_3 (HML), \qquad (6)$$

where SMB is a size factor, HML is a value factor, and the description for remaining terms is the same as in the CAPM described above.

The fifth measure used is obtained from the Carhart (1997) 4-factor model and is calculated as

$$\alpha_{j,t} = (R_{j,t} - R_{f,t}) - \hat{\beta}_1 (R_{m,t} - R_{f,t}) - \hat{\beta}_2 (SMB) - \hat{\beta}_3 (HML) - \hat{\beta}_4 (WML), \qquad (7)$$

where WML is a momentum factor and the description for remaining terms is the same as in the Fama and French (1993) 3-factor model.

The last measure uses a 5-factor model that includes an industry factor to the Carhart (1997) 4-factor model and is calculated as

$$\alpha_{j,t} = (R_{j,t} - R_{f,t}) - \hat{\beta}_1 (R_{m,t} - R_{f,t}) - \hat{\beta}_2 (SMB) - \hat{\beta}_3 (HML) - \hat{\beta}_4 (WML) - \hat{\beta}_5 (IND), \qquad (8)$$

where IND is the utility industry return calculated as a value-weighted return of all utility firms except the utility stock being analyzed. The IND factor is used to capture any industry effects that might be driving utility stock returns. The coefficients for all factors in the Fama and French (1993), Carhart (1997), and 5-factor model are measured over a 250-trading-day window prior to the repurchase trade. The data for R_f (30-day T-bill rate), SMB, HML, and WML factors are obtained from Kenneth French's (2005) online data library.

4. Results and discussion

4.1 Analysis of allocation to local utility stocks at the household level

This section explores whether households overweigh their local (in-state) stocks as a proportion of their entire utility stock portfolio, both in terms of the number and value of stocks. Hong, Kubik, and Stein (2008) find that geography plays a role in how local bias may affect firm prices. We divide all households into the following four regions according to the 1990 U.S. Census classification: midwest, northeast, west, and south. We compute a household's observed local utility allocation according to value (or number of stocks) by averaging the percentage of the total value (or number of stocks) of its utility portfolio invested in local (in-state) utility stocks over the number of months in which it held utility stocks. The market allocation for each household in value terms is equal to the market capitalization of all companies operating within the state by the total market capitalization of all utility stocks in the United States. Similarly, the market allocation in number terms for each state is equal to the number of all companies operating within the state divided by the number of utility stocks in the United States. The average observed and market allocation for each region is obtained by averaging the observed and market allocations for households residing in various regions. We test the hypothesis that the observed allocation to local utility stocks exceeds the market allocation for households in each region.

$$H_0 : \text{Observed Allocation (A)} = \text{Market Allocation (B)}$$
$$H_a : \text{Observed Allocation (A)} > \text{Market Allocation (B)}$$

The results indicate that, for most of the states in our sample, the observed allocation (in terms of both number and value) to local stocks exceeds the market allocation. Table 2, Panel A shows that the western region with the maximum number of households in our sample has an average observed and market allocation of 20.7% and 4.3%, respectively. The excessive allocation of 16.4% to local utilities for the west is statistically significant (single-sided p-value < 0.01). We find a similar level of statistical significance for other regions, both in terms of value and number of stocks (Panel B). The evidence favors the alternate hypothesis, which states that households allocate greater portions of their portfolios to local utilities than the market allocation.

[Place Table 2 here]

We also find statistically significant results that support the observation of allocations to local stocks being more than four times the market allocation. To test the robustness of our results, we conducted tests at the state level, finding that the observed household allocations across most states are more than four times their market allocation. In the interest of conserving space, we have not presented these additional results. Overall, we conclude that households, irrespective of the type of geographic classification, allocate a far greater portion of their portfolios to their local in-state utility stocks than market allocation.

4.2 Purchasing decision among various utility stocks

In this section, we use a logistic regression approach to study households' decisions to purchase various utility stocks. In our analysis, for each month, we consider only those households that purchase at least one utility stock. Doing so provides us with panel data for the 71-month period, with a monthly average of 228 households that decided to buy one or more of 170 utility stocks.[6] We cluster the standard errors of coefficients at the firm and household level. In addition, we use time dummies to capture any time-specific effects. The logistic regression specification is as follows:

$$\mathrm{Log}\left[\pi_{i,h,t}/(1-\pi_{i,h,t})\right] = \alpha + \beta_i \mathrm{LOCAL}_{i,h,t} + \sum_{j=1}^{N_i} \gamma_j X_{j,t} + \sum_{j=1}^{N_h} \omega_j \mathrm{HH}_{j,t} + \sum_{t=1}^{70} \delta_t T_t, \quad (9)$$

where π refers to the probability of buying utility stock, i refers to a utility stock, h refers to a household, t refers to time (71 months), LOCAL is a dummy variable that takes the value 1 if a household is local to utility i and 0 otherwise, X refers to firm-specific control variables, HH refers to household specific variables, and T refers to time dummies. The logistic regression results are presented in Table 3. In our first regression specification, Reg 1, the LOCAL dummy has a statistically significant coefficient of 1.74, indicating that the odds of individuals buying their local utilities is 5.69 times higher than the odds of their buying a non-local utility. This result highlights the strong preference for local utilities.

Utilities are often classified as "widow and orphan stocks," commonly used to describe stocks considered relatively safe with high dividend yields. Thus, in Reg 1, we also consider a dividend yield variable (DIV) and its interaction with the LOCAL dummy. DIV refers to industry-adjusted trailing annual dividend yields for each utility stock and is calculated on a

[6] Thus, we have 2.75 million (228 households x 71 months x 170 utility stocks) observations for the logistic regression.

monthly basis.[7] We find that the coefficient for DIV is significantly positive, though very small in magnitude (0.005). In addition, a statistically significant coefficient of 0.004 for the LOCAL*DIV interaction indicates that individuals exhibit a marginally higher preference for local utility stocks that have higher industry-adjusted dividend yields. Our initial results indicate that local bias plays a dominant role in utility stock selection while higher dividend yields further compliment the demand for these stocks, albeit marginally.[8]

[Place Table 3 here]

A potential drawback of these results is the lack of firm-specific control variables beyond DIV. For example, individuals often take the past performance of a stock as reflective of the future, referred to as *extrapolation bias* (Lakonishok, Shleifer, and Vishny, 1994; Benartzi, 2001). In Reg 2, we introduce firm-specific control variables, namely industry-adjusted monthly returns (ind-adj monthly return), beta, size, ROE (return on equity), B/M (book-to-market) ratio, and leverage ratio.[9] Our results for LOCAL, DIV, and their interaction still remain statistically significant and have a similar magnitude as before. The coefficient for the LOCAL dummy of 1.61 (i.e., odds ratio of 5) remains economically and statistically significant.

Affluent investors could make better investment decisions (possibly because they have more resources) than regular investors, presenting the possibility of the local utility investment being driven by superior information about the stocks. In addition, investors' financial sophistication

[7] The dividend yield for each stock is calculated as the trailing 12-month dividend divided by the month-end stock price. Our results for the DIV remain unchanged if we consider adjusting dividend yields at the end of each month with equally weighted industry-adjusted returns as opposed to value-weighted results presented here.

[8] Our results for the LOCAL dummy are of similar magnitude and statistically significant when we consider the following specifications: (1) LOCAL as the only independent variable and (2) LOCAL and DIV as the only independent variables.

[9] The beta, size, and ind-adj monthly return are calculated for the end of each month while ROE, B/M ratio, and leverage ratio are calculated for the end of the prior fiscal year. Ind-adj monthly return is the stock's return during the month, minus the value-weighted industry return. The monthly beta is the Scholes-Williams (1977) beta, calculated using the previous one year of daily returns. Size is the log of the month-end market capitalization of the firm. ROE is defined as the net income divided by the equity. The B/M ratio is the total assets divided by the market capitalization of the firm. The leverage ratio is the total assets divided by the total equity.

(irrespective of affluence) might influence their investment decisions. If sophisticated investors show a greater tendency to hold utility stocks, this tendency might suggest an information-based explanation for individuals preferring their local utility stocks. Thus, omission of affluence and investor sophistication in our regressions could potentially bias our coefficient estimates. In Reg 3, we incorporate an affluent investor dummy and diversification measure (monthly average number of stocks in an investor's portfolio) to capture investor sophistication.[10] Furthermore, we incorporate a portfolio size variable (log of monthly portfolio value at brokerage house) to capture the increased likelihood of ownership of any stock simply due to a larger portfolio size. Though we observe a small positive loading on the portfolio-size variable, our observed estimates for local bias and dividend preference are still similar to prior regressions.

Given the regional nature of utility operations, after controlling for various firm-specific and individual-specific factors, we find strong evidence of local bias in utility stocks. In addition, utility stocks could attract investors seeking safety in higher dividend yields. Consistent with this hypothesis, we find that individuals are marginally more likely to prefer purchasing utility stocks with higher dividend yields and this preference is accentuated for their local utilities.

4.3 Information-based explanation

Investors may derive an informational advantage from substantial coverage of local firms by their local press and media and interaction with employees, executives, and other parties involved in business transactions with a firm. Coval and Moskowitz (1999) find that U.S. investment managers exhibit a strong preference for locally headquartered firms, particularly small, highly leveraged firms that produce nontrade goods. Analyzing the same large discount

[10] The discount brokerage house classifies households that maintain an average account balance of $100,000 at the brokerage house as *affluent*.

brokerage data set used in our study but including non-utility stocks, Ivkovic and Weisbenner (2005) attribute individual preference for local stocks to the presence for information.

The presence of any informational advantage in local utility transactions should be indicated by positive abnormal returns in local utility round-trip trades. This section explores the performance of local utility trades of individuals in various contexts to check for the presence of any information.

4.3.1 Local versus non-local utility stocks

The presence of superior or private information should lead to positive abnormal returns on round-trip trades in local utility stocks. Furthermore, if privileged information is attributable to geographic proximity, then local utility round-trip trades should outperform the non-local utility round-trip trades. Using various abnormal return measures, we explore the average round-trip utility trades at both the trade and household levels in Table 4, Panel A. For both the trade and household levels, no significant abnormal returns accrue to local utility stock trades. Using the Carhart (1997) 4-factor model, the monthly abnormal return earned by the average household on local and non-local utility stocks is 0.18% (*p*-value = 0.19) and 1.29% (*p*-value = 0.30), respectively. Contrary to the implications of the information-based explanation, non-local utility stocks seem to outperform local utility stocks. However, the differences remain statistically insignificant.

[Place Table 4 here]

In Table 4, Panel B, we explore the differences in gross returns between the following types of households: (a) Households that purchase only local or non-local utility stocks and (b) households that purchase both local and non-local utility stocks. Purely local utility investors earn a monthly 4-factor abnormal return of 0.27% (*p*-value = 0.21) in comparison to 1.59%

(*p*-value = 0.30) earned by purely non-utility investors. We find no evidence that households that strictly adhere to purchasing their local utility stocks earn significant positive abnormal returns or outperform households that buy only their non-local utility stocks. Among households that hold both local and non-local utility stocks, the differences between the local utility and non-utility trades remain insignificant. Overall, the results indicate that possible information asymmetry fails to explain why individuals tend to invest in their local utility stocks.

4.3.2 Non-S&P 500 versus S&P 500 local utility stocks

Among utility firms, opportunities to profit from information are likely to be greater for firms not listed in the S&P 500 index because these stocks are likely to receive little attention from analysts and the national media. The presence of superior or private information requires the following: (1) Individuals should earn significantly positive abnormal returns on their non-S&P 500 local utility stocks, and (2) the realized abnormal returns on non-S&P 500 local utility stocks should be significantly greater than those on their S&P 500 local utility stocks. We find that the abnormal returns for both the non-S&P 500 and S&P 500 local utility stocks (Table 5, Panel A) are statistically insignificant at both the trade and household levels, indicating a lack of private or superior information about either kind of stock. These results hold in Table 5, Panel B, which shows data for various household classifications. Non-S&P 500 utility stocks seem to outperform the S&P 500 utility stocks, hinting at the possibility of some information advantage. However, the differences in abnormal returns between non-S&P 500 and S&P 500 utility stocks are statistically insignificant.

[Place Table 5 here]

4.4 Affluence, sophistication, and preference for local utility stocks

Could local utility investors be the less-affluent investors who have access to resources that aid better financial decision making? The discount brokerage house classifies all investors who maintain an average balance of $100,000 as *affluent*. We find that the percentage of affluent investors among non-local and local utility investors is 21.00% and 25.02%, respectively. The slightly greater proportion (p-value < 0.01) of affluent investors among local utility investors does not support the argument that investing in a local stock is confined to people who do not have extensive access to investment resources.

In unreported results using five measures of diversification presented in Kumar and Goetzmann (2008), we find that local utility investors are no less diversified than non-local utility investors, who are no less diversified than non-utility investors.[11] Hence, we conclude that local utility investors and utility investors, in general, are not naïve in their portfolio construction because they hold as many securities in their portfolios as other investors.

5. Conclusion

This study finds that individuals tend to prefer their local utility stocks as opposed to non-local utility stocks. We also find some support for higher dividend yields driving demand for certain utilities, the effect of which is further magnified for local utility stocks. Our tests indicate that the information-based explanation fails to explain this behavior. Thus, we ascribe individual investor preference for local utilities to pure non-information-based geographic familiarity with local firms. Interestingly, our conclusions are consistent with Seasholes and Zhu (2010) but contrast with Ivkovic and Weisbenner (2005), who use the same brokerage house data as we do but find that individual investment in local firms is information-based for the entire cross-section of industries in the United States. Unlike prior studies, our conclusions are based on round-trip

[11] Refer to Goetzmann and Kumar (2008) for details on diversification measures. These statistics are available upon request from the author.

trade (buy-to-sell) analysis of trade returns, which could potentially bias the results toward the information-based trading explanations, yet we find little support for such explanations. We extend the analysis to the characteristics of locally biased investors. We find that local utility investors are as affluent and sophisticated as their non-local utility investing counterparts, if not more so. Thus, we find no support for the argument that individuals investing in their local utility stocks are naïve or less affluent in comparison to other investors.

Faced with a possible large geographic-information asymmetry surrounding utility firms and resource limitations for learning about many firms, individuals prefer their familiar local utility stocks. In addition, we find that investing in local utility stocks seems to be a fairly pervasive behavior, not confined to a particular class of investors.

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Table 1
Summary Statistics

The sample covers trading records of 62,942 households at a large discount brokerage house from January 1991 to November 1996. Commission is calculated as commission paid by the value of the trade.

Variable	Mean	25th percentile	Median	75th percentile	Standard deviation	# of obs	# of households
Panel A : Purchase							
Price ($)	31.00	11.00	23.00	40.00	115.77	1,071,182	55,902
Trade size ($)	11,143.00	2,513.00	4,975.00	10,500.00	31,841.00	1,071,182	55,902
Commission (%)	2.07	0.82	1.40	2.41	4.86	1,071,182	55,902
Panel B : Sale							
Price ($)	31.13	12.00	24.00	41.00	110.15	876,116	56,997
Trade size ($)	13,630.00	2,688.00	5,725.00	13,000.00	38,087.00	876,116	56,997
Commission (%)	3.01	0.73	1.25	2.23	140.93	876,116	56,997
Panel C : Securities not listed on NYSE/AMEX/NASDAQ							
Price ($)	9.71	0.00	0.50	3.12	153.80	5,307	

Table 2
Household and Market Allocation

This table presents the observed household and market allocation (both in terms of number and value of stocks) to in-state direct utility companies within the direct utility portfolios held by households residing in various states. Each household's observed value (or number) allocation is computed by averaging the percentage value (or number) of the total value (or number of stocks) of its direct utility portfolio invested in local (in-state) direct utility stocks over the number of months in which it held direct utility stocks. The observed allocation (A) for each state is computed by averaging the portfolio allocations for all households in the state. The market value (B) allocation for each state is equal to the market capitalization of all companies operating within the state divided by the total market capitalization of all direct utility stocks. The market number allocation for each state is equal to the number of all companies operating within the state divided by the number of direct utility stocks in the United States. The hypothesis of interest (i.e., A=B) is tested using paired right-sided *t*-tests.

Region	# of households	Household allocation in-state (A)	Market allocation in-state (B)	*t* statistic (H_0: A=B)	
Panel A: Allocation of $ amounts					
Midwest	1673	18.93%	2.34%	20.61	***
Northeast	1815	21.22%	2.76%	21.98	***
South	2476	14.77%	3.19%	20.44	***
West	4329	20.70%	4.26%	32.71	***
Panel B: Allocation among # of firms					
Midwest	1673	18.59%	2.74%	19.94	***
Northeast	1815	20.83%	3.46%	20.92	***
South	2476	14.52%	2.16%	22.09	***
West	4329	20.39%	3.43%	34.90	***

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

Table 3
Household Purchasing Decisions

This table presents logistic regression results that model the dichotomous response (i.e., buy or not buy) to investing in various utility stocks of households that purchased at least one utility stock in any given month. For our regression, we have an average of 228 households that purchase a utility stock (approx. 170 utility stocks each month) during each of the 71 months. The standard errors are calculated by clustering at the firm and household levels. Time dummies (suppressed to conserve space) are included to capture any time-specific effects. The key variables of interest are LOCAL and DIV. LOCAL is a dummy variable that takes the value 1 if a household is local to a utility and 0 otherwise. DIV refers to industry-adjusted dividend yields for each utility stock and is calculated on a monthly frequency. The dividend yield for each stock is calculated as the trailing 12-month dividend divided by the month-end stock price. Other variables considered are ind-adj monthly return, beta, size, ROE (return on equity), B/M (book to market) ratio, leverage ratio, affluent investor dummy, diversification measure, and portfolio size. Ind-adj monthly return, beta, and size are calculated at the end of each month while ROE, B/M ratio, and leverage ratio are calculated at the end of the prior fiscal year. Ind-adj monthly return is the stock's return during the month minus the value-weighted industry return. The monthly beta is the Scholes-Williams (1977) beta, calculated using the previous one year of daily returns. Size is the log of the month-end market capitalization of the firm. ROE is the net income divided by the equity. The B/M ratio is the total assets divided by the market capitalization of the firm. The leverage ratio is the total assets divided by the total equity. The diversification measure considered is number of stocks, the average number of stocks held by a household during the 71-month period. The discount brokerage house classifies investors holding an average balance in excess of $100,000 as affluent. This classification is used for the affluent investor dummy. Portfolio size refers to the log of the portfolio value held by a household at the end of each month. The chi-square values for the coefficients are presented in parentheses.

Coefficient	Reg 1		Reg 2		Reg 3	
Intercept	-5.177	***	-14.171	***	-14.238	***
	(181,036)		*(14,848)*		*(14,556)*	
LOCAL	1.742	***	1.612	***	1.613	***
	(5,550)		*(4,705)*		*(4,704)*	
DIV	0.004	***	0.011	***	0.011	***
	(202)		*(1,843)*		*(1,838)*	
LOCAL*DIV	0.004	***	0.003	***	0.003	***
	(11)		*(9)*		*(9)*	
Beta			0.656	***	0.656	***
			(218)		*(218)*	
Size			0.606	***	0.606	***
(Log of capitalization)			*(5,588)*		*(5,584)*	
ROE			0.006	***	0.006	***
			(83)		*(83)*	
Ind-adj monthly return			-0.034	***	-0.034	***
			(280)		*(280)*	
B/M ratio			0.067	***	0.067	***
			(909)		*(908)*	

Leverage ratio		-0.016	***	-0.016	***
		(21)		*(21)*	
Diversification measure				0.003	***
(# of stocks)				*(49)*	
Affluent investor dummy				-0.001	
				0	
Portfolio value				0.006	***
(Log of portfolio value)				*(5)*	
Time dummies	--	--		--	
Likelihood	9,096	25,164		25,239	
Max-rescaled R^2	0.04	0.11		0.11	
Obs (# buys)	20,197	20,164		20,164	
Obs (# not buys)	2,735,960	211,913		211,843	

* Significance at 10% level
** Significance at 5% level
*** Significance at 1 % level

Table 4
Comparison of Local and Non-Local Utility Stock Performance

This table compares the gross returns for local and non-local utility round-trip repurchase transactions (i.e., returns earned on the first sale transaction after repurchase). A round-trip transaction is defined as a buy and a subsequent sale of a particular stock. Once the gross return is computed for each round-trip transaction, we convert it to a monthly measure. Panel A compares round-trip transactions at the transaction level and the household level. The transaction level returns are equally weighted returns for utility round-trip transactions in various categories while, the household level involves an equally weighted aggregation, with each household return calculated as the value-weighted gross return for repurchases in each category. Panel C classifies the households into the following categories: (1) Households that bought either local or non-local utility stocks and (2) households that bought both local and non-local utility stocks. The analysis of the latter category uses matched *t*-tests at the household level. *Nominal returns* refers to the raw returns. A market-adjusted abnormal return is the difference between the return on the round-trip trade and the return on the market (R_i-R_m). The industry-adjusted return is the difference between the return on the round-trip trade and the value-weighted return earned by all stocks in the same industry, excluding the repurchased stock. The 49 industry classifications are obtained from Kenneth French's (2005) online data library. The CRSP value-weighted NYSE/AMEX/NASDAQ is used to proxy for market returns, and the one-month T-bill rate is used as the risk-free rate. Details of computation for 3-, 4-, and 5-factor adjusted returns are provided in Section 3.2. The coefficient for the various factor models, except for the CAPM, are estimated using OLS regressions over 250 trading days prior to each repurchase. The *p*-values for all *t*-tests are presented in parentheses.

Panel A: Utility round-trip returns at transaction and household level

	Round-trip transaction level						Household level					
Gross return	Local		Non-local		Difference		Local		Non-local		Difference	
Measure	(1)		(2)		(1-2)		(1)		(2)		(1-2)	
Nominal returns	0.49	(.21)	0.92	(.29)	-0.43	(.78)	0.21	(.17)	1.17	(.29)	-0.97	(.54)
Market-adj returns	0.32	(.20)	0.96	(.30)	-0.64	(.70)	0.13	(.17)	1.23	(.30)	-1.09	(.52)
Industry-adj returns	0.37	(.22)	0.96	(.30)	-0.59	(.72)	0.15	(.19)	1.23	(.30)	-1.08	(.53)
Jensen's alpha	0.27	(.18)	0.97	(.30)	-0.70	(.67)	0.12	(.14)	1.24	(.30)	-1.13	(.51)
3-factor adj returns	0.44	(.22)	1.00	(.30)	-0.56	(.74)	0.18	(.20)	1.28	(.30)	-1.11	(.53)
4-factor adj returns	0.43	(.22)	1.01	(.30)	-0.58	(.74)	0.18	(.19)	1.29	(.30)	-1.11	(.53)
5-factor adj returns	0.45	(.22)	1.00	(.30)	-0.56	(.75)	0.18	(.20)	1.28	(.30)	-1.10	(.54)

Panel B: Utility round-trip returns across household classifications												
	Only local/non-local Household level						Partially local Household level					
Gross return Measure	Local (1)		Non-local (2)		Difference (1-2)		Local (1)		Non-local (2)		Difference (1-2)	
Nominal returns	0.31	(.20)	1.44	(.30)	-1.13	(.62)	0.03	(.08)	0.01	(.00)	0.02	(.37)
Market-adj returns	0.20	(.20)	1.51	(.30)	-1.31	(.59)	0.02	(.31)	0.00	(.69)	0.02	(.37)
Industry-adj returns	0.24	(.21)	1.52	(.30)	-1.28	(.59)	0.02	(.27)	0.00	(.80)	0.02	(.26)
Jensen's alpha	0.17	(.17)	1.53	(.31)	-1.36	(.58)	0.02	(.21)	0.00	(.25)	0.02	(.34)
3-factor adj returns	0.28	(.22)	1.59	(.30)	-1.31	(.60)	0.02	(.24)	0.00	(.67)	0.02	(.30)
4-factor adj returns	0.27	(.21)	1.59	(.30)	-1.32	(.60)	0.02	(.28)	0.00	(.77)	0.02	(.32)
5-factor adj returns	0.28	(.22)	1.59	(.30)	-1.31	(.61)	0.02	(.36)	0.00	(.35)	0.02	(.28)

Table 5

Comparison of Non-S&P 500 and S&P 500 Local Utility Stock Performance

This table shows a comparison of the performance of Non-S&P 500 and S&P 500 round-trips within the subset of local utility stocks. Except for a difference in comparison categories, the method is identical to that described for Table 4. The *p*-values for all *t*-tests are presented in parentheses.

Panel A: Local utility round-trip returns at transaction and household level												
	Round-trip transaction level						Household level					
Gross return	Non-S&P 500		S&P 500		Difference		Non-S&P 500		S&P 500		Difference	
Measure	(1)		(2)		(1-2)		(1)		(2)		(1-2)	
Nominal returns	1.18	(.23)	0.02	(.00)	1.16	(.15)	0.45	(.19)	0.01	(.00)	0.44	(.13)
Market-adj returns	0.78	(.21)	0.01	(.19)	0.77	(.13)	0.30	(.17)	0.00	(.78)	0.30	(.10)
Industry-adj returns	0.91	(.22)	0.01	(.12)	0.90	(.14)	0.34	(.19)	0.00	(.99)	0.34	(.12)
Jensen's alpha	0.65	(.19)	0.01	(.03)	0.64	(.12)	0.26	(.15)	0.00	(.19)	0.25	(.09)
3-factor adj returns	1.08	(.23)	0.01	(.11)	1.07	(.15)	0.41	(.20)	0.00	(.81)	0.41	(.12)
4-factor adj returns	1.05	(.22)	0.01	(.13)	1.04	(.14)	0.40	(.19)	0.00	(.92)	0.40	(.12)
5-factor adj returns	1.09	(.23)	0.00	(.45)	1.09	(.14)	0.42	(.19)	0.00	(.22)	0.42	(.12)
Panel B: Local utility round-trip returns across household classifications												
	Only local household level						Partially local household level					
Gross return	Non-S&P 500		S&P 500		Difference		Non-S&P 500		S&P 500		Difference	
Measure	(1)		(2)		(1-2)		(1)		(2)		(1-2)	
Nominal returns	0.77	(.21)	0.01	(.00)	0.75	(.12)	0.05	(.13)	0.01	(.05)	0.04	(.18)
Market-adj returns	0.50	(.20)	0.00	(.64)	0.50	(.11)	0.04	(.25)	0.00	(.31)	0.05	(.16)
Industry-adj returns	0.59	(.21)	0.00	(.53)	0.59	(.12)	0.04	(.21)	0.00	(.35)	0.04	(.13)
Jensen's alpha	0.43	(.18)	0.01	(.08)	0.42	(.09)	0.05	(.21)	0.00	(.99)	0.05	(.17)
3-factor adj returns	0.70	(.22)	0.00	(.38)	0.70	(.12)	0.04	(.21)	0.00	(.53)	0.04	(.14)
4-factor adj returns	0.68	(.21)	0.00	(.40)	0.68	(.12)	0.05	(.24)	0.00	(.40)	0.05	(.16)
5-factor adj returns	0.71	(.22)	0.00	(.81)	0.71	(.12)	0.05	(.26)	-0.01	(.05)	0.06	(.14)

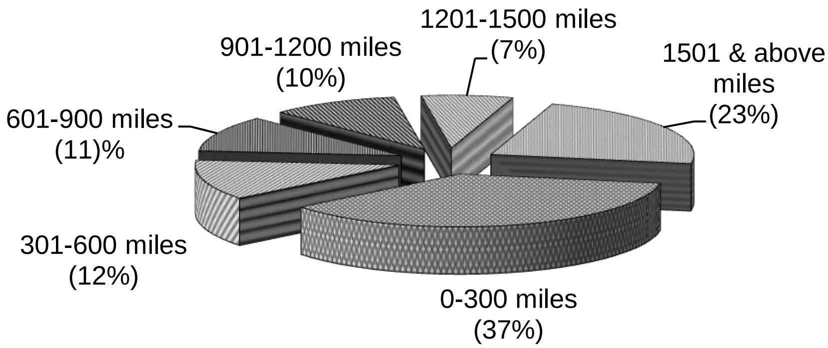

Figure 1
Utility Stock Ownership and Distances

The above pie-graph shows the distribution of the number of purchase transactions in direct utility firms across various distance categories. *Distance* is defined as the distance between the household and the closest state centroid in which a firm operates.