

# **Brand Perception in Investor Decision Making**

By David S. Adams  
Briarcliff High School  
Briarcliff Manor, NY, 10510

## **ABSTRACT**

I find that there is a significant relationship between an investor's portfolio formation and brand preference. My findings suggest that individual investors favor stocks of companies with which they are more familiar, perpetuating the much-cited familiarity bias. Despite this preference, investor portfolios remain inefficient and returns are not influenced by the inclusion of stocks of companies with recognized brand names. An interesting implication of my research to financial practitioners is that security values are affected by branding in much the same manner that product reputation is affected by New York Stock Exchange listing.

## **INTRODUCTION**

Behavioral finance research suggests that investors make decisions based on heuristics, rather than through reason and logic, which results in systematic errors in judgment. One such error, familiarity bias, is the tendency to gravitate toward things that are familiar, even in the face of contrary information. My research examines whether investors behave like consumers by choosing stocks of companies with recognizable brands.

To better understand if familiarity bias is present, I conduct a controlled experiment that measures the changes in investment holdings after exposing brand information to the participants. Such investigation cannot be conducted in naturally occurring markets because investors have disparate sets of information. In a laboratory setting, I can control the investment opportunities as well as the availability of information. In this way, my experiment can test whether brand information is sufficient to change behavior, and whether investors are more predisposed to invest in stocks of companies with strong brands. My findings indicate that brand information does change investment choice.

The remainder of this paper is organized as follows. First, I review the relevant literature to show how my own research fits within the existing body of knowledge. Next, I describe my research method, including the experimental design, participants, and procedures. This is followed by the experimental results and a discussion about those results. I conclude with implications of my research findings.

## **LITERATURE REVIEW**

Traditional finance assumes that investors make rational investment decisions based on the goal of earning the highest possible returns while bearing the lowest level of acceptable risk. Behavioral finance argues that some part of the rational investor assumption does not hold true. Behavioral finance draws upon the research from experimental psychology, which puts forth that people rely on heuristics (rules of thumb) in their decision making. This causes systematic errors or biases in judgment (Tversky and Kahneman, 1982). One such bias is that people place more importance on things with which they are more familiar, even when this defies logic and reason (Heath and Tversky, 1991). Familiarity bias implies that investors will prefer stocks of familiar or known companies even when it may be irrational to do so.

There is a small but growing body of empirical studies on familiarity bias. Coval and Moskowitz (1999) find that U.S. investment managers exhibit a strong preference for locally headquartered firms when forming their domestic portfolios. Their stock portfolios consist of companies that are located 100 miles closer to the investment manager's office than the average U.S. firm. Huberman (2001) finds individual investors are also geographically biased. Based on holdings of Regional Bell Operating Company (RBOC) stocks, he finds that stockholders invest more heavily in the local RBOC in relation to the other out-of-state RBOCs. This is true for both

customers and employees. Ackert, Church, Tompkins, and Zhang (2003) find support for home bias as well. In their experiment, Canadian and American participants are asked to allocate funds to domestic and foreign investments. Their test results indicate that investors prefer domestic firms. Frieder and Subrahmanyam (2005) are the first to specifically examine the relationship between brands and institutional stock holdings. They find that institutional investors disproportionately invest in companies with familiar or strong brands.

One way people become familiar with a company is through their brands. Aaker (1991) defines a “brand” as a name, term, sign, symbol, logo, trademark, or design, or any such combination, that is intended to differentiate the seller’s product from that of its competitors. Brands make customer choice more effective by reducing the amount of information required to make a purchase decision (Doyle, 1990). A brand that is familiar tends to be favored because familiarity signals the belief that the product is tried and trusted.

Marketers have acknowledged the importance of maintaining brand awareness in order to create consumer loyalty to a company’s products. To that end, Kapferer (1997) finds companies use a number of product branding strategies, ranging from the simple one product brand concept to the complex, hierarchical, multi-brand scheme. He indicates that many companies utilize a mix of brand strategies. Branding is evolving to encompass corporate brands. Aaker (1996) suggests that corporate brands add value to the purchasing decision by providing recognition, credibility, and reassurance of the perceived quality of the firm’s products. Kapferer (1997) argues that many firms are promoting their corporate brands because consumers want to know the company that stands behind the product brand. As a result of this trend, many companies have adopted their most famous product brand as their corporate brand. Regardless of which brand strategy is formulated, Aaker (1996) argues that the goal of building a strong brand is to

create a business that resonates with customers, avoids competitor strengths and exploits their weaknesses, and seeks to maximize its own strengths while neutralizing its own weaknesses.

## **HYPOTHESIS**

My research seeks to answer the question of whether individual investors exhibit familiarity bias when making portfolio decisions. Specifically:

H<sub>0</sub>: Portfolio weightings are not affected by investor knowledge of company brands.

H<sub>1</sub>: Portfolio weightings are affected by investor knowledge of company brands.

I also explore the question of whether portfolio returns are influenced by stocks of companies with recognized brand names. Specifically:

H<sub>0</sub>: Portfolio performance is not affected by investor knowledge of company brands.

H<sub>1</sub>: Portfolio performance is affected by investor knowledge of company brands.

## **METHODS**

### *Brand Data*

Because my study assumes that investor preferences are associated with brand strength, I use the Image Power Survey as the indicator of brand strength (Owen, 1993). The Image Power Survey was conducted by Landor Associates in October 1990 and has been used in previous empirical studies (Frieder and Subrahmanyam, 2005; Lane and Jacobson, 1995). The Image Power Survey results are based on a self-administered questionnaire to 5,000 subjects, who indicate on a 5-point scale their awareness/familiarity and personal regard for each brand.

Landor then calculates the overall strength of each brand, based on a proprietary algorithm that combines both scores. The result is a ranking of the 300 strongest U.S. brands.

To create my sample, I first match the 300 strong brands to the 145 companies that own them as of December 2005. Next, I eliminate 62 firms that are privately held, headquartered outside of the U.S., or subsequently acquired by other companies. This leaves me with 83 publicly traded U.S. companies with 200 strong brands. From this list I choose five strong brand stocks, based on their ability to be matched with another stock of a company operating in the same industry that did not have any strong brands (referred to as weak brands). Table 1 lists the industries and matched pairs.

**Table 1 Portfolios**

<b>Industry</b>	<b>Firms with Strong Brands</b>	<b>Firms with Weak Brands</b>
Pharmaceutical Preparations	Johnson & Johnson	Abbot Laboratories
Retail Restaurants	Yum! Brands	Landry Restaurants
Motion Picture Development	Time Warner, Inc.	World Wrestling Entertainment
Motor Vehicles	General Motors Corporation	Navistar International Corporation
Electric & Electronic Equipment	General Electric Company	Emerson Electric Company

#### *Experiment Overview*

I conduct my experiment at a number of locations in Westchester County, New York during May 2006. The experimental design draws heavily upon the one used by Ackert, Church, Tompkins, and Zhang (2003). Participants are provided with investment opportunities that include five strong brand stocks, five weak brand stocks, and a risk-free asset (Treasury bond). Each session consists of two treatments, referred to as Experiment 1 and Experiment 2. In Experiment 1, participants are provided with an information sheet for each stock that contains a narrative description of the company, financial information, and industry membership. The

financial information, compiled from *Yahoo! Finance* and company annual reports, provides price history (52-week high and low, year-end prices, and average daily trading volume), earnings history, and other selected data (sales, price/earnings ratio, and common stock beta). In Experiment 2, participants are given an information sheet containing all of the above data with the inclusion of the firm's corporate and product brands (see Exhibit 1).

At the end of Experiment 2, participants complete a post-experiment questionnaire. The questionnaire is designed to collect demographic data as well as information about participants' familiarity with the five industries. The demographics collected include gender, age range, occupation, educational level, and familiarity with finance and marketing. Industry familiarity was measured on an 11-point scale. A choice of (1) indicates no knowledge, a choice of (11) indicates a great deal of knowledge, and a choice of (6) indicates some knowledge. Subsequent to the experiment sessions, I calculate the ex-post values for each portfolio formed in Experiments 1 and 2, which I then plot in return-risk space.

### *Experiment Participants*

A total of 45 subjects are recruited for participation. Each person voluntarily complies with all parts of the experiment, and all were over the age of 18. The participants include 16 females and 29 males. Three are between the ages of 18 and 20, twenty-three between 21 and 30, four between 31 and 40, eight between 41 and 50, four between 51 and 60, and three above 61. All 45 participants graduated high school, with five completing part of college, 22 graduating from college, and 15 completing any kind of post-graduate work. For the college graduate group, the majority have a major in business or science and technology. Accounting is the most frequently listed major, representing 24.4% of the participants. In terms of taking finance or marketing classes, 48.8% of the participants have not taken a class in either subject,

35.5% indicate they have taken both, 11.1% have taken only finance, and the remaining 4.4% have taken only marketing. The most frequently listed occupations are consultants (specifically technology/information technology) and accountants. IT Consultant is the most frequently listed occupation, representing 28.8% of the participants.

### *Experiment Methodology*

Participants are handed a packet containing Instructions, Experiment 1, Experiment 2 and the Data Collection Form. Instructions are read aloud by a proctor. Participants are endowed with an imaginary \$1,000,000 in cash, which has to be allocated among the 11 presented investment opportunities. Participants are told that they may choose not to invest in any particular asset, but they could not short sell. Short selling refers to the practice of selling a stock prior to purchasing it. In addition, participants are instructed that all of the cash has to be fully invested. Participants are provided with information sheets for each investment opportunity.

After the instructions are read, participants are told to begin. Subjects are given 10 minutes to complete Experiment 1, including recording their answers. When time is called, subjects are instructed to begin Experiment 2. Subjects are given 10 minutes to complete Experiment 2, including recording their answers. At the end of Experiment 2, participants complete the post-experiment questionnaire.

### *Portfolio Returns*

Given the assumptions of the rational investor, every possible investment combination can be plotted in return-risk space. I calculate portfolio returns and risk using traditional investment mathematics (Teall, 1999).

$$R_p = \sum_{i=1}^N w_i R_i$$

$$\sigma_p = \left[ \sum_{i=1}^N w_i^2 \sigma_i^2 + \sum_{i=1}^N \sum_{\substack{j=1 \\ i \neq j}}^N w_i w_j \sigma_{ij} \right]^{\frac{1}{2}}$$

Within this return-risk space is the efficient frontier and the capital market line. The efficient frontier (a concave curve given the no short sale restriction) represents the optimal portfolio of risky assets that have the highest return for a given level of risk. The region above the efficient frontier is unachievable, whereas the region below is suboptimal. With the introduction of a risk-free asset, optimal portfolios can be constructed along the capital market line. The point where the efficient frontier meets the capital market line is known as the super-efficient portfolio.

## RESULTS

### *Experiment*

To determine what information was relevant in their decision-making, I test the correlation of Experiment 1 portfolio weights with the financial data contained on the information sheet. The data included the 5-year average earnings per share (EPS), EPS volatility (as measured by standard deviation), earnings yield (EY), the 5-year average dividend yield (DY), the current market capitalization (ME), the price-to-earnings (P/E) ratio, current year sales, the price-to-sales (P/S) ratio and the 5-year historical beta of the stock. The correlation data is shown in Table 2. I find high positive correlations with average earnings per share and average dividend yields, and high negative correlations with EPS volatility and beta. The evidence suggests that investors preferred strong performing stocks with low risk when making investment decisions.

**Table 2 Correlation Matrix**

	Weights	Average EPS	EPS Volatility	EY	Average DY	ME	P/E	Current Sales	P/S	Beta
Weights	1.00									
Average EPS	0.57	1.00								
EPS Volatility	-0.54	-0.94	1.00							
EY	0.29	0.37	-0.49	1.00						
DY	0.36	0.18	0.02	-0.68	1.00					
ME	0.79	0.19	-0.23	0.16	0.14	1.00				
P/E	0.39	0.15	-0.32	0.70	-0.39	0.29	1.00			
Sales	0.18	-0.20	0.28	-0.77	0.65	0.48	-0.51	1.00		
P/S	0.59	0.07	-0.21	0.44	-0.10	0.40	0.79	-0.26	1.00	
Beta	-0.48	-0.78	0.74	-0.10	-0.20	-0.18	-0.06	0.01	-0.12	1.00

Next I examine industry familiarity and portfolio formation (see Table 3). In general, participants have some limited knowledge of the industries. I test the correlations between industry familiarity and the average portfolio weights of the Experiment 1 total portfolio. I find that industry knowledge is correlated to industry preferences ( $r = 0.713$ ). I conclude from the data that the initial portfolio formations are based on industry familiarity.

**Table 3 Industry Familiarity**

Industry	Familiarity Index Mean (Std. Dev.)	Experiment 1 Mean (Std. Dev.)	Correlation (Multiple R)
Pharmaceutical Preparations	5.20 (2.4551)	0.3125 (0.1390)	0.713
Retail Restaurants	4.56 (2.1591)	0.1340 (0.1111)	
Motion Picture Development	4.80 (2.4177)	0.1425 (0.1244)	
Motor Vehicles	5.13 (2.4827)	0.1085 (0.1170)	
Electric & Electronic Equipment	5.73 (2.7253)	0.3024 (0.1260)	

Next, I compute the average holdings both with the risk free asset included (referred to as the total portfolio) and with the risk free asset excluded (referred to as the stock-only portfolio). This allows me to better examine the influence of brands (see Table 4). Strong brand stocks represent 42.57% of the total portfolio and 53.36% of the stock-only portfolio in Experiment 1, as compared to 48.11% of the total portfolio and 57.72% of the stock-only portfolio in

Experiment 2. This shift in holdings suggests investors are biased towards strong brands in forming their portfolios. To test the significance of this, I perform a paired samples t-test because I am using two data sets collected from the same subjects. The paired t-test determines whether the data sets differ from each other in a significant way under the assumption that the paired differences are independent and identically distributed. I use this test because I am interested in the change in holdings, regardless of direction. For both the total portfolio and the stock-only portfolio, the t-test is significant at the 5% level. Therefore, I reject the null hypothesis and conclude my results are unlikely due to a coincidence of random sampling.

$$t = \frac{X_D}{\frac{\sigma_D}{\sqrt{N}}}$$

I also examine strong brand holding changes at the industry level. As Table 4 indicates, investors increase their holdings of strong brand stocks in all industries except Retail Restaurants. Based on the two-tailed pair sample t-test, statistically significant shifts in investor preferences are seen in the Electronic & Electrical Equipment as well as the Motion Picture Development industries (at the 10% level).

**Table 4 Strong Brand Holdings**

<b>Industry</b>	<b>Experiment 1 Mean (Std. Dev.)</b>	<b>Experiment 2 Mean (Std. Dev.)</b>	<b>T-Test</b>	<b>P-value</b>
Total portfolio	0.4257 (0.1858)	0.4811 (0.1864)	2.55	0.01*
Stock-only portfolio	0.5336 (0.1698)	0.5772 (0.1759)	0.28	0.04*
Pharmaceutical Preparations	0.5791 (0.2584)	0.6070 (0.2705)	1.00	0.32
Retail Restaurants	0.3996 (0.3641)	0.3655 (0.3608)	0.43	0.67
Motion Picture Development	0.3656 (0.3608)	0.4739 (0.3931)	1.99	0.05**
Motor Vehicles	0.3440 (0.3693)	0.3944 (0.4091)	1.02	0.31
Electric & Electronic Equipment	0.5724 (0.2907)	0.6453 (0.2821)	1.80	0.08**

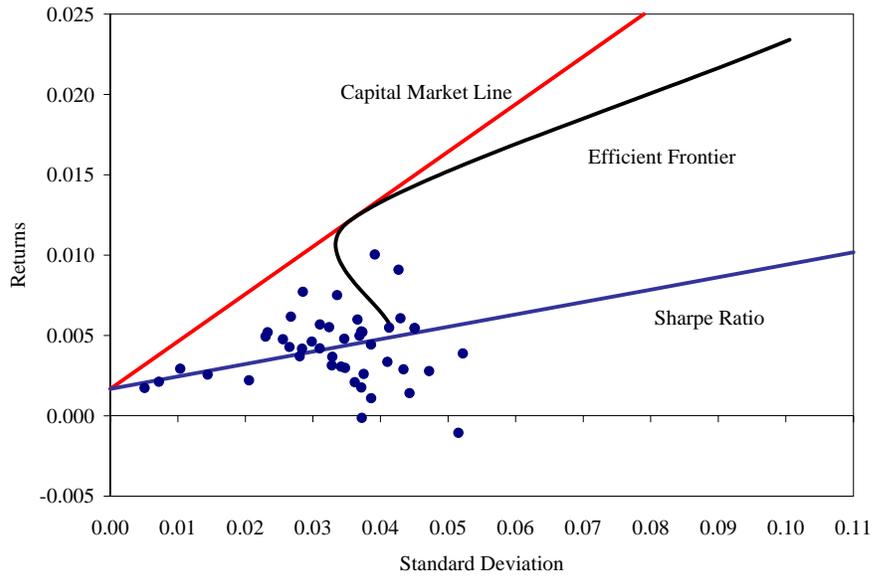
\* Statistically significant at 5% level

\*\* Statistically significant at 10% level

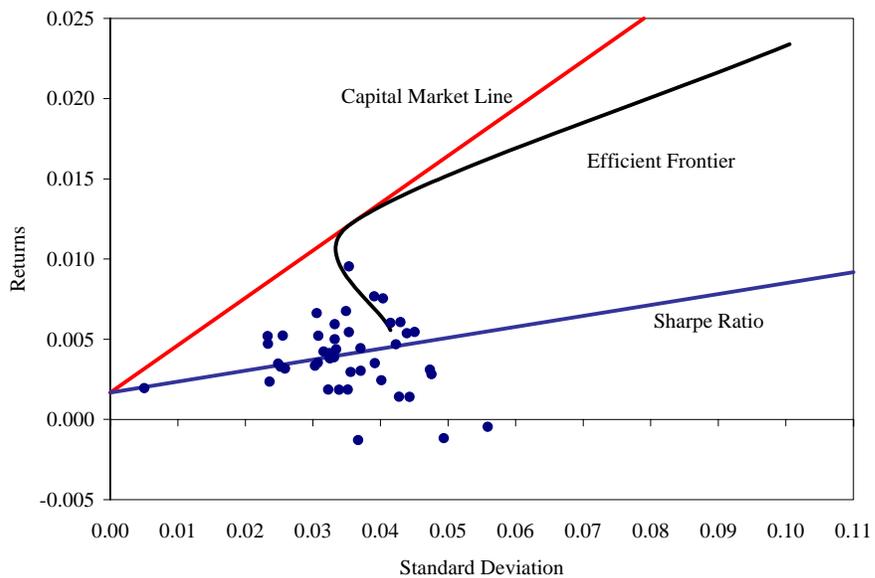
*Portfolio Performance*

I calculate the returns and risk associated with each participant's portfolio, on an ex-post basis. The ex-post values are from the 60-month time period from May 2001 to April 2006. I then compare each portfolio to both the efficient frontier and the capital market line. As shown in Figures 1 and 2, the portfolios formed in Experiments 1 and 2 are sub-optimally efficient.

**Figure 1 Experiment 1 Portfolio Risk and Returns**



**Figure 2 Experiment 2 Portfolio Risk and Returns**



Next, I calculate the Sharpe ratio of each portfolio. The Sharpe ratio is a standard measure of portfolio reward-to-risk characteristics, which enables comparability between portfolios (Sharpe, 1994). The higher the Sharpe ratio, the better the portfolio's risk-adjusted performance.

$$S_p = \frac{R_p - R_f}{\sigma_p}$$

The average Sharpe ratio is 0.0773 and 0.0683 for Experiment 1 and 2, respectively. The paired t-test results are not statistically significant (p-value 0.31). While the change is not statistically significant, the brand information seems to bring about a reduction in returns and risk, suggesting that investors perceive good brands to be good investments (Frieder and Subrahmanyam, 2005). Further analysis at the industry level reveals that only the Pharmaceutical Preparations industry exhibits a strong brand and superior stock performance relationship (see Table 5). This means any shift in strong brand holdings outside Pharmaceutical Preparations would either have no affect (e.g., Electric & Electronic Equipment) or have an adverse affect (e.g., Motion Picture Development, Retail Restaurants and Motor Vehicles).

**Table 5 Risk and Returns**

	<b>Stock</b>	<b>Monthly Returns</b>	<b>Standard Deviation</b>	<b>Sharpe Ratio</b>
Pharmaceutical Preparations	Strong	0.0056	0.0415	0.0937
	Weak	0.0038	0.0646	0.0329
Retail Restaurants	Strong	-0.0048	0.1061	-0.0613
	Weak	0.0065	0.1115	0.0431
Motion Picture Development	Strong	-0.0128	0.0959	-0.1509
	Weak	0.0100	0.0905	0.0917
Motor Vehicles	Strong	-0.0018	0.0586	-0.0599
	Weak	0.0081	0.0571	0.1119
Electric & Electronic Equipment	Strong	0.0167	0.0696	0.2158
	Weak	0.0234	0.1006	0.2161
Treasury Bill		0.0017	0	NA

## CONCLUSIONS

This paper reports the results of an experiment designed to determine the effects of brand perception on investor decision-making. I find support for my first hypothesis which is that brand familiarity does play a strong role in investor decision making. This corroborates the assertion by Huberman (2001) that investors are more likely to invest in companies with which they are more familiar. More revealing is that investor bias toward strong brands may be conditional on the industry. While I was unable to prove any statistical significance to support this observation, future research may provide more information to fully understand the implications of my findings. I did not find support for my second hypothesis that portfolio returns are influenced by stocks of companies with recognized brand names. My research supports the work of others in exploring familiarity bias.

My findings also have implications for managers and financial practitioners. One ramification is that security values are affected by branding in much the same manner that product reputation is affected by New York Stock Exchange listing. Firms have traditionally used such listings as a means to add credibility to their product brands. Another implication relates to initial public offerings (IPOs). IPOs can create significant media coverage as seen with the Internet stocks whose market prices soared upon listing. This valuable publicity led to a build up their product brand awareness (Demers and Lewellen, 2003). Given the results of my study that investors prefer stocks of companies with familiar brands, managers may need to reconsider this practice of underpricing to gain media attention, and focus on more conventional branding efforts.

## **ACKNOWLEDGEMENTS**

I would like to thank Dr. John Teall, Mr. Michael Inglis, Ms. Kimberly Dyer and my parents for all of their help and support in completing this paper.

## REFERNCES

- Acker, David A. *Managing Brand Equity: Capitalizing on the Value of a Brand Name*, The Free Press, New York, 1991.
- Acker, David A. *Building Strong Brands*, The Free Press, New York, 1996.
- Ackert, Lucy F., Bryan K. Church, James Tompkins, and Ping Zhang. "What's in a name? An experimental examination of investment behavior", *Federal Reserve Bank of Atlanta Work Paper*, (2003-12) September 2003, pages 1 – 28.
- Bernard, H. Russell. *Social Research Methods: Qualitative and Quantitative Approaches*, Sage Publications, Thousand Oaks, California, 2000.
- Coval, Joshua D. and Tobias J. Moskowitz. "Home bias at home: Local equity preference in domestic portfolios," *Journal of Finance* (54:6), December 1999, pages 2045 – 2073.
- Demers, Elizabeth and Katharina Lewellen. "The marketing role of IPOs: Evidence from internet stocks", *Journal of Financial Economics*, (68:3) June 2003, pages 413 – 437.
- Doyle, Peter. "Building successful brands: The strategic options", *Journal of Consumer Marketing*, (7:2) Spring 1990, pages 5 – 20.
- Frieder, Laura and Avaniidhar Subrahmanyam. "Brand perceptions and the market for common stock", *Journal of Financial and Quantitative Analysis* (40:1), March 2005, pages 57 – 85.
- Heath, Chip and Amos Tversky. "Preference and belief: Ambiguity and competence in choice under uncertainty", *Journal of Risk and Uncertainty* (4:1), January 1991, pages 5 – 28.
- Huberman, Guy. "Familiarity breeds investment", *The Review of Financial Studies*, (14:3), Autumn 2001, pages 659 – 680.
- Kapferer, Jean-Noel. *Strategic Brand Management: Creating and Sustaining Brand Equity Long Term* (Second Edition), Kogan Page, Dover, New Hampshire, 1997.
- Lane, Vicki and Robert Jacobson. "Stock market reactions to brand extension announcements: The effects of brand attitude and familiarity", *Journal of Marketing*, (59:1), January 1995, pages 63 – 77.
- Owen, Stewart. "The Landor Image Power Survey: A global assessment of brand strength" in *Brand Equity & Advertising: Advertising's Role in Building Strong Brands*, edited by David A. Aaker, Alexander L. Biel, Lawrence Erlbaum Associates, Hillsdale New Jersey, 1993.

Sharpe, William F. "The Sharpe Ratio", *Journal of Portfolio Management*, (21:1), Fall 1994, pages 49 – 58.

Teall, John L. *Financial Markets Analytics*, Quorum Books, Westport, CT, 1999.

Tversky, Amos and Daniel Kahneman. "Judgments under uncertainty: Heuristics and bias" in *Judgments Under Uncertainty: Heuristics and Biases*, edited by Daniel Kahneman, Paul Slovic and Amos Tversky, Cambridge University Press, New York, 1982.

Exhibit 1  
Sample Information Sheet

The information sheet shown below was presented to participants in Experiment 2 (i.e., the name and brands of the firm are provided). In Experiment 1, the firm name and brands are omitted. Participants received an information sheet for each investment opportunity.

**Motion Picture Development - Stock E**  
**Time Warner, Inc. (NYSE: TWX)**

Time Warner is a leading media and entertainment company. It operates in five segments:

- Internet: Provides interactive services and e-commerce services in the United States and Europe under the American Online AOL brand.
- Cable: Offers video, high-speed data and digital phone services to subscribers under the Time Warner Cable brand.
- Filmed Entertainment: Produces and distributes film, television, and other programming, distributes home video businesses, and licenses rights to a film library. Brands include Warner Bros., Castle Rock, New Line Cinema, Looney Tunes and Hanna-Barbera.
- Networks: Owns and operates several cable and broadcast television channels, and develops new programming under such brands as WB Network, HBO, Cinemax, TBS, TNT, CNN, Cartoon Network, and Turner Classic Movies.
- Publishing: Develops and controls the rights to several magazine periodicals (People, Sports Illustrated, Southern Living, In Style, Real Simple, Entertainment Weekly, Time, Fortune, Cooking Light and What's On TV) and book publishers.

Price Information:

Current Price	52-Week Price		Average Daily Trading Volume	Year End Prices			
	Low	High		2005	2004	2003	2002
\$17.00	\$16.10	\$19.00	25,187,900	\$17.44	\$19.45	\$17.99	\$13.10

Market Capitalization: \$76,590,000,000

Earnings and Dividend Information:

On Per Share Basis	Estimated	Historical			
	2005	2004	2003	2002	2001
Earnings	\$0.62	\$0.72	\$0.57	-\$21.82	-\$1.32
Dividends	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00

Other Information for the Year 2005:

Sales	Price/Earnings Ratio*	Beta**
\$22.22 Billion	27.55	2.02

\* Based on trailing 12 months of data as of March 24, 2006.

\*\* Beta is the measure of market risk from the Capital Asset Pricing Model (CAPM).