

Familiarity Breeds Investment

by

Gur Huberman

Columbia University

First draft: March 1997

This draft: November 1999

JEL: F36, D10, D81, D84, G11, G15, G23

Comments are welcome.

Address: 807 Uris Hall, Columbia University, 3022 Broadway, New York NY 10027; 212 854 4100.

GHI6@Columbia.edu

I am grateful to Yakov Amihud, Maya Bar-Hillel, Joshua Coval, Frank Edwards, Joseph Even, William Gentry, Larry Glosten, Sean Hanna, Laurie Hodrick, Josef Lakonishok, Ariel Rubinstein, Richard Thaler, William Schwert, Eldar Shafir and Jason Zweig for useful conversations and to Lipper Analytical Services for data on Texas municipal bond funds.

Familiarity Breeds Investment

by

Gur Huberman

Columbia University

Abstract. We examine the geographic distribution of the shareholders of the U.S. Regional Bell Operating Companies (RBOCs) and document that a customer of an RBOC is more likely to invest in his local company than in an RBOC in another service area. Holdings of the local RBOC tend to be larger than investments in RBOCs that serve other areas. We relate these observations to the general tendency of people to have concentrated portfolios, to the tendency of workers to hold their own company's stock in their retirement accounts and the home country bias in the international arena. Together, these phenomena provide compelling evidence that people invest in the familiar while often ignoring the principles of portfolio theory. Survey results point in the same direction, and suggest that wishful thinking plays a role in portfolio allocation.

Familiarity Breeds Investment

Introduction

Rational investors will greatly benefit from international diversification. Nonetheless, people tend to ignore this advice: by and large, investors' money stays in their home countries. Kang and Stultz (1997) observe: "Many Financial Economists have noticed that even though the barriers to international investment have fallen dramatically, foreign ownership of shares is still extremely limited and much smaller than one would expect in the absence of barriers to international investment." An article in the Economist (1996), "Stay-at-Home Shareholders," concludes: "It appears, therefore, that foreign investment has been hampered, at least until recently, by many of the factors that common sense would suggest: capital controls, opaque markets, and the high cost for fund managers of setting up overseas. In the past few years, these barriers have been falling—especially in emerging markets, where the gains from diversifying are biggest. So investors should soon start gobbling up foreign shares in record numbers. If they do not, economists may have to diversify into other theories."

A novel explanation of the home country bias is that people simply prefer to invest in the familiar. People root for the home team, and feel comfortable investing their money in a business that is visible to them. Paucity of international diversification is only one of the implications of this tendency to invest in the familiar.

To test this hypothesis, consider the geographic distribution of the shareholders of the seven U.S. Regional Bell Operating Companies (RBOCs) at the end of 1996. Each RBOC has been the major provider of local telephone service in its region since the 1984 divestiture of AT&T. The behavioral hypothesis implies that a disproportionate number of an RBOC's customers tend to hold a disproportionate number of shares of that RBOC and invest a disproportionate amount of money in their local RBOC. The usual explanations for the small scale of international stock diversification are irrelevant here, as each of the seven RBOCs is equally accessible to the U.S. investing public, their shares trade on the New York Stock Exchange, and their market capitalizations are very large – they all

exceed 15 billion dollars. (The December 1996 average market capitalization of NYSE traded stock was \$2.5 billion.)

We show that people do invest in the familiar. In every state but Montana, more people hold shares of the local RBOC than of any other single RBOC. In most states, more money is invested, per investor, in the local RBOC than in any other RBOC. A typical investor in an RBOC tends to invest more money if he invests in the local RBOC than if he invests in an out-of-state RBOC. Typical account sizes range between \$10,000 and \$20,000, a considerable amount to be invested in a single stock. We estimate the average account size of investors who hold shares in the local RBOC (just because it is the local RBOC) exceeds \$20,000 – more than twice the average account size for out-of-state RBOCs. Furthermore, average RBOC account sizes are substantial in comparison with the typical U.S. household's net worth and direct and indirect stock holdings.

Investment in the familiar manifests itself in more than just the home country bias and the location of RBOC shareholders. Coval and Moskowitz (1999) find that U.S. investment managers exhibit a strong preference for locally headquartered firms in their domestic portfolios. Feldstein and Horioka (1980) document high positive correlation between a country's savings and its investment rate, arguing that capital flows to familiar (domestic) investment opportunities, not necessarily to the most profitable. Kilka and Weber (1997) show that German business students are more optimistic about German stocks than American stocks, and vice versa for American business students. More than 30% of defined contribution pension money is invested in the employer's stock. And respondents to a Gallup survey (Driscoll, Karen, Jill Malcolm, Marsha Sirull and Patricia Slotter, 1995) view their own employer's stock as safer than a diversified stock fund, domestic or international.

Heath and Tversky (1991) lay out behavioral foundations for betting on the familiar, but do not explain why the nature of the bet is frequently "buy and hold." They conduct a series of experiments showing that "holding judged probability constant – people prefer to bet in a context where they consider themselves knowledgeable or competent than in a context where they feel ignorant or uninformed." Heath and Tversky conclude "[the competence hypothesis] might also help explain why investors are sometimes willing to forego the advantage of diversification and concentrate on a small number of companies with which they are presumably familiar."

Merton (1987) offers an asset pricing theory which deviates from the CAPM because investors focus on the familiar. In that work, every stock is familiar to a subset of investors in the sense that they – and only they – know the parameters of the stock return’s distribution. Investors trade only in securities with which they are familiar; otherwise they are rational mean-variance maximizers. In equilibrium, stocks with a smaller investor base will have lower prices (and higher expected returns).

In Section 1 we document the geographic distribution of the RBOC shareholders and relate the amounts of money that individuals invest in the RBOCs to the typical U.S. household’s net worth and stock holdings. In Section 2 we assemble seemingly disparate evidence on how familiarity affects investment choices. We discuss possible explanations in section 3, and offer concluding remarks in Section 4.

1. Evidence on the Regional Bell Operating Companies

Traditional hedging arguments suggest both over- and under-investment in the local RBOC, but the argument favoring under-investment is stronger than the argument favoring over-investment. A customer of an RBOC may over-invest in its stock as a hedge against unexpected increase in the price of its services. But the magnitude of a typical household’s expenditure on local telephone service suggests that only a small portion of the household’s investment portfolio should be dedicated to such a hedge. We show that on average, a household that chooses to own shares of an RBOC is heavily invested in these shares in comparison with the typical household’s equity portfolio.

Theory would suggest that a person should diversify and invest less in the RBOC serving him than in those operating at other parts of the country because the fortunes of the RBOCs vary with the economic tides in their home areas. To the extent that a household’s financial well being is tied to its region’s well being, share returns of the local RBOC are more positively correlated with the household’s well being than the returns of any of the other six RBOCs. Therefore, a rational household’s portfolio should have a *smaller* weight in its local RBOC than in each of the other RBOCs.

We present the data from various perspectives. Implicitly, the null hypothesis is that shareholders' location has no effect on their choice of RBOC stocks. We usually reject this hypothesis in favor of the alternative that people tend to invest in the RBOC that serves them.

1.1 The Data

The seven RBOCs provided the number of account holders and the number of shares being held in each state in late 1996. There are 48 states in the sample because Connecticut, Alaska, and Hawaii were not served by an RBOC, while Washington, D.C., is listed as a separate state. BellSouth provided the information only for individual accounts registered directly with it, i.e., it omitted both institutional accounts and individual accounts held through brokerage firms. Ameritech requested that we not publish explicit data on the distribution of its shareholders, but allowed us to incorporate its information into aggregate statistics. Share prices are February 10, 1997, closing prices.

Table 1 reports the nationwide number of shareholders for each RBOC and the number of shares outstanding. It also provides calculations of the average number of shares per account, the market capitalization of the RBOC, the average dollar value of an account, and the fraction of the S&P500 that is represented by the RBOC's capitalization. Finally, Table 1 provides the portfolio value of an investor if he held the S&P500 portfolio and the size of his holding of the particular RBOC were equal to the average account size.

The number of shareholders provided by the RBOCs and reported in Table 1 is the sum of the number of individual shareholders registered directly with the RBOC, the number of institutions holding the RBOC's shares, the number of various brokerage accounts that pool individual holdings, and the number of trustee accounts. BellSouth is exceptional. For BellSouth we have only the number of individual accounts registered directly with the company. Therefore the number of accounts of BellSouth reported in the table, 1.088 million, is not comparable to the total number of accounts provided for the other RBOCs. Nonetheless, the table shows that BellSouth has more shareholders than the other RBOCs. Among them, these 1.088 million shareholders hold 373 million shares out of the total 993 million outstanding. Thus, about 62% of the equity of BellSouth is held by institutions and by people who hold the shares through brokerage accounts.

One might suspect that our results are driven by the RBOCs' tendency to subsidize employees stockholdings. But the RBOCs subsidize their employees' stock purchases only within a 401(k) pension plan. The shares of the 401(k) plan are held by a trustee on behalf of the pension plan and therefore appear as owned by a single owner – the trustee. Thus, our results are not contaminated by employees holdings of subsidized employer stocks.

The average account value reported in Table 1 reflects all accounts – individuals directly holding shares with the companies as well as institutions, brokerage and trust accounts. For BellSouth, however, we can calculate that the average account size of individuals who are registered directly with the company is \$16,024.

Table 2 shows the states covered by the different RBOCs and the fraction of the telephone lines that is provided by the RBOC. (The rest of the lines are provided by non-Bell companies.) In addition, Table 2 reports the fraction of all the RBOC shareholders who reside in each state, and the fraction of the total RBOC equity held in that state. Finally, Table 2 provides the fraction of US lines and fraction of US population in each state. (The correlation between the fractions of lines and population is more than .99.)

New York is unusual. Its fraction of account holders is 14.16%, but the fraction of equity held in New York is 73.75%. The reason is that many institutional holders, custodians and brokerage firms reside in New York. They do not hold many accounts, but they hold many shares – approximately 62% of the total number of shares outstanding. The 62% estimate is obtained in two different ways. First, this is the fraction of BellSouth's shares that are not held by households directly. Second, the fraction of BellSouth's shares held by directly registered shareholders in New York is 10.65%. Take that as typical for the other RBOCs, and subtract it from the average fraction of the equity held in New York – 73.75% to obtain 63.1%, as a second estimate of the fraction of shares held in New York by institutional holders, custodians and brokerage firms. The proximity of the two estimates suggests that New York addresses are used by the lion's share of stockholders who are not individual holders registered directly with the company.

1.2 The Questions

We examine the association between the geographic focus of the RBOCs' services and the location of their shareholders from different perspectives. First, we ask if an RBOC has more shareholders in the area that it serves

than do other RBOCs. Second, we ask if the fraction of an RBOC's equity that is held in the area it serves is bigger than the fractions of other RBOCs' equity held in the same area. Third, we ask if the area that an RBOC serves invests more money in that RBOC than in other RBOCs. Fourth, we estimate the account sizes and then compare the typical holding in the local RBOC to the holdings in the other RBOCs. Finally, we compare the RBOC account sizes to portfolios of U.S. households.

We summarize the answers to the first three questions in Tables 3-6, which have a similar structure. State by state, we report the average relevant statistic for out-of-state RBOCs, then for the local RBOC; then we take the ratio of the first two columns, and the ratio of the statistic for the local RBOC and the maximal non-local RBOC. Finally, for each state we compute a t-statistic, testing the null hypothesis that the relevant statistic for the local RBOC has the same mean as that for the other RBOCs, and that they are all normally distributed. To this end, we calculate the mean (m) and standard deviation ($s.d.$) of the statistic for the six out-of-state RBOCs and report $\sqrt{5}(x-m)/(s.d.)$, where x is the statistic for the local RBOC. Under the null, the statistic has a t distribution with five degrees of freedom; the 5%, 1%, and ½% upper tails of the distribution are at 2.015, 3.365, and 4.032, respectively. These t statistics are approximately independent across states, but less so across tables.

The dollar amounts reported in Tables 6 and 7 are substantial in comparison with the equity holdings of the typical U.S. household, as has been gleaned from the Survey of Consumer Finance. We elaborate on this comparison at the end of this section.

1.2.1 The Number of Accounts in Each State

Table 3 reports the average and highest number of accounts for out-of-state RBOCs and the number of accounts for the local RBOC. The local RBOC has more accounts than any other RBOC in 47 out of the 48 states (including D.C.) that are served by an RBOC. (Montana is the exception.)

On average, the number of accounts held in the local RBOC is more than twice the average number of accounts held in the out-of-state RBOCs; the number of accounts held in the local RBOC is 63% bigger than the number of accounts held in the next most popular RBOC. In other words, approximately two out of every seven RBOC accounts are with the local RBOC. (The expected number is of course one out of seven.)

In summary, in every state but one there are more shareholders of the local RBOC than of any other RBOC.

1.2.2 The Fraction of Accounts in Each State

For each RBOC, consider the number of accounts in each state divided by the total number of accounts for that RBOC. By constructing this ratio we control for differences in popularity of the different RBOCs. Table 4 reports the average and highest of these ratios for the out-of-state RBOCs as well as for the local RBOC.

In every state, the fraction of the local RBOC account holders exceeds that of the highest fraction among the other RBOCs. On average, the fraction of the local RBOC is 82% higher than that of the next RBOC.

In summary, a disproportionate number of an RBOC's equity holders tend to live in the area it served by that RBOC.

1.2.3 The Fraction of the RBOCs' Outstanding Equity in Each State

Next, we consider the state-by-state distribution of the holdings of the RBOCs' outstanding equity. In other words, we ask, what fraction of an RBOC's shares is held in the different states?

Investment in the familiar would suggest that the fraction of the local RBOC that is held in a state is larger than the corresponding fractions of the out-of-state RBOCs. However, when considering fractions of shares being held, recall that the behavior and addresses of large institutions strongly affect these numbers. Table 2 shows the strong tendency of companies' equity to be held by New Yorkers – but not necessarily individuals. These can be institutional holders (e.g., pension funds with New York addresses), trustees (e.g., money center banks that act as trustees for big RBOC employee retirement accounts) or large brokerage firms that hold shares belonging to individuals but held under the brokerage firms' names. Moreover, the number of shares held in each state is affected by portfolio choices of money managers. These are at most a few hundred large institutions that control hundreds of billions of dollars invested in US stocks.

When interpreting the distribution of the numbers of shares held in each state, one should keep in mind the possibility that a few large institutional investors located in a particular state will deem it wise to invest in a particular RBOC, thereby leaving the number of accounts holding that RBOC in that state almost intact, but increasing considerably the number of shares held in that state.

Table 5 reports the average and highest fraction of the out-of-state RBOCs' equity as well as the fraction of the local RBOC's equity held in a state. In all 48 states, the average fraction of equity of out-of-state RBOCs is smaller than the fraction of the local RBOC equity which is held locally. On average, the fraction of RBOC equity held locally is 2.76 times higher than the average fraction of the out-of-state RBOCs' equity held in that state. Many of the corresponding t statistics are highly significant.

For 19 out of the 48 states, the fraction of the local RBOC equity held locally is larger than the fraction of any other RBOC's equity held in that state. On average, the ratio of the fraction of the local RBOC's equity held locally to that of the highest fraction of an out-of-state RBOC's equity is 2.40.

In summary, a disproportionate fraction of an RBOC's equity tends to be held in the area served by that RBOC.

1.2.4 The Dollar Value of Shares Held

To compute the dollar values of each RBOC's equity held in each state, we multiply the February 10, 1997, closing RBOC share prices by the numbers of shares held in each state. We then examine whether a state's residents tend to invest a disproportionate number of dollars in the RBOC that serves them.

We would like to examine if the tendency of people to invest in the familiar also applies to the dollar amounts they invest, not just to the number of people who invest and the fraction of RBOC's outstanding equity that is held in the area that it serves. But just as the numbers of shares held are heavily influenced by the behavior of institutions, so too are the dollar amounts. Moreover, stock price fluctuations also affect the results; a run-up in one RBOC's share price will increase its market capitalization and therefore the dollar amount invested in it.

Table 6 reports the average and highest dollar amounts invested in out-of-state RBOCs as well as the amount invested in the local RBOC. In 44 out of 48 states, the amount invested in the local RBOC exceeds the average amount invested in the out-of-state RBOCs. On average, it is 3.15 times higher. (The four exceptional states are Arizona, New Mexico, Nevada and Wyoming.)

For 26 out of the 48 states, more money is invested in the local RBOC than in any other RBOC. On average, the amount invested in the local RBOC is 1.84 times higher than the amount invested in the next most heavily invested RBOC.

In summary, a disproportionate dollar amount is invested in the local RBOC compared to the amount invested in out-of-state RBOCs.

1.2.5 Account Sizes

Our goal is to assess the importance of the RBOC investment to the shareholders. We examine whether the propensity to invest in the familiar is satisfied by holding just a few shares or if it involves large holdings of stocks in familiar companies. We therefore compute the average account size for each RBOC in each state by taking the dollar amount invested in that state and dividing it by the number of accounts holding that RBOC in that state.

Table 7 reports the average account size for out-of-state RBOCs (excluding BellSouth) and the average account size for the local RBOC. Average account sizes for BellSouth are provided separately because the BellSouth data are only for individual accounts. In addition, when we compute the cross states averages for these average account sizes, we exclude New York because New York holdings are predominantly institutional.

It is noteworthy that the average account size for the local RBOC is \$13,817 – higher than \$8,869, the average account size for out-of-state RBOCs when we exclude BellSouth from the sample, or \$9,576, the average if we include BellSouth. This comparison suggests that investors who hold shares of the local RBOC because it is the local RBOC tend to buy more than a token number of shares in the local RBOC.

Next, we estimate the account size of investors who choose the local RBOC over the out-of-state RBOCs. We estimate separately the total amount invested in a state's local RBOC just because it is the local RBOC and the number of shareholders who choose to invest in the local RBOC just because it is the local RBOC. The former is the dollar amount invested in the local RBOC in excess of the average amount invested in the six out-of-state RBOCs. The latter is the number of shareholders in the local RBOC in excess of the average number of shareholders in the other RBOCs in that state. The ratio of these two statistics is our estimator of the average account size of the people who hold shares in the local RBOC just because it is the local RBOC. The last column of Table 7 reports these estimates.

The average estimated account size of the people who hold shares in the local RBOC just because it is the local RBOC is \$23,968. The population-weighted average is \$21,182. The median estimate is \$25,056. These numbers are much larger than typical RBOC account sizes, suggesting that an RBOC customer is not only more likely to invest in his local telephone company, but is also likely to invest much more money in the local telephone company than in other Bell companies.

In summary, the average RBOC investor has about \$8,246 worth of that RBOC stock, whereas the average investor in the local RBOC has about \$14,400 worth of its stock.

1.2.6 A Perspective on RBOC Account Sizes: The Typical Stock Holding of a U.S. Household

Our insights are based on incomplete data. Ideally, we would observe households' entire investment portfolios and examine whether they tilt these portfolios toward the familiar. Unfortunately, this information is not available, but a comparison between the typical household and the typical RBOC shareholding helps gauge the significance of the RBOC stocks to their holders. The comparison is valuable because there are so many households that directly hold shares in the RBOCs -- hundreds of thousands of such shareholders.

Does it make sense for an individual to hold shares directly and not through a mutual fund? For instance, BellSouth has 1.088 million shareholders who hold a total of 373 million shares. On average, each shareholder holds 343 shares; at \$46.75 a share, the average holding is worth about \$16,000.

To put this number in perspective, consider Kennickell, Starr-McCluer and Sunden (1997) who summarize results from the 1995 Survey of Consumer Finances. They report that the median (mean) U.S. family net worth was \$56,400 (\$205,900). About 15% of the families held stocks directly, 12% held mutual funds and about 43% had retirement accounts. The families are broken down by five income categories, and in each category, there are more families that held stocks directly than families that held mutual funds.

Direct stock ownership accounted for 40.4% of all families' financial assets. For families with an annual income lower than \$10,000, direct stock ownership accounted for 21.1% of their financial assets. The number increases with income, reaching 39.9% for families with an annual income between \$50,000 and 100,000, and 47.6% for families with an annual income above \$100,000.

The median value of families' direct and indirect stock ownership (for the 41.1% of families with direct or indirect stock ownership) was \$13,500. If we focus only on the 20.2% of families with annual incomes between \$50,000 and \$100,000, then the median value of direct and indirect stock ownership (for the 66.7% of families in this income range that held stocks) was \$21,300. The median value of direct and indirect stock ownership for families in the lower income categories ranges from \$4,000 for families with incomes of lower than \$10,000 to \$8,000 for families with incomes of between \$25,000 and \$50,000. Only 6.1% of the families had an annual income higher than \$100,000, and their median direct and indirect stock ownership was \$90,800.

Compare these numbers with the numbers in Table 7. In particular, look at the numbers for BellSouth (which do not reflect institutional ownership) or the numbers in the last column of Table 7 (which are estimates of the marginal account size, i.e., the account size of those who hold the local RBOC stock just because it is the local RBOC). The estimates in Table 7 are substantial in comparison with the typical family stock holdings.

Indeed, the following back-of-the-envelope computation makes one wonder which families hold stocks directly and to what extent holding stocks directly conflicts with a major principle of portfolio theory – diversification. Suppose that an individual who holds shares directly holds only round lots – multiples of 100 shares. The New York Stock Exchange reported that the average December 1996 price of shares traded there was about \$40. (Private

communication.) At that price an investor with 100 shares in one firm would hold \$4,000 worth of that firm's stock. If the investor wished to be somewhat diversified and invest in ten firms, his portfolio value would be worth \$40,000, almost twice the \$21,300 mentioned earlier as the median value of direct and indirect stock ownership of households in the \$50,000-\$100,000 income range.

2. Other Instances of Investment in the Familiar

The inclination of RBOC shareholders to invest in the firm that serves them is only one example of the general tendency to invest in the familiar. We survey numerous additional examples, that share this feature and thereby show the strong and pervasive influence familiarity exerts on investment decisions. We recall the relevant literature on international investments, mention the geographic bias of U.S. domestic fund managers, discuss employees' inclination to hold their employers' equity in defined contribution pension plans and relate a few additional anecdotes. Together, the evidence suggests that in addition to perceived risk and return, other variables – familiarity, for instance – affect investment choices, or that these other variables affect the perception of risk and return.

2.1 International Finance and Investing in the Familiar

Grubel (1968), Levy and Sarnat (1970) and Solnik (1974) were among the first to recommend international diversification. French and Poterba (1991) is probably the most prominent among the numerous studies which document the home country bias – evidence that investors do not diversify internationally.

French and Poterba (1991) consider an investment universe consisting of equity indices of six countries – the U.S., Japan, the U.K., France, Germany, and Canada -- from the perspective of investors in three countries – the U.S., Japan, and the U.K. They estimate that these investors hold 93%, 98%, and 82% of their equity investments, respectively, in their home countries.

French and Poterba (1991) observe that they can reliably estimate a variance-covariance matrix of the returns on the six indices, but not the vector of their expected returns. They consider a hypothetical mean-variance optimizing investor and address the following question: Given the variance-covariance matrix and an international asset allocation equal to the aggregate allocation of investors in the particular country, what is the implied vector of

expected returns? They compute the expected returns vectors from the perspective of U.S., Japanese, and U.K. investors.

French and Poterba (1991) compare the imputed expected returns across investors, and for each investor, across countries. Each investor is most optimistic about his own country's equity returns. The expected return on U.S. equities is 5.5% in the eyes of U.S. investors, compared with 3.1% and 4.4% in the eyes of Japanese and U.K. investors, respectively. The expected return on Japanese equities is 6.6% in the eyes of Japanese investors, compared with 3.2% and 3.8% in the eyes of U.S. and U.K. investors, respectively. Interestingly, the most egregious numbers come from the investors who display the weakest home bias, the U.K. investors. In their eyes, the expected returns on their equities is 9.6%, compared with 4.5% and 3.8% in the eyes of U.S. and Japanese investors, respectively.

A partial list of the studies that discuss the home country bias includes Cooper and Kaplanis (1986, 1994), French and Poterba (1991), Gehrig (1993), Kang and Stultz (1997) Pesenti and van Wincoop (1996), Tesar and Werner (1995). Lewis (1995, 1999) surveys this literature. More recent contributions include the papers of Serrat (1996), Gomez and Zapatero (1997), and Grossman and Zhou (1997). Attempts to explain the home country bias usually consider either hedging needs or transaction costs.

Barriers to cross border investments include outright capital controls, taxes and higher transactions costs associated with international investments. But these seem to pose no material challenge to cross border investments among the developed countries. Indeed, Tesar and Werner (1995) write: "the high transactions rate on foreign investments suggests that investors frequently adjust the composition and size of their international portfolios, even though much of this activity has little impact on net investment positions... [This observation] suggests that high transaction costs associated with trading foreign securities cannot be the reason for the observed reluctance of investors to diversify their positions internationally."

Interestingly, Tesar and Werner (1995) anticipate our results, noting that “Observations on the portfolio choices of Canadian and U.S. investors suggest that to the extent investors do invest in foreign securities, their investment decisions do not reflect pure diversification motives. Instead, geographic proximity seems to be an important ingredient in the international portfolio allocation decision.”

Different hedging needs may arise because residents of different countries consume bundles that are subject to different stochastic inflation rates, or because they produce and consume different non-traded goods, or because they own assets that do not trade. Cooper and Kaplanis (1994) examine the first possibility, and reject it. Indeed, for each of their sample’s eight developed countries, they reject the joint hypothesis that the representative investor is risk averse and that the domestic stock market’s return is positively correlated with the domestic inflation rate. So if investors tilt their portfolio toward domestic holdings, they must be risk loving!

Pesenti and van Wincoop (1998) examine the role of non-traded goods and conclude, “[w]e find that accounting for nontradables leads to only a small bias towards domestic assets. The bias is about 10-15% when asset returns are computed based on a fundamentals approach, and 3% when based on stock returns data. After adjusting the benchmark portfolio measure based on stock market capitalization for this bias, there still remains an average bias towards domestic assets in the range of 56% to 68% of the total portfolio.”

The impact of non-traded assets on hedging demands depends on the correlation between their returns and those of the domestic and international securities, and on whether the investor is long or short the non-traded assets. For instance, if the investor owns non-traded assets and their returns are negatively correlated with the domestic equity market’s return, he should tilt his portfolio toward domestic holdings. Baxter and Jermann (1997) argue persuasively that the single most important non-traded asset is human capital and that returns to human capital are highly correlated with the returns to the domestic stock market. Indeed, Baxter and Jermann consider typical investors from four countries – Japan, Germany, the U.K. and the U.S. – who wish to allocate their portfolios among equity indices of these markets. Optimally, each investor should *short* a substantial fraction of his national market portfolio!

The home country bias also applies to real investments, not just to financial investments. Indeed, a closely related puzzle is the high correlation between a country’s long term’s saving rate and its investment rate, which suggests that

money saved in a country is invested in that country rather than in the (possibly foreign) country that offers the best return. Obsfeld (1995) offers a critical review of the literature, which was pioneered by Feldstein and Horioka (1980).

2.2 Domestic Equity Managers

2.3

Coval and Moskowitz (1999) report that the typical equity portfolio of a U.S. money manager consists of stocks of firms that are located 100 miles closer to the manager's office than the average U.S. firm. The bias toward investing locally increases with firm leverage and decreases with firm size and output tradability, but seems unrelated to the money manager's type. Coval and Moskowitz (1997) find abnormal performance in locally held firms and interpret their results as evidence that information advantages motivate investors to favor nearby investments.

2.3 Investment in the Most Familiar: The Employer's Stock

Investment in the familiar extends to workers who choose to invest some – perhaps all – their retirement money in their employers' stocks.

Since 1993, defined contribution pension plans [401(k)] must have at least 3 investment options: a broad-based equity fund, a bond fund, and a money market fund. Frequently, these plans also allow workers to invest in company stock. Survey estimates suggest that more than 30% of the 401(k) money of large firms' workers is invested in the employer's stock.

Schultz (1996b) reports the results of a 1996 survey, conducted by the Institute of Management and Administration, of 246 of the largest American companies. (These employers have 10.6 million defined contribution plan participants.) The survey finds that employer stock accounted for \$133 billion of the total \$318 billion in the defined contribution plans surveyed – i.e., 42% of the total! Williams (1997) reports that as of September 1996, 32.3% of the total assets among the top 1,000 corporate defined contribution plans were in employer stock. (62.3% of the \$732 billion in these defined contribution plans were in stocks.)

In some cases, workers prefer to buy the company stock instead of investing in the other options available in their pension plans. In other cases the preference for the company stock is induced by a matching contribution of the employer. And in still other cases, it is the company that contributes its own stock to the plan, without offering the workers any choice in the matter.

Employers may – and some do – offer incentives to workers to include the company stock in their retirement accounts. In these cases, stockholders essentially sell the firm’s shares to workers at a discount. A standard application of the principal-agent theory cannot account for this behavior, since in a large firm, most individuals’ job performance hardly affects the bottom line. It seems that employers have two mutually enhancing reasons for seeing rank-and-file workers as fellow shareholders: one, this makes employees identify more strongly with the company and thereby motivates them to become better workers; and two, workers actually like to hold the company stock – it is familiar!

Even in the absence of an explicit financial inducement, many employees choose to hold their firm’s stock in their 401(k) accounts. For instance, the presumably financially sophisticated employees of J.P. Morgan invest 19% of their 401(k) plan money in Morgan’s stock, although the firm offers no incentive to make this particular choice. (J.P. Morgan, 1997.) Business Week (1997) reports, “in some companies, even when employees have the choice of other investment options, they tend to go for what they know. Look at Abbott Labs. Until January, 1996, employees had no choice: All of the 401(k) money went into company stock. Then the company added four investment choices and the chance to reallocate. Today, 68% of the employees' regular investment still goes toward stock and the total plan remains 90% invested in Abbott shares.”

Krane (1996) provides an example of how badly workers of one company were hurt, having invested their retirement money with the company’s stock: “Employees of Color Tile still don’t know how much money they lost. Most of their 401(k) is invested in company stock and real estate, but the company, a retailer of home-decorating materials based in Fort Worth, declared bankruptcy in January. That froze the estimated \$20 million in the plan and its exact value is unknown.” According to Schultz (1996a) Color Tile’s 401(k) plan had 1,362 participants.

Kahn (1997) reports on the 401(k) plan of Mercury Finance, a firm whose stock price dropped from \$12.25 on December 31, 1996, to \$2.25 on April 4, 1997. According to Kahn, “Of a total of about 1,900 workers, nearly 900 are enrolled in the company’s 401(k) plan. And according to the plan data for 1994, nearly two-thirds of the plan’s assets were invested in Mercury Finance’s own plummeting stock...Besides Mercury stock workers were offered just one other equity option, a diversified growth fund. The only other active options were a money market fund and a guaranteed investment contract... At the end of 1994, besides the 65.5 percent in Mercury stock, the plan assets were divided as follows: 18 percent in the guaranteed investment contract, 8.5 percent in the equity fund and 5.5 percent in the money market fund...[P]lan participants themselves chose how to divide their contributions to the plan.”

The John Hancock-Gallup survey sheds further and consistent light on the issues discussed here. [Driscoll, Malcolm, Sirull and Slotter (1995).] It compiles the responses of 803 randomly selected individuals whose employers were offering a 401(k), savings, thrift or profit sharing plan with a choice of funds in which to invest. To qualify for the survey, these workers had to be currently contributing to the considered retirement plan.

Participants were asked to rate the risk level associated with different investment types on a scale of 1 (meaning no risk) to 5 (high risk). They rated international/global funds at 3.8, stock funds at 3.5 and company stock at 3.2. In other words, plan participants consider the employer’s stock safer than a diversified international or domestic stock fund.

Additional survey results include the average size of a plan participant’s savings within and without the plan (they resemble the typical U.S. household), the participants’ familiarity with various investment options, and the relevancy of familiarity in their choice of investment. These results are as follows:

1. On average, survey participants saved \$39,130 in the plan and \$35,200 outside the plan;
2. Forty one percent of the participants invest in their employers’ stock;
3. Participants were asked to rate their familiarity with different types of investment. On a scale of 1 (do not know anything) to 5 (very familiar) they rated their own company’s stock highest, at 3.4. Lower rated types of investment were money market funds (3.3), stock funds (3.1), government/treasury funds (3.0), bond funds (2.9), etc;
4. Ninety-three percent of participants said that they were more likely to contribute to a familiar investment option;

5. Seventy percent of the participants who have non-plan savings invest in safe short term liquid investments. (57% of the 70% are in bank accounts and 9% are in money market funds.) The remaining thirty percent save in stock funds (13%), individual stocks (9%), bond funds, non-residence real estate and individual bonds (3% in each category).

In summary, both the data on 401(k) asset allocation and the John Hancock survey suggest that workers' financial well being is often closely tied to their employer's stock. Workers actually like this situation because the employer's stock is a very familiar investment.

2.4 Additional Instances of Investment in the Familiar

People tend to invest in companies with which they are familiar. We have confirmed this hypothesis for the RBOCs and argued that employees' tendencies to buy company stock is another demonstration of the same phenomenon. Additional manifestations of this behavior come to mind.

Casual empiricism suggests that residents of company towns tend to hold shares in these companies (e.g., Rochester, N.Y., for Bausch and Lomb, Kodak, and Xerox.) A piece of anecdotal evidence: following the 1994 takeover of Gerber Products by Sandoz, The New York Times reported from Fremont, Michigan, that "hundreds of local residents – including descendants of those farmers who first invested in the cooperative that became Gerber Products – are figuring out how to reinvest anywhere from the hundreds to tens of millions of dollars they will receive from the Gerber stock." Fremont had 3,900 residents. Gerber directly accounted for 40% of local taxes and employed about 1,300 people according to The New York Times. (Feder, 1994.) Fremont's shareholders of Gerber were very lucky, but their portfolio selection was far from wise.

The Wall Street Journal (Deogun, 1997) provides another example, reporting that at least \$23 billion of Coca Cola stock, or 16%, is held in Georgia, most of it in metropolitan Atlanta, and to many shareholders, selling is anathema. (Coke's headquarters are in Atlanta.)

Lipper Analytical Services (1997, personal communication) reports the existence of 21 mutual funds of Texas municipal bonds. Among them, they manage around \$500 million. Residents of a state will buy shares in a fund

whose assets are municipal bonds from their home state if they wish to avoid paying both federal and state taxes on the interest income. Texas, however imposes no state tax. It seems, then, that buying a Texas municipal bond fund is yet another manifestation of investment in the familiar and an act of Texan patriotism.

Having surveyed the evidence showing that people favor familiar investments, and are reluctant to invest in the unfamiliar, we turn now to survey-based evidence that sheds light on the reasons for this deviation from portfolio theory.

3. Decision Theory and Investment in the Familiar

Familiarity may represent information available to the investor, but not yet to the market. It may represent the investor's illusion that he has superior information. It may represent an investor's belief that he *will* have superior information – perhaps he will be among the first to hear of bad news, and therefore will be able to get out in time. Thus, familiarity as information ranges from the investor actually possessing superior information, to the investor thinking that he currently has superior information, to the investor thinking that he will have superior information at some important point in the future.

People are better informed about the familiar than the unfamiliar – this is almost the defining property of the familiar! But being better informed means spotting as many “sell” opportunities as “buy.” In fact, even having the illusion of superior information – now or in the future – should not, by itself, bias one's position to buy a security, if one follows a standard portfolio selection procedure. However, there is not a single state in which the local RBOC is less popular than the average out-of-state RBOC in terms of number of accounts or fraction of the equity held. And it seems that people tend to buy (and hold) the familiar stocks, not sell them. Moreover, price changes and new insights induce trading by people with informational advantage – or with the illusion of possessing it. Therefore we expect investors who believe that they have superior information to trade frequently. But abysmally underdiversified 401(k) investors who buy their employers' stocks seem in the main to be holding these investments rather than trading them aggressively in response to new information.

Investors in the familiar seem to have static, “buy-and-hold” portfolios. If their positions exploited informational advantage, who are the people on the other side of these positions? Recall that people who acknowledge their

informational inferiority can compensate for it by acquiring an index of the stocks about which they feel they know less than others. The equilibrium implications of this observation are yet to be explored. But before we turn to complex equilibrium considerations, it is worthwhile to look at the behavioral evidence pertaining to investments in the familiar.

It seems that the bias favoring the familiar does not reflect the exploitation of informational advantage – real or imagined. Rather, it reflects people’s tendency to be optimistic about and charitable toward what they feel affinity with -- the comfortable and the familiar. The experimental evidence reviewed below supports this view.

Confidence in the familiar is documented by Heath and Tversky (1991), who summarize their results: “a series of experiments provides support for the hypothesis that people prefer betting on their own judgment over an equiprobable chance event when they consider themselves knowledgeable, but not otherwise. They even pay a significant premium to bet on their judgments.” French and Poterba (1991) suggest that Heath and Tversky’s competence hypothesis may explain the home country bias. But they do not explain how the competence hypothesis implies buy (and probably hold) the home country equity, as opposed to sell it.

Kilka and Weber (1997) examine the relation between the home country bias and the competence hypothesis by directly eliciting expectations about returns of American and German stocks from American and German business students. The elicited returns expectations were both about individual stocks and about two leading stock indices – the Dow Jones and the DAX. Subjects were asked to assess their competence to form beliefs about the equities in question, and then to provide a rough probability distribution of the returns of these equities.

U.S. subjects felt that they were more competent to construct return distributions of U.S. stocks and the Dow than of German stocks and the DAX, and vice versa for the German subjects. For individual stocks, the elicited returns distributions were more dispersed the less competent a subject felt about his ability to form such a distribution. In particular, German (U.S.) subjects had higher dispersions for U.S. (German) than for German (U.S.) equities, and within each country, higher dispersions for the equities about which they felt less competent to judge. This observation seems consistent with the Heath and Tversky (1991) competence hypothesis.

A more interesting result, which directly explains the home country bias but does not follow from the competence hypothesis is the expected returns associated with familiar stocks. For individual stocks, imputed expected returns were higher the more competent the subject felt about his ability to form the return probability distribution. In particular, German (U.S.) subjects had higher expected returns for German (U.S.) than for U.S. (German) equities.

The Dow and the DAX provide a puzzling exception which calls for a further study. The average dispersion of the returns distributions in the eyes of both U.S. and German subjects were similar for the two indices. Also, the German subjects' average expected returns of the two indices were virtually the same, as were the U.S. subjects' average expected returns of the two indices.

Kilka and Weber's results for individual stocks suggest that familiarity, or perceived competence, tends to increase the returns distributions' expected values and lower their variances. The variances of individual assets' returns hardly affect the portfolio weights of optimizing individuals, because they should care about the overall variances of their portfolio returns, not about the return variances of components of the portfolios. However, individuals who do not attempt to choose mean-variance efficient portfolios may assign undue importance to stock-specific risks. Moreover, investors should and do shift portfolio weights toward assets with higher expected returns.

It seems, then, that people look favorably upon stocks with which they are familiar and think of them as more likely to deliver higher returns, at lower stock-specific risks. And this view tilts portfolio weights toward familiar stocks.

A favorable view of stocks with which a person has an affinity, whether he has a stake in them or not, recalls wishful thinking. Indeed, it has been documented that people who vote for a party assign that party a higher probability of winning the election than those who do not vote for it. And fans of a sports team who bet on the outcomes of ballgames are more likely than those who do not support that team to bet that their favorite team will win. (See Babad and Katz (1991), Babad (1995), Bar-Hillel and Budescu (1995))

Preference for the familiar, and distaste for and fear of the unfamiliar, are familiar phenomena with wide ranging manifestations. One example is people's support for local causes such as sports teams and charities. Race- and

gender-based discrimination reflect less innocuous aspects of such a preference. And many wars and inter-ethnic violent conflicts may be the most pernicious outbreaks of the distaste for the alien.

Levi (1993) recognizes the universality of these phenomena, albeit in a very different context, prefacing his work, “[this book] should be able (...) to furnish documentation for a quiet study of certain aspects of the human mind. Many people – many nations – can find themselves holding, more or less wittingly, that ‘every stranger is an enemy’. For the most part this conviction lies deep down like some latent infection; it betrays itself only in random, disconnected acts, and does not lie at the base of a system of reason.”

4. Concluding Remarks

By looking at the geographic distribution of shareholders of the Regional Bell Operating Companies we demonstrate the tendency of people to invest in the familiar. Investment in the familiar conflicts with portfolio theory’s advice to diversify. Indeed, it may be hazardous to its practitioners’ wealth, especially if they concentrate large amounts of their retirement money in their employers’ stock. This behavior is consistent with the home country bias and workers’ propensity to invest in their company’s stock. Familiarity is associated with a general sense of comfort with the known and discomfort with – even distaste for and fear of – the alien and distant. This adds a non-pecuniary dimension to the traditional risk-return tradeoff, which is the focus of earlier studies of the portfolio selection problem.

Our study suggests that investors do not optimize along objective risk-return tradeoffs. Indeed, investors’ heterogeneous experiences will lead them to invest with different companies. A person is more likely to invest with a company he knows (or thinks he knows). At the extreme, this will lead most people to shy away from foreign stocks and to concentrate their portfolios on stocks they know – for instance, their own company’s stock, stocks of firms that are visible in the investors’ lives, and stocks that are discussed favorably in the media.

According to Miller (1986), "for [individual] investors stocks are usually more than just the abstract "bundles of returns" of our economic models. Behind each holding may be a story of family business, family quarrels, legacies received, divorce settlements, and a host of other considerations almost totally irrelevant to our theories of portfolio selection. That we abstract from all these stories in building our models is not because the stories are uninteresting but because they may be too interesting and thereby distract us from the pervasive market forces that should be our principal concern."

When individuals' stories about portfolio selection are systematically similar, they are pervasive market forces. We have documented that familiarity breeds investment, thereby making a contribution to portfolio theory. Since portfolio theory is the foundation of asset pricing theory, implications of this work may affect our understanding of the way security prices are set.

References

- Babad, E., and K. Yosi, 1991, "Wishful Thinking – Against All Odds," *Journal of Applied Social Psychology*, 21, 1921-1938.
- Babad, E., 1995, "Can Accurate Knowledge Reduce Wishful Thinking in Voters' Predictions of Elections Outcomes?" *Journal of Psychology*, 129, 285-300.
- Bar-Hillel, M., and D. Budescu, 1995, "The Elusive Wishful Thinking," *Thinking and Reasoning*, 1, 71-103.
- Baxter, M. and U.J. Jermann, 1997, "The International Diversification Puzzle Is Worse Than You Think," *American Economic Review*, 87 170-180.
- Beartzi, S., and R.H. Thaler, 1995, "Myopic Loss Aversion and the Equity Premium Puzzle," *Quarterly Journal of Economics*, 110:1, 75-92.
- Bernstein Research, 1996, "The Future of Money Management in America, 1997 Edition."
- Brown, P., F. George, and E. Noreen, 1985, "Security Analysts Multi-year Earnings Forecasts and the Capital Market," *Studies in Accounting Research* 21.
- Business Week*, 1997 "The Cream of the Crop in Pensions, Too," May 19.
- Cooper, I., and E. Kaplanis, 1994, "Home Bias in Equity Portfolios, Inflation Hedging, and International Capital Market Equilibrium," *Review of Financial Studies*, 7, 45-60.
- Cooper, I., and E. Kaplanis, 1986, "Costs of Crossborder Investment and International Equity Market Equilibrium," in Jeremy Edwards (ed.), *Recent Advances in Corporate Finance*, Cambridge University Press.
- Coval, J. D. and T. J. Moskowitz, 1999, "Home Bias at Home: Local Equity Preference in Domestic Portfolios," *Journal of Finance*, 54, 1-39.
- Coval, J. D. and T. J. Moskowitz, 1997, "The Geography of Investment: Are There Gains to Investing Locally?" UCLA working paper.
- Deogun, N., 1997, "The Legacy: Roberto Goizueta Led Coca-Cola Stock Surge, and Its Home Prospers," *Wall Street Journal*, October 20.
- Driscoll, K., J. Malcolm, M. Sirull, and P. Slotter, 1995, "1995 Gallup Survey of Defined Contribution Plan Participants," a paper issued by John Hancock Financial Services, November.
- The Economist*, 1996, "Stay-at-Home Shareholders," February 17, page 75.
- Errunza, V. and E. Losq, 1985, "International Asset Pricing Under Mild Segmentation: Theory and Test," *Journal of Finance*, 40, 105-124.
- Feder, Barnaby J., 1994, "Gerber's Hometown Ready to Welcome Sandoz," *New York Times*, August 2, page D1.
- Feldstein, M. and C. Horioka, 1980, "Domestic Saving and International Capital Flows," *Economic Journal*, 90, 314-329.
- French, K. R. and J.M. Poterba, 1991, "Investor Diversification and International Equity Markets," *American Economic Review*, 81, 222-226.
- Gehrig, T., 1993, "An Information Based Explanation of the Domestic Bias in International Equity Investment," *The Scandinavian Journal of Economics*, 95, 97109.

- Grossman, S. J., and Z. Zhou, "Incomplete Equitization and the Foreign Exchange Risk Premium," 1997 The Wharton School, University of Pennsylvania.
- Grubel, H.G., 1968, "Internationally Diversified Portfolios," *American Economic Review* 58, 1299-1314.
- Heath, C. and A. Tversky, 1991, "Preferences and Beliefs: Ambiguity and Competence in Choice Under Uncertainty," *Journal of Risk and Uncertainty*, 4, 5-28.
- Kang, J. and R. Stultz, 1997, "Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan," *Journal of Financial Economics*, 46, 3-28.
- Kahn, V. M., 1997, "A 401(k) with One Big Gun Is One Big Risk," *New York Times*, April 6.
- Kennickell, A. B., M. Starr-McCluer, and A.E. Sunden, 1997, "Family Finances in the U.S.: Recent Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, January, 1-24.
- Kilka, M., and M. Weber, 1997 "Home Bias in International Stock Return Expectations," Universitat Manheim working paper.
- Kocherlakota, N. R., 1996, "The Equity Premium: It's Still a Puzzle," *Journal of Economic Literature*, 34, 42-71.
- Krane, M., 1996, "Earning It: Redress For Broken Nest Eggs," *New York Times*, November 3.
- Levy, H., and M. Sarnat, 1970, "International Diversification of Investment Portfolios," *American Economic Review*, 60, 668-675.
- Levy, H., 1978, "Equilibrium In an Imperfect Market: A Constraint On the Number of Securities In the Portfolio," *American Economic Review*, 68, 643-658.
- Levi, P., 1993, *Survival in Auschwitz*, Macmillan Publishing Company, New York, translated by Stuart Wolf.
- Lewis, K. K., 1995, "Puzzles in International Financial Markets," Handbook of International Economics, G. Grossman and K. Rogoff, eds. vol. III Elsevier Science B.V. North Holland: Amsterdam, 1913 - 1971.
- Lewis, K. K., 1999, "Trying to Explain Home Bias in Equities and Consumption," Journal of Economic Literature, 37, 571-608.
- Merton, R. C., 1987 "A Simple Model of Capital Market Equilibrium with Incomplete Information," *Journal of Finance*, 42, 483-510.
- Miller, M. H., 1986, "Behavioral Rationality in Finance," *Journal of Business*, 59, S451-S468.
- J.P. Morgan, 1997, "Profit Sharing/401(k) Plan, 1997-98 Report to Participants."
- New York Stock Exchange, 1995, *Shareownership*.
- Obstfeld, M., 1995, "International Capital Mobility in the 1990s," *Understanding Interdependence*, Peter Kened, Ed..
- Pesenti, P., and E. Wincoop, "Do Nontraded Goods Explain the Home Bias Puzzle?" October 1996, NBER Working Paper No. 5784.
- Serrat, A., "A Dynamic Model of International Risk-Sharing Puzzles," MIT working paper, 1995.
- Schultz, E. E., 1996a, "Color Tile Offers Sad Lessons For Investors in 401(k) Plans," *Wall Street Journal*, June 5.
- Schultz, E. E., 1996b, "Workers Put Too Much in Their Employer's Stock," *Wall Street Journal*, September 13.

Siegel, J. J., and R.H. Thaler, 1997, "The Equity Premium Puzzle," *Journal of Economic Perspectives*, 191-200.

Solnik, B. H., 1974, "Why Not Diversify Internationally Rather than Domestically?" *Financial Analyst Journal*, 30, 91-135.

Tesar, L. L., and I.M. Werner, 1995, "Home Bias and High Turnover," *Journal of International Money and Finance*.

Williams, F., 1997, "Equities Top 62% of 401(k) Assets," *Pensions and Investments*, January 20,.

Table 1. End of 1996 RBOCs' numbers of shareholders and shares, and average account sizes

Company Ticker	Ameritech AIT	Bell Atlantic BEL	BellSouth BLS	NYNEX NYN	Pacific Telesis PAC	SBC SBC	US West USW	Total
#Shareholders (thousands)	834	867	1,088	866	671	797	722	
#Shares (millions)	588	438	993	440	433	609	474	
Shares per account	705	505	913	508	645	765	657	
Share price, in dollars (Feb. 10, 1997)	64	70.5	46.75	52.625	40.75	57	34.25	
Market capitalization (millions)	37,639	30,862	46,443	23,154	17,638	34,739	16,235	206,709
Average account value	45,143	35,600	42,683	26,751	26,276	43,594	22,492	
Fraction of SP500	0.62%	0.51%	0.76%	0.38%	0.29%	0.57%	0.27%	3.39%
Imputed portfolio size, in dollars	7,316,140	7,036,470	5,606,226	7,047,428	9,087,401	7,654,921	8,451,094	

Comments. Number of Shareholders is from the companies directly. Number of shares from companies SEC form 10Q for Q3 1996. Fraction of SP500 is computed by dividing the RBOC's 2/10/97 market capitalization by \$6 trillion, the approximate value of the SP500 portfolio. Imputed portfolio size is the average account value divided by the corresponding fraction of SP500. The number of shareholders for BellSouth is the number of individuals who are registered directly with BellSouth. (I.e., for BellSouth, institutional accounts and brokerage accounts are excluded.) For BellSouth, the reported average number of shares per account and average account size treats all of BellSouth's 993 thousand shares as if they were wholly owned by its 1.088 million shareholders. In reality, only 373 million shares of BellSouth are held directly by the 1.088 million households, or 38% of the total.

Table 2: RBOCs' penetration into each state, as service providers and investment opportunities

State	RBOC	% lines by RBOC	% RBOCs accounts	% RBOCs equity from state	% US phone lines	% US population
AK	N.A.	0.00	0.06	0.01	0.22	0.22
AL	BLS	80.75	0.80	0.15	1.43	1.65
AR	SBC	68.98	0.50	0.18	0.82	0.96
AZ	USW	93.46	1.32	0.40	1.50	0.23
CA	PAC	79.70	8.45	2.57	12.56	12.12
CO	USW	95.70	1.49	0.42	1.49	1.34
CT	N.A.	0.00	1.61	0.42	1.29	1.34
DC	BEL	100.00	0.22	0.08	0.51	0.25
DE	BEL	100.00	0.34	0.11	0.30	0.27
FL	BLS	59.24	6.65	2.08	6.01	5.27
GA	BLS	83.70	1.84	0.35	2.67	2.64
HI	N.A.	0.00	0.13	0.03	0.40	0.45
IA	USW	66.36	0.82	0.25	0.97	1.13
ID	USW	74.93	0.19	0.05	0.39	0.41
IL	AIT	83.64	6.75	2.45	4.78	4.65
IN	AIT	62.88	1.28	0.39	2.01	2.26
KS	SBC	83.60	0.73	0.26	0.94	1.01
KY	BLS	57.93	0.64	0.15	1.23	1.50
LA	BLS	92.83	0.96	0.19	1.45	1.72
MA	NYN	99.91	5.52	1.34	2.65	2.45
MD	BEL	99.81	2.65	0.72	1.99	1.95
ME	NYN	83.80	0.68	0.19	0.49	0.50
MI	AIT	85.19	2.32	0.83	3.72	3.78
MN	USW	75.35	0.95	0.27	1.73	1.78
MO	SBC	75.94	2.13	0.82	1.95	2.08
MS	BLS	93.75	0.49	0.10	0.80	1.05
MT	USW	69.54	0.27	0.06	0.31	0.33
NC	BLS	49.77	1.79	0.45	2.62	2.70
ND	USW	70.80	0.09	0.02	0.23	0.26
NE	USW	80.75	0.55	0.15	0.60	0.64
NH	NYN	93.98	0.89	0.22	0.48	0.45
NJ	BEL	96.77	8.92	2.60	3.66	3.15
NM	PAC	79.70	0.50	0.14	0.52	0.62
NV	PAC	28.70	0.36	0.11	0.64	0.49
NY	NYN	89.82	14.16	73.75	7.43	7.33
OH	AIT	59.09	3.06	1.03	4.08	4.42
OK	SBC	83.46	0.82	0.26	1.20	1.28
OR	USW	66.79	0.75	0.21	1.17	1.16
PA	BEL	77.56	5.69	2.31	4.62	4.84
RI	NYN	100.00	0.55	0.14	0.38	0.41
SC	BLS	67.10	0.80	0.18	1.24	1.42
SD	USW	77.77	0.14	0.04	0.25	0.28
TN	BLS	80.47	0.97	0.21	1.94	1.99
TX	SBC	77.10	3.81	1.37	6.29	6.92
UT	USW	95.56	0.34	0.09	0.61	0.70
VA	BEL	75.82	2.30	0.67	2.45	2.52
VT	NYN	84.27	0.35	0.08	0.23	0.23
WA	USW	69.37	1.24	0.34	2.07	1.98
WI	AIT	66.84	1.44	0.52	1.94	1.99
WV	BEL	83.52	0.58	0.17	0.56	0.73
WY	USW	83.04	0.14	0.05	0.18	0.18
average		74.61				
phone line-weighted avg		76.96				

Sources: US Statistical Abstracts, FTC, RBOCs.

Comments. % RBOCs accounts is the fraction of all RBOC accounts which are held in that state. % RBOCs equity is the fraction of RBOCs equity held in that state.

Table 3: Number of Accounts

State	AVG	Highest	#accts for Local RBOC	# accts Local/AVG	# accts Local/Highest	t-stat
AK	£	635	No local RBOC			
AL	4,96	5,298	17,214	3.47	3.25	64.75
AR	3,51	4,747	7,842	2.23	1.65	14.75
AZ	10,363	12,471	14,700	1.42	1.18	8.13
CA	65,912	77,753	98,515	1.49	1.27	12.49
CO	10,976	13,652	21,500	1.96	1.57	16.22
CT	13,417	17,005	No local RBOC			
DC	1,67	2,217	2,596	1.55	1.17	7.22
DE	2,55	3,650	4,762	1.87	1.30	8.81
FL	48,935	54,614	94,929	1.94	1.74	19.45
GA	11,559	12,349	38,168	3.30	3.09	63.18
HI	1,10	1,374	No local RBOC			
IA	6,24	7,677	10,300	1.65	1.34	11.11
ID	1,43	1,726	2,700	1.88	1.56	19.13
IL	50,962	65,375	Ameritech			
IN	9,57	12,904	Ameritech			
KS	5,12	6,564	11,905	2.32	1.81	20.30
KY	4,34	4,813	11,410	2.63	2.37	38.67
LA	6,51	6,964	17,013	2.61	2.44	50.09
MA	41,200	52,829	75,297	1.83	1.43	12.06
MD	19,595	27,858	37,261	1.90	1.34	9.32
ME	5,02	6,722	9,385	1.87	1.40	10.27
MI	17,206	23,263	Ameritech			
MN	6,97	8,775	13,400	1.92	1.53	14.34
MO	14,902	18,887	35,296	2.37	1.87	21.27
MS	3,11	3,275	9,720	3.12	2.97	66.27
MT	2,10	5,039	3,400	1.62	0.67	2.04
NC	12,335	14,091	30,610	2.48	2.17	31.17
ND	€	829	1,400	2.09	1.69	18.55
NE	4,14	5,039	7,200	1.74	1.43	13.60
NH	6,64	8,722	12,339	1.86	1.41	11.33
NJ	69,861	90,986	102,135	1.46	1.12	5.89
NM	3,87	4,756	5,900	1.52	1.24	9.12
NV	2,91	3,375	3,496	1.20	1.04	5.62
NY	110,051	141,217	166,966	1.52	1.18	7.52
OH	23,358	31,851	Ameritech			
OK	5,71	7,368	13,592	2.38	1.84	20.74
OR	5,74	6,853	9,400	1.64	1.37	15.07
PA	41,527	58,410	83,127	2.00	1.42	10.58
RI	4,04	5,399	7,742	1.92	1.43	11.33
SC	5,31	6,127	14,602	2.75	2.38	36.30
SD	1,00	1,181	1,900	1.90	1.61	19.70
TN	6,42	6,839	18,387	2.86	2.69	48.58
TX	26,376	34,307	64,431	2.44	1.88	20.93
UT	2,47	2,972	5,100	2.06	1.72	23.10
VA	17,225	25,645	31,277	1.82	1.22	7.40
VT	2,62	3,539	4,574	1.74	1.29	8.73
WA	9,32	11,261	16,500	1.77	1.47	16.80
WI	10,278	13,769	Ameritech			
WV	4,33	6,233	7,715	1.78	1.24	7.89
WY	1,02	1,188	1,900	1.85	1.60	21.86
Average (including Ameritech)				2.02	1.63	19.08

Comments. **AVG** is the average number of accounts for out-of-state RBOCs. **Highest** is the highest number of accounts for an out-of-state RBOC. **t-stat** is for the hypothesis that the number of accounts for the local RBOC has the same mean as that for the out-of-state RBOCs.

Table 4: Fraction of accounts, by state, for each RBOC.

State	AVG (in percent)	Highest (in percent)	Local (in percent)	Local/AVG	Local/Highest	t-stat
AK	0.06	0.08				
AL	0.63	0.66	1.58	2.52	2.38	115.78
AR	0.42	0.44	0.98	2.35	2.23	53.54
AZ	1.22	1.32	2.04	1.67	1.54	21.20
CA	7.70	8.62	14.68	1.91	1.70	27.60
CO	1.29	1.39	2.98	2.31	2.14	57.17
CT	1.61	1.87				
DC	0.20	0.21	0.30	1.48	1.44	37.58
DE	0.31	0.34	0.55	1.80	1.64	35.29
FL	6.17	6.31	8.72	1.41	1.38	79.94
GA	1.46	1.50	3.51	2.40	2.34	136.91
HI	0.13	0.16				
IA	0.73	0.79	1.43	1.94	1.80	36.01
ID	0.17	0.20	0.37	2.20	1.92	28.42
IL	6.13	6.53				
IN	1.15	1.19				
KS	0.61	0.68	1.49	2.44	2.20	46.25
KY	0.55	0.60	1.05	1.91	1.74	40.31
LA	0.82	0.87	1.56	1.90	1.79	44.79
MA	4.98	5.22	8.70	1.75	1.67	61.37
MD	2.35	2.56	4.30	1.83	1.68	38.29
ME	0.60	0.62	1.08	1.79	1.74	68.67
MI	2.06	2.15				
MN	0.82	0.87	1.86	2.26	2.13	48.75
MO	1.78	1.88	4.43	2.49	2.35	58.11
MS	0.39	0.41	0.89	2.27	2.18	78.45
MT	0.23	0.46	0.47	2.01	1.02	4.37
NC	1.56	1.63	2.81	1.81	1.73	64.91
ND	0.08	0.08	0.19	2.46	2.35	67.40
NE	0.49	0.53	1.00	2.04	1.87	38.69
NH	0.80	0.83	1.43	1.78	1.72	107.41
NJ	8.42	8.94	11.78	1.40	1.32	26.41
NM	0.46	0.51	0.82	1.79	1.60	32.91
NV	0.34	0.40	0.52	1.53	1.30	11.33
NY	13.30	13.95	19.29	1.45	1.38	35.33
OH	2.79	2.93				
OK	0.68	0.73	1.71	2.50	2.32	56.46
OR	0.68	0.82	1.30	1.91	1.58	17.16
PA	4.98	5.37	9.59	1.92	1.79	53.54
RI	0.49	0.50	0.89	1.84	1.79	143.17
SC	0.67	0.71	1.34	2.00	1.90	71.71
SD	0.12	0.13	0.26	2.23	2.06	43.38
TN	0.81	0.85	1.69	2.08	1.99	81.57
TX	3.15	3.38	8.09	2.57	2.39	65.25
UT	0.29	0.33	0.71	2.42	2.13	38.04
VA	2.06	2.36	3.61	1.75	1.53	21.87
VT	0.32	0.33	0.53	1.67	1.62	59.51
WA	1.10	1.28	2.29	2.07	1.78	25.16
WI	1.23	1.30				
WV	0.52	0.57	0.89	1.71	1.55	27.79
WY	0.12	0.14	0.26	2.16	1.94	31.55
Average (including Ameritech)				1.98	1.82	50.89

Comment. The basic statistic is the ratio between the number of accounts of an RBOC in a given state, divided by the total number of accounts for that RBOC, in percent. **AVG** is the average of that statistic for out-of-state RBOCs, **Highest** is the highest statistic for out-of-state RBOCs, **Local** is that statistic for the local RBOC, etc.

Table 5: Fraction of RBOCs' equity held in each state (in percent).

State	AVG (in percent)	Highest (in percent)	Local (in percent)	Local/AVG	Local/Highest	t-stat
AK	0.01	0.03				
AL	0.14	0.17	1.78	12.41	10.25	150.70
AR	0.15	0.39	0.40	2.63	1.04	4.84
AZ	0.49	1.08	0.58	1.18	0.54	0.63
CA	2.76	6.21	6.29	2.28	1.01	4.72
CO	0.45	1.04	1.03	2.27	0.99	4.12
CT	0.55	1.38				
DC	0.09	0.22	0.15	1.61	0.68	2.01
DE	0.12	0.32	0.22	1.83	0.67	2.22
FL	2.01	2.39	10.42	5.18	4.35	63.80
GA	0.34	0.39	4.66	13.81	11.88	197.76
HI	0.05	0.11				
IA	0.29	0.65	0.48	1.70	0.74	2.22
ID	0.06	0.12	0.11	1.99	0.90	3.43
IL	2.32	5.77				
IN	0.38	1.01				
KS	0.24	0.55	0.57	2.41	1.03	4.83
KY	0.15	0.19	1.19	8.07	6.18	74.16
LA	0.18	0.29	1.65	9.04	5.79	61.65
MA	1.51	3.72	2.66	1.76	0.71	2.38
MD	0.79	2.07	1.48	1.88	0.72	2.50
ME	0.22	0.53	0.34	1.55	0.64	1.73
MI	0.81	1.97				
MN	0.29	0.63	0.57	1.96	0.91	3.34
MO	0.65	1.57	2.02	3.09	1.28	6.80
MS	0.10	0.13	1.07	11.17	8.42	109.92
MT	0.07	0.15	0.16	2.43	1.05	4.53
NC	0.43	0.50	3.36	7.83	6.71	96.09
ND	0.03	0.06	0.07	2.64	1.07	4.68
NE	0.17	0.37	0.32	1.94	0.88	3.20
NH	0.25	0.63	0.44	1.74	0.70	2.28
NJ	3.06	7.51	4.12	1.35	0.55	1.10
NM	0.17	0.39	0.24	1.40	0.61	1.29
NV	0.13	0.28	0.18	1.32	0.63	1.35
NY	63.46	79.19	77.91	1.23	0.98	1.26
OH	1.35	4.45				
OK	0.22	0.55	0.64	2.86	1.15	5.77
OR	0.24	0.53	0.40	1.64	0.75	2.23
PA	2.20	4.99	4.90	2.23	0.98	4.45
RI	0.16	0.40	0.28	1.76	0.70	2.32
SC	0.18	0.22	1.49	8.53	6.83	92.38
SD	0.06	0.19	0.08	1.49	0.44	0.88
TN	0.21	0.25	5.83	28.40	23.08	344.05
TX	1.15	2.76	3.32	2.89	1.21	6.23
UT	0.09	0.19	0.19	2.06	1.02	3.85
VA	0.76	2.18	1.42	1.87	0.65	2.14
VT	0.10	0.25	0.15	1.55	0.61	1.65
WA	0.39	0.87	0.74	1.90	0.85	3.07
WI	0.44	1.11				
WV	0.20	0.55	0.33	1.68	0.61	1.78
WY	0.06	0.16	0.08	1.32	0.53	0.82
Average (including Ameritech)				2.76	2.40	27.24

Comment. The basic statistic is the ratio between the number of shares of an RBOC in a given state, divided by the total number of shares for that RBOC, in percent. **AVG** is the average of that statistic for out-of-state RBOCs, **Highest** is the highest statistic for out-of-state RBOCs, **Local** is that statistic for the local RBOC, etc.

Table 6: Dollar Amounts invested from each state.

State	AVG (in \$ million)	Highest (in \$ million)	Local (in \$ million)	Local/AVG	Local/Highest	t-stat
AK	3	6				
AL	40	60	311	7.87	5.18	33.82
AR	34	68	138	4.01	2.04	11.00
AZ	121	188	95	0.79	0.51	(1.08)
CA	673	1,082	1,109	1.65	1.03	3.61
CO	112	181	170	1.52	0.94	2.49
CT	129	240				
DC	20	38	46	2.25	1.20	5.66
DE	27	56	67	2.53	1.20	5.42
FL	547	841	1,817	3.32	2.16	12.56
GA	92	138	812	8.80	5.89	40.60
HI	11	19				
IA	71	114	80	1.12	0.70	0.57
ID	14	22	19	1.33	0.85	1.73
IL	512	1,007				
IN	84	176				
KS	53	97	196	3.70	2.03	12.02
KY	41	66	208	5.08	3.15	18.46
LA	51	97	288	5.67	2.95	18.85
MA	356	649	635	1.78	0.98	3.39
MD	174	361	459	2.64	1.27	6.22
ME	52	93	81	1.55	0.87	2.30
MI	183	344				
MN	73	109	93	1.28	0.85	1.37
MO	146	274	690	4.73	2.52	15.12
MS	26	39	187	7.07	4.74	29.39
MT	16	27	27	1.64	0.99	3.04
NC	118	172	586	4.98	3.41	20.64
ND	6	11	11	1.78	1.01	3.34
NE	41	64	53	1.29	0.83	1.40
NH	60	110	106	1.77	0.96	3.29
NJ	692	1,310	1,277	1.85	0.98	3.52
NM	42	68	39	0.93	0.58	(0.30)
NV	32	48	31	0.95	0.64	(0.30)
NY	16,658	24,768	18,625	1.12	0.75	0.50
OH	289	776				
OK	49	96	217	4.42	2.26	13.60
OR	59	93	65	1.10	0.70	0.59
PA	502	869	1,516	3.02	1.74	9.36
RI	37	69	67	1.79	0.96	3.39
SC	48	70	260	5.41	3.71	22.25
SD	13	33	14	1.08	0.42	0.21
TN	57	86	1,017	17.96	11.78	82.08
TX	252	481	1,136	4.52	2.36	15.35
UT	24	44	32	1.33	0.72	1.29
VA	168	380	440	2.62	1.16	5.27
VT	23	43	36	1.58	0.84	2.38
WA	96	152	122	1.28	0.80	1.51
WI	96	194				
WV	44	96	104	2.33	1.08	4.60
WY	15	28	14	0.95	0.50	(0.20)
Average (including Ameritech)				3.15	1.84	9.68

Comment. The basic statistic is the product of the number of shares of an RBOC in a given state and the share price on February 10, 1997, in millions of dollars. **AVG** is the average of that statistic for out-of-state RBOCs, **Highest** is the highest statistic for out-of-state RBOCs, **Local** is that statistic for the local state.

RBOC.Table 7: Average Account Sizes

State	AVG	Average for BellSouth	Average account size for local	Local/AVG	(Excess dollars Local)/ (Excess # accounts in local)
AK	6,210	9,154			
AL	7,789	18,072	18,072	2.32	22,788
AR	8,247	14,268	17,600	2.13	33,460
AZ	10,669	15,086	6,472	0.61	-11,685
CA	9,300	13,916	11,259	1.21	21,015
CO	9,235	13,286	7,894	0.85	7,378
CT	8,468	14,131			
DC	10,633	17,290	17,710	1.67	67,480
DE	8,694	15,348	14,082	1.62	36,455
FL	10,982	19,140	19,140	1.74	31,489
GA	7,845	21,276	21,276	2.71	27,877
HI	8,727	13,699			
IA	10,215	14,862	7,726	0.76	3,341
ID	8,832	12,614	6,863	0.78	4,764
IL	8,430	15,399			
IN	7,194	13,607			
KS	9,040	14,738	16,477	1.82	26,805
KY	9,127	18,192	18,192	1.99	25,268
LA	7,624	16,910	16,910	2.22	23,575
MA	7,497	12,288	8,431	1.12	12,410
MD	7,484	12,961	12,311	1.64	30,318
ME	9,060	13,797	8,624	0.95	10,816
MI	9,266	14,794			
MN	9,753	12,461	6,976	0.72	4,457
MO	8,349	14,509	19,544	2.34	33,150
MS	8,323	19,193	19,193	2.31	24,854
MT	9,202	5,320	7,812	0.85	NA
NC	9,347	19,154	19,154	2.05	28,361
ND	8,020	13,014	7,789	0.97	8,373
NE	9,078	12,745	7,363	0.81	5,459
NH	7,810	12,661	8,576	1.10	12,723
NJ	8,548	14,393	12,508	1.46	52,541
NM	9,833	14,386	6,689	0.68	-2,415
NV	10,378	14,331	8,830	0.85	-12,940
NY	187,053	13,158	111,548	0.60	76,364
OH	8,665	24,348			
OK	7,263	13,059	15,973	2.20	26,997
OR	9,473	13,510	6,943	0.73	2,422
PA	11,092	14,881	18,242	1.64	41,036
RI	8,045	12,816	8,608	1.07	12,575
SC	8,852	17,838	17,838	2.02	25,056
SD	8,816	27,641	7,198	0.82	1,483
TN	8,607	55,306	55,306	6.43	83,158
TX	8,224	14,007	17,636	2.14	29,367
UT	9,134	10,984	6,178	0.68	3,654
VA	7,936	14,818	14,055	1.77	48,212
VT	7,532	12,185	7,914	1.05	12,806
WA	9,386	13,529	7,420	0.79	5,126
WI	7,877	14,107			
WV	8,488	15,375	13,439	1.58	39,985
WY	14,854	12,658	7,310	0.49	-1,025
Average (w/o NY, including Ameritech)					
	8,869	15,681	13,817	1.59	23,968
Population-weighted average (w/o NY)					
	8,246	15,173	14,400	1.74	20,809
Population-weighted average (with NY)					
	21,947	16,137	22,585	1.71	21,182
Median	8,727	14,268	13,747	1.21	25,056

Comment. The basic statistic is the product of the number of shares per account of an RBOC in a given state

and the share price on February 10, 1997. **AVG** is the average of that statistic for out-of-state RBOCs, excluding BellSouth, **Local** is that statistic for the local RBOC, **(Excess dollars Local)/(Excess # accounts in local)** is the ratio of total dollars invested in the local RBOC in excess of the average number of dollars invested in the out-of-state RBOCs and the number of accounts in the local RBOC in excess of the average number of accounts for the out-of-state RBOCs.