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Market Madness? The Case of *Mad Money*

Joseph Engelberg
Kenan-Flagler Business School, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599, joseph_engelberg@unc.edu

Caroline Sasseville
BlackRock, San Francisco, California 94105, caroline.sasseville@blackrock.com

Jared Williams
Smeal College of Business, Pennsylvania State University, University Park, Pennsylvania 16802, jmw52@psu.edu

We use the popular television show *Mad Money*, hosted by Jim Cramer, to test theories of attention and limits to arbitrage. Stock recommendations on *Mad Money* constitute attention shocks to a large audience of individual traders. We find that stock recommendations lead to large overnight returns that subsequently reverse over the next few months. The spike-reversal pattern is strongest among small, illiquid stocks that are hard to arbitrage. Using daily Nielsen ratings as a direct measure of attention, we find that the overnight return is strongest when high-income viewership is high. We also find weak price effects among sell recommendations. Taken together, the evidence supports the retail attention hypothesis of Barber and Odean (Barber, B., T. Odean. 2008. All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. *Rev. Financial Stud.* **21**(2) 785–818) and illustrates the potential role of media in generating mispricing.

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1. Introduction

Financial economists have become increasingly interested in the relationship between attention and asset prices. This interest is motivated by examples of large changes in equity prices that appear to be driven by attention alone. For example, Huberman and Regev (2001) document the case of cancer drug company EntreMed, whose stock price tripled based on a favorable front-page article in the *New York Times* in May of 1998 even though all the information in the article had been released 12 months earlier in the journal *Nature*. Retail investors are unlikely to read *Nature*, but are likely to read headline articles in the *New York Times*. Barber and Odean (2008) argue that such attention shocks to retail investors cause temporary price pressure because retail buyers are unlikely to be sellers.

Although anecdotes suggest that retail attention can affect returns and there exists a theory to explain its effect (Barber and Odean 2008), empiricists face a substantial problem when linking retail attention to prices: we rarely observe attention directly. This paper, however, considers a laboratory in which retail traders trade, and we can measure their attention directly. We analyze the market's reaction to stock recommendations of Jim Cramer, host of the CNBC show *Mad Money*, between June 2005 and February 2009.[1]

We have three main findings. First, equal-weighted portfolios based on Cramer's recommendations—but formed *before* the recommendations are made—have no statistically detectable, long-run alpha. *Mad Money* typically airs at 6:00 P.M. EST, and portfolios that buy recommended stocks at 4:00 P.M. (more than two hours before they are recommended) perform no better than the market when held for 50, 150, or 250 trading days (one year).

Second, even though Cramer's recommendations do not appear to be informative in the long run, there is a strong short-run effect: the average overnight abnormal return following Cramer's buy recommendations is 2.4%, which corresponds to an average change in market capitalization of \$77.1 million.[2]

[1] Although our paper is the first to examine the price response to stocks picked on *Mad Money*, Neumann and Kenny (2007) repeated the analysis that was in an early draft of this paper and included sell recommendations. Also, Keasler and McNeil (2008) analyzed Cramer's recommendations to test whether the market's response to his recommendations is due to information or price pressure. By looking at the spike-reversal pattern and the bid-ask spreads following his recommendations, they conclude that the market's response is due to price pressure rather than new information. Although subsequent papers have confirmed the spike-reversal pattern in returns that we find in this paper, none have considered the role of investor attention (TV viewership), the role of contemporaneous news, the role of arbitrageurs (via short selling and rebate rates), or the timing of the market's response in the after-hours market that we consider here.

[2] This computation is based on abnormal returns, which are defined as the stock's returned minus its Fama-French matched portfolio. See §2 for more details on the matching methodology.

Given that there is no long-run effect, this implies that the short-run effect must be temporary. It is. Long portfolios formed the day *after* Cramer has made his recommendation earn an annualized alpha of −9.98% at the 50-day horizon, −6.15% at the 150-day horizon, and −3.2% at the 250-day horizon. Among the quintile of stocks that had the highest overnight return, long portfolios formed the day after Cramer's recommendation earn an annualized alpha of −29.54% at the 50-day horizon, −16.66% at the 150-day horizon, and −8.91% at the 250-day horizon.

The first two findings provide evidence of media-induced mispricing: stocks recommended on *Mad Money* have prices that immediately become too high. The size of the overnight mispricing, however, should be related to two key factors: (1) the amount of attention paid to a recommendation and (2) the market frictions that prevent arbitrageurs from correcting the mispricing. Therefore, our final set of tests considers the cross section of recommendations and relates the size of the mispricing to the size of the attention shock and the limits to arbitrage.

First, we show that less prominent buy recommendations on the show have a smaller overnight response. Stocks recommended during the "lightning round" segment on *Mad Money* shows with many other recommendations have the smallest overnight returns.

Our most direct tests of the attention hypothesis come when we relate viewership to overnight mispricing. Using proprietary viewership data from Nielsen Media Research, we find a positive relationship between total viewership and overnight return. A one-standard-deviation increase in total viewership leads to an additional 30 bps in overnight abnormal return. Moreover, when we divide total viewership by income we find a strong positive relationship between high-income viewership and overnight return, but no relationship between low-income viewership and overnight return. A one-standard-deviation increase in the number of high-income households watching the show increases abnormal overnight returns by 34 bps, whereas a one-standard-deviation increase in poor viewership has no effect. Our results suggest that the link between the exposure of public information and the market response may be more complex than previously thought. In particular, the results suggest that who observes an event may be just as important as how many do.

When we consider limits to arbitrage (e.g., Pontiff 1996, Shleifer and Vishny 1997), we find the largest overnight returns in the set of stocks that are hardest to arbitrage: small, illiquid stocks with high idiosyncratic volatility. Moreover, for a subset of our sample we are able to obtain short-selling data from a set of securities lenders. Given the fact that the large overnight returns we observe eventually reverse, an arbitrageur would like to take a short position in the recommended stocks. Using proprietary lending data, we find that stocks with short-sale constraints experience the largest overnight return.

Our final test of the Barber and Odean (2008) attention hypothesis considers sell recommendations. Barber and Odean (2008) argue that there should be a strong asymmetric effect with respect to buying and selling following an attention shock. Because retail traders rarely short, we should see considerably more buying than selling following an attention shock because selling would require ex ante ownership, whereas buying does not. The predicted asymmetry is precisely what we find. Whereas first-time buy recommendations have a large overnight return of 2.4%, first-time sell recommendations have overnight returns that are smaller in magnitude (−0.29%). There is also no detectable postrecommendation trend in sell-recommendation returns. The evidence supports the view that an attention shock in the form of a sell recommendation has little effect on returns, perhaps because retail traders rarely short.

Taken together, our findings contribute to several literatures. The first is a growing literature that considers the relationship between investor attention and prices. Whereas Huberman and Regev (2001) focus on one stock, Tetlock (2008) considers "repeat news stories" and finds differential return patterns based on whether news stories are repeated in the media. DellaVigna and Pollet (2009) find a weaker response to earnings announcements on Fridays, when presumably fewer traders are present. A shortcoming in each of these papers is the identification strategy. Although the papers infer that asset prices around information events are partially determined by the number of traders who observe the events, none of these papers can directly measure how many traders observe the public information. Authors of earlier studies use proxies for this attention, including trading volume (e.g., Gervais et al. 2001, Barber and Odean 2008, Hou et al. 2008), the existence of news (Barber and Odean 2008), firms' advertising expenses (Grullon et al. 2004), extreme returns (Barber and Odean 2008), and up/down markets (Hou et al. 2008). Although each of these measures may be related to attention, they also capture other effects. For example, the most popular measure of attention—trading volume—is also a popular measure of disagreement in the literature (Chen et al. 2001). Our paper is different. Because *Mad Money* is on television, we can measure the TV viewership that witnesses these recommendation events and draw a direct link between the number of traders who observe the event and the consequence for asset prices.

Second, our setting is ideal for testing whether costly arbitrage affects the level of mispricing. As Pontiff (1996) notes, there are two types of arbitrage costs: transaction costs and holding costs. We use size and illiquidity to proxy for transaction costs—we assume that small, illiquid stocks have the highest transaction costs. Idiosyncratic volatility and the difference between the federal funds rate and the stock's rebate rate (this difference, or *Specialness*, is a measure of short-selling costs) are our measures for holding costs. We find that small, illiquid stocks with high idiosyncratic volatility and high *Specialness* experience the highest abnormal overnight returns. These findings strongly support the notion that arbitrage costs do in fact affect asset mispricing.

Third, our findings contribute to the growing literature that analyzes the media's causal effect on investor behavior (e.g., Reuter and Zitzewitz 2006, Engelberg and Parsons 2011). As Engelberg and Parsons (2011) point out, it is difficult to isolate the effect of media on investors. Our setting is particularly advantageous because the "media effect" happens at a well-documented moment in time. This allows us to search for any contemporaneous news announcements to be reasonably sure that the *Mad Money* recommendation was the only effect on investors (§4). In fact, when we can isolate the recommendation as the only event, we find an even stronger pattern of spike/reversal.[3] Consistent with the conclusions in Huberman and Regev (2001), Barber and Loeffler (1993), and Liu et al. (1990), the evidence here suggests that media endorsements of particular stocks can induce short-term, temporary mispricing in those stocks.

The paper is organized as follows. In §2 we describe *Mad Money* and some basic characteristics of the stocks Cramer tends to recommend. In §3 we provide evidence that Cramer's recommendations do not constitute value-relevant information. We show that long-term portfolios formed before his recommendations have no statistically detectable alpha. In §4 we show that even though his recommendations have no long-term value, there is a strong overnight response and subsequent reversal. Section 5 considers the characteristics of stocks where this overnight mispricing is likely to be greatest: stocks that receive more attention and stocks with the greatest limits to arbitrage. Section 6 considers sell recommendations and finds the asymmetric return response as predicted in Barber and Odean (2008). Section 7 concludes.

2. Recommendation Data

Mad Money is a popular financial television show that airs every weekday evening on CNBC. Its host, Jim Cramer, is a former hedge fund manager who has been described by the popular press as "hyperactive," "hyperkinetic," "bellowing," "blustery," and that "he resembles a cross between a pro wrestler and an air traffic controller."[4] During each episode, Cramer provides stock recommendations to the sound of bulls roaring, cash registers ringing, bowling pins crashing, and a slew of other sound effects.

Our recommendation data consist of the 1,149 first-time buy recommendations made by Cramer on his television show *Mad Money* between July 28, 2005, and February 9, 2009. These 1,149 recommendations are taken from a website that tracked Cramer's recommendations: YourMoneyWatch.com[5] YourMoneyWatch.com is unaffiliated with Cramer or *Mad Money*.[6] We restrict attention to first-time recommendations to maximize the likelihood and impact of an attention shock. A stock that is recommended multiple times in a week should produce the largest attention shock at its first recommendation.

Of these 1,149 stocks, 949 are ordinary common shares of American stocks. We are able to match 847 of these recommendations to size and book-to-market quintiles based on NYSE stocks. The size of each stock is computed at the end of June, and the book-to-market at date t is defined as ((BE)/(market)), where BE is the book equity at the end of the latest fiscal year ending before the latest June preceding date t, and "market" is defined as the size of the company in the December preceding the latest June preceding date t.[7]

[3] This is partially due to the positive correlation between size and the likelihood of news coverage (Chan 2003, Vega 2006, Fang and Peress 2009, Engelberg 2008, Tetlock 2008).

[4] *Sources*. Lemire (2005), Arends (2006), and Kadlec (2005).

[5] We downloaded the data from YourMoneyWatch.com in February of 2009. Since then, YourMoneyWatch.com has gone offline.

[6] Another website, TheStreet.com, also tracks Cramer's recommendations. The two websites heavily overlapped, but there were a few discrepancies. These disagreements probably arise because of the subjective nature of deciding what constitutes a buy recommendation. For example, Cramer sometimes gives conditional recommendations (e.g., "wait three days, then buy") or uses noncommittal language (e.g., "I like the stock"). Of these websites, YourMoneyWatch.com appears to have the stricter standard of what constitutes a buy recommendation. We are not concerned by the disagreement between the sites because our results are qualitatively similar regardless of which site we use.

[7] More formally, book equity is defined as shareholder equity minus preferred stock plus investment tax credit (TXDITC) minus postretirement benefit assets (PRBA). If total stockholder equity (SEQ) is nonmissing, we set shareholder equity to equal it. Otherwise, if total common/ordinary equity (CEQ) and total preferred stock (PSTK) are nonmissing, we set shareholder equity to be the sum of these variables. Otherwise, we define shareholder equity as total assets (AT) minus total liabilities (LT) minus minority interest (MIB). We define preferred stock to be the redemption value of preferred stock (PSTKRV) if this is nonmissing. Otherwise, we define it to be the liquidating value of preferred stock (PSTKL). If both PSTKRV and PSTKL are missing, we define preferred stock to be total preferred stock (PSTK).

Table 1 Summary Statistics

	Number of observations	Mean	Standard deviation	Minimum	20th percentile	Median	80th percentile	Maximum
Total Viewership	386	195.982	51.607	66	154	192	234	650
Low-Income Viewership	386	61.479	22.977	9	43	60	78	171
High-Income Viewership	386	134.503	44.885	20	97	136	166	479
Size	826	11.866	29.885	0.013	0.587	2.478	12.660	365.839
Book-to-Market Ratio	826	0.414	0.590	−9.689	0.185	0.349	0.599	9.103
50-*Day CAR*	826	0.084	0.167	−0.437	−0.034	0.062	0.185	1.541
Specialness	271	0.549%	1.537%	−0.110%	−0.031%	0.113%	0.423%	12.508%

Notes. Total Viewership is the total number of households (in thousands) viewing the 6:00 P.M. (EST) showing of *Mad Money*. *High-* (*Low*)*-Income Viewership* is the number of households earning more than (less than) $60,000 per year viewing the 6:00 P.M. (EST) showing of *Mad Money*. *Size* is the market cap, in billions USD, on the last trading day prior to the recommendation. *Book-to-Market Ratio* is defined in §2. The variable 50-*Day CAR* is the cumulative abnormal return in the 50 trading days before the recommendation is made (including the day of the show). *Specialness* is the average difference between the federal funds rate and the rebate rate between event time days −5 and −34.

Of the remaining 847 recommendations, 19 were made on days for which we lack viewership data from Nielsen, and CRSP lacked opening price information for two of the stocks on the day following the recommendation. Our final sample consists of the remaining 826 recommendations made between July 28, 2005, and February 6, 2009.

Relative to stocks in the NYSE, our sample of recommendations is composed of large stocks with low book-to-market ratios. Of the stocks, 238 (28.8% of the sample) lie in the largest quintile based on NYSE cutoff values, and 163 (19.7%) lie in the smallest quintile. As for book-to-market ratios, 305 of the stocks (36.9% of the sample) lie in the lowest quintile based on NYSE cutoff values, whereas only 81 (9.8%) lie in the highest quintile.

Cramer also tends to recommend recent winners. We sort all the stocks in the CRSP universe (with CRSP share codes equal to 10 or 11) into deciles based on their prior 12-month returns. Of Cramer's recommendations, 148 (17.9%) lie in decile 10 (the "winners" decile), and 153 (18.5%) lie in decile 9. These two deciles contain more recommendations than any of the other eight deciles. The least populated momentum deciles are decile 1 ("the losers"), with 19 recommendations (2.3%), and decile 2, with 39 recommendations (4.7%).

We report summary statistics on the size, book-to-market, and 50-day prior cumulative abnormal return for our recommendations sample in Table 1.

3. *Mad Money* and Long-Run Returns

Much of our analysis of the return phenomena surrounding the *Mad Money* recommendations will be guided by the kind of information disseminated on the show. If *Mad Money* recommendations are value relevant, then our analysis of the attention paid to this value-relevant information should focus on the speed of incorporation of this value-relevant information into prices. If the recommendations are noise and lead to noise trading, then our analysis should focus on the interplay between noise traders and smart money and its consequences for asset prices.

Therefore, the point of departure for our analysis is to look for evidence of value-relevant information in *Mad Money* recommendations. We do this by forming portfolios that go long *Mad Money* recommendations hours before those recommendations are made. Specifically, *Mad Money* airs at 6:00 P.M. (EST) and we go long *Mad Money* recommendations at the market close, 4:00 P.M. (EST). By looking at long-term returns with portfolio formation before the recommendation we can answer the following question: How would an investor have fared in the long run had he owned a portfolio of *Mad Money* recommendations before the short-term effects from the recommendations themselves?

If the recommendations contained value-relevant information not already impounded in prices, we would expect positive, abnormal returns from such a portfolio. We find none. Table 2 considers long-only daily calendar-time portfolios that hold Cramer recommendations for 50, 100, 150, 200, and 250 days (one year) through June 30, 2009. We regress the excess return from these equal-weighted portfolios on the market excess return in panel A and the standard four factors in panel B. We find no statistically detectable alpha and, in fact, find a negative alpha in several specifications. For example, the intercept from a market (four-factor) model that held Cramer stocks for 100 days is −0.43 bps per day. An investor who started with $1 on July 28, 2005, and followed the 200-day strategy—which has an estimated beta of almost exactly 1—would have had $0.80 on June 30, 2009. If he had invested $1 in the market, he would have had $0.83.

Table 2 Before-Recommendation Portfolio Returns

	Hold 50 days	Hold 100 days	Hold 150 days	Hold 200 days	Hold 250 days
			Panel A: Market model		
Intercept	0.104	−0.427	−0.336	−0.163	0.990
	[3.882]	[3.208]	[2.249]	[1.902]	[1.729]
MKT–RF	0.893***	0.882***	0.954***	1.004***	1.022***
	[0.046]	[0.035]	[0.028]	[0.023]	[0.020]
Observations	939	987	987	987	987
R-squared	0.6062	0.6773	0.8334	0.8859	0.9067
			Panel B: Four-factor model		
Intercept	0.287	0.049	−0.144	−0.095	1.008
	[3.463]	[2.754]	[1.858]	[1.492]	[1.271]
MKT–RF	1.062***	1.055***	1.047***	1.065***	1.068***
	[0.045]	[0.026]	[0.023]	[0.020]	[0.015]
SMB	0.589***	0.496***	0.517***	0.529***	0.542***
	[0.105]	[0.059]	[0.046]	[0.038]	[0.031]
HML	−0.016	−0.107	−0.075	−0.074*	−0.064*
	[0.118]	[0.071]	[0.050]	[0.042]	[0.035]
MOM	0.332***	0.293***	0.143***	0.077***	0.051***
	[0.062]	[0.043]	[0.030]	[0.021]	[0.017]
Observations	939	987	987	987	987
R-squared	0.6857	0.7581	0.8849	0.9294	0.9493

Notes. The table presents regression results when daily, calendar-time portfolio excess returns are regressed on standard factors. Portfolio returns are calculated from equal-weighted portfolios with returns reported in basis points. Portfolios go long *Mad Money* recommendations at the market close *before the recommendations are made*. Stocks stay in the portfolio for 50, 100, 150, 200, and 250 days in columns 1, 2, 3, 4, and 5, respectively. Panel A presents regression results when the calendar-time portfolios are regressed against one factor: the excess market return. Panel B presents regression results when the calendar-time portfolios are regressed against the standard four factors. All daily factor returns are taken from Ken French's website. Standard errors are in brackets.

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

4. Overnight Returns and Reversals

In the previous section we found no evidence of long-run profits from *Mad Money* recommendations. Investors would have been just as well off holding the market portfolio than holding a portfolio of *Mad Money* stocks formed hours before the recommendation took place. If *Mad Money* recommendations are indeed uninformative, we should expect no response from fully rational investors. On the other hand, Barber and Odean (2008) argue that individual investors are not fully rational and will be net buyers following an attention shock even when the information they are attentive to is uninformative or stale.

To disentangle the two hypotheses, we begin by analyzing the overnight returns following Cramer's recommendations. We define the overnight return as

$$OR_{i,t} = \frac{\text{open price}_{i,t+1} - \text{closing price}_{i,t}}{\text{closing price}_{i,t}},$$

where t is the day of Cramer's recommendation of stock i, and $t+1$ is the first trading day following the recommendation.

We define a stock's abnormal overnight return (*AOR*) as the difference between its overnight return and the average of all stocks in the CRSP database in the stock's size and book-to-market quintile. Because *Mad Money* airs at 6:00 P.M. (EST), the recommendations are not made public until after the market closes on the day it is recommended. Hence, the average overnight abnormal return is a measure of the market's reaction to Cramer's recommendation.

Table 3 contains summary statistics concerning the average overnight abnormal return following Cramer's recommendations. The size of the overnight returns is substantial, with an average of 2.4%, which corresponds to an average change of \$77.1 million in market capitalization. Given the median *AOR* is 1.18% it is clear that the larger mean is driven by some particularly large *AOR*s (maximum = 32.8%).

There are three pieces of evidence to suggest that these large returns are driven by the *Mad Money* show. First, the average overnight returns are abnormal relative to size and book-to-market benchmarks. Market news may come out after hours, but the returns we find are much higher than the benchmark returns over this period. In other words, the positive average overnight returns we find are not driven by positive "market news" released overnight during this period.

Second, it is possible that Cramer bases his recommendation on current news events for particular stocks, and it is the reaction to that news—not

Table 3 Abnormal Overnight Returns With and Without News

	Number of observations	Mean (%)	Standard deviation (%)	Minimum (%)	20th percentile (%)	Median (%)	80th percentile (%)	Maximum (%)
All Recommendations	826	2.405	3.696	−10.465	0.151	1.179	3.963	32.809
Recommendations with News	362	1.880	3.215	−4.973	0.060	0.729	3.047	20.182
Recommendations without News	464	2.815	3.987	−10.465	0.233	1.675	4.563	32.809

Notes. We report statistics on the abnormal overnight returns following Cramer's buy recommendations. Our sample consists of the 826 first-time recommendations Cramer issued between July 28, 2005, and February 6, 2009. Abnormal overnight returns are defined as the difference between the overnight return of the recommended stock and the average overnight return in the stock's size and book-to-market matched portfolio. The *Recommendations with News* sample consists of the stock recommendations for which there was a (non-Cramer related) news article appearing in Factiva during the three-day window surrounding the recommendation date. The *Recommendations without News* sample consists of the other recommendations.

to the recommendation that follows it—that causes the abnormally high return. For example, if Cramer always made buy recommendations on days in which firms announce positive earnings after hours, we would observe large overnight returns on days in which Cramer made buy recommendations. To test whether this is driving our results, we search Factiva for any news article about the stock on the trading day before Cramer's recommendation, on the day of the recommendation, or on the day after the recommendation. We used a combination of company name, ticker, and Factiva company code to identify firms in articles. We exclude articles in which the stock was mentioned in a table (e.g., a table of mutual fund holdings or a table of the day's highest-volume stocks) and exclude articles in which Cramer's recommendation *was* the news event in the article. Summary statistics for abnormal overnight return for stocks with and without news is presented in Table 3. If anything, the average *AOR* is higher for firms that have no news surrounding the recommendation than the firms that have news (2.82% versus 1.88%). This difference is significant at 1% based on a simple t-test.

Third, the return response we observe occurs precisely when the recommendation is made. We obtain after-hours trade data for a small subset of our recommendations from an electronic communication network (ECN).[8] Our data are from NASDAQ's historical Totalview-ITCH, which records all orders and executions on the NASDAQ system for securities listed on NASDAQ, NYSE, AMEX, and regional exchanges.[9] It also includes orders and executions over INET—the Instinet Group's ECN that NASDAQ acquired in December of 2005. The ECN orders and executions are particularly relevant for our study because Cramer's recommendations are made after hours.

We display the average returns in the after hours of the days of Cramer's recommendations in panel A of Figure 1. The price at each time (in multiples of 30 minutes) is defined as the price of the last trade on the ECN prior to that time. The base price for the return calculations is the price of the last trade on the ECN prior to the 6:00 P.M. start of *Mad Money*. As the graph illustrates, the price response occurs during the hour *Mad Money* airs—from 6:00 P.M. to 7:00 P.M. Before 6:00 P.M., the price run-up is economically insignificant and barely statistically significant.[10] Moreover, when we split the sample into "News" and "No News" groups in panel B, we see a large spike in returns at 6:00 P.M. for stocks that have no other news except for Cramer's recommendation. This is clear evidence that overnight returns are being driven by these recommendations.

We arrive at similar conclusions by examining trading volume in the after-hours market. Panel C of Figure 1 displays the recommended stock's turnover on the ECN (scaled by 1,000) during each 30-minute interval. There is scant evidence of abnormal trading volume before the show's airing, but clear evidence of abnormal trading volume during the show's airing, especially among the No News stocks (panel D). Trading volume remains unusually high following the show's airing even though prices remain flat.[11]

In the previous section we found no evidence of long-run profits from buying *Mad Money* recommendations before they become public. However, in this section we found immediate price increases following *Mad Money* recommendations. Logically, this leads to our strongest evidence of mispricing: postrecommendation reversals.

In Table 4 we repeat the portfolio analysis of Table 2 with one critical difference. Instead of establishing our long position in the hours before the recommendation, we establish the long position on the close of the day after the recommendation is made.

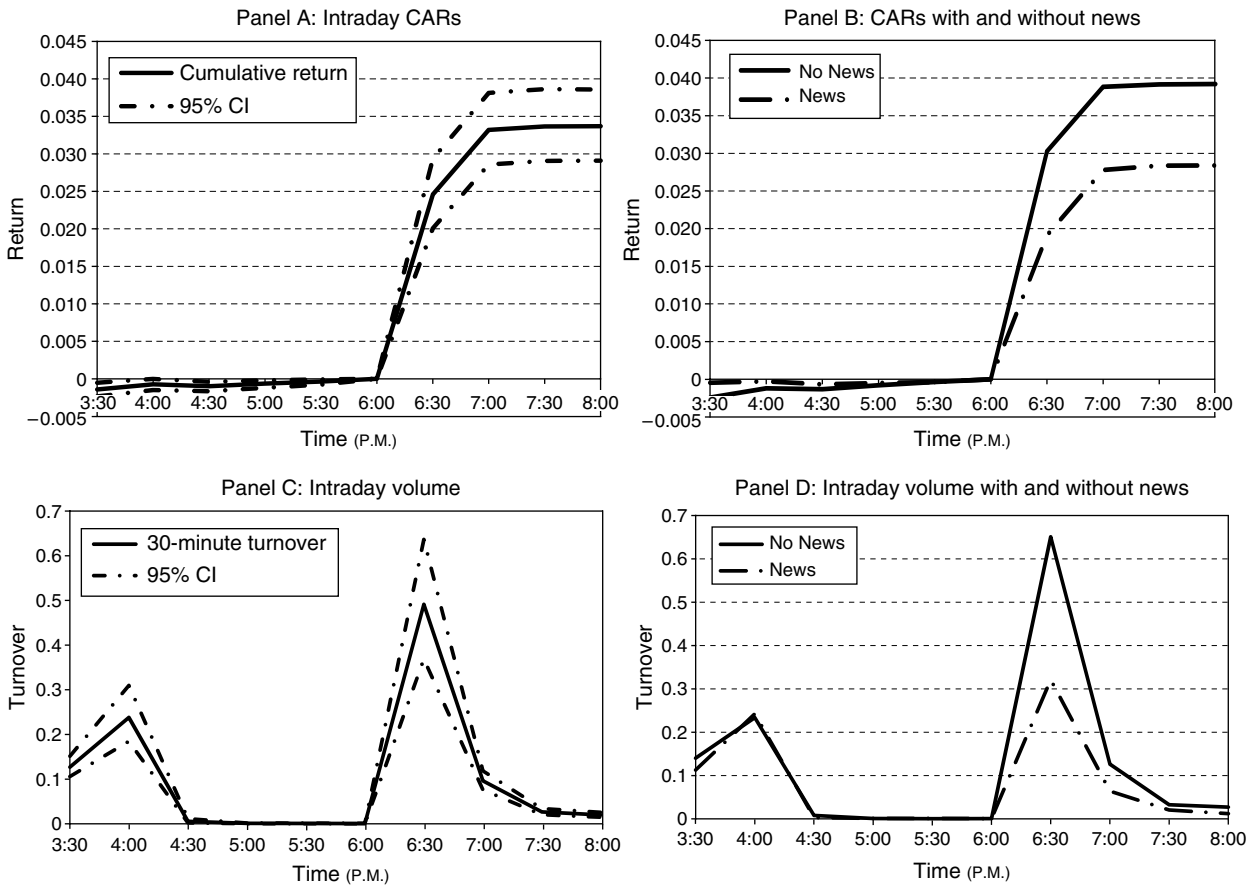
[8] This subset corresponds to the sample of recommendations made between November 16, 2005, and June 23, 2006. Because we do not require a measure of abnormal returns for this analysis, we do not restrict this sample to recommendations that can be matched to size and book-to-market quintiles.

[9] http://www.nasdaqtrader.com/Trader.aspx?id=ITCH.

[10] The upper bound for the confidence interval at 4:30 P.M. is −0.04%.

[11] Recall that the show airs between 6:00 P.M. and 7:00 P.M.

Figure 1 Intraday Returns and Volume Surrounding Recommendations



Notes. In panel A we plot intraday returns on the day of Cramer's recommendation. Prices are based on recorded trades in NASDAQ'a historical ITCH data feed, which includes after-hours trades on INET. Our sample consists of the 382 stocks with at least one trade on the ITCH data prior to 6:00 P.M. on the day of the recommendation. In panel B we plot intraday returns based on whether the stock had a news announcement in Factiva during the three-day window surrounding Cramer's recommendation. The news sample consists of 187 stocks, and the no news sample consists of 195 stocks. In panels C and D we plot intraday turnover (scaled by 1,000) per 30-minute interval based on trading data from NASDAQ's historical ITCH data feed, which includes after-hours trading on INET. In panels A and C, the 95% bootstrap confidence interval is plotted in dashed lines.

The top panel presents the equal-weighted portfolio returns for various holding periods regressed against the standard four factors. The bottom panel presents the same portfolio strategy among the stocks in the highest quintile of overnight return. The portfolio results provide strong evidence of reversal, especially among shorter horizons. For example, the average daily return for all (largest overnight return) stocks with the 50-day ex post trading strategy is −4.2 bps (−13.9 bps), which corresponds to an annualized return of about −10% (−30%).

Evidence for the spike/reversal pattern is also found in our event-time analysis. We plot the cumulative abnormal returns from days −5 to 100, where event time 1 is defined as the first trading day following the recommendation. The abnormal return for stock i on day t is defined as the difference between i's return on day t and its benchmark portfolio's return on day t, where the benchmark portfolio is the Fama-French size and book-to-market matched portfolio. The cumulative abnormal return is defined by the following equation:

$$CAR_{i,t} = \sum_{s=0}^{t} AR_{i,s},$$

where $\overline{CAR}_t$ is the sample mean of CARs on event day t.

Panel A of Figure 2 presents the event-time analysis for our entire sample. The spike/reversal pattern is illustrated by the large initial abnormal return of 2.4%, which falls to less than a percent within 100 days. We report evidence of the same pattern among News and No News stocks in panel B. Perhaps the most dramatic evidence of overnight mispricing comes when we examine the quintile of stocks that had the highest overnight return (the dotted line in panel A). If Cramer's recommendations constituted information, these would be the set of recommendations that were "most informative," and yet we find

Table 4 After-Recommendation Portfolio Returns

	Hold 50 days	Hold 100 days	Hold 150 days	Hold 200 days	Hold 250 days
			Panel A: All recommendations		
Intercept	−4.173	−2.674	−2.520	−2.400*	−1.282
	[3.494]	[2.737]	[1.814]	[1.443]	[1.221]
MKT–RF	1.056***	1.059***	1.049***	1.066***	1.068***
	[0.047]	[0.026]	[0.023]	[0.020]	[0.015]
SMB	0.552***	0.479***	0.500***	0.514***	0.528***
	[0.108]	[0.059]	[0.045]	[0.038]	[0.031]
HML	0.015	−0.100	−0.071	−0.072*	−0.064*
	[0.119]	[0.071]	[0.050]	[0.041]	[0.034]
MOM	0.334***	0.292***	0.138***	0.073***	0.048***
	[0.063]	[0.043]	[0.029]	[0.021]	[0.017]
Observations	938	986	986	986	986
R-squared	0.681	0.7619	0.8905	0.9342	0.9532
			Panel B: High overnight returns		
Intercept	−13.884**	0.082	−7.228	−6.510*	−3.704
	[6.500]	[5.544]	[4.433]	[3.707]	[2.963]
MKT–RF	1.210***	1.319***	1.244***	1.262***	1.261***
	[0.102]	[0.085]	[0.058]	[0.053]	[0.042]
SMB	0.397*	0.441***	0.569***	0.641***	0.660***
	[0.206]	[0.152]	[0.117]	[0.103]	[0.079]
HML	0.016	−0.395*	−0.333**	−0.221*	−0.182*
	[0.280]	[0.213]	[0.141]	[0.119]	[0.096]
MOM	0.509***	0.321***	0.286***	0.152***	0.013
	[0.096]	[0.078]	[0.062]	[0.049]	[0.037]
Observations	837	910	960	986	986
R-squared	0.4327	0.5601	0.6328	0.7354	0.8294

Notes. The table presents regression results when daily, calendar-time portfolio excess returns are regressed on the standard four factors. Portfolio returns are calculated from equal-weighted portfolios with returns reported in basis points. Portfolios go long *Mad Money* recommendations at the market close *after the recommendations are made*. Stocks stay in the portfolio for 50, 100, 150, 200, and 250 days in columns 1, 2, 3, 4, and 5, respectively. Panel A presents regression results for the entire sample of recommendations, and panel B presents results for the set of recommendations which are in the highest quintile of overnight return. All daily factor returns are taken from Ken French's website. Standard errors are in brackets.

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

the strongest evidence of return reversal among these firms. After Cramer's recommendation, these stocks had an average abnormal return of over 7%. However, 100 days later the CAR is about 2%.

5. Cross-Sectional Results

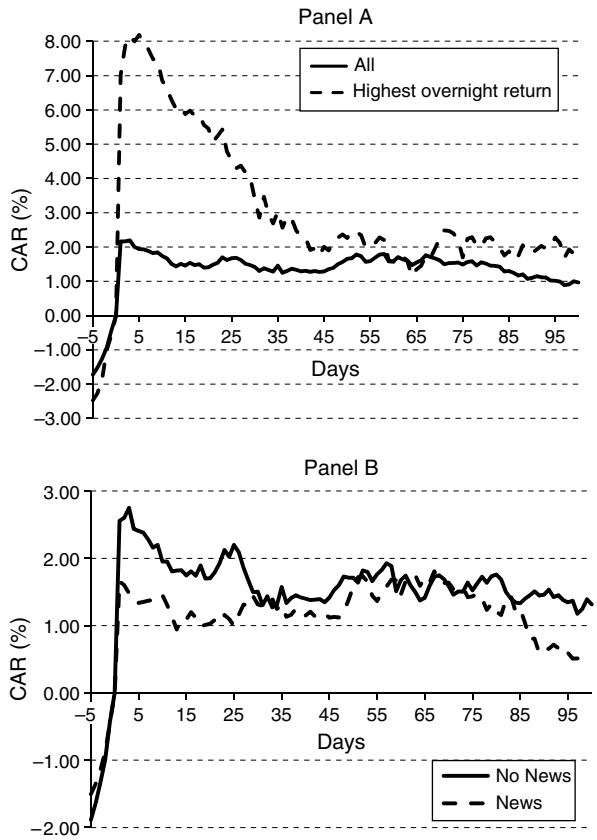
So far we have found evidence of media-induced mispricing. Stocks recommended on the show *Mad Money* have large overnight returns even though there is no evidence that the information in the recommendation is value relevant. This suggests that *Mad Money* recommendations constitute an attention shock: noise traders buy the recommended stocks and temporarily push prices up (Barber and Odean 2008). If this is the case, the size of the overnight mispricing should vary along two dimensions: (1) the size of the attention shock and (2) the market frictions that prevent arbitrageurs from correcting the mispricing. Therefore, our next set of tests considers the cross section of recommendations and relates the size of the mispricing to the size of the attention shock and the limits to arbitrage.

5.1. Attention

We begin our analysis of the relationship between the size of the attention shock and the overnight mispricing by analyzing two characteristics of the recommendation that are likely to vary with attention. The first is a dummy variable that takes the value of 1 if a stock is recommended during the "lightning round" of the show. There are two types of recommendations during episodes of *Mad Money*—"discussion segment" picks, which Cramer generally spends several minutes discussing, and "lightning round" picks, which Cramer generally spends a few seconds discussing. The lightning round dummy variable proxies for the amount of time Cramer devotes to the recommendation. Stocks that are allocated less time on the show are likely to be given less attention by a viewing audience.

The other characteristic is the number of total recommendations made during the show. Similar to the

Figure 2 CARs Sorted by News and Overnight Return



Notes. We plot average cumulative abnormal returns (CARs) around Cramer's recommendations in event time, where day 1 is the first trading day following the recommendation. Abnormal return on a given day is computed as the stock's return minus its matched portfolio's equal weighted return. The solid line in panel A is based on the entire sample consisting of the 826 buy recommendations of non-ADRs that can be matched to size and book-to-market portfolios. The dashed line in panel A is based on the 165 observations with the highest overnight return (top quintile). The solid line in panel B is based on the sample consisting of 464 buy recommendations with no news event in the three-day window surrounding the recommendation. The dashed line in panel B is based on the sample consisting of 362 buy recommendations with a news event in the three-day window surrounding the recommendation.

argument made in Hirshleifer et al. (2009), individuals allocate less attention to any particular recommendation when many recommendations are made. For example, if an investor is exposed to only one stock during an entire show, he will likely allocate much more attention to this stock than one stock that is part of a series of 10 stocks recommended on the show.

To test these hypotheses, we estimate the following model of abnormal overnight returns:

$$AOR_{i,t} = \alpha + \beta\ Lightning\ Round_{i,t} + \delta\ Number\ of\ Picks_t + \gamma\ Controls_{i,t} + \epsilon_{i,t},$$

where the dependent variable is the benchmark-adjusted overnight return of stock i on day t and the independent variables include (1) a *Lightning Round* dummy variable that takes the value of 1 if stock i was recommended during the lightning round; (2) the total number of discussion segment picks made during the episode, excluding the pick under consideration (*Number of Picks*); and (3) a control variable dummy for whether there was a (non-Cramer related) news event in Factiva during the three-day window surrounding the recommendation.

The results in column 1 of Table 5 are consistent with the attention hypothesis. The coefficient of −0.0239 on *Lightning Round* (t-statistic 10.71) suggests that non-lightning-round recommendations have overnight returns that are 239 bps higher on average. Moreover, the coefficient of −0.011 on *Number of Picks* (t-statistic 5.18) suggests that a one-standard-deviation increase in the number of recommendations on the show decreases the overnight return of any particular recommendation by 65 bps.

5.2. Viewership

These results are suggestive of the relationship between attention and overnight mispricing. Another measure of attention in this environment is the actual viewership of the show. The key advantage of using *Mad Money* as a laboratory for examining the effect of attention on asset prices is that we can accurately measure the size and scope of the attention shock using viewership data from Nielsen Media Research (NMR). NMR is a firm that specializes in audience measurement across a variety of media. Perhaps most popular are "Nielsen Ratings," which is a points system that allocates one point for every 1% of American households with televisions. For example, a program with a Nielsen rating of 3.5 in 2006–2007 indicates that an estimated 3,899,000 households watched the program because 1% of American households with televisions is approximately 1,114,000 households. Nielsen measures television viewership by placing approximately 12,600 meters in homes across the country.[12] The meters track household and individual viewership during the day and send daily reports to Nielsen's operations center in Florida. Nielsen collects and processes the metered data (which is approximately four terabytes in size per day) to make it available for local and national broadcasting networks and cable channels that use the data to measure the success of their programs and set advertising rates. During "sweeps" months, Nielsen supplements its metered data collection with personal diaries that households fill out to describe their viewing habits each week. Beyond the physical count of viewers, Nielsen also collects information about the

[12] *Source*. Nielsen Media Research's National Reference Supplement 2006–2007.

Table 5 Determinants of Overnight Mispricing

	Dependent variable: *Abnormal Overnight Return*						
Lightning Round	−0.024***	−0.024***	−0.024***	−0.017***	−0.016***	−0.016***	−0.024***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Number of Picks	−0.011***	−0.011***	−0.010***	−0.007***	−0.006***	−0.006***	−0.009*
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.005]
News	−0.008***	−0.008***	−0.008***	−0.001	−0.001	−0.001	−0.002
	[0.003]	[0.003]	[0.003]	[0.002]	[0.002]	[0.002]	[0.004]
Total Viewership		0.058*					
		[0.032]					
High-Income Viewership			0.076**	0.074**	0.075**	0.067**	0.181**
			[0.037]	[0.035]	[0.033]	[0.034]	[0.073]
Low-Income Viewership			−0.003	−0.030	−0.025	−0.009	0.077
			[0.060]	[0.053]	[0.053]	[0.052]	[0.124]
High-Illiquidity Dummy				0.049***	0.013*	0.014**	0.020
				[0.004]	[0.007]	[0.007]	[0.013]
Small-Size Dummy					0.040***	0.033***	0.036***
					[0.007]	[0.007]	[0.013]
High Idiosyncratic Volatility Dummy						0.015***	0.002
						[0.0078]	[0.0078]
Short-Sale Constraint Dummy							0.015*
							[0.008]
Observations	826	826	826	826	826	826	271
R-squared	0.12	0.12	0.12	0.34	0.37	0.39	0.44

Notes. We report the results of regressions in which the dependent variable is the abnormal overnight return. *Abnormal Overnight Return* is defined as the return of the stock minus the average return of all stocks in the size and book-to-market matched portfolio. *Lightning Round* is a dummy for whether the recommendation was made during the lightning round portion of the show. *Number of Picks* is the number of discussion segment (i.e., nonlightning round) picks (in units of 10) Cramer makes on the day of the recommendation, excluding the recommendation under consideration. *News* is a dummy for whether a (non-Cramer related) news article appears in Factiva during the three-day window surrounding the recommendation date. *Total Viewership* is the number of households, in millions, that viewed the 6:00 P.M. (EST) episode of the show. *High- (Low)-Income Viewership* is the number of households, in millions, with annual incomes greater than $60,000 (less than $60,000) viewing the 6:00 P.M. (EST) episode of the show. *High Illiquidity* (*High Idiosyncratic Volatility) Dummy* is a dummy for the stock being in the highest-illiquidity (idiosyncratic volatility) quintile. *Small-Size Dummy* is a dummy for the stock being in the smallest quintile based on NYSE cutoffs. *Short-Sale Constraint Dummy* is a dummy for the stock being in the quintile with the highest *Specialness*. The regressions in columns 4–7 also include dummies for *Illiquidity* quintiles 2, 3, and 4. Similarly, the regressions in columns 5–7 also include dummies for *Size* quintiles 2, 3, and 4, the regressions in columns 6 and 7 include dummies for *IdioVol* quintiles 2, 3, and 4, and the regression in column 7 includes dummies for *Specialness* quintiles 2, 3, and 4. The coefficients of these dummies are omitted to make the table more reader friendly. Robust standard errors are clustered by recommendation date and are shown in brackets.

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

households they sample, including age, race, education, and income class.

Our data consist of Nielsen's live daily viewership estimates for *Mad Money*, which originally airs at 6:00 P.M. (EST) each weekday (and reruns at 9:00 P.M. and midnight).[13] Our data are broken down by (1) the time of the show (6:00 P.M., 9:00 P.M., or midnight) and by (2) household income classes. Table 1 includes some summary statistics about our 6:00 P.M. viewership data. The average viewership in our sample for the 6:00 P.M. show is 195,982, with a standard deviation of 51,607 households. Nielsen breaks the viewership into income brackets: We have data on the number of households viewing each episode with annual incomes less than $20K, between $20K and $30K, between $30K and $40K, between $40K and $50K, between $50K and $60K, between $60K and $75K, and greater than $75K. Defining high-income viewers as those with household income above $60,000, we find the average high-income viewership in our sample for the 6:00 P.M. show is 134,503 households, with a standard deviation of 44,885 households.[14]

If individual traders who watch *Mad Money* are the noise traders of Barber and Odean (2008), we should expect to find a positive relationship between the size of the attention shock measured by Nielsen viewership and the size of the overnight mispricing. We find

[13] Nielsen also collects DVR or "Tivo" viewership estimates for households that record shows and watch them later. Only the live viewership estimates are used in our analysis.

[14] We define high-income households as those earning more than $60,000 because the median income for a four-person family in the United States is $67,019. (*Source*. http://www.census.gov/hhes/www/income/data/statistics/4person.html, accessed January 20, 2011.) All of our qualitative results are robust to using $75K or $50K as the high-income cutoff.

exactly that. Column 2 of Table 5 augments column 1 by adding total viewership in millions (*Viewership*).

Now the control variables include all of the independent variables in column 1 (including *Lightning Round*, *Number of Picks*, and *News*), and *Viewership* is the total number of households that watched the show on day t according to NMR.

The positive coefficient of 0.0584 (t-statistic 1.80) on *Viewership* suggests that when more people are exposed to the recommendation (as measured by viewership) the overnight return is higher. A one standard deviation in total viewership leads to another 30 bps of overnight return. This is some of our strongest evidence in support of the attention hypothesis of Barber and Odean (2008): when we vary the size of the attention shock (which we can directly measure using viewership) we also vary the size of the overnight mispricing.[15]

Interestingly, when we consider low-income (annual income < \$60,000) and high-income (annual income > \$60,000) viewership in column 3 of Table 5, we find the dominant effect exists among high-income viewers. This is perhaps because high-income individuals, who are likely to be wealthy, have capital to execute a trade following an attention shock and are more likely to participate in the market in the first place (see, e.g., Table 6 in Vissing-Jorgensen 2003). A one-standard-deviation increase in *High Income Viewership* increases abnormal overnight returns by 34 basis points. In contrast, we find no evidence of a relationship between the number of low-income individuals exposed to the recommendations and abnormal overnight returns. This evidence suggests that attention shocks are not homogeneous and that the composition of the cross section of traders who receive the shock matters for asset prices. In short, who observes an event may be just as important as how many do.

5.3. Limits to Arbitrage

Arbitrageurs have a strong incentive to profit when prices deviate from fundamental values. Therefore, the size of the mispricing should be related to the frictions and forces that prevent arbitrageurs from correcting any mispricing (Pontiff 1996, Shleifer and Vishny 1997). Here, we consider several limits to arbitrage and ask whether the size of the mispricing is related to the size of the ties that bind the arbitrageur.

We are not the first researchers to test whether arbitrage costs affect the mispricing of assets. Previous researchers have looked at the relationship between potential limits to arbitrage and various anomalies, including postearnings announcement drift (Mendenhall 2004), the book-to-market effect (Ali et al. 2003), and the accrual anomaly (Mashruwala et al. 2006). Our setting differs in that we have a clear case of temporary mispricing followed by convergence to fundamental value, whereas the other studies focus on anomalies that may or may not be the result of market mispricing.

We begin by using three stock-specific variables that have been commonly used to proxy for limits to arbitrage: illiquidity, size, and idiosyncratic volatility. Small, illiquid stocks can have high transaction costs relative to large, liquid stocks, and idiosyncratic volatility poses a holding cost that an arbitrageur must bear. See Pontiff (2006) for a discussion on why idiosyncratic volatility should affect arbitrageurs' willingness to correct mispricing.

Our measure of idiosyncratic volatility is *IdioVol*, which is defined as the standard deviation of the abnormal daily returns from days −34 through −5, where day 0 represents the day of the recommendation. Our measure of *Size* is the NYSE-based size quintile that the stock is assigned to when we match the stocks to size and book-to-market quintiles.

Finally, our measure of *Illiquidity* is developed by Amihud (2002). This measure is defined as

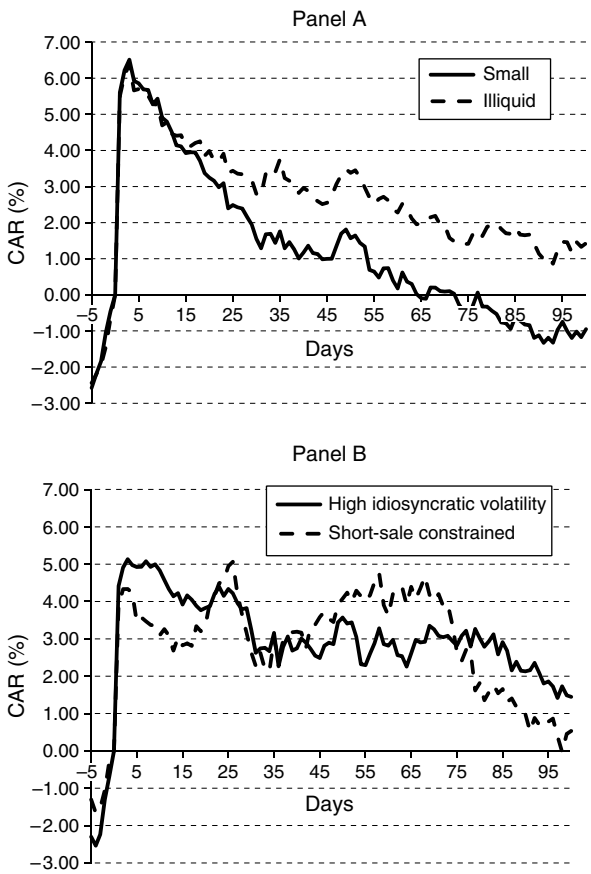
$$Illiquidity = \text{Average}\left(\frac{|r_t|}{Volume_t}\right),$$

where r_t is the stock return on day t and $Volume_t$ is the dollar volume on day t. The average is calculated over all positive-volume days from days −34 to −5 (inclusive).

We are especially interested in the stocks with the most significant limits to arbitrage. Figure 3 considers these stocks in the event-time framework. Panel A considers the CAR around the recommendation date for the smallest *Size* quintile of recommendations as well as recommendations in the largest *Illiquidity* quintile. Panel B considers the highest *IdioVol* quintile as well as stocks that are short-sale constrained (discussed below). If limits to arbitrage prevent arbitrageurs from immediately correcting mispricing, we should see the most dramatic spike/reversal patterns among these subsamples of recommendations. This is precisely what we find. For example, among the smallest *Size* recommendations, stocks have a mean

[15] It is also worth mentioning that our regression analysis likely underestimates the effect of attention on prices because we only observe variation in casual viewership. Because Webster and Wakshlag (1983) and Zubayr (1999) find evidence of both channel and program loyalty among television audience members, we can imagine that Cramer's viewers are either loyal viewers (who watch nearly every show) or casual viewers (who do not). By definition, time-series variation in viewership only captures variation in casual viewership. Therefore, our regression estimates of the relationship between attention and prices will be driven by casual viewers. To the extent that loyal viewers are more likely to trade following a Cramer recommendation than casual viewers, we have underestimated the relationship between viewership and overnight return.

Figure 3 CARs and Limits to Arbitrage



Notes. We plot average cumulative abnormal returns (CARs) around Cramer's recommendations in event time, where day 1 is the first trading day following the recommendation. Abnormal return on a given day is computed as the stock's return minus its matched portfolio's equal weighted return. Panel A is based on the buy recommendations in the smallest *Size* quintile (solid line) and the highest *Illiquidity* quintile (dashed line). Panel B is based on the quintile of buy recommendations with the highest idiosyncratic volatility or *IdioVol* (solid line) and the highest short-selling constraints or *Specialness* (dashed line).

CAR above 6% shortly after Cramer's recommendation. However, within three months the mean CAR among small stocks falls below 0%. Similar results are found among illiquid stocks and those with high idiosyncratic volatility.

In Table 5 we consider limits to arbitrage in the multivariate regression framework. We divide the stocks into quintiles based on their *Size*, *IdioVol*, and *Illiquidity*, and then regress the abnormal overnight returns on our attention variables and dummies for the quintiles that the stock belongs to for each of our three limits to arbitrage variables. For each of our regressions, the dummy for the least significant limit to arbitrage quintile is omitted from the set of independent variables.

In column 4 of Table 5, we report the results for the regression with *Illiquidity* fixed effects. The coefficient for the largest *Illiquidity* is 4.9% (t-statistic 11.8), which implies that liquidity plays a large role in the overnight returns.

In column 5, we add fixed effects for the NYSE-based *Size* quintile of the recommended stock. The coefficient for the smallest quintile is 4.0% (t-statistic 6.05), showing that the smallest stocks experience much larger overnight returns following Cramer's recommendations than do the largest ones.

In column 6, we add fixed effects for the *IdioVol* quintile. As predicted, the quintile of stocks with the highest idiosyncratic volatilities has significantly larger overnight returns than the quintile of stocks with the lowest idiosyncratic volatilities (1.5% difference, t-statistic 3.49).

5.4. Short Selling

Short-sale constraints are another potential limit to arbitrage. If an arbitrageur believes a stock is trading above its fundamental value and he does not already own the stock, he must borrow shares in order to sell the stock. Such borrowing can be costly, especially when there is a lot of demand for borrowing. If short-sale constraints are an insignificant limit to arbitrage, these costs should be unrelated to the level of mispricing. If, however, these costs limit arbitrageurs' ability to correct mispricing, we should expect a correlation between the size of the mispricing and the cost of short selling.

To test these hypotheses, we obtain equity lending data for a subset of our recommendations from a data provider that is both a market maker in the equity loan market and a data provider for major equity lenders. See Kolasinski et al. (2008) for a more detailed description of the equity lending data. For every stock on every day, the lending database reports the weighted average rebate rate calculated from the loan portfolios of 12 lenders. The cost of shorting is measured by the difference between the federal funds rate and the rebate rate. (The rebate rate is the interest rate paid on the collateral posted by the short seller when borrowing the shares to sell.) For each recommendation, we define a variable called *Specialness* as the average difference between these variables between days −34 and −5 (inclusive). As Reed (2007, p. 6) argues, the specialness of a stock "represents scarcity in the equity loan market on a daily basis."

The subsample of stocks for which we have short-selling data consists of 271 recommendations made between November 16, 2005, and August 4, 2006. Compared to the full sample, these stocks have similar book-to-market ratios but are smaller.[16] The mean (median) book-to-market ratio is 0.44 (0.35),

[16] The stocks in this sample are smaller because Cramer tended to recommend smaller stocks during the time period in which we have short-selling data.

and the mean (median) market cap is \$6.75 billion (\$1.53 billion). The average value of *Specialness* is 54.9 bps, with a standard deviation of 153.7 bps. The distribution is heavily skewed to the right: the median is only 11.3 bps, and the range runs from −11.0 bps to 1,250.8 bps. We divide the sample into quintiles based on *Specialness*, where the sorting is done within size quintile.[17] Of particular interest to us is the high *Specialness* quintile, representing stocks that are especially expensive to short. This quintile consists of 55 stocks, whose average *Specialness* is 222.8 bps.

In column 7 of Table 5, we include dummies for the *Specialness* quintiles (quintile 1 is omitted from the regression). The coefficient of the quintile 5 dummy is 1.5% (t-statistic 1.93), indicating that these stocks average 1.5% higher abnormal overnight returns than do the stocks in the lowest *Specialness* quintile.

We also present the average CARs for the stocks in the high *Specialness* quintile in panel B of Figure 3. The average CAR rises to 4.3% on days 2 and 3, and it remains significantly different than 0 until day 10. By day 98, the price impact of the recommendation completely reverses as the average CAR dips below 0.

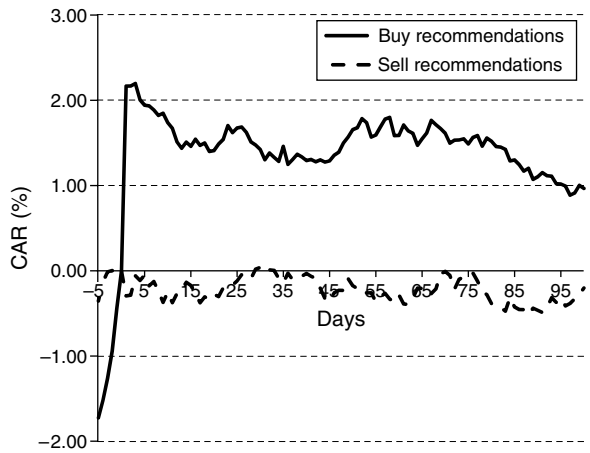
6. Sell Recommendations

Because there is scant evidence that Cramer has skill in selecting underpriced stocks (see §3), it is puzzling why viewers act on the recommendations at all. One possibility is that viewers simply purchase any stocks they hear on television, regardless of the context. Another possible explanation is that viewers (falsely) believe that following Cramer's advice generates positive alpha. If the former explanation is the dominant factor, we should also expect positive abnormal overnight returns following Cramer's *sell* recommendations. However, if the latter explanation is the dominant factor, we should see negative abnormal overnight returns following his sell recommendations, but the returns should be less significant due to short-sale constraints.[18]

To better understand why viewers are acting on the recommendations, we analyze the price response to Cramer's sell recommendations. Because YourMoneyWatch.com does not supply sell recommendations, we gather them from an alternate source (http://www.madmoneyrecap.com/) that also catalogues Cramer recommendations. From MadMoneyRecap, we gather 1,445 first-time sell recommendations between July 1, 2005, and December 24, 2008.[19] Like the buy recommendations, these stocks tend to be recent winners with low book-to-market ratios. Of the sell recommendations, 277 (19%) are in the top momentum decile, and 546 of the 1,445 recommendations (38%) are in the smallest book-to-market quintile. The sell recommendations differ from the buy recommendations in that they are most likely to fall in the smallest size quintile: 386 of the recommendations (27%) lie in the smallest quintile, more than any other quintile.

We find a clear asymmetry between buy and sell recommendations, suggesting that viewers do not respond the same way to sell recommendations as they do to buy recommendations. When we compare all first-time buy recommendations with all first-time sell recommendations, we see a considerable asymmetry (Figure 4). First-time buy recommendations have a large overnight return (2.4%), whereas the magnitude of the overnight return is small following first-time sell recommendations (−0.29%). There is also no detectable postrecommendation trend in sell-recommendation returns. The evidence supports the view that an attention shock in the form of a sell recommendation has little effect on returns, perhaps because it is difficult for retail traders to short Cramer's sell recommendations.

Figure 4 **Sell vs. Buy Recommendations**



Notes. We plot cumulative abnormal returns (CARs) for the first-time sell recommendations and the first-time buy recommendations Cramer issued between July 1, 2005, and December 24, 2008. Day 1 is the first trading day following the recommendation. Abnormal return on a given day is computed as the stock's return minus its matched portfolio's equal-weighted return.

[17] *Size* and *Specialness* are significantly negatively correlated.

[18] For sell recommendations, viewers can easily act on the recommendation only if they already own shares of the stock. The idea that short selling is more difficult than purchasing shares, and therefore attention can produce asymmetries between the buying and selling of stocks by individual traders, also appears in Barber and Odean (2008).

[19] The larger number of sell recommendations does not indicate that Cramer makes more sell recommendations. Casual observation suggests that our source for sell recommendations (http://www.madmoneyrecap.com/) has a weaker standard for what constitutes a sell recommendation than our source for buy recommendations.

7. Conclusion

We find considerable evidence that Jim Cramer causes individual stock prices to temporarily rise when he recommends them on his CNBC show *Mad Money*. The causal interpretation is supported by the fact that prices rise in the precise hour his show airs and for stocks that have no other news. Interestingly, this effect exists even though there is no evidence of information in the recommendations. Calendar-time portfolios that go long the recommendations *before the show airs* find no long-term alpha. This suggests that the initial price spikes constitute mispricing.

We also find that the size of the mispricing varies considerably in the cross section. When attention toward the recommendations is high or limits to arbitrage are great, we find much greater mispricing. Moreover, the size of the cross-sectional variation is large. In a few cases, prices spike by more than 20% overnight (maximum = 32.8%, Table 3) following a *Mad Money* recommendation, but limits to arbitrage still prevent "smart money" from correcting such distortions.

Taken together, the evidence here suggests that media endorsements of individual stocks may lead to substantial mispricing (Huberman and Regev 2001) and that limits to arbitrage is a powerful friction that allows mispricing to persist.

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