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Pragmatics and the Marketplace:
How Gricean Implicature Affects Investor Decision-Making

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Abstract

This paper will present a theory of how Gricean Implicature has an impact on investor decision-making. Overactive security markets are known to violate the rational model of stock valuation known as “price equals value.” At present, two hypotheses exist as explanations for the overactivity: overconfidence and overreaction. This paper provides support for a new hypothesis – that investors, when provided with information about the marketplace, make the often-erroneous assumption that such information is precise, relevant and requires action. Finally, the paper will analyze how this new hypothesis could have implications for future experiments in psychology, as well as for public policy.

HOW PRICE DOES NOT EQUAL VALUE

Research in cognitive psychology explains how people violate *rational models* in many ways – like peoples’ susceptibility to overconfidence, optimism, hindsight bias, overreaction to chance events, loss aversion, non-Bayesian forecasting, and framing effects (Camerer & Loewenstein, 2004; De Bondt & Thaler, 1988; Kahneman & Riepe, 1998). This paper will make a similar attempt to explain how people violate a rational model in the world of economics. The exact rational model this paper addresses is the following: according to the assumptions of the Capital Asset Pricing Model (and of the “price equals value” theory), the price of a stock should equal that stock’s intrinsic value – the amount of physical assets it represents, the present value of its future dividends, the amount of diversification it offers a portfolio, and the amount of its variance compared to the variance of the market as a whole (Bodie, Kane, & Marcus, 2005). In other words, according to “price equals value” (PEV), there should be one agreed upon price for any given stock at any given time.

By PEV’s logic, a change in the intrinsic value of a security should be the only circumstance that necessitates trading – the purchasing or selling of a security. In other words, consumer demand should alter a stock’s price only when the disclosure of new information adjusts the stock’s intrinsic value. Long ago, however, the PEV model came under scrutiny and its applicability to real world markets was questioned. Researchers were puzzled by the inconsistency between PEV assumptions (a rational model) and excessive trading volume in the real world (a behavior that seemed to violate the model). In fact, as early as 1982, future Nobel Laureate Kenneth Arrow pointed out that “daily variations in futures and securities markets are excessive relative to the daily changes in

information” (Arrow, 1982). In other words, given the small amount of new information disclosed on a day-to-day basis in securities markets, Arrow considered the amount of trading volume irrationally high.

If Arrow’s conjecture could be proven correct, it would carry serious weight in the financial world. Over-trading would have many nontrivial consequences. For example, solid evidence of over-trading in the marketplace would reveal that, on average, individual investors lose money through trades because of *transaction costs* – small fees charged each time an investor buys or sells a security (Barber & Odean, 2000). Also, evidence of investor overactivity would clash with the *efficient markets hypothesis* – the theory that investors serve society by properly allocating capital to the goods and services demanded by society (Daniel, Hirshleifer, & Teoh, 2002). The most important of all consequences that would be brought to bear by evidence of over-trading, however, is the potential abandonment of the PEV model that many economists hold so dear.

As it turns out, Arrow’s conjecture is correct: over-trading is rampant in today’s markets. The simplest evidence of market overactivity is the high level of trading for the market as a whole. For instance, the average annual turnover rate for the New York Stock Exchange (NYSE) is above 75 percent (NYSE website, as cited in Odean, 2004). Additionally, economists like Robert Shiller (1981) have created models illustrating how information about changes in dividend structures – one of the key components of PEV stock valuation – is not abundant enough to explain high market activity. When Shiller presented his research to the Federal Reserve Bank in 1996, it convinced Chairman Alan Greenspan to accuse the overactive U.S. marketplace of “irrational exuberance” (Sherfin, 2000). All the available evidence suggests that within the marketplace, there is more

variation than can be accounted for by new information that changes fundamental determinants of price (Shiller, 1987).

CURRENT EXPLANATIONS FOR MARKET OVERACTIVITY

Again, if the marketplace (and, therefore, all the individual investors within it) adhered to the PEV model of stock valuation, over-trading would not occur. Instead, stock-price adjustments would result only from *information disclosure*. But since over-trading does occur, the primary focus of researchers has been to determine why people violate the rational model. At present, the quest to show why people over-trade has produced two standout hypotheses.

One hypothesis for why markets are overactive is that investors are far too confident about their decision-making capabilities (Odean, 2004). Through experimental evidence, people have long been shown to exhibit *overconfidence* – a cognitive error from a normative standpoint. For example, in a 1977 study, Fischhoff, Slovic, and Lichtenstein gave subjects a general knowledge test and asked them how sure they were of their answers. When subjects reported being 100 percent certain, they were actually only 70 percent to 80 percent correct (Fischhoff, Slovic, & Lichtenstein, 1977). Later, this cognitive error was demonstrated to hold true even when mapped onto more specific domains – like medicine and, more pertinently, finance. For instance, Kahneman and Riepe (1998) explain that subjects fall prey to overconfidence when asked to provide the following:

What is your best estimate of the Dow Jones one month from today? Next pick a high value such that you are 99 percent sure (but not absolutely sure) that the Dow a month from today will be lower than that value. Now pick a low value,

such that you are 99 percent sure (but no more) that the Dow Jones a month from today will be higher than that value. (p. 53)

Between 15-20 percent of participants calibrate this number incorrectly and find that one month from the time of their initial estimate, the Dow Jones' value is outside their confidence interval (Kahneman & Riepe, 1998).

In a 1999 paper on over-trading, Odean explains how the sort of investor overconfidence in Kahneman's and Riepe's example is capable of leading to market overactivity. He shows that one particular class of investors – those with discount brokerage accounts – exhibits patterns of overconfidence characterized by reluctance to realize losses and frequent engagement in trading even when expected returns are not lucrative enough to offset trading costs (Odean, 1999). Ultimately, investors who demonstrate such overconfidence regularly wind up selling stocks that outperform the ones they buy – their overactivity causes them to achieve worse returns than the average investor (Odean, 2004).¹

The other notable hypothesis that attempts to explain marketplace overactivity is that investors *overreact* to dramatic and unexpected events. In cognitive psychology experiments, a related phenomenon – the availability heuristic – explains people's tendency to rely on salient examples when making decisions. For instance, people in the United States tend to overestimate the number of yearly deaths by murder, while they underestimate the percentage of deaths from stomach cancer (Tong, 2003). In this example, people believe that a relatively infrequent but newsworthy event occurs more

¹ Odean also astutely points out how trading, by its very nature, is likely to appeal to an overconfident population. And, similarly, people's tendency to "overestimate the degree to which they are responsible for their own successes" probably leads to a "survivorship bias" in which successful investors grow increasingly overconfident (Odean, 2004).

often than a relatively common event that rarely draws media attention. Such inaccurate estimations – where long-term averages and other less salient data is ignored – are clear violations of Bayesian forecasting, a foundation of modern rational economic thought.

Overreaction to salient information, according to De Bondt and Thaler (1985), explains why stock markets are so overactive. They argue that the marketplace is volatile because people rely too heavily on recent, noteworthy fluctuations in stock prices rather than long-term trends. Or, in different terms, investors over-rely on dramatic and newsworthy events, which lead to “biased expectations about the future” (De Bondt & Thaler, 1990). In defense of their claim, De Bondt and Thaler cite a market trend in which “prior ‘losers’ are found to outperform prior ‘winners’” over three-year time-periods and vice versa (De Bondt & Thaler, 1985; De Bondt & Thaler, 1986). This trend implies that when investors learn one of their stocks is falling in price, they tend to overreact to that information by exhibiting a willingness to sell the stock for lower than its inherent, PEV-determined value. In the same way, the trend implies that the exact opposite pattern holds true when a stock’s price is rising. Over three years, however, investors grow to recognize the existence of such overreactions, and stocks return towards their initial prices. Still, because of people’s initial overreactions, the number of trades that take place is excessive when compared to the amount of available information about the fundamental PEV value of a stock (De Bondt & Thaler, 1985).

Challenges to Current Explanations of Market Overactivity

Overconfidence and overreaction are reasonable hypotheses to account for some overactivity in the marketplace. Each hypothesis uses an experimentally-supported violation of rational thought to explain overactivity in financial markets. Still each

hypothesis is imperfect, and even together they fail to provide full justification for market overactivity.

One flaw of the overconfidence hypothesis is its inability to explain overactivity among more than just one class of investors: those with discount brokerage accounts. Indeed, because of their risk-seeking nature, these investors may deserve blame for a significant portion of marketplace overactivity (Odean, 2004). And, undoubtedly, other classes of investors may exhibit overconfidence too. But it also stands to reason that many classes of investors might contribute to market overactivity without being overconfident. For example, it would be unsurprising if some investors are overactive because of frantic, worried attempts to “keep up with the Jones’s” portfolio. If they are indeed motivated by these concerns, these investors might trade too frequently because of a sort of under-confidence.

The reasons why overconfidence cannot be an all-encompassing hypothesis extend well beyond its inability to account for more than one class of investor. The biggest problem for overconfidence is that it only applies to certain situations. If investors are supposed to be overconfident about their decisions, one would deduce that they should be similarly overconfident about all such decisions – including those made in the past. In other words, investors ought to be overconfident about their past, present, and future purchases – not just the stocks they obtain in the here and now. Compelling evidence suggests otherwise, however, as investors tend to sell stocks that have risen. This indicates that investor overconfidence is not timeless, but short-lived (Barber & Odean, 1999).

The overreaction hypothesis, too, cannot account for all overactivity in the marketplace. One weak point of this hypothesis is that it lacks experimental defense related to the financial domain – no one has been able to isolate variables in a controlled setting to defend De Bondt's and Thaler's hypothesis. But, even if it was backed-up by experimental evidence, the overreaction hypothesis would remain in doubt because it is supported by such unusual data. First, the data is unusual because it revolves around seemingly arbitrary time frames, and second, it is unusual because it survives the process of arbitrage – the process by which securities are purchased on one market and sold in another for immediate profit from price discrepancy.

Regardless, the overreaction hypothesis' greatest drawback is that De Bondt and Thaler argue how “dramatic information” is the cause of the overreaction that leads to market overactivity. Simply put, this is not the case – research indicates that the market is volatile and overactive even in the absence of drama (Shiller, 1987). Take, for instance, the 1,673,508,243 shares that were traded Friday, April 22, 2005, on the NYSE (NYSE website). Though this date offered no unusual amount of dramatic events in the world of security-trading, it still resulted in nearly two billion shares changing hands. Most days – just like that Friday – are composed of non-dramatic information, which makes the overreaction hypothesis hard to believe as a cause of market overactivity.

A NEW EXPLANATION FOR MARKET OVERACTIVITY

Undoubtedly, despite their inherent faults, overconfidence and overreaction are still capable of explaining a portion of market overactivity. But, because of their faults, the two hypotheses cannot account for *all* overactivity in the marketplace. At least another factor, or perhaps several more factors, must be in play. This paper argues that

the most important factor ignored by previous explanations of overactivity is the following: when people are provided with information about the stock market, they make implicit assumptions about the information's meaning that lead them to over-trade.

In 1975, linguist Hebert Paul Grice gave a speech explaining how implicit assumptions affect the interpretation of conversational language. In that speech, Grice proposed the existence of four Maxims of Conversation, which essentially state that people are cooperative when they converse (the *Cooperative Principle*) (Grice, 1975). He referred to the Maxims as *Conversational Implicatures*, since they describe ways in which words implicate more than strict interpretations of their definitions may indicate (Grice, 1975).

While all four of Grice's Maxims could potentially contribute to market overactivity, two are central to this paper's argument and therefore merit some elaboration. The first Maxim that applies is the Maxim of Quantity. Essentially, it argues that the amount of information a person provides in conversation ought to be *precisely* the amount expected of them (Levinson, 1983). In other words, when people contribute to a conversation, they provide a reasonable amount of information – people do not provide more or less information than is required of them. This idea is most easily explained through an example:

Sandy: Where is Gail?

Tom: Gail is either in Minneapolis or St. Paul.

Grice's Maxim of Quantity dictates that Tom's answer will cause Sandy to make at least two inferences. First, Sandy will infer that Tom knows Gail is in one of the Twin Cities

of Minneapolis and St. Paul, and, consequently, there is no possibility of Gail being anywhere else. Second, Sandy will infer that Tom does not know more than the information he provided – Sandy will assume that Tom considers the possibility of Gail being located in one city to be just as great as the possibility of her being in the other.

The second Gricean Maxim relating to this paper's argument about investor decision-making is the Maxim of Relation. This Maxim dictates that being relevant is central to orderly conversation (Levinson, 1983). More specifically, this Maxim reflects the idea that people are expected to avoid saying falsities and other things for which they lack adequate evidence. Take, for example, the following exchange (Jannedy, Poletto, & Weldon, 1994, 237):

Sandy: Is Gail dating anyone these days?

Tom: Well, she goes to Cleveland every weekend.

According to Gricean Implicature, Sandy will infer that Gail is dating someone in Cleveland, because she assumes that Tom's answer is relevant to her question. Additionally, Sandy will not consider a scenario in which Gail goes to Cleveland every weekend for non-dating purposes, because Tom's language implicates against such an alternative.

Since Grice's speech in 1975, some psychologists have used the Maxims of Conversation to explain results in decision-making experiments. Hilton's research, for example, shows that contextual information affects judgments of causal explanations (Hilton & Erb, 1996). In other words, Hilton claims, "a good explanation has to be more than just true or likely to be true. It has to be informative and relevant" (Hilton & Erb,

1996, 274). Science typically only emphasizes the importance of truth in explaining a cause. But, according to Hilton's research, most people consider truth a necessary yet insufficient requirement for accepting a causal explanation – in addition to the truth, people need an explanation to be relevant and informative in order to believe it.

Framing effects are also at least somewhat impacted by Gricean Implicature. McKenzie and Nelson (2003) made a case for the Gricean Maxims of Relevance and Quantity causing people to violate rational models through framing effects. He created a paradigm in which he either filled or lowered cups of water (to a halfway point) in the presence of participants. Afterward, when asked to describe the cups of water, participants chose frames that reflected whether water had been filled into or poured out of the cups (participants framed cups as “half-full” or “half-empty,” respectively). Those results led McKenzie to argue, “reference points influenced speakers’ choices between logically equivalent frames” (McKenzie & Nelson, 2003). And since listeners recognize that frames are chosen based upon implicit information conveyed within explicit content, they are sometimes led to make irrational decisions through framing effects.

This paper contends that Gricean Implicature can explain decision-making in another realm: financial markets. In other words, when people receive information about the marketplace, they believe information implicates more than it says outright. By this logic, people are overactive in financial markets because they make systematic (but erroneous) assumptions that pieces of information are reasonable, relevant and require action.

While Grice's theory dealt solely with oral conversation between two or more people, this paper contends that people make similar implicit assumptions about other

types of communication. In other words, Grice's Cooperative Principle carries over into other domains, like newsprint or television. The work of Hilton and McKenzie suggests that such a contention is more than reasonable – in psychology experiments, results indicate that implicit assumptions are made in many more communicative domains than just spoken conversation. Similarly, in Clark's (1993) book "Using Language," he argues that all methods of communication (including, but not limited to, speech) are forms of joint actions between two or more people (Clark, 1996, as cited in Walker, 1996). In doing so, Clark offers support for the idea that implicit assumptions made through any form of communication are capable of leading to action. As a consequence of these findings and theories, this paper will operate under the assumption that people make Gricean inferences about all types of information – not just language.

In the context of the stock market, Grice's Maxim of Quantity dictates that whenever a person encounters information about the marketplace, the person assumes said information is neither more precise nor less precise than necessary. Invoking the Maxim of Quantity could regularly lead to market overactivity. When provided with imprecise information, adhering to the Maxim could lead people to wrongly conclude that the information is of an appropriate quantity. Examples of this sort of scenario are not hard to come by; having seen, heard, or read information about several straight quarters of rising profits in the citrus industry, an investor might use this assumed-to-be-precise information as rationale for purchasing stock in an orange-juice company. In this instance, however, making that Gricean inference would be regrettable if weather-forecasters predicted a big hurricane for Florida during the upcoming orange-growing season.

Clearly, the orange-juice investor's story is a very simplified example of how the Maxim of Quantity can impact investor decision-making. In that example (and in others as well), the investor may appear to make a rash decision based on too little information. It must be stressed, though, that the very nature of the marketplace – an arena in which being “ahead of the crowd” is associated with huge gains – frequently leads to action being taken on the basis of whatever information is at hand. Just a simple web search on Google will result in hundreds of websites that offer “investment strategies” to stay “ahead of the crowd”. In other words, because quick decision-making can lead to great rewards in the stock market, investors are likely to let inferences based upon the Maxim of Quantity cause too many trades.

The Gricean Maxim of Relation, in the context of the stock market, is capable of similar effects on investors. When investors encounter information about a stock, they assume such information is relevant to the stock's price (as the Maxim of Relation dictates). Consequently, investors fail to consider the possibility that much available information is irrelevant. Understandably, this tendency to interpret information as relevant could cause overactive trading. Any time an investors sees, hears, or reads information about increased sales, decreased profits, or steady dividends for a stock, the implied relevance of that information will make the investor inclined to trade it.

At the very surface, the hypothesis that investor reliance on the Maxims of Quantity and Relation leads to market overactivity seems valid. But, this paper concedes that Gricean Implicature is not the only factor at play when investors are overactive. Although both overreaction and overconfidence are is incapable of being solely

responsible for market overactivity, they still contribute to the irrationally high number of trades made by investors.

For instance, in the following example, overconfidence, overreaction, and Gricean Implicature were all involved in actual events. In the year 2000, Palm Pilot spun off from its parent company, 3Com. At the time of the spin-off, 5 percent of Palm Pilot shares were released to the public, while the remaining 95 percent were possessed by 3Com (Malkiel, 2003). As such, every share of 3Com indirectly represented 1.5 shares of Palm Pilot. But, in a clear violation of PEV, trading of Palm Pilot shares was extremely overactive, and Palm Pilot shares grew to be worth \$95 while 3Com shares traded at only \$82 (Malkiel, 2003). The overactive trading in this instance produced an obvious conflict, since the value of Palm Pilot shares implied that that 3Com shares should have been worth at least \$137 (1.5 times the price of a share of Palm Pilot).

The Palm Pilot example applies to this paper's hypothesis because it is a case where overactivity and PEV-violating should be attributed to Gricean Implicature as well as to overconfidence and overreaction. In this case some overactivity occurred because knowledgeable, perfectly informed investors were overconfident in their own abilities to sell shares of Palm Pilot for a profit before the "bubble burst." Simultaneously, another cause of overactive trading in this example was that some investors overreacted to dramatic information about the high volume of Palm Pilot and 3Com shares being traded.

But consider the role that Gricean Implicature too might have played in this example. In 2000, at the time of the Palm Pilot example, many investors were presented with information about the new wonder-device. Indisputably, some of those investors made purchases after inferring that the amount of information they received was precise

when, in fact, they lacked valuable information about 3Com's holdings of Palm Pilot stock. Likewise, some investors must have assumed all the available information was relevant to their own portfolios. As they read, heard, and saw how the Palm Pilot was a life-changing device, they contributed to the market's overactivity by trading shares of Palm Pilot.

COUNTERARGUMENTS

Gricean Implicature almost certainly has some effect on investor decision-making. The foundation of this argument is capable of extending well beyond financial markets – in many facets of life, people make decisions through inferences about information. This paper's goal, however, was to show that investors violate the PEV model of stock valuation at least in part because they make erroneous assumptions about information. In order to fully reach that goal, four counterarguments need to be addressed.

The first counterargument to this paper is that it conflicts with the *status quo bias* – an experimentally-supported violation of rational thought in which people have an irrational preference for keeping the status quo. It ought to be pointed out that this counterargument does not conflict with this paper's hypothesis per se – rather, it conflicts with the marketplace phenomena of overactivity. Even so, the status quo bias merits discussion. Most experiments defending this bias have been mapped onto individuals' desires to keep objects that they already own – no research has shown that the status quo bias impacts peoples' trading patterns. In fact, evidence from the marketplace shows just the opposite: people are overactive traders, consistently unhappy with the status quo (Shiller, 1987). Consequently, the argument that market overactivity conflicts with the

status quo bias can be addressed in one of two ways. Either the status quo bias does not apply to the domain of security trading, or, alternatively, peoples' thoughts and actions when trading stocks are strong enough to overcome the status quo bias.

A second counterargument is that Gricean Implicature cannot explain inferences in communicative domains beyond oral conversation. Undoubtedly, this was Grice's original intention – his theory of Implicature explains how people are cooperative when they speak. But McKenzie (1993) and Hilton (1996) have already shown how identical inferences are made about other types of information. Conspiracy theories aside, it seems that arguments like Clark's (1996) are correct: most means of providing information have an underlying principle of cooperation. For example, in the newspaper and on the Internet, readers expect writers to be relevant and cooperate by avoiding various untruths. The same goes for television viewers' expectations of television production. This paper assumed that Gricean Implicature applies to more domains than just language because people assume cooperation whenever they communicate, not just when they speak.

A third counterargument of the ideas presented in this paper questions the validity of Grice's Maxims. Some theorists claim that Gricean Implicature is non-existent, or at least flawed (Bach, 2000). Admittedly, there are certainly instances in which people flout Grice's Maxims – like when people tell lies, use sarcasm, or otherwise fail to say precisely what they mean. Partially because of such instances, an entire field of study is devoted to Gricean Implicature and other theories of how people comprehend and produce communicative acts. The field is known as *pragmatics*, which implies that theories like Grice's are practical and necessary for orderly communication. Indeed,

Grice said: “one of my avowed aims is to see talking as a special case or variety of purposive, indeed rational, behavior” (Grice, 1975, 47). On that note, it is impossible to dismiss this counterargument – that Grice’s Maxims might be flawed – in just a few pages. Rather than attempt to do so, this paper will admit that Grice’s Maxims do not always hold true. However, the Maxims do hold true in the examples in this paper. And, undeniably, the Maxims are also applicable in similar examples – many of which relate to the marketplace. Accordingly, the Maxims, although they may be flawed, must impact investor overactivity.

Finally, one last counterargument needs to be addressed. This final counterargument relates to the larger picture of finance. This paper operates under the premise that, in a perfect world, PEV would be able to explain investor activity. In other words, this paper assumes investors should value securities rationally (follow PEV), even if they fail to do so at present. But, in light of findings in behavioral finance, some people do not consider PEV to be a realistic model (Summers, 1985) – and, consequently, those same people might take issue with this paper. This counterargument will be addressed much like the last one. That is to say, yes – people who think PEV is an unrealistic model might be correct. But if that is case, this paper still significant because it explains one reason why it is unreasonable to assume investors should follow such a model.

Each of these counterarguments is deserving of further examination. All four counterclaims – even the last two, which are rooted ideological debates – present criticism that will likely be used in future attempts to refute this paper’s hypothesis. But, in addressing them here, this paper has tried to acknowledge the presence and importance

of such counterarguments while maintaining confidence in its own claim: Gricean Implicature is a cause of investor overactivity.

DISCUSSION

As far as psychology-related contributions to behavioral economics go, this paper took an atypical approach. Usually, psychologists present experimental evidence of rational-model violations, and then, later, they map the evidence onto examples of irrationality in real-world economic activities. This paper did the reverse. Rather than find experimental evidence for how people are irrational and then illustrate how such evidence carries over to economics, this paper rooted itself in evidence of irrationality from the marketplace and attempted offer psychological insight to explain that irrational activity.

Having taken an atypical approach to explaining how people violate a rational model, this paper presently lacks experimental evidence in defense of its hypothesis. Undoubtedly, experimental support would strengthen this paper's case significantly. It is no small challenge, however, for a researcher to create a paradigm in which Gricean Implicature could be definitively shown as *the* cause of market overactivity. In most instances (like the Palm Pilot example), market overactivity is the result of several factors. Hence, it is difficult to tease Gricean Implicature apart from other causes of market overactivity. Nevertheless, it is possible to create a paradigm in which Gricean Implicature can be isolated as a factor that contributes to market overactivity. Such a paradigm will no doubt require creative manipulation of other variables (in order to avoid contributions from overreaction and overconfidence) to determine whether people make Gricean inferences in an experimental setting.

If an experiment could show this paper's hypothesis to be true in practice as well as in theory, the implications would be far-reaching. Clearly, such evidence would affect the field of economics since it would provide yet another reason to avoid strict interpretations of rational models of economic thought. And, similarly, experimental results would – at least to some degree – further discredit the hypotheses of overconfidence and overreaction as explanations of market overactivity. Additionally, experimental evidence supporting this paper's hypothesis could lead to explorations of Gricean Implicature as an explanation of other psychological phenomena, like peoples' use of heuristics.

But, if experimental evidence supports this paper's hypothesis, the farthest-reaching implications would relate to public policy. As a reminder, if people traded stocks in a rational manner (by following PEV), over-trading would not take place, and stock prices would adjust only because of specific information disclosure. But this paper argues that information disclosure in the real-world – more specifically, the Gricean inferences people make based upon available information – causes violations of that rationality. If experimental evidence shows that people rely on Gricean Implicature in practice just as they do in theory, the sorts of information available to investors would need to be carefully examined.

The disclosure of some information (the speculative, hearsay sort) can hardly be controlled. But, disclosure of another dimension of information (the cold, hard fact sort) is already subject to intense rules and regulations. The Securities and Exchange Commission (SEC), the governing body that essentially oversees stock markets in the United States, is driven by the goal of giving all investors access to the same factual

information about the marketplace. In an effort to achieve its goal, the SEC enforces rules that require public companies to disclose specific information to the public, like, for instance, quarterly earnings reports (SEC website, 2005).

At present, the SEC claims, “only through the steady flow of timely, comprehensive and accurate information can people make sound investment decisions” (SEC website, 2005). But if inferences based upon available information cause people to make unsound investment decisions, the role of the SEC ought to be reexamined. Current SEC legislation fails to acknowledge the fact that many investors do not access such “timely, comprehensive, and accurate information” directly from reports filed with the SEC. In different terms, lots of investors receive cold, hard facts through other sources – like investment advisors, newspapers, and television. These secondary sources, despite the large impact they have on many investors’ decisions, are hardly subject to any requirements regarding how they pass down SEC information to investors.² As such, they ways in which those sources provide information could be – knowingly or unknowingly – causing investors to make Gricean Inferences that result in over-activity.

Even prior to this paper’s argument about the effects of Gricean Implicature on investor decision-making, some experts already questioned the authenticity of the SEC’s role, claiming, “[SEC required] disclosure alone fails to address the needs of investors operating under a dense cloud of behavioral illusions” (Choi & Pritchard, 2003). Indeed, evidence from the marketplace indicates that investors “do not simply misconstrue the

² Investment advisers, more so than the media and other sources of secondary information, are subject to regulations concerning how information is disclosed to investors. For instance, according to section 206 of the Investment Advisers Act (1940), investment advisers are prohibited from both engaging “in any act, practice, or course of business which is fraudulent, deceptive, or manipulative” and failing to disclose information about investments that could “act as principal for [their] own account[s].” Nevertheless, even after the National Securities Markets Improvement Act of 1996 (SEC website, 2005), the regulations regarding how investment advisers pass down information are vague and limited.

precision of their information, but its very meaning” (Odean, 2004). In other words, by all indications, the SEC’s current rules and regulations fail to protect investors from their own cognitive errors.

According to data from the marketplace, something leads investors to misinterpret the information that is available to them, which is one reason why they over-trade. This paper has laid out an argument proposing how that “something” is actually a complex interplay between use of Gricean Implicature and other cognitive heuristics and biases. If this paper’s hypothesis can be proven through an experiment, it will necessitate a careful cost-benefit analysis regarding the role of the SEC and its regulations surrounding information disclosure to the public. Depending on the results of that cost-benefit analysis, any number of actions might be taken. Two potential actions warrant mention. First, the SEC, rather than attempting to provide “timely, comprehensive, and accurate information,” might better serve investors by leaving information-disclosure decisions at the discretion of individual companies. Or, on the contrary, it might be determined that regulations should be imposed about how information gets passed down from the SEC to individual investors. Whatever action is taken, it will benefit investors if it reduces the erroneous assumptions they make about available information.

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