Familiarity Breeds Investment

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Shareholders of a Regional Bell Operating Company (RBOC) tend to live in the area which it serves, and an RBOC's customers tend to hold its shares rather than other RBOCs' equity. The geographic bias of the RBOC investors is closely related to the general tendency of households' portfolios to be concentrated, of employees' tendency to own their employers' stocks in their retirement accounts, and to the home country bias in the international arena. Together, these phenomena provide compeling evidence that people invest in the familiar while often ignoring the principles of portfolio theory.

Traditional economic models posit investors who have beliefs about future payoffs of assets. Each investor selects his portfolio so as to maximize the expected utility of the portfolio's payoff. Investors' aversion to risk implies that their portfolios should be diversified. In particular, they 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 Stulz (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."

This article offers a novel explanation of the home country bias: 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.

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Investment in the familiar manifests itself in more than just the home country bias. 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 et al. (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 that deviates from the capital asset pricing model (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).

To test the familiarity 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 (NYSE), and their market capitalizations are large.

The evidence that people do invest in the familiar is clear. 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 in comparison with the typical U.S. household's net worth and direct and indirect stock holdings.

Section 1 assembles seemingly disparate evidence on how familiarity affects investment choices. Section 2 documents the geographic distribution of the RBOC shareholders and relates the amount of money that individuals invest in the RBOCs to the typical U.S. household's net worth and stock holdings. Section 3 discusses possible explanations and Section 4 concludes.

1. Instances of Investment in the Familiar

This section surveys numerous examples of the tendency to invest in the familiar and thereby demonstrates the strong and pervasive influence familiarity exerts on investment decisions. It recalls the relevant literature on international investments, mentions the geographic bias of U.S. domestic fund managers, discusses employees' inclination to hold their employers' equity in defined contribution pension plans, and relates 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.

1.1 International finance and investing in the familiar

Grubel (1968), Levy and Sarnat (1970), and Solnik (1974) are 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) estimate that U.S., Japan, and U.K. investors hold 93%, 98%, and 82% of their equity investments, respectively, in their home countries, and argue that these numbers are inconsistent with standard models of asset allocation. Observing that they can reliably estimate a variance-covariance matrix of returns but not the vector of their expected returns, they consider hypothetical mean-variance optimizing investors 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 and 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. Of interest, 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.

This gap between investors' actual and presumably optimal behavior motivated numerous studies in the search for an explanation. A partial list of articles looking at the home country bias includes Cooper and Kaplanis (1986, 1994), Gehrig (1993), Tesar and Werner (1995), Pesenti and Wincoop (1996), and Kang and Stulz (1997). Lewis (1995, 1999) surveys this literature. More recent contributions include Grossman and Zhou (1997).

Attempts to explain the home country bias usually consider either transaction costs or hedging needs. The former include outright capital controls, taxes, and higher transaction 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."

Of interest, Tesar and Werner (1995) anticipate this article's 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 nontraded goods, or because they own assets that do not trade. Baxter and Jermann (1997) argue persuasively that the single most important nontraded 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 United Kingdom, and the United States—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, not just financial investments. Indeed, a closely related puzzle is the high correlation between a country's long-term 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. Obstfeld (1995) offers a critical review of the literature, which was pioneered by Feldstein and Horioka (1980).

1.2 Domestic equity managers

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 tradeability, 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.

1.3 Investment in the most familiar: the employer's stock

Investment in the familiar extends to workers who choose to invest some, or perhaps all of their retirement money in their employer's stock. 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 from 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. Benartzi (2000) reports that "[r]oughly a third of assets in large retirement savings plans are in company stock . . . [E]mployees invest 20–30 percent of their *discretionary* funds in company stock (as opposed to being required to own company stock)."

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: (1) this makes employees identify more strongly with the company and thereby motivates them to become better workers; and (2) 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 et al. (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. The survey's most relevant finding for this work is that participants consider the employer's stock safer than a domestic stock fund, which they consider safer than an international stock fund. In addition, they say that they are more likely to contribute to a familiar investment option, and that their own company stock is the most familiar investment option to them.

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.

1.4 Additional instances of investment in the familiar

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 is 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 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 income 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.

A detailed look at the geographic distribution of the shareholders of the RBOCs augments the review of the evidence that shows that people favor familiar investments, and are reluctant to invest in the unfamiliar.

2. Evidence on the Regional Bell Operating Companies

Traditional hedging arguments suggest both over- and underinvestment in local RBOCs, but the argument favoring underinvestment is stronger than the one favoring overinvestment. A customer of an RBOC may overinvest 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. Nonetheless, the evidence indicates 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 in 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.

The data are considered from various perspectives. The implicit null hypothesis that shareholders' location has no effect on their choice of RBOC

stocks is usually rejected in favor of the alternative that people tend to invest in the RBOC that serves them.

2.1 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, that is, it omitted both institutional accounts and individual accounts held through brokerage firms. Ameritech requested that explicit data on the distribution of its shareholders not be published, but allowed the incorporation of its information into aggregate statistics. Share prices are February 10, 1997, closing prices.

Table 1 reports the number of shareholders and market capitalization of each RBOC. It also provides the average dollar value of an account, and the imputed value of an S&P 500 portfolio with the holding of the particular RBOC 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, having provided 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.

The RBOCs tend to subsidize their employees' stockholdings, but this tendency does not drive the results below. They subsidize their employees' stock purchases only within a 401(k) pension plan, and 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 this article's 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, 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 provided by the RBOC. (The rest of the lines are provided by non-Bell companies.) In addition, Table 2 reports the fraction of

Table 1
End of 1996 properties of the RBOCs and holdings of their shares

Company	Ameritech	Bell Atlantic	Bell-South	NYNEX	Pacific Telesis	SBC	US West	Total
No. of shareholders (thousands)		834	867	1,088	866	671	797	722
Market capitalization ($ billions)	38	31	46	23	18	35	16	207
Average account value ($ thousands)	45	36	43	27	26	44	23	
Imputed portfolio size ($ millions)	7.3	7.0	5.6	7.0	9.1	7.7	8.5	

Number of shareholders is from the companies directly. Market capitalization from companies SEC form 10Q for Q3 1996. The number of shareholders for BellSouth is the number of individuals who are registered directly with BellSouth (i.e., for BellSouth, institutional and brokerage accounts are excluded). Imputed portfolio size is the average account value divided by the corresponding fraction of S&P 500. (Fraction of S&P 500 is computed by dividing the RBOC's 2/10/97 market capitalization by $6 trillion, the approximate value of the S&P 500 portfoio.)

all the RBOC shareholders who reside in each state, and the fraction of the total RBOC equity held in that state.

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.

2.2 The issues

The association between the geographic focus of the RBOC's services and the location of its shareholders has different but related aspects which are covered in this section. Typically an RBOC has more shareholders in the area that it serves than other RBOCs; the fraction of an RBOC's equity that is held in the area it serves is larger than the fractions of other RBOCs' equity held in the same area; the area that an RBOC serves invests more money in that RBOC than in other RBOCs; the account sizes in the local RBOC are comparable to or larger than those in the other RBOCs. Evidence suggesting that RBOC account sizes are large relative to portfolios of U.S. households concludes this section.

Tables 3 and 4, which have a similar structure, summarize most of the evidence. State by state, they provide the average and maximal relevant

Table 2
General statistics

State	RBOC	% lines by RBOC	% RBOCs accounts in state	% RBOCs equity from state
AK	N.A.	0.00	0.06	0.01
AL	BLS	80.75	0.80	0.15
AR	SBC	68.98	0.50	0.18
CA	PAC	79.70	8.45	2.57
CO	USW	95.70	1.49	0.42
CT	N.A.	0.00	1.61	0.42
DC	BEL	100.00	0.22	0.08
DE	BEL	100.00	0.34	0.11
FL	BLS	59.24	6.65	2.08
GA	BLS	83.70	1.84	0.35
HI	N.A.	0.00	0.13	0.03
IA	USW	66.36	0.82	0.25
ID	USW	74.93	0.19	0.05
IL	AIT	83.64	6.75	2.45
IN	AIT	62.88	1.28	0.39
KS	SBC	83.60	0.73	0.26
KY	BLS	57.93	0.64	0.15
LA	BLS	92.83	0.96	0.19
MA	NYN	99.91	5.52	1.34
MD	BEL	99.81	2.65	0.72
ME	NYN	83.80	0.68	0.19
MI	AIT	85.19	2.32	0.83
MN	USW	75.35	0.95	0.27
MO	SBC	75.94	2.13	0.82
MS	BLS	93.75	0.49	0.10
MT	USW	69.54	0.27	0.06
NC	BLS	49.77	1.79	0.45
ND	USW	70.80	0.09	0.02
NE	USW	80.75	0.55	0.15
NH	NYN	93.98	0.89	0.22
NJ	BEL	96.77	8.92	2.60
NM	PAC	79.70	0.50	0.14
NV	PAC	28.70	0.36	0.11
NY	NYN	89.82	14.16	73.75
OH	AIT	59.09	3.06	1.03
OK	SBC	83.46	0.82	0.26
OR	USW	66.79	0.75	0.21
PA	BEL	77.56	5.69	2.31
RI	NYN	100.00	0.55	0.14
SC	BLS	67.10	0.80	0.18
SD	USW	77.77	0.14	0.04
TN	BLS	80.47	0.97	0.21
TX	SBC	77.10	3.81	1.37
UT	USW	95.56	0.34	0.09
VA	BEL	75.82	2.30	0.67
VT	NYN	84.27	0.35	0.08
WA	USW	69.37	1.24	0.34
WI	AIT	66.84	1.44	0.52
WV	BEL	83.52	0.58	0.17
WY	USW	83.04	0.14	0.05
Average		74.61		
Phone line-weighted average		76.96		

statistic for out-of-state RBOCs, then for the local RBOC. For each state they report 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, the mean (m) and standard deviation (SD) of the statistic are calculated for the six out-of-state RBOCs. The reported t-statistic is $\sqrt{5}(x - m)/(\text{SD})$, 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 0.5% 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.

2.2.1 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 of the 48 states (including Washington, 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% larger 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 of seven). In summary, in every state but one there are more shareholders of the local RBOC than of any other RBOC.

2.2.2 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, thereby controlling for differences in the popularity of the different RBOCs. Table 3 also 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 served by that RBOC.

2.2.3 The fraction of the RBOCs' outstanding equity in each state. Next, consider the state-by-state distribution of the holdings of the RBOCs' outstanding equity. In other words, ask what fractions of an RBOC's shares are 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

Table 3
Number and fraction of accounts

State	Average # and % accts for out of state RBOCs		Highest # and % accts for out-of-state RBOCs		# and % accts for local RBOC		*t*-statistic	
	#	%	#	%	#	%	#	%
AK	512	0.06	635	0.08	No local RBOC	No local RBOC	No local RBOC	No local RBOC
AL	4,964	0.63	5,298	0.66	17,214	1.58	64.75	115.78
AR	3,517	0.42	4,747	0.44	7,842	0.98	14.25	53.54
AZ	10,363	1.22	12,471	1.32	14,700	2.04	8.13	21.20
CA	65,912	7.70	77,753	8.62	98,515	14.68	12.49	27.60
CO	10,976	1.29	13,652	1.39	21,500	2.98	16.22	57.17
CT	13,417	1.61	17,005	1.87	No local RBOC	No local RBOC	No local RBOC	No local RBOC
DC	1,678	0.20	2,217	0.21	2,596	0.30	7.22	37.58
DE	2,550	0.31	3,650	0.34	4,762	0.55	8.81	35.29
FL	48,935	6.17	54,614	6.31	94,929	8.72	19.45	79.94
GA	11,559	1.46	12,349	1.50	38,168	3.51	63.18	136.91
HI	1,106	0.13	1,374	0.16	No local RBOC	No local RBOC	No local RBOC	No local RBOC
IA	6,243	0.73	7,677	0.79	10,300	1.43	11.11	36.01
ID	1,439	0.17	1,726	0.20	2,700	0.37	19.13	28.42
IL	50,962	6.13	65,375	6.53	Ameritech	Ameritech	Ameritech	Ameritech
IN	9,572	1.15	12,904	1.19	Ameritech	Ameritech	Ameritech	Ameritech
KS	5,124	0.61	6,564	0.68	11,905	1.49	20.30	46.25
KY	4,345	0.55	4,813	0.60	11,410	1.05	38.67	40.31
LA	6,516	0.82	6,964	0.87	17,013	1.56	50.09	44.79
MA	41,200	4.98	52,829	5.22	75,297	8.70	12.06	61.37
MD	19,595	2.35	27,858	2.56	37,261	4.30	9.32	38.29
ME	5,025	0.60	6,722	0.62	9,385	1.08	10.27	68.67
MI	17,206	2.06	23,263	2.15	Ameritech	Ameritech	Ameritech	Ameritech
MN	6,976	0.82	8,775	0.87	13,400	1.86	14.34	48.75
MO	14,902	1.78	18,887	1.88	35,296	4.43	21.27	58.11
MS	3,111	0.39	3,275	0.41	9,720	0.89	66.27	78.45
MT	2,101	0.23	5,039	0.46	3,400	0.47	2.04	4.37
NC	12,335	1.56	14,091	1.63	30,610	2.81	31.17	64.91
ND	669	0.08	829	0.08	1,400	0.19	18.55	67.40
NE	4,143	0.49	5,039	0.53	7,200	1.00	13.60	38.69
NH	6,646	0.80	8,722	0.83	12,339	1.43	11.33	107.41
NJ	69,861	8.42	90,986	8.94	102,135	11.78	5.89	26.41
NM	3,873	0.46	4,756	0.51	5,900	0.82	9.12	32.91
NV	2,915	0.34	3,375	0.40	3,496	0.52	5.62	11.33
NY	110,051	13.30	141,217	13.95	166,966	19.29	7.52	35.33
OH	23,358	2.79	31,851	2.93	Ameritech	Ameritech	Ameritech	Ameritech
OK	5,719	0.68	7,368	0.73	13,592	1.71	20.74	56.46
OR	5,741	0.68	6,853	0.82	9,400	1.30	15.07	17.16
PA	41,527	4.98	58,410	5.37	83,127	9.59	10.58	53.54
RI	4,040	0.49	5,399	0.50	7,742	0.89	11.33	143.17
SC	5,314	0.67	6,127	0.71	14,602	1.34	36.30	71.71
SD	1,000	0.12	1,181	0.13	1,900	0.26	19.70	43.38
TN	6,426	0.81	6,839	0.85	18,387	1.69	48.58	81.57
TX	26,376	3.15	34,307	3.38	64,431	8.09	20.93	65.25
UT	2,473	0.29	2,972	0.33	5,100	0.71	23.10	38.04
VA	17,225	2.06	25,645	2.36	31,277	3.61	7.40	21.87
VT	2,626	0.32	3,539	0.33	4,574	0.53	8.73	59.51
WA	9,323	1.10	11,261	1.28	16,500	2.29	16.80	25.16
WI	10,278	1.23	13,769	1.30	Ameritech	Ameritech	Ameritech	Ameritech
WV	4,337	0.52	6,233	0.57	7,715	0.89	7.89	27.79
WY	1,029	0.12	1,188	0.14	1,900	0.26	21.86	31.55
Average (including Ameritech)							19.08	50.89

The number of accounts is the basic statistic for the left column of each pair; the ratio between the number of accounts of an RBOC in a given state and the total number of accounts for that RBOC, in percent, is the basic statistic for the right column of each pair.

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 U.S. 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 4 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 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.

2.2.4 The dollar value of shares held. The tendency to invest in the familiar may also apply to the dollar amounts invested, 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.

The dollar values of each RBOC's equity held in each state is the product of the February 10, 1997, closing RBOC share prices and the numbers of shares held in each state. Table 4 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 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.)

Table 4
Fraction of an RBOC equity and dollar amount held in a state

State	Average fraction and dollar amount		Highest fraction and dollar amount for out-of-state		Fraction and amount held for local RBOC		*t*-statistic	
AL	0.14%	40	0.17%	60	1.78%	311	150.70	33.82
AZ	0.49%	121	1.08%	188	0.58%	95	0.63	(1.08)
CA	2.76%	673	6.21%	1,082	6.29%	1,109	4.72	3.61
CO	0.45%	112	1.04%	181	1.03%	170	4.12	2.49
CT	0.55%	129	1.38%	240	No local RBOC	No local RBOC	No local RBOC	No local RBOC
DC	0.09%	20	0.22%	38	0.15%	46	2.01	5.66
DE	0.12%	27	0.32%	56	0.22%	67	2.22	5.42
FL	2.01%	547	2.39%	841	10.42%	1,817	63.80	12.56
GA	0.34%	92	0.39%	138	4.66%	812	197.76	40.60
HI	0.05%	11	0.11%	19	No local RBOC	No local RBOC	No local RBOC	No local RBOC
IA	0.29%	71	0.65%	114	0.48%	80	2.22	0.57
ID	0.06%	14	0.12%	22	0.11%	19	3.43	1.73
IL	2.32%	512	5.77%	1,007	Ameritech	Ameritech	Ameritech	Ameritech
IN	0.38%	84	1.01%	176	Ameritech	Ameritech	Ameritech	Ameritech
KS	0.24%	53	0.55%	97	0.57%	196	4.83	12.02
KY	0.15%	41	0.19%	66	1.19%	208	74.16	18.46
LA	0.18%	51	0.29%	97	1.65%	288	61.65	18.85
MA	1.51%	356	3.72%	649	2.66%	635	2.38	3.39
MD	0.79%	174	2.07%	361	1.48%	459	2.50	6.22
ME	0.22%	52	0.53%	93	0.34%	81	1.73	2.30
MI	0.81%	183	1.97%	344	Ameritech	Ameritech	Ameritech	Ameritech
MN	0.29%	73	0.63%	109	0.57%	93	3.34	1.37
MO	0.65%	146	1.57%	274	2.02%	690	6.80	15.12
MS	0.10%	26	0.13%	39	1.07%	187	109.92	29.39
MT	0.07%	16	0.15%	27	0.16%	27	4.53	3.04
NC	0.43%	118	0.50%	172	3.36%	586	96.09	20.64
ND	0.03%	6	0.06%	11	0.07%	11	4.68	3.34
NE	0.17%	41	0.37%	64	0.32%	53	3.20	1.40
NH	0.25%	60	0.63%	110	0.44%	106	2.28	3.29
NJ	3.06%	692	7.51%	1,310	4.12%	1,1277	1.10	3.52
NM	0.17%	42	0.39%	68	0.24%	39	1.29	(0.30)
NV	0.13%	32	0.28%	48	0.18%	31	1.35	(0.30)
NY	63.46%	16,658	79.19%	24,768	77.91%	18,625	1.26	0.50
OH	1.35%	289	4.45%	776	Ameritech	Ameritech	Ameritech	Ameritech
OK	0.22%	49	0.55%	96	0.64%	217	5.77	13.60
OR	0.24%	59	0.53%	93	0.40%	65	2.23	0.59
PA	2.20%	502	4.99%	869	4.90%	1,516	4.45	9.36
RI	0.16%	37	0.40%	69	0.28%	67	2.32	3.39
SC	0.18%	48	0.22%	70	1.49%	260	92.38	22.25
SD	0.06%	13	0.19%	33	0.08%	14	0.88	0.21
TN	0.21%	57	0.25%	86	5.83%	1,017	344.05	82.08
TX	1.15%	252	2.76%	481	3.32%	1,136	6.23	15.35
UT	0.09%	24	0.19%	44	0.19%	32	3.85	1.29
VA	0.76%	168	2.18%	380	1.42%	440	2.14	5.27
VT	0.10%	23	0.25%	43	0.15%	36	1.65	2.38
WA	0.39%	96	0.87%	152	0.74%	122	3.07	1.51
WI	0.44%	96	1.11%	194	Ameritech	Ameritech	Ameritech	Ameritech
WV	0.20%	44	0.55%	96	0.33%	104	1.78	4.60
WY	0.06%	15	0.16%	28	0.08%	14	0.82	(0.20)
Average (including Ameritech)							27.24	9.68

The basic statistics are the ratio between the number of shares of an RBOC in a given state and the total number of shares for that RBOC, in percent (for the left column), and the number of shares of an RBOC in a given state and the 2/10/97 share price.

For 26 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.

2.2.5 Account sizes. The average dollar value of an RBOC account indicates the importance of the RBOC investment to its shareholders. For each RBOC in each state the average account size is the dollar amount invested in that state divided by the number of accounts holding that RBOC in that state.

Table 5 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, the computation of the cross states averages for these average account sizes excludes 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 BellSouth is excluded from the sample, or $9,576, the average if it is included. 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. 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.

2.2.6 A perspective on RBOC account sizes: the typical stock holding of a U.S. household. To appreciate the dollar figures in Table 5, one would like to 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).

Direct stock ownership accounted for 40.4% of all families' financial assets. The number increases with income, reaching 39.9% for families with an

Table 5
Average account sizes

State	Average account size for out-of-state RBOCs, w/o BLS	Average account size for BellSouth	Average account size for the local RBOC
AK	6,210	9,154	No local RBOC
AL	7,789	18,072	18,072
AR	8,247	14,268	17,600
AZ	10,669	15,086	6,472
CA	9,300	13,916	11,259
CO	9,235	13,286	7,894
CT	8,468	14,131	No local RBOC
DC	10,633	17,290	17,710
DE	8,694	15,348	14,082
FL	10,982	19,140	19,140
GA	7,845	21,276	21,276
HI	8,727	13,699	No local RBOC
IA	10,215	14,862	7,726
ID	8,832	12,614	6,863
IL	8,430	15,399	Ameritech
IN	7,194	13,607	Ameritech
KS	9,040	14,738	16,477
KY	9,127	18,192	18,192
LA	7,624	16,910	16,910
MA	7,497	12,288	8,431
MD	7,484	12,961	12,311
ME	9,060	13,797	8,624
MI	9,266	14,794	Ameritech
MN	9,753	12,461	6,976
MO	8,349	14,509	19,544
MS	8,323	19,193	19,193
MT	9,202	5,320	7,812
NC	9,347	19,154	19,154
ND	8,020	13,014	7,789
NE	9,078	12,745	7,363
NH	7,810	12,661	8,576
NJ	8,548	14,393	12,508
NM	9,833	14,386	6,689
NV	10,378	14,331	8,830
NY	187,053	13,158	111,548
OH	8,665	24,348	Ameritech
OK	7,263	13,059	15,973
OR	9,473	13,510	6,943
PA	11,092	14,881	18,242
RI	8,045	12,816	8,608
SC	8,852	17,838	17,838
SD	8,816	27,641	7,198
TN	8,607	55,306	55,306
TX	8,224	14,007	17,636
UT	9,134	10,984	6,178
VA	7,936	14,818	14,055
VT	7,532	12,185	7,914
WA	9,386	13,529	7,420
WI	7,877	14,107	Ameritech
WV	8,488	15,375	13,439
WY	14,854	12,658	7,310
Average (w/o NY, including Ameritech)	8,869	15,681	13,817
Population-weighted average (w/o NY)	8,246	15,173	14,400
Population-weighted average (with NY)	21,947	16,137	22,585
Median	8,727	14,268	13,747

The basic statistic is the product of the number of shares per account of an RBOC in a given state and the 2/10/97 share price.

annual income between $50,000 and 100,000, and 47.6% for families with an annual income of more than $100,000. For the 20.2% of families with annual incomes between $50,000 and $100,000, 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. 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 5. In particular, look at the numbers for BellSouth, which do not reflect institutional ownership. The estimates in Table 5 are substantial in comparison with the typical family stock holdings; they suggest that to many, their equity investments in the RBOCs represent substantial fractions of their savings.

3. Decision Theory and Investment in the Familiar

Expected utility-based portfolio theory focuses only on financial attributes of assets. The preceding sections document that familiarity, apparently a nonfinancial attribute, affects investors' choices.

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 the 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 investors who believe that they have superior information are likely 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 turning 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 buying (and probably holding) the home country equity, as opposed to selling 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 the returns of U.S. (German) than for German (U.S.) equities, and within each country, higher dispersions for the returns of 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. Strong and Xu (1999) offer a similar finding. They "use survey data of fund managers' views on prospects for international equity markets" and "find that fund managers from the U.S., the U.K., Continental Europe, and Japan show a significant comparative optimism towards their home equity market."

The reports of Kilka and Weber (1997) and Strong and Xu (1999) 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 Yosi (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 interethnic 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

The geographic distribution of shareholders of the Regional Bell Operating Companies demonstrates the propensity 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 nonpecuniary dimension to the traditional risk-return trade-off, which is the focus of earlier studies of the portfolio selection problem.

This study suggests that investors do not optimize along objective risk-return trade-offs. 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. This article's assertion that familiarity breeds investment is 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.

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