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PERSUASION IN FINANCE

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ABSTRACT

Persuasion is a fundamental part of social activity, yet it is rarely studied by economists. We compare the traditional economic model, in which persuasion is communication of objectively valuable information, with a behavioral model, in which persuasion is an effort to fit the message into the audience's already held beliefs. We present a simple formalization of the behavioral model, and compare the two models using data on financial advertising in Money and Business Week magazines over the course of the internet bubble. The evidence on the content of the persuasive messages is broadly consistent with the behavioral model of persuasion.

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1. Introduction.

In most societies, a tremendous amount of resources is devoted to persuasion (McCloskey and Klamer 1995). Selling, advertising, political campaigns, organized religion, law, much of the media, and good parts of education are devoted to getting people to accept certain ideas. The activity of persuasion is not just an expenditure of resources; the content of the message crucially shapes its effectiveness. But what constitutes persuasive content?

In this paper, we compare traditional and behavioral models of persuasion. In the traditional model (Stigler 1961), persuasion is communication of objectively useful information. "Advertising may be defined as the provision of information on the availability and quality of a commodity" (Stigler 1987, p. 243). In the behavioral model, in contrast, persuasion caters or panders to the prevailing beliefs even if these beliefs are inaccurate. In the process, characteristics of the product are integrated into the prevailing beliefs of the customer using either factual or spurious messages. There are few outright lies, but many more insinuations aimed at harnessing a pre-existing and possibly false belief. To take a famous example, Alberto Culver Natural Silk Shampoo contained some silk, and was advertised with a slogan "We put silk in a bottle." The idea was obviously to suggest that the product makes hair silky, even though the company spokesman conceded that "silk doesn't really do anything for hair" (Carpenter, Glazer, and Nakamoto 1994). In the behavioral model, far from trying to convince the audience that it holds erroneous beliefs, the persuader attempts to benefit from such beliefs[2].

Our goal is to compare these two models using data on financial advertising. We examine advertisements in *Money* and *Business Week* magazines over a decade 1994-2003: before, during and after the internet bubble. Financial advertising is helpful for distinguishing

[2] Some Bayesian models make a similar prediction. If individuals are unsure of the source's credibility, they may see the source as credible if its message matches their priors (Prendergast 1993, Gentzkow and Shapiro 2006). It is hard to put Culver's Natural Silk Shampoo into this framework, but it works better with other examples.

the two models because beliefs about investment change systematically over the course of the bubble. Specifically, we argue that investors hold two broad systems of beliefs about investment: growth and protection. The former sees investing as a way to get rich; the latter as a way to secure the future. As stock prices rose, investors' beliefs shifted towards growth; as prices declined beliefs shifted towards protection. The behavioral theory predicts that advertisements should respond to these shifts by catering to the changing sentiments. The traditional theory on the other hand makes predictions based on the objective usefulness of risk and return information during booms and busts. We test a variety of specific predictions of the behavioral theory and find they are consistent with the data.

Economic research on persuasion has so far been limited. A perceptive early contribution is Tullock (1967). Posner (1995) draws a sharp distinction between persuasion (rhetoric) and provision of information, and discusses Aristotle's and Plato's ideas on the subject. More recent research includes studies of hatred (Glaeser 2005), media (Mullainathan and Shleifer 2005, Gentzkow and Shapiro 2006), and political persuasion (Becker 2001, Murphy and Shleifer 2004, Glaeser, Ponzetto, and Shapiro 2005). Gabaix and Laibson (2005) and Shapiro (2005) present models of marketing and advertising in which limited cognition plays a key role. Becker and Murphy (1993) examine a model in which advertising and the good being consumed are complements. Laibson (2001) extends this model to consider complementarity between goods and psychological cues. Our framework provides a belief-based foundation for the complementarity studied in these papers.

Our results are also related to several previous findings in finance. Some of these findings indicate that messages such as name changes of mutual funds or firms affect investor behavior. For example, Cooper, Gulen, and Rau (2005) find that when a fund changes its name

to a popular style, it receives high inflows from investors. Cooper, Dimitrov, and Rau (2003) find that changing a firm's name to a dot.com results in large price increases during the internet bubble. Resnick and Stern (1977) and Cronqvist (2005) show that financial advertising is inconsistent with the standard model of what data rational investors would require. Swensen (2005) offers trenchant criticism of mutual fund advertising as a way of misleading investors.

Our work is also related to a significant body of research examining trend-chasing by investors (e.g., DeLong et al. 1990, Barberis, Shleifer, and Vishny 1998). Theoretically, this research tends to assume that investors extrapolate past returns, and pursue styles that have done well in the past (e.g., Barberis and Shleifer 2005). Empirically, several authors find a strong positive relation between mutual fund past performance and subsequent fund inflows (Ippolito 1992, Chevalier and Ellison 1997, Sirri and Tufano 1998). Our research fully accepts the finding that belief systems are shaped by extrapolation, but then considers the optimal content of a persuasive message in light of these beliefs. Put differently, the question of optimal persuasion can be treated separately from the question of how beliefs are formed.

We focus solely on the content of persuasive messages, on the assumption that advertisers, as profit maximizing firms, on average know which messages work. We do not consider the possibility that advertisers herd, are vulnerable to biases, or otherwise supply messages that do not work. Nor do we consider the effectiveness of advertising empirically. Jain and Wu (2000) present evidence that advertising by mutual funds is effective in increasing inflows into these funds, but is not predictive of superior future returns. Cronqvist (2005) also documents the effectiveness of financial advertising for attracting inflows into mutual funds, even though much of such advertising is non-informative. Reuter and Zitzewitz (2005) show

that favorable mentions in the articles in financial press are more effective than advertising itself in bringing fund inflows. Our topic is not the effectiveness, but the content of persuasion.

In the next section, we summarize some of the principal differences between the traditional and the behavioral models of persuasion. In Section 3, we motivate our empirical analysis based on the data from Merrill-Lynch advertising campaigns over the course of the internet bubble. Section 4 presents a highly stylized model that generates more specific hypotheses about the content of financial advertising over the course of the bubble. Sections 5 and 6 then present some evidence bearing on these hypotheses. Section 7 concludes.

2. Theories of Persuasion.

In the traditional theory, persuasion communicates objectively useful information about characteristics of the product. Consumers use these data to rationally update their beliefs about the product, and then decide whether or not to buy it. Moreover, consumers do not take the information they receive at "face-value," but rather recognize that withholding data is itself information. This limits how much persuaders can hide since silence leads investors to rationally assume the worst (Akerlof 1970, Grossman and Hart 1980).

What does this model predict about financial advertising? First, it predicts that advertisers should provide information on fees and product choices to investors just as Stigler has suggested. Second, mutual funds should rarely present returns, since returns tend not to persist. To the extent that they present returns, they should present relative returns, since absolute returns are not the information relevant to investors assessing fund manager quality. Third, mutual funds should present data on risk. Finally, traditional theory predicts that these data ought to be included in financial advertising. A fund that fails to disclose its relative returns

would be inferred to be a poor performer; likewise, a fund that fails to disclose its fees should be inferred to be expensive[3].

Behavioral models of persuasion yield very different predictions. At the most general level, these models emphasize the importance of both cognitive and emotional response to the messages presented by persuaders (Kahneman and Tversky 1982). As a consequence, people often ignore relevant data and do not process the messages they receive following Bayesian logic. Effective persuaders could convey incomplete and even misleading information without the fear that the audience will assume the worst if not completely informed. Effective persuasion may also include irrelevant information that arouses an emotionally favorable response (Carpenter et al. 1994).

Research in psychology suggests a particular structure of successful persuasion (Petty and Cacioppo 1986). Persuasive messages resonate with the audience's prevailing beliefs and sentiments; put crudely, they tell people what they are prepared to hear. In their study of media markets, Mullainathan and Shleifer (2005) summarize a considerable body of research in psychology indicating that people appreciate, find credible, enjoy, and remember messages consistent with their prevailing beliefs, and disregard messages that are not. This is so for several reasons. First, as Dorothy Graber (1984) shows, people often simply ignore messages inconsistent with their views and do not even think about them. To get people even to pay attention, a persuader must deliver a message not too distant from prevailing beliefs. Second, research on information processing shows that people find data inconsistent with their beliefs to

[3] The very act of spending money on ads may constitute useful information, as it signals profitability or confidence of the advertiser (Nelson 1970, 1974). In these signaling models, the content of the persuasive message is irrelevant. This prediction is inconsistent with the systematic variation in content that we describe below.

be less credible, and update less as a result (Lord, Ross, and Lapper 1979, Zaller 1992, Rabin and Schrag 1999). Third, people often seek out data that confirm their priors (Klayman 1995).

There is another – perhaps deeper – way to motivate this behavioral approach to persuasion. Individuals appear to represent the world as a system of connected associations (Gilovich 1981). These association maps provide a representation of their beliefs and experiences.[4] A persuasive message must connect the product or idea being "sold" with these prevailing associations. The contrast between this view of persuasion and the traditional view can be seen from some famous advertising campaigns. The immensely successful Marlboro cigarette campaign, depicting a smoking cowboy, typically contains no words or data except for the brand name and the surgeon general's warning that smoking kills. Other than this warning, there is no information. Yet the ads persuaded millions to associate Marlboro with cowboys, and indirectly with masculinity, independence, freedom and even the pristine and healthy environment of the American West. Likewise, American Express sold billions of dollars of its travelers' checks scaring Americans about being robbed in foreign countries. The exhortation, "don't leave home without them," is solemnly delivered by Karl Malden, the actor who played a policeman on TV – an example of associational thinking rather than information.

But can these illustrations be generalized? We focus on financial advertising to argue that they can. The reason that financial advertising is so useful for testing the behavioral theory is that investor beliefs about investing change over time, often in response to measurable changes in the environment such as past stock market returns. The behavioral model predicts that the

[4] Psychologists and marketing researchers actually measure the association maps. Zaltman (2003) describes a system of structured interviews, in which subjects bring with them pictures of objects they associate with a particular topic, and then answer questions seeking to elicit the various emotional connections between these pictures. These interviews provide maps of mental associations, which can then be used by persuaders.

content of persuasive messages would change in response to these changes in the investor beliefs so as to deliver messages catering to beliefs prevailing at the moment.

Perhaps one way to illustrate this point is to recall a story told to one of us by the late Merton H. Miller in 1987. At that time, Miller was affiliated with a money management firm specializing in small stock investments. As Miller told the story, the company had two brochures for prospective investors. When small stocks were doing well, it handed out a brochure describing the small firm effect. When small stocks were doing poorly, it handed out a brochure describing the diversification benefits of investing in small stocks. Now, the two brochure strategy is difficult to reconcile with a traditional model of persuasion: an investor receiving the diversification brochure would surely suspect poor past performance. Yet the strategy is broadly consistent with the behavioral model, in which people accept the evidence catering to their current beliefs without sufficient skepticism.

More generally, to extract specific predictions of the behavioral model, we make assumptions about beliefs and how they change over time. We propose that people hold in their minds two very different – and often conflicting – systems of beliefs about investing. We can describe these systems as growth (investment as a way to make money) and protection (investment as a way to secure the future). Growth is associated with wealth, independence, enjoyment, and freedom *to* do the things one likes. Protection is associated with security, insurance against ill health and poverty, and freedom *from* adversity. Growth and protection are intimately related to greed and fear as well as to return and risk.

Crucially, these alternative systems of beliefs prevail at different times. A persuasive message taps into the system available at the moment (Tversky and Kahneman 1973). When people already associate investment with getting rich, a persuasive message offers growth; when

people feel insecure about investments, a persuasive message offers protection. The internet bubble provides a fertile testing ground for these theories precisely because the belief systems about investment fluctuated so radically over a ten year span. As stock market prices rose, the growth belief system came to dominate investor thinking. As prices fell in 2001, beliefs shifted to protection. The behavioral theory predicts that the content of persuasive messages must have changed as well, offering growth after markets rose, and protection after they fell.

This broad outline suggests our research strategy. In the next section, we illustrate this description more specifically using the data from Merrill-Lynch advertising campaigns. We then present one possible formalization of these ideas, and test its predictions using data on financial advertising over the course of the bubble.

3. Data and the Evidence from Merrill Lynch Campaigns.

We put together a data set of all financial advertisements from two magazines: *Business Week* and *Money*. *Business Week* is a weekly business newsmagazine. We examine all issues from January 1, 1994 to December 31, 2003. *Money* is monthly and more specifically directed at individual investors. We examine all the issues from January 1, 1995 to December 31, 2003. (The one year difference in coverage is due to hard copy availability in Harvard libraries.) We copy and date all financial advertisements in every issue, both to count them and to examine their content. We aggregate the information on both the number and the content of ads into quarterly series. Since we are interested in the persuasion of investors, we eliminate from the data base business to business ads (principally investment banking ads, or other ads explicitly directed at companies). Our total sample includes 1469 ads from *Business Week* and 4971 ads from *Money*.

In addition to the name of the advertiser, we keep track of the category of service being advertised. These include mutual funds, Individual Retirement Accounts or IRA's (which usually but not always include specific mutual funds), 401k plans, brokerage services, insurance, annuities, private banking, financial advice (e.g., Schwab), general investment services, and other. In many instances, the same company advertises different services in different ads: Fidelity offers brokerage services, investment advice, and its own mutual funds in different ads. In addition to presenting some data on overall financial advertising, we focus specifically on mutual fund ads (including IRA ads promoting specific mutual funds). For those, we collect data on whether they mention their past returns, whether these are absolute or relative returns, and whether they mention Morningstar or Lipper ratings of the fund. We also note whether these are stock, bond or mixed funds, and if they are stock funds, what is their investment style (growth, value, blend, or index). Except for these very basic features, we do not keep track of the content of particular advertisements.

To illustrate some of the ideas we assess, consider Merrill Lynch advertising in *Business Week* and *Money* (along with T. Rowe Price, Fidelity, and Schwab, Merrill is one of the most prolific advertisers in these magazines). Over this period, Merrill ran six campaigns, respectively called "a tradition of trust", "the difference is Merrill Lynch," "human achievement," "be bullish," "ask Merrill," and "total Merrill." The motto of each campaign always appears in the ad. Figures 1 and 2 show the frequency of the ads from these six campaigns, by year, in the two magazines. Roughly speaking, the first two campaigns precede the bubble, the third and the fourth appear during it, and the last two are run after the sharp market decline.

One way to compare these campaigns is to look at a representative ad from each. "A tradition of trust" ads often show a grandfather and a grandson fishing. The ads talk about slow

accumulation of wealth. The difference in generations (as well as the activity of fishing itself) suggests slowness, tradition, skill, consistency, and patience. The ads advise on how to protect oneself and one's family financially. Ads from "the difference is Merrill Lynch" campaign likewise show a grandfather and a grandson with fishing rods, and talk about the virtue of saving.

This message changes in 1999. A "human achievement" ad from 1999 shows a 12 year old girl wearing a helmet and carrying a skate board. The image is much hipper and more modern than those from the previous campaigns. In a truly transitional way, the ad refers to "Protected Growth Investments." The theme of the next campaign, from 2000-2001, is simply "be bullish". One ad shows a Merrill Lynch bull wired as a semiconductor board (the word "wired" itself has two meanings, connection and hyperactivity). The theme of protection is gone; growth and opportunity emerge, unfettered by information. After the market declines, Merrill switches to the "ask Merrill" campaign, with its emphasis on uncertainty in the world, and the company's expertise in protecting its customers. A representative ad is dominated by a page-size question mark, invoking insecurity, uncertainty, and the need for answers. Finally, by the end of the decade we cover, the firm moves to the "total Merrill" campaign, with its familiar emphasis on protection and intergenerational fishing.

The Merrill campaigns are difficult to understand from the viewpoint of the traditional model of persuasion. First, many of the ads provide no new data about Merrill Lynch. Although some describe the products Merrill offers, others offer general financial advice (the virtues of saving for retirement and starting an IRA) or no information at all (the wired bull). There is no mention of track records (absolute or relative), of the cost of Merrill's services, let alone of risk and return. Second, the content changes systematically over time in a way that is difficult to reconcile with a standard model of what data investors require.

These campaigns are easier to understand from the perspective of the behavioral theory of persuasion outlined above. First, the ads appeal to the growth and protection belief systems. Second, the messages Merrill sends change as beliefs change. Merrill's clients are relatively well-to-do individuals, whose prevailing belief system for investment is wealth protection. Not surprisingly, Merrill's ads portray the company as a bastion of reliability, expertise, stability, and longevity – exactly the message the behavioral model would see as persuasive. At the peak of the bubble, however, the beliefs even of these investors have evidently changed, and millions of new ones entered financial markets. Merrill responded by changing its message to evoke its own modernity and access to opportunities, as well as to present growth images. After the bubble collapsed, protection ruled again. The Merrill campaigns illustrate the central prediction of the behavioral model: a persuasive message panders to prevailing beliefs.

4. A Simple Model and Predictions.

To organize the empirical work, we begin with a very simple behavioral model of persuasion. The model does not capture most of the subtle psychological ideas of how persuasion works, but has the advantage of yielding testable predictions. In particular, we think of individuals evaluating investments in terms of their perceived risk and return, and of their "belief system" as the perceived tradeoff between risk and return. Investors governed by greed believe that bearing extra risk brings considerable extra expected return; investors governed by fear believe that risk is not rewarded with return. We assume that the perceived tradeoff changes with past market returns; more specifically high past returns activate the growth belief system. We consider how the content of persuasive messages changes with this change in beliefs.

Let σ and r be the perceived risk and expected excess return of a particular fund. The investor's utility function, for simplicity, is given by $U(\sigma, r) = r - \sigma$. At any given point in time, the investor perceives that the relationship between risk and excess return is given by $r = a\sigma$, where $a>0$ summarizes the individuals beliefs about how "easy" it is to earn excess returns. Thus, when a is low, the investor believes that extra risk yields little excess return; we describe this state of mind as fear. Alternatively, when a is high, the investor believes that extra risk yields a great deal of excess returns, so we describe this state of mind as greed.

Crucially, the advertiser does not try to change investor beliefs, summarized by a. Rather, it takes these beliefs as given and tries to deliver a profit-maximizing message. This message consists of up to two parts: a piece about returns and a piece about risk. The firm can always choose to send only one of these signals. We therefore write the message M as:

In other words, the firm either $M = \begin{cases} (m_\sigma, m_r) \\ (*, m_r) \\ (m_\sigma, *) \end{cases}$ sends a signal about σ, or about r, or about both. Consistent with the evidence summarized above, we assume that the signal about expected return is typically the past return, so investors extrapolate returns. The signal about risk can be much less precise. An advertiser might draw attention to its expertise in making investment decisions, the number of professionals on its staff, or even simply show a picture of a grandfather and grandson fishing.

Investors use their prior beliefs – the value of a they have in mind – to interpret messages and assess the utility from investing with the firm. The firm chooses its messages to maximize the individual's perceived utility, since doing so enables it to charge the most for its product. Our key behavioral assumption is that individuals take information at face value**,** so second-guessing

of messages does not place a constraint on the firm's message choice. The only constraints on this choice are: (1) firms cannot lie about returns, and (2) investors interpret messages according to their prevailing beliefs. We do not assume that firms cannot lie about risk (or safety), since that information is inherently fuzzy and therefore the opportunities to mislead exceed those for messages about returns. So what are the consequences of each message?

Choice 1: Send only a signal about return. In this case, the individual expects $r = m_r$ by the face-value assumption, as well as the assumption that he uses past returns to predict future returns. He relies on his prevailing belief system to infer that $\sigma = m_r/a$. So when only returns are publicized, the individual expects utility $m_r(1 - 1/a)$ from buying the product.

Choice 2: Send only a signal about risk. In this case, the individual assumes $\sigma = m_\sigma$ by the face-value assumption, and relies on his prevailing beliefs to infer that $r = am_\sigma$. So when only risk is advertised, the individual expects utility $am_\sigma(1 - 1/a)$.

Choice 3: Send a signal about both risk and return. The individual now has a problem. On the one hand, he takes the message at face value. On the other, it may not lie on his belief line. So what is this individual to do? We assume a parameter b which measures how much the individual weighs the return signal versus the safety signal. This parameter generates beliefs about risk and return given by:

$$\begin{aligned} r &= bm_r + (1-b)am_\sigma \\ \sigma &= b\frac{m_r}{a} + (1-b)m_\sigma \end{aligned}$$

The weights need to be the same in the calculation for r and σ because the equilibrium belief condition $r = a\sigma$ must hold. When b is close to 1, the return signal is used almost exclusively. When b is closer to 0, the risk signal is used almost exclusively. It is also worth noting that if the

signal actually lies on the belief line so that $m_r = a m_\sigma$, then the messages are not contradictory and the same forecast is generated irrespective of *b,* namely $r = m_r$ and $\sigma = m_\sigma$. In other words, the individual accepts the message as his forecast.

Given these assumptions, what will the firm choose? We first establish:

Proposition 1: The firm can always achieve the highest investor utility by choosing to send a return only or a risk only message.

The utility under a mixed message is the weighted average of utilities under pure messages, with weights given by *b*, i.e., $U(m_r, m_\sigma) = b\, U(m_{r,*}) + (1-b)U(*, m_\sigma)$. So whichever of $U(m_{r,*})$ or $U(*, m_\sigma)$ is higher yields a higher expected utility than a mixed message.

The next question is whether the firm will choose to deliver a risk or a return message. If the firm is advertising returns, it sends a truthful message about its own returns. If the firm is advertising safety, we have assumed it can mislead. Let us take the extreme assumption that it can send the message $\sigma = 0$, i.e., that its investment strategies are completely safe. Which message would it wish to send? The inspection of two utility levels leads to:

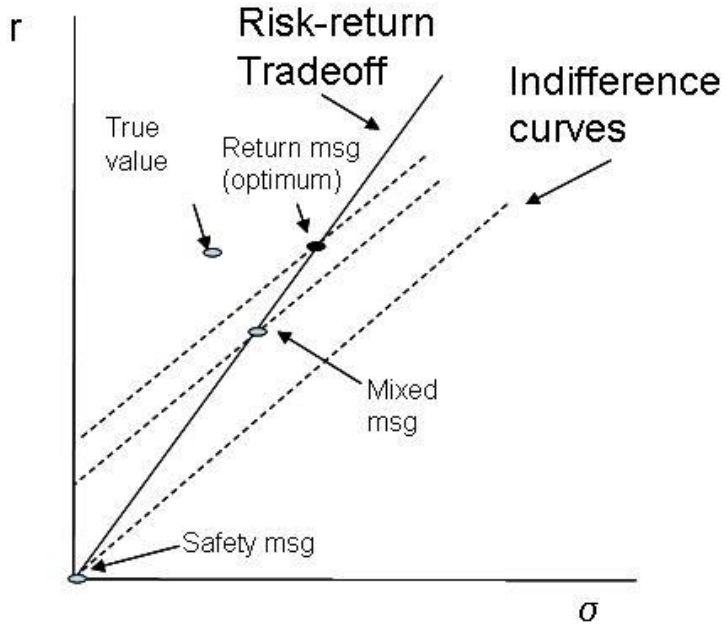
Proposition 2: If $a < 1$, the best message is $m_\sigma = 0$; if $a > 1$, the best message is m_r.

When investors believe the risk/return tradeoff is shallow (they are driven by fear), most firms exclusively discuss safety. When investors believe this tradeoff is steep (they are driven by greed), most firms exclusively discuss returns.

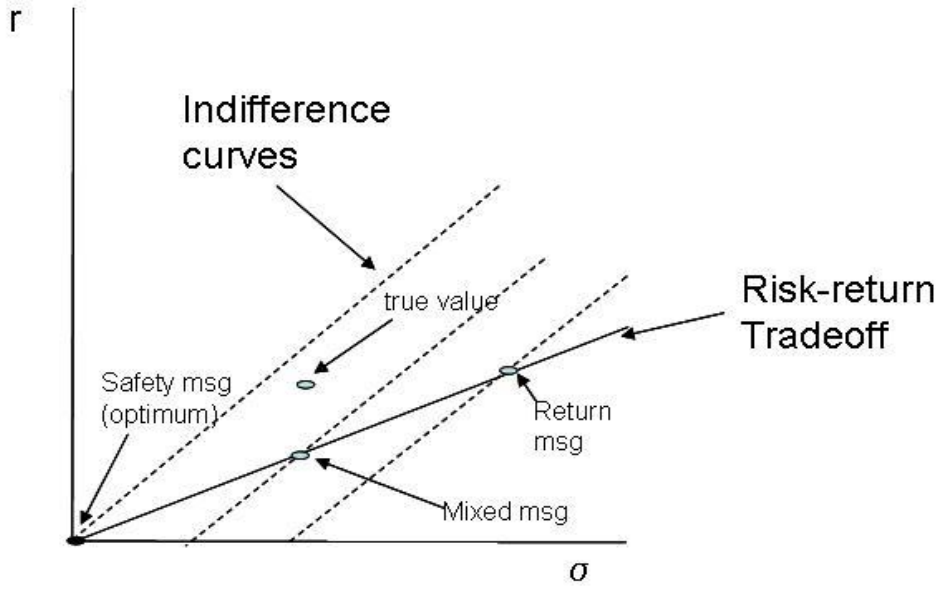
Obviously, the extreme all return or all risk result depends on the linear utility function. With a more general utility function, the firm could choose mixed messages, although it is still quite possible that, when investors are governed by fear, it will pick an all-safety message. Even in the more general model, however, a shift of investor beliefs from greed to fear leads to a shift in the firm's messages from return to safety orientation.

This simple analysis, combined with the assumption that *a* is high when past returns are low, and low when past returns are high, yields two testable predictions. First, it predicts that financial advertisers will disproportionately use returns in their ads when past market returns are high. In those times, investors do not automatically assume that past returns have been high because of high risk, and therefore avoid the product. Indeed, this prediction applies not just to using own raw past returns, but more broadly to all reports of own past performance: if those are high when investors are fearful, they will only infer that the investment is risky.

Second, and perhaps more subtly, the model predicts that the incidence of presentation of returns in financial advertisements must depend on the past *market* returns (which are what shape the parameter *a*), and not on *own* past returns. Thus even a firm that had good own returns, or good relative returns while the market was doing poorly, should still avoid advertising performance. In the next section, we test both of these predictions.



Optimal message is return when a>1



Optimal message is safety when a<1

5. Advertising Own Returns.

We begin with the principal prediction of the behavioral model of persuasion, as generated by our model:

H1: Advertisers are more likely to present their own past returns after high market returns.

In the traditional model of persuasion, absolute own past returns should probably not even be reported. To the extent that a manager's skill can be assessed based on past returns, it should be relative rather than absolute returns; absolute returns just muddy up the data. Even with relative returns, there is a problem that superior performance does not seem to be predictable (Chevalier and Ellison 1997, Sirri and Tufano 1998). Most importantly, we do not see how the traditional model could predict that own returns be reported *disproportionately* after

the market has gone up. This would seem to contradict the basic implication of that model that when relevant data are not reported, investors assume the worst.

Before presenting the results on *H1*, we note that 40 percent of mutual fund ads in *Money*, and nearly half in *BW*, contain no reference whatsoever to past returns – absolute or relative. If one believes that returns are essential information for assessing mutual fund managers, it is curious how often they are not even reported, especially if, as in the traditional model, investors assume the worst.

Figures 3, 4, and 5 show for *BW* and *Money* separately that the rolling one quarter lagged S&P returns are strong predictors of 1) the share of ads with returns in all ads, 2) the share of mutual fund ads with returns in all mutual fund ads, and 3) the share of stock mutual fund ads with returns in all stock mutual fund ads. The correlations are in the .5 to .7 range, depending on the specification. Advertisers put their own returns in the ads after the market returns have been high, and take them out after market returns have been low.

Could this evidence be driven by advertiser composition, rather than cyclical changes in the persuasive message? Perhaps the advertisers who persuade with past returns, such as growth mutual funds, enter during the bubble, but disappear after it crashes? Figure 6 presents the data on the most prolific advertiser in these magazines, T. Rowe Price, a mutual fund company that also offers general investment advice, brokerage, and other services. The data are presented at the annual frequency, since there is too much noise in the quarterly data. The share of T.Rowe Price ads with returns in the total number of T. Rowe Price ads clearly follows the bubble on both *Money* and *Business Week*, suggesting that compositional changes are not the whole story.

As we indicated, *H1* should apply not just to own *raw* returns, but also to any measure of own performance, since good past performance in the behavioral model is interpreted as an

indication of riskiness. This observation enables us also to address the concern that the previous evidence supports not the behavioral model, but the simple hypothesis that firms only present returns when those have been high. Under the latter hypothesis, but NOT under the behavioral model, firms should always present measures of performance that look good, including measures of relative performance in down markets.

We use two measures of market-insensitive performance. The first one is relative returns. The traditional theory, as we noted, predicts that only relative returns should be used to begin with. However, in our data, funds report relative returns less than half the time *when they report returns*. The psychological theory predicts that the use of relative returns in all ads should decline, just as the use of absolute returns does, since investors are concerned with protection rather than growth.

The second measure of performance we deploy to test the same hypothesis is Morningstar/Lipper ratings. These ratings reflect fund performance relative to a peer group (Pozen 2002). Under our behavioral theory, again, funds would not want to use these ratings after the marked fell, because investors are concerned with protection not performance.

Figures 7 and 8 present the share of funds reporting relative returns in all funds advertising for *Money* and *Business Week* separately. The results are somewhat ambiguous. For *Money*, the correlation between this share and lagged S &P returns is an insignificant -.056. On the other hand, there is striking evidence of an increase in the share of funds advertising relative returns during 2001-2002, consistent with the "report good news" hypothesis. For *Business Week*, the correlation between the share of advertising funds that present relative returns and lagged S&P returns is, at .41, both positive and high. This result supports the prediction of the

behavioral theory that advertisers avoid all measures of performance, including relative returns, when market returns had been low.

Figure 9 reports the fraction of ads with Morningstar/Lipper ratings of money manager quality as a fraction of total mutual fund ads. For *Money* the figure reports a high positive correlation of .64 with past S&P returns. For *Business Week*, the correlation is also positive, but much smaller. The evidence thus seems to be generally supportive of the prediction of the model that advertisers eschew even market-insensitive proxies for performance in down markets, although the evidence on relative returns in *Money* is more ambiguous.

Finally, we turn to the hypothesis – closely related to the analysis above – that it is market returns (which shape investor state of mind) rather than the firm's own returns that determine the content of advertising. This hypothesis yields the prediction that, after the market has gone down, advertisers will avoid reporting returns even when they have mutual funds with superior *relative* past performance. In other words, the absence of advertising funds with good relative returns is a deliberate choice, and not just the consequence of the dearth of such funds.

Figure 10 presents the relevant data for T. Rowe Price, using the universe of T. Rowe Price stock mutual funds with assets over $300 million at the beginning of the period. It shows that T. Rowe Price is a frequent advertiser throughout this period, and that it has many mutual funds outperforming S&P 500 after 1999. If anything, the number of funds with good relative performance rises sharply during 2001-2002. Nonetheless, both the number of stock mutual fund ads, and the number of such ads reporting returns, falls to near zero after the market declines. Even though T. Rowe Price has many funds with positive abnormal performance, it chooses not to advertise them. This finding is broadly consistent with our behavioral model of persuasion, and inconsistent with the view that "reporting good news" is always effective.

6. Product Choice.

In our model and in the previous section, we focused on the question of *how* to advertise a given product. However, there is a closely related question (which is not addressed by the model) of *which* product to advertise. In the same spirit, our analysis would predict that firms should advertise products appealing to a growth-focused investor after returns have been high, and those appealing to a protection-focused investor after returns have been low.

In this section, we test this prediction. Specifically, we focus on the advertisements of growth funds compared to those of alternative products, whether mutual funds or other services. Growth funds are investment products most compatible with the growth belief system, and hence their advertisement should increase after the market rises, and decline after it falls.

Financial economists discuss two particular equity investment styles (among others): growth and value.[5] Growth investment involves selecting portfolios of stock with rapid earnings growth, high price to earnings and price to book ratios, technology orientation, etc. Value investment involves selecting portfolios with the opposite characteristics. Although historically value strategies outperformed growth ones on average (Fama and French 1992, Lakonishok, Shleifer, and Vishny 1994), in 1998-1999 value dramatically underperformed growth (Chen and Lakonishok 2003). Growth investing cues many of the associations of the growth belief system. In contrast, it may be hard for an investor caught in a bubble to see how buying low sales growth, not-particularly-profitable, and otherwise out-of-favor stocks is the path to riches, especially at the time when exactly the opposite category of stocks has been earning huge returns. If anything, value investment seems more compatible with the protection system of beliefs (hence the name, "value").

This discussion yields a further prediction of the behavioral theory of persuasion:

[5] Other styles in these data include bond funds, international funds, index funds, and mixed style funds.

H3: Past S&P returns predict the share of mutual fund ads taken up by growth funds.

The traditional theory of persuasion predicts something different. Financial research suggests that growth stocks were more overvalued at the time of high valuations than value stocks, and the latter were better investments. (This was strikingly confirmed during 2001-2002). An informative message would have reminded investors that 1999-2000 was a time to reduce exposure to stocks, and even if one wanted such exposure, to shift toward value. This is the opposite of what *H3* predicts, but of course, according to the behavioral theory, investors do not interpret the informative message correctly.

Figures 11 and 12 show the proportion of mutual fund ads devoted to growth and value funds, respectively. Over the entire period, roughly a quarter of mutual fund advertisements were taken up by growth funds, and roughly a tenth by value funds. Figure 11 confirms that growth fund advertisement is highly responsive to past returns; indeed, growth fund ads nearly disappear during 2001-2002 after reaching over half of the total in 1999-2000. This result is consistent with *H3*. Figure 12 shows that, if anything, the share of value fund advertising is lower after the market does well. Perhaps the most striking feature of Figure 12 is that value fund ads rise AFTER – not before – the market collapses, i.e., in 2001-2002. This is the period when value funds have already outperformed growth funds. Again, this evidence is supportive of the behavioral model of persuasion.

One concern with this evidence is that it might reflect the composition of advertisers (although the behavioral model of course does predict that the composition of advertisers should change). To address this concern, we return to T. Rowe Price, which (unlike, say, Merrill Lynch or Charles Schwab) does a lot of advertising of its own mutual funds but also offers other products, such as brokerage and general investment advice, which we think of as protection-

oriented products. We consider the composition of the products that T. Rowe Price offers as a function of market returns.

Figure 13 presents the shares of advertisements of growth funds, all other mutual funds, and other services by T. Rowe Price in *Money*. The share of growth fund ads rises at the peak of the bubble, but these ads literally *disappear* after the market begins to fall. Instead, T. Rowe Price raises the share of ads of other mutual funds (including bond and foreign funds). The correlation of one quarter lagged rolling S&P returns is .59 with the share of growth fund ads in all mutual fund ads, and .66 with the share of growth fund ads in all T. Rowe Price ads. The persuasion strategy of this advertiser, then, is broadly consistent with the behavioral theory: push the growth funds when the market is rising, and products promising protection when it is falling.

7. Conclusion.

Using data on financial advertising in *Business Week* and *Money* magazines between 1994 and 2003, we present evidence supportive of the behavioral model of persuasion. Over the course of the internet bubble, advertisers tapped into the growth system of beliefs when stock prices were rising, and into the protection system when prices were falling. Evidence on both the use of fund returns in ads and the choice of products being promoted is consistent with the view that firms supply messages that pander to prevailing investor beliefs.

This conclusion on the nature of persuasion bears on a key question in the analysis of market efficiency in general, and price bubbles in particular, namely whether financial institutions play a stabilizing role. Previous research has focused on one form of professional activities, namely arbitrage, and has shown that institutions often play a destabilizing role (DeLong et al. 1990, Brunnermeier and Nagel 2004). But, as Kindelberger (1978) has

recognized long ago, institutions play another important role: they can facilitate or discourage the speculation by individual investors. Our analysis shows that, at a minimum, financial institutions encourage speculation rather than contrarian behavior through their persuasion strategies. If such persuasion works (something we do not show), its effect is to destabilize prices.

But there is also a broader point. This paper, like Mullainathan and Shleifer (2005), shows that competitive markets in information deliver what consumers want. This, however, need not be the whole truth, or even the data most needed for consumers' well-being. Whether public policy can improve on these outcomes remains a wide-open question.

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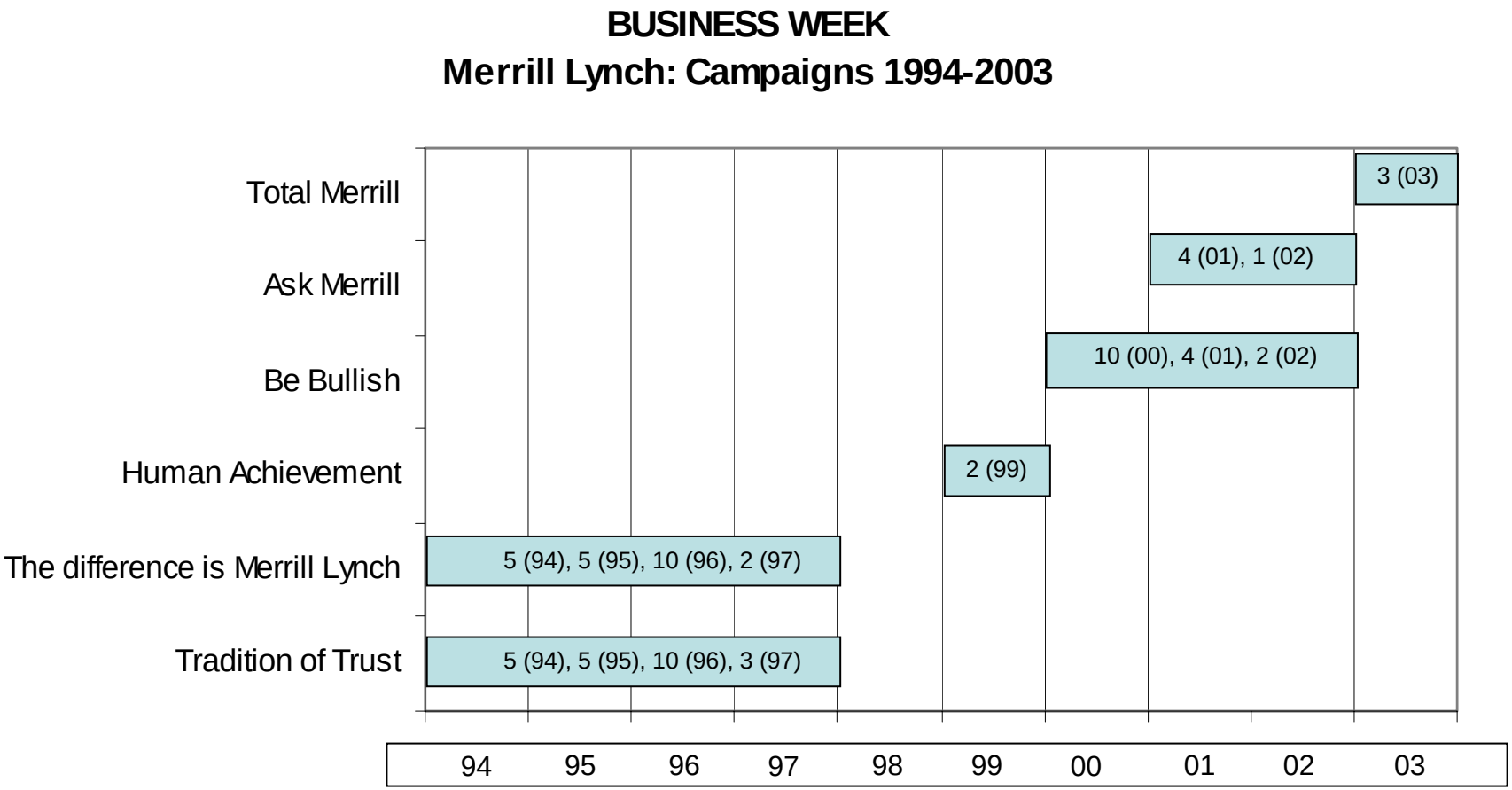
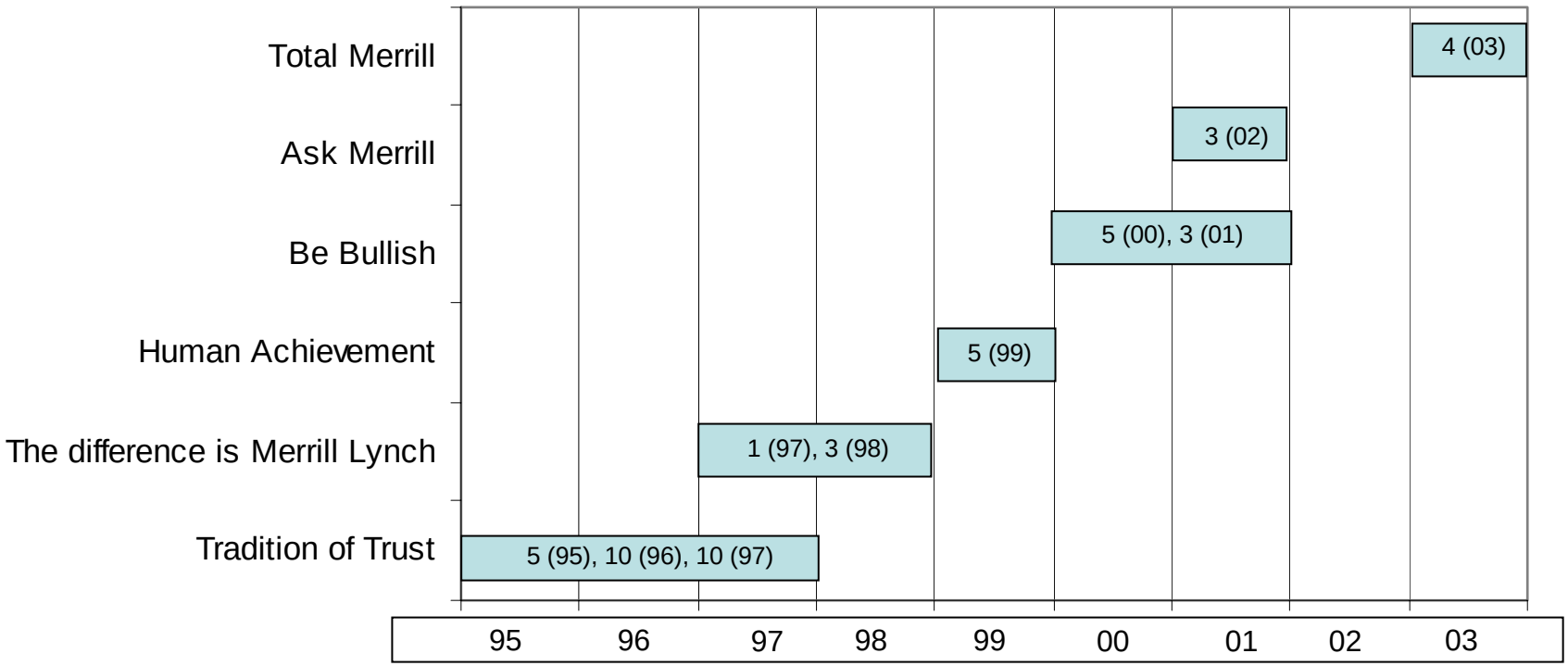
Figure 1



Note: Format is # of ads (year of ads)

Figure 2

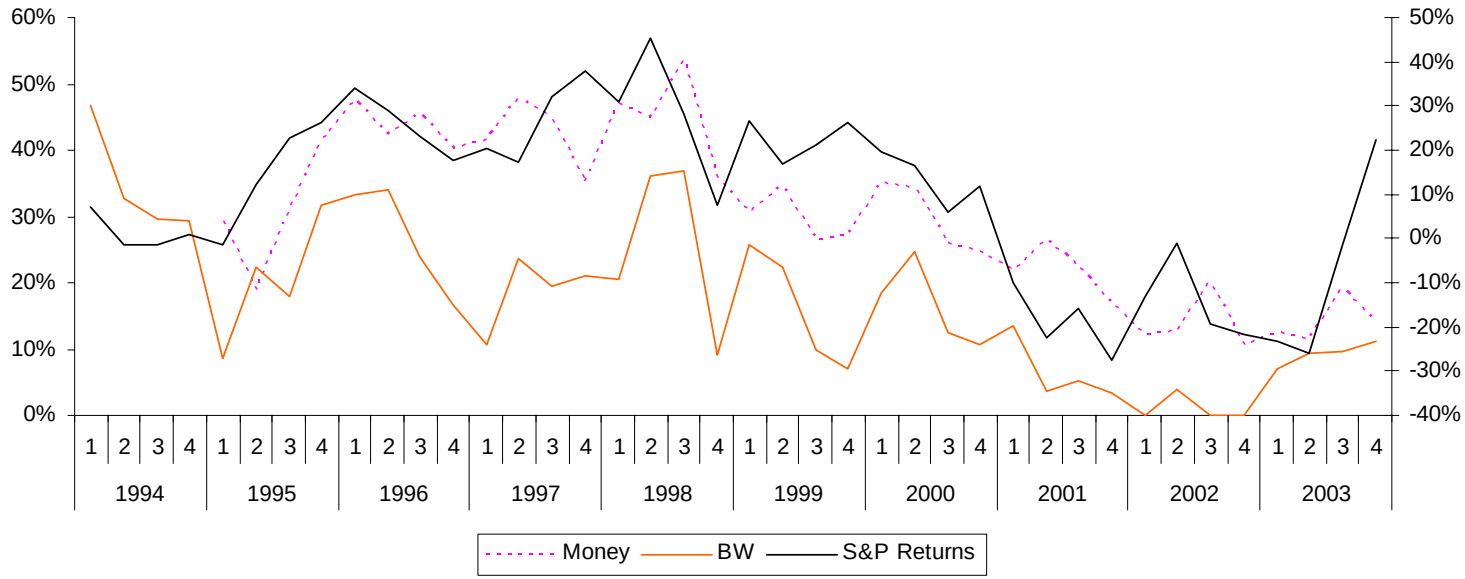
MONEY
Merrill Lynch: Campaigns 1995-2003



Note: Format is # of ads (year of ads)

Figure 3

Ads with returns / total ads against 1-quarter lagged *rolling* S&P returns



Correlations:

Money / S&P : 76.2%

BW / S&P: 59.9%

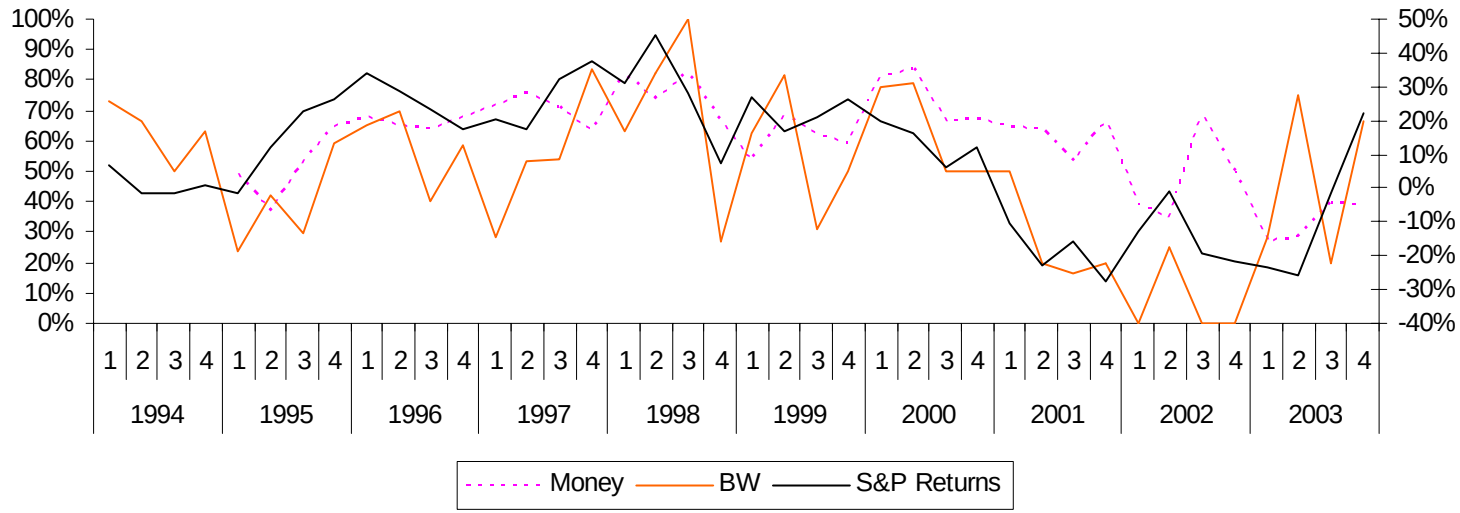
Means:

Money: 30.2%

BW: 17.5%

Figure 4

Mutual fund ads with returns / total mutual fund ads against 1-quarter lagged *rolling* S&P returns



Correlations:

Money / S&P : 48.9%

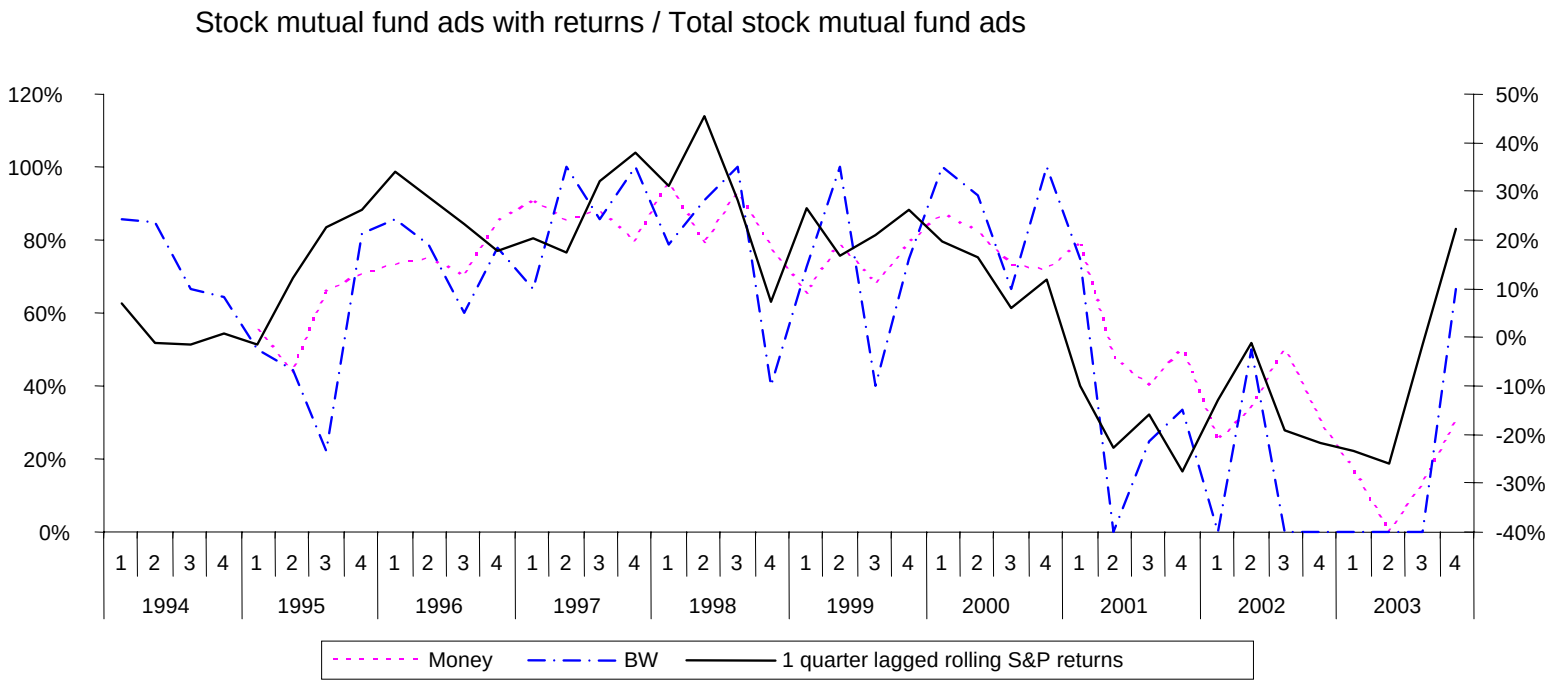
BW / S&P: 61.9%

Means:

Money: 60.3%

BW: 48.4%

Figure 5



Correlations:

Money / S&P : 71.0%

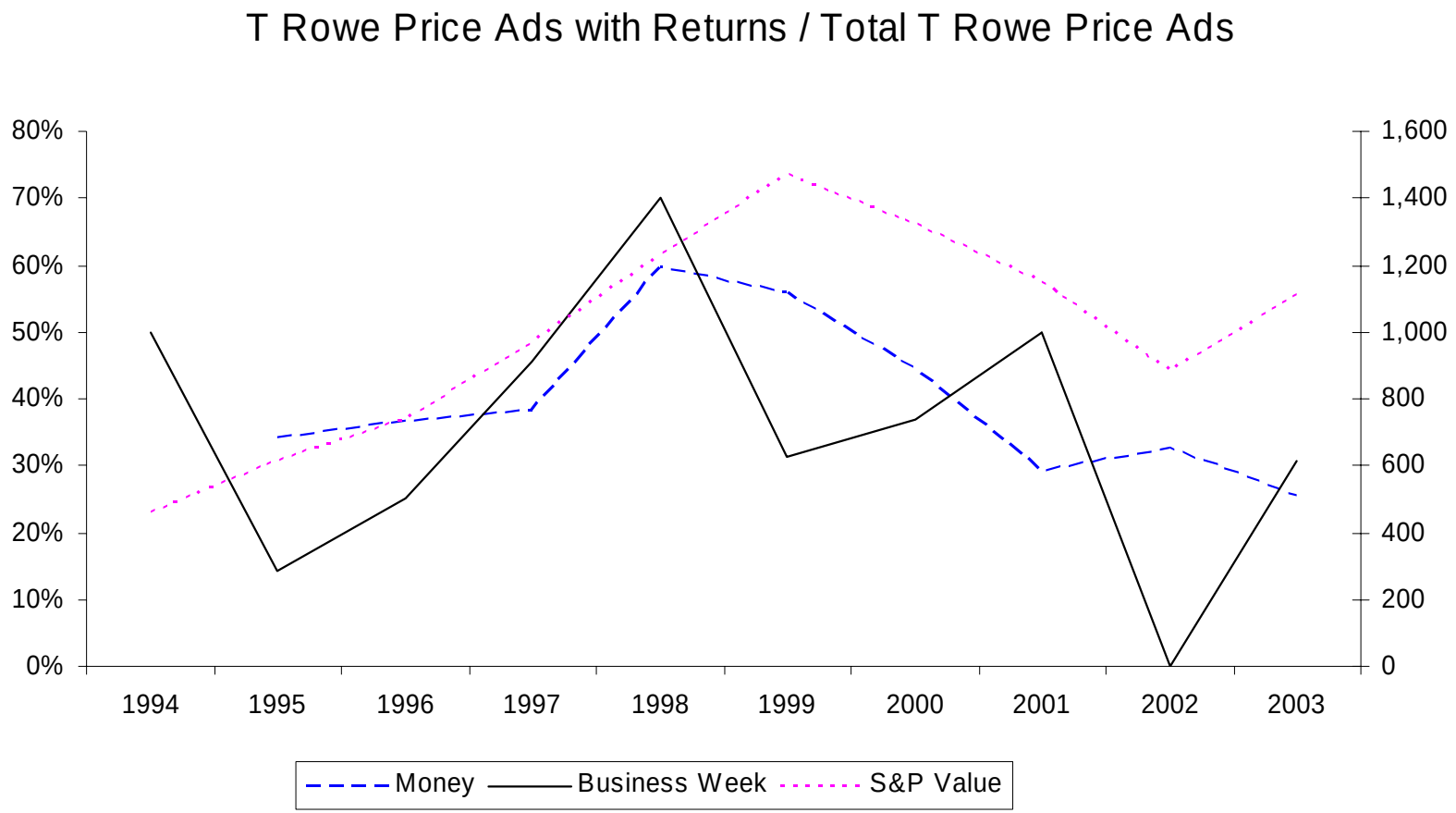
BW / S&P: 74.3%

Means:

Money: 62.4%

BW: 59.0%

Figure 6



Correlations:

Money / S&P: ***55.76%***

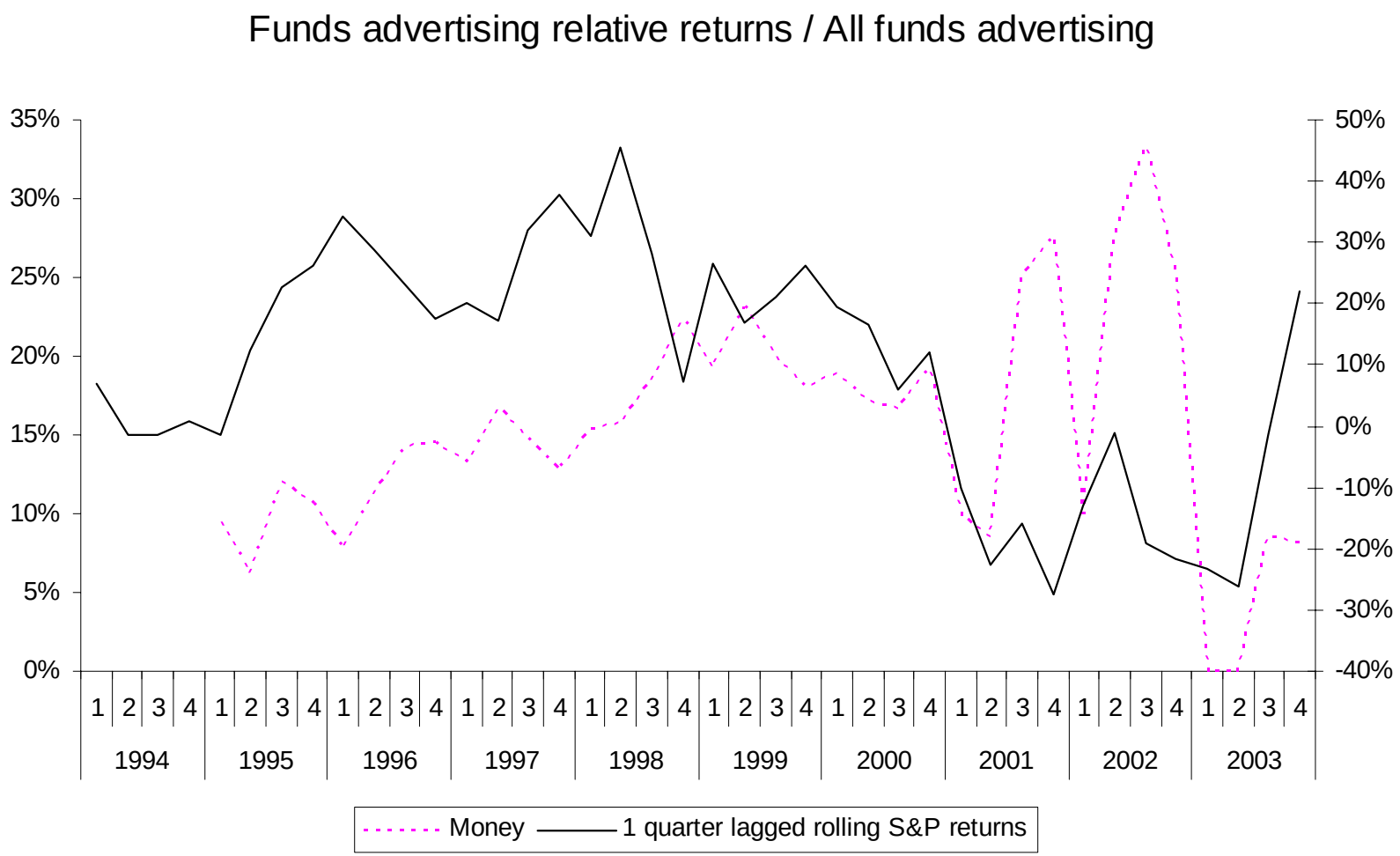
BW / S&P: ***25.92%***

Means:

Money: ***39.5%***

BW: ***35.4%***

Figure 7

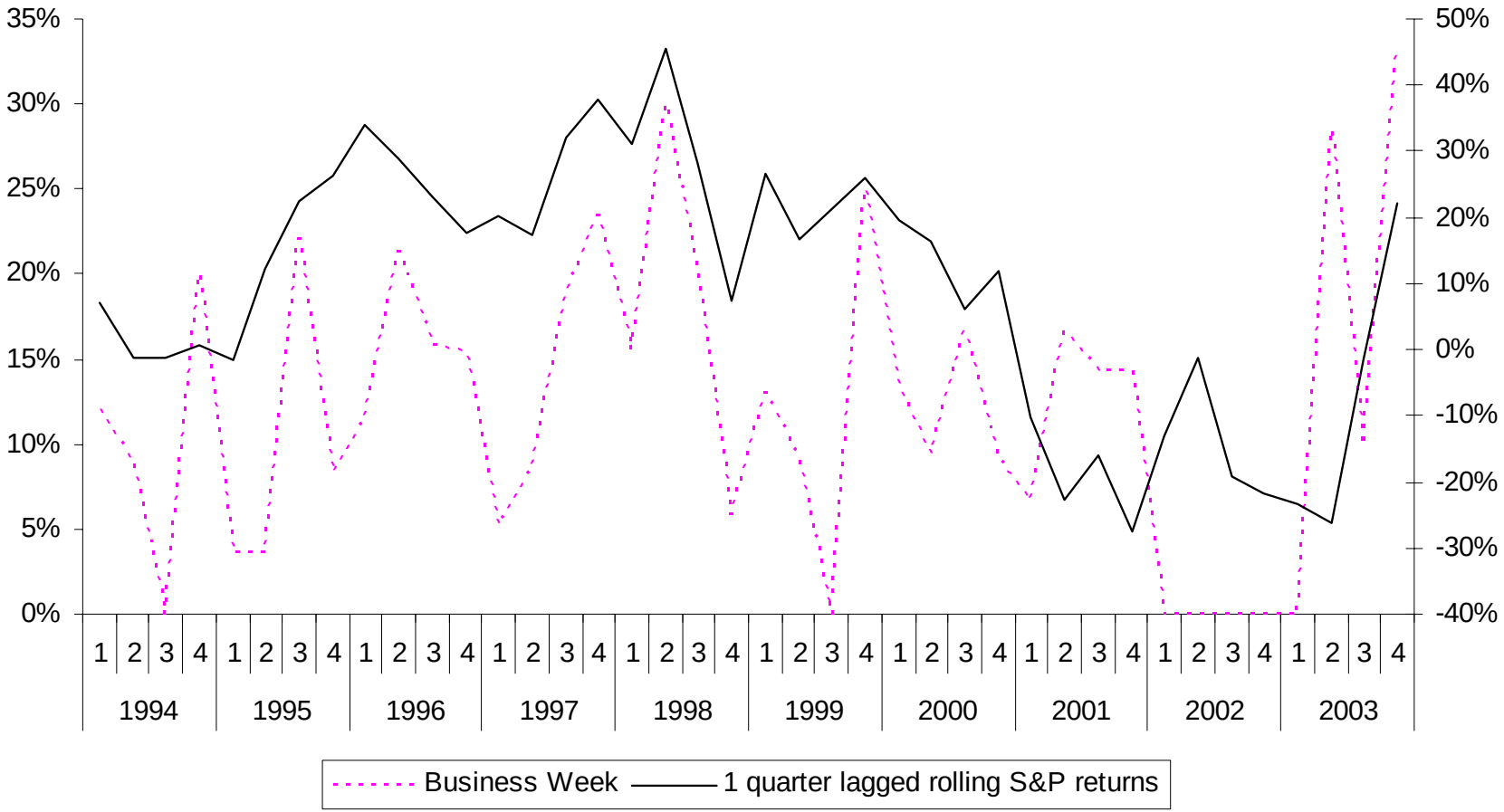


Correlation: -5.6%

Mean: 15.3%

Figure 8

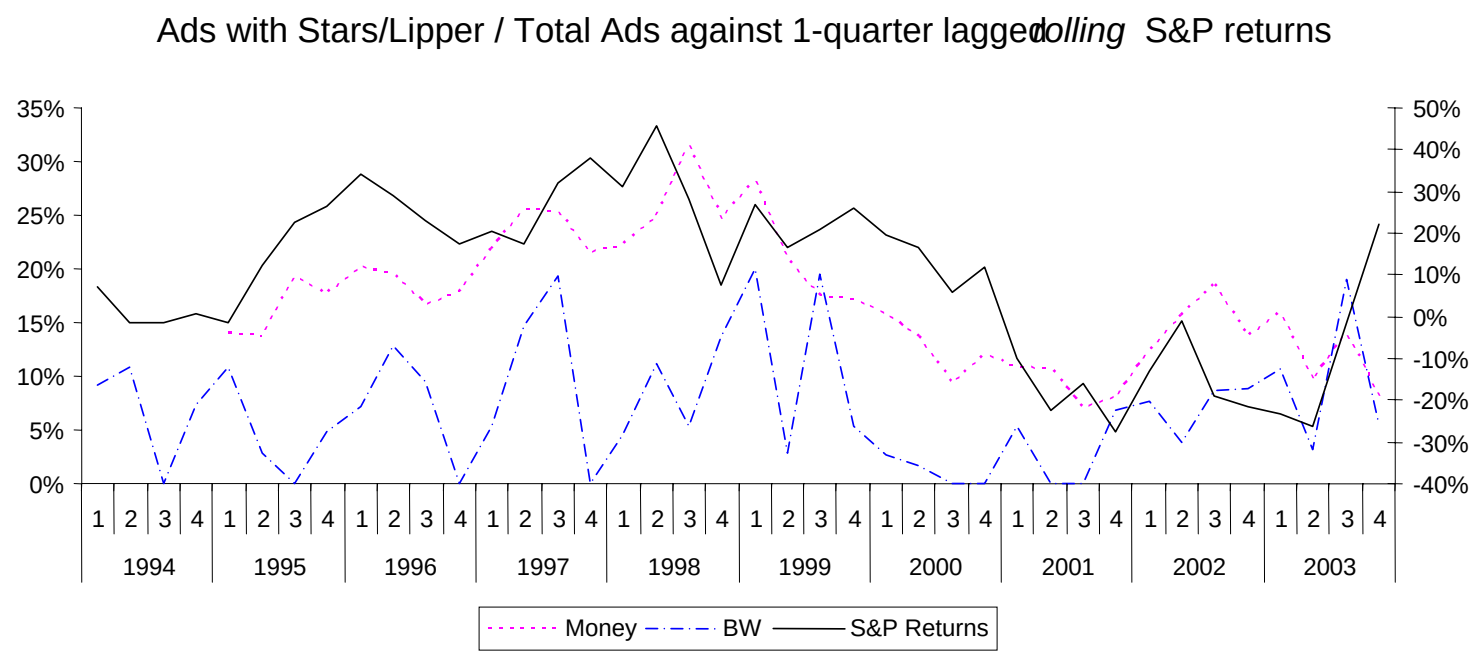
Funds advertising relative returns / All funds advertising



Correlation: 41.1%

Mean: 12.3%

Figure 9



Correlations:

Money / S&P : 64.6%

BW / S&P: 12.3%

Means:

Money: 17.1%

BW: 7.0%

Figure 10

Stocks outperforming S&P 500 vs. Number of Ads

T Rowe Price Year-on-Year

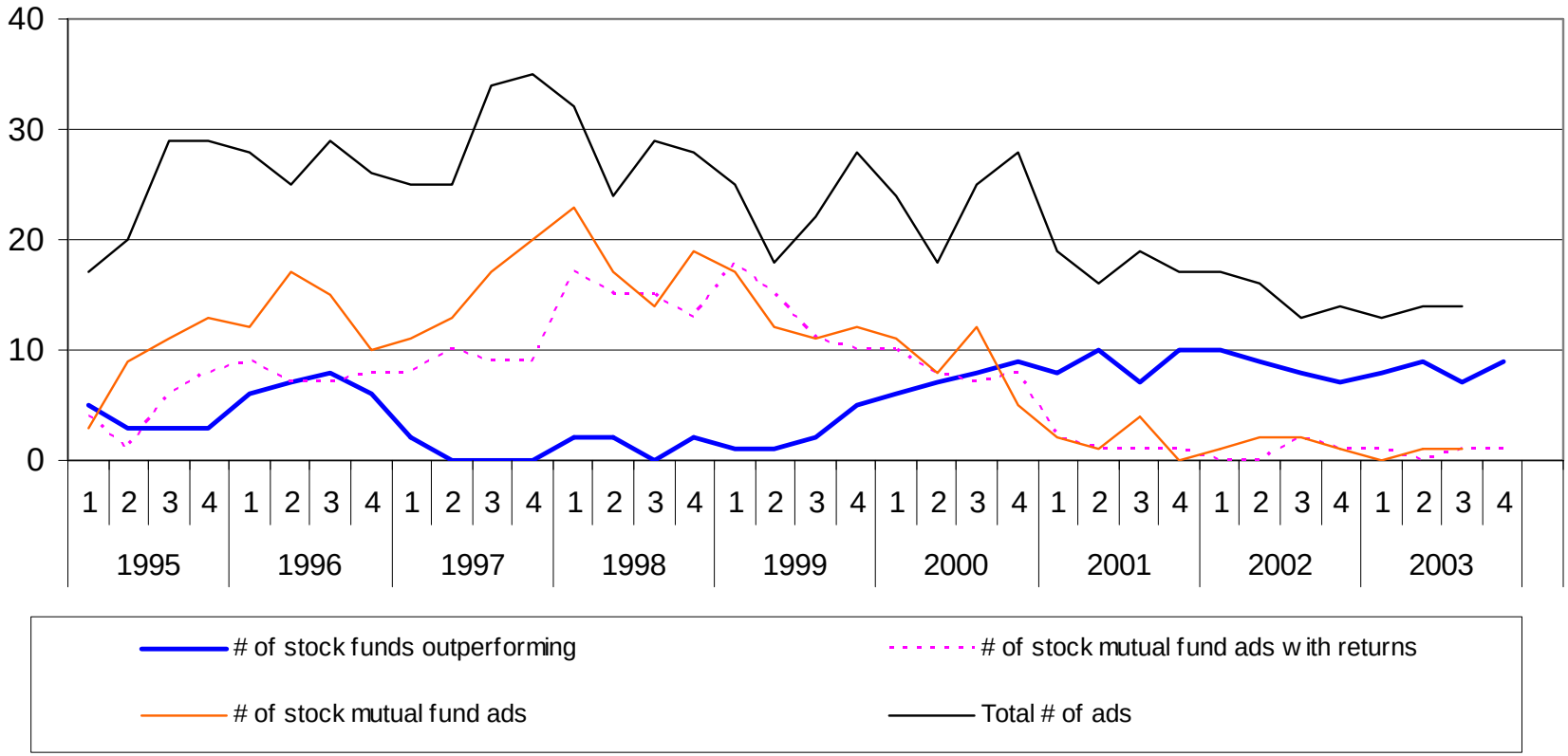
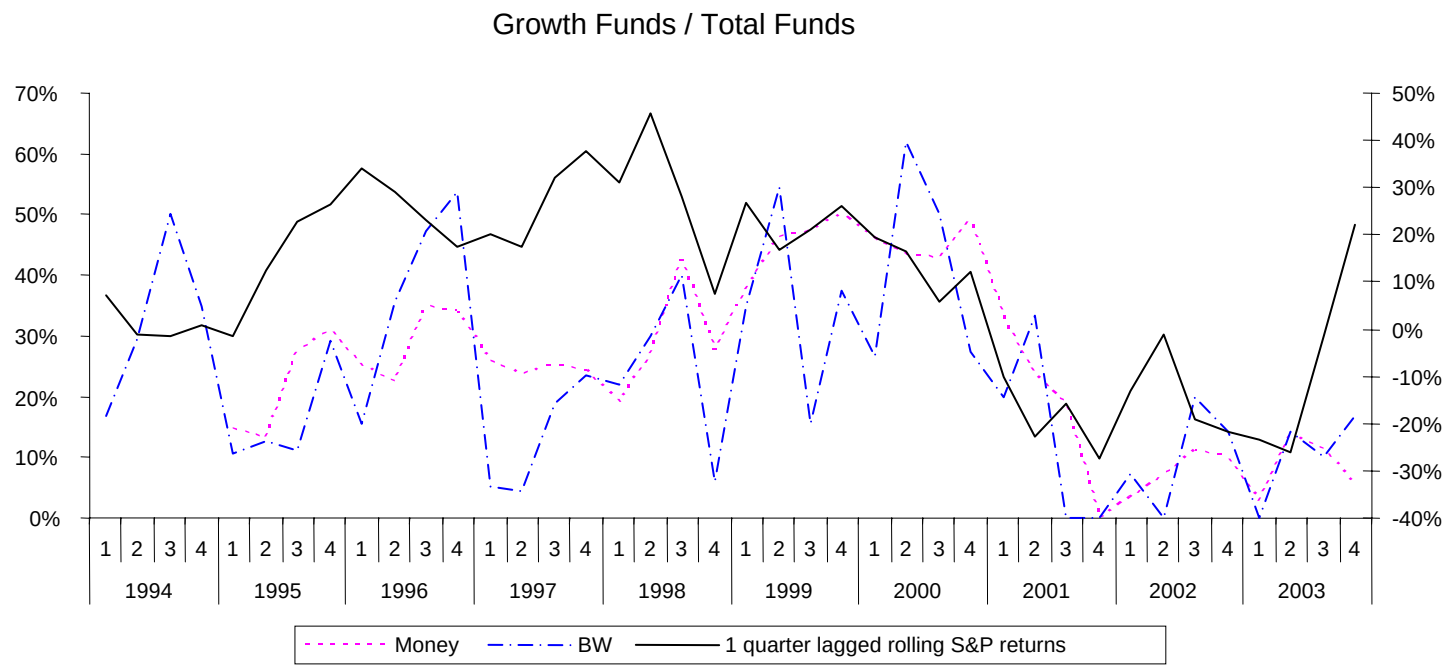


Figure 11



Correlations:

Money / S&P : 53.3%

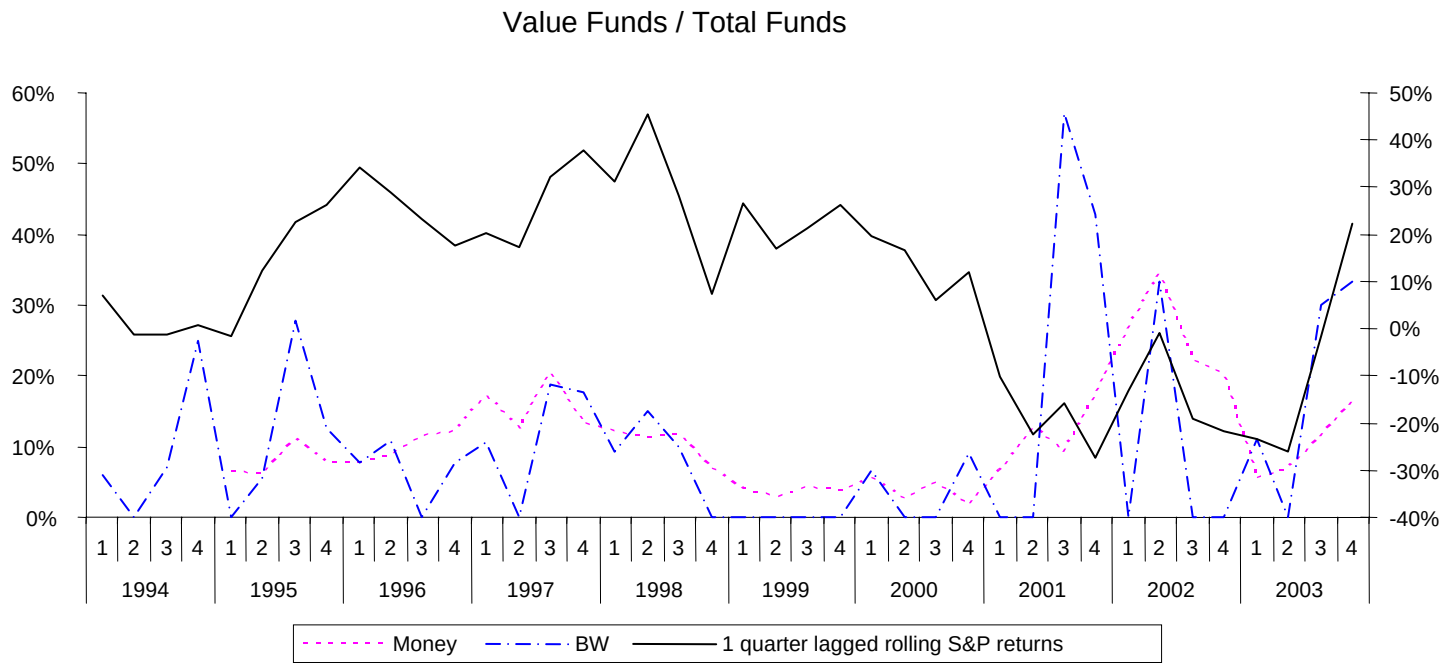
BW / S&P: 34.7%

Means:

Money: 25.6%

BW: 23.5%

Figure 12



Correlations:

Money / S&P : -22.9%

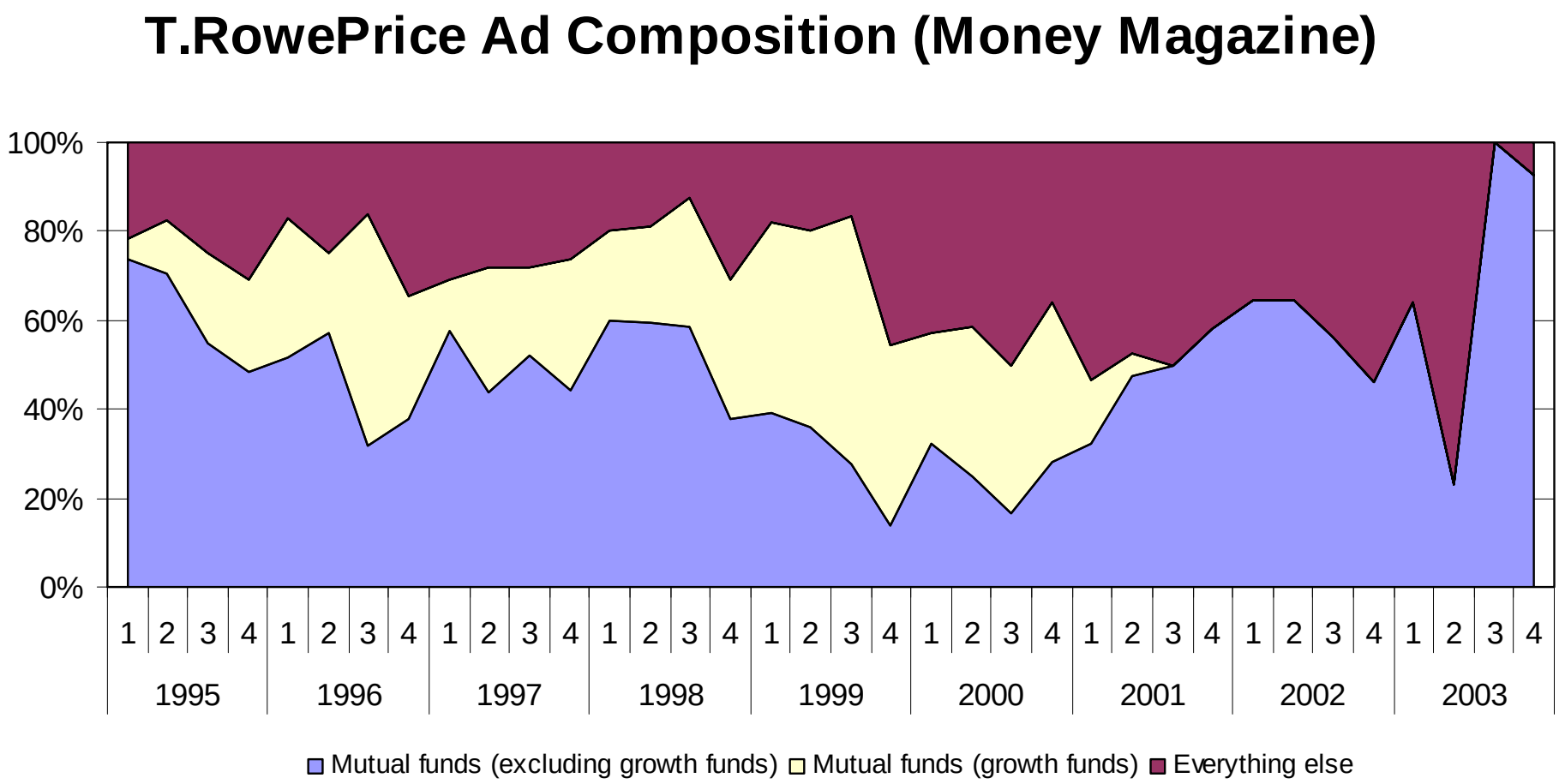
BW / S&P: -7.6%

Means:

Money: 11.0%

BW: 10.4%

Figure 13


T.RowePrice Ad Composition (Money Magazine)
100%
80%
60%
40%
20%
0%
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mutual funds (excluding growth funds)
Mutual funds (growth funds)
Everything else