CHAPTER 32 INSTITUTIONAL INVESTORS

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ABSTRACT

This chapter discusses the literature on institutional investors. First, it selectively surveys the vast literature on whether institutional investment managers (specifically hedge funds and mutual funds) deliver superior risk-adjusted returns to their outside investors. Early work was skeptical about the ability of investment managers to deliver alpha, but the use of new econometric techniques and the advent of hedge funds has resulted in new evidence that some investment managers can deliver consistently positive risk-adjusted performance. Next, the chapter discusses the literature that analyzes the holdings and trades of institutional investors at both low and high frequencies. Evidence suggests that institutions are well-informed about cash-flow relevant news and trade consistently in the right direction before and after earnings announcements. Also discussed are the restrictions on institutional investors imposed by the behavior of capital flows from outside investors and the incentives that institutions have to exacerbate, rather than correct, mispricings in asset markets.

INTRODUCTION

One of the main defenses of the efficient markets hypothesis has been the theoretically predicted role of ‘arbitrageurs.’ In particular, when prices deviate from their fundamental values in financial markets, sophisticated, well-capitalized investors are predicted to enter the market and take large positions intended to profit from the resultant discrepancy. The concept of arbitrage employed here (and more generally in discussions in behavioral finance) does not merely cover the axiomatic definition of a no-loss, sure gain bet; it is rather, a broader description covering any attempt to eliminate deviations between fundamental value and price. As a consequence of the actions of such intelligent, wealthy agents, the theory predicts that

prices will return to fundamental value very quickly. The consequence of these agents' actions is to eliminate the anomalous behavior of prices.

While this logic is appealing in theory, many questions remain. The first and rather obvious question is: Who are these arbitrageurs in real-world financial markets? Other important questions are: Can arbitrageurs easily spot such discrepancies between price and fundamental value in the first place, especially if they are not glaring? Is anyone really well-capitalized enough to conduct such trades once they have been identified? Does the separation of ownership and control between intelligent investors and their outside financiers make theoretically predicted trading activity difficult? How do transactions costs impede the ability of arbitrageurs to do their job effectively? If arbitrageurs could benefit more from increasing mispricing in the short-run, would they do so?

Most financial economists' instinctive answer to the first question would be that institutional investors play the role of the theoretical arbitrageurs in real-world financial markets. This only invites further questions because treating institutional investors as a monolithic entity masks important heterogeneity among these investors. Pension funds, mutual funds, and hedge funds clearly have different investment mandates and, as a large empirical literature attests, they have very different performance characteristics. These differences are important and this chapter begins by exploring them in the context of the different performance characteristics of two types of institutional investors: mutual funds and hedge funds. The chapter then turns to exploring the literature on institutional investor holdings and trade data, where in contrast to the performance measurement studies, the perspective is generally taken that analyzing the investment behavior of institutional investors as a group is instructive. The goal of the literature on holdings is primarily to understand whether institutions arbitrage apparent inefficiencies in asset markets, and whether they have a stabilizing or destabilizing influence on asset prices.

As an important aside, the complement of institutional investors is the set of individual investors, the behavior of which is discussed in other chapters of this book. There are two

obvious differences between institutional investors and individuals (ignoring exceptional cases). First, the level of wealth controlled by institutional investors is per capita higher than that controlled by individual investors. Second, decisions are taken in some structured fashion by institutions, which may or may not be the case for individual investors.

This chapter begins by discussing (with a focus on more recent work) the extensive empirical evidence on the behavior of institutional investors, focusing primarily on equity asset markets. The discussion is categorized into four sub-categories that attempt to broadly capture the different approaches taken by authors. The subsequent section discusses a selective summary of theory, which focuses on a few papers that outline the incentives that institutional investors may have to behave in a destabilizing fashion. Specifically, there may be situations in which institutions can generate higher returns from destabilizing behavior than by attempting to move prices back towards fundamental value.

EMPIRICAL WORK ON INSTITUTIONAL INVESTORS

The empirical behavior of institutional investors has been extensively studied. The studies in this area can be divided into four main categories. First, a straightforward way to test the efficient markets hypothesis is to inspect the portfolio returns of groups of institutional investors, such as mutual fund or hedge fund managers, to see if they earn more than a fair compensation for risk. If they do, such evidence would suggest that markets might not be informationally efficient because agents can garner profits from exploiting these inefficiencies. Second, using publicly available datasets that are generally low frequency (i.e., quarterly or annual), academics have investigated the holdings of institutional investors. The goals of these studies have been twofold. Holdings allow another, possibly more accurate measurement of pre-fee institutional investor returns and they also allow the investigation of whether institutions act as a stabilizing or destabilizing influence on prices (the latter, for example, might be associated with trend-following behavior by institutions). Third, more recently, researchers have

used higher-frequency data to analyze institutional investors' trading behavior. Fourth, several authors examine how the behavior of flows to institutional investors affects their investment decisions.

The Returns of Institutional Investment Managers: Mutual Funds

The literature on the investment performance of mutual fund managers is vast. Treynor (1965), Sharpe (1966), and Jensen (1968) (the latter being the precursor to perhaps the most standard current methodology), pioneered these studies in the mid-1960s. Jensen ran a single-factor model, regressing the returns of 115 mutual funds over the period 1945-1964 on the contemporaneous returns on the S&P 500 composite index, using the intercept (alpha) as a measure of the fund's risk-adjusted average return. This was the first time such a methodology was systematically employed to assess the performance of investment managers. Jensen's pessimistic conclusion that gross of expenses, the funds have an average alpha of negative 40 basis points (net of expenses, this number is even lower at negative 1.1 percent) has subsequently been the subject of intense academic scrutiny and debate.

Following the initial set of studies analyzing the average performance of mutual funds, Hendricks, Patel, and Zeckhauser (1993) heralded an important shift in methodology towards understanding conditional mutual fund performance, rather than simply concentrating on unconditional performance. They are not the first authors to analyze the phenomenon of mutual fund performance persistence because Goetzmann and Ibbotson (1994) conducted a similar contemporaneous study. Yet, Hendricks et al. are among the first to identify significant evidence of performance persistence from 1974 to 1988 and to document that it is essentially a short-run phenomenon. The methodology that they use, which is now standard, is to rank funds based on their ex-ante performance and to track the performance of these funds in an ex-post evaluation period. They find that funds with the highest (lowest) past returns over short evaluation periods

continue to outperform (underperform) in the evaluation period relative to their levels of systematic risk.

In an in-depth investigation of the Hendricks et al. (1993) result, Carhart (1997) documents that the continuing outperformance and underperformance of successful and unsuccessful funds can be explained by loadings on a 'momentum' factor, namely a portfolio which is long stocks with recent high past returns and short stocks with recent low returns. The sequence of these papers is instructive because in the literature on the performance of institutional investment managers, new methodologies uncovering evidence of outperformance are followed by new risk-adjustment methodologies that uncover the source of the outperformance. The next step is usually to create a financial product that mimics the newly uncovered investment strategy by investing in the factor responsible for investment manager's outperformance.

Studies following these early mutual fund papers increasingly used sophisticated approaches and large datasets of mutual fund performance to estimate institutional investors' risk-adjusted returns. One important result of these studies, which sometimes employ complicated econometric techniques, is the discovery that some mutual funds deliver consistently superior risk-adjusted performance.

Ferson and Schadt (1996) introduced new methodology to the study of mutual funds that influenced subsequent researchers to consider the concept of conditional performance evaluation. This approach uses publicly available variables as conditioning information to model time-varying mutual fund risk exposures. In essence, Ferson and Schadt model the risk exposures of funds as time-varying and conditional on macroeconomic variables. Using their methodology on a sample of 68 mutual funds over the period 1968-1990, they find that the performance of the funds is broadly neutral, rather than negative as Jensen (1968) reports. Mamaysky, Spiegel and Zhang (2008) provide the most recent manifestation of the move to adopt models of time-varying factor exposures in mutual funds. Their model introduces a

sophisticated Kalman-filter based model to uncover the unobservable factors on which time-varying factor exposures of mutual funds may depend. These authors find that using their method reveals significant timing ability in about a fifth of the total set of mutual funds in the Center for Research on Security Prices (CRSP) mutual fund database.

Another recent paper using sophisticated econometric methodology is the bootstrap analysis of Kosowski, Timmerman, Wermers, and White (2006). Using this bootstrap method, the authors attempt to distinguish luck from skill in the cross-section of all open-end mutual funds from 1975 to 2002. They find convincing evidence that the top 10 percent of mutual fund managers has statistically significant positive performance. Furthermore, the risk-adjusted performance of these managers persists, which conflicts with Carhart's (1997) evidence.

Other recent papers that arrive at similar conclusions are Bollen and Busse (2005) and Avramov and Wermers (2006). However, some contrary perspectives in recent data have been offered by Fama and French (2009) and Barras, Scaillet, and Wermers (2009), who are unable to detect evidence of performance persistence. Busse, Goyal and Wahal (2009), using data on the managed investments of retirement plans, endowments, and foundations, also find little evidence of positive risk-adjusted performance or performance persistence.

The increasingly sophisticated techniques and new data brought to bear on the question have uncovered important new evidence of positive risk-adjusted performance in mutual funds. Yet, this must be confronted with the broad consensus in the empirical literature supporting Jensen's (1968) initial conclusion that finding evidence of positive risk-adjusted mutual fund performance is extremely difficult. One way to interpret this observation is that markets are so efficient that intermediaries cannot make significant risk-adjusted profits. This suggests that these intermediaries do not have sufficiently high levels of skill to be able to generate insights unavailable to the market as a whole.

Much debate exists, however, about whether this conclusion can be interpreted in this fashion. Grossman and Stiglitz (1980) offer one important theoretical refutation. If the market is

informationally efficient, then no single agent would have sufficient incentives to acquire information and impound it into prices. In a sense, the presence of a large investment management industry is evidence that markets are not informationally efficient. Berk and Green (2004) offer another useful insight. They argue that if rational investors compete to find talented investment managers and managers face capacity constraints in the implementation of their strategies, then in equilibrium, the result would be zero net-of-fee alpha with no detectable performance persistence even if superior investment ability does exist.

The Returns of Institutional Investment Managers: Hedge Funds

This section examines hedge fund returns. Hedge funds are a relatively new form of investment management vehicle. These intermediaries are relatively lightly regulated and have enormous trading flexibility, including the ability to use short sales as well as take long positions. They generally promise alpha ('absolute returns' in the jargon of practitioners) to their investors and are generally paid high incentive fees when they generate returns above a benchmark. These features of hedge funds lead naturally to the expectation that their risk-adjusted performance will dominate that of mutual funds and that performance persistence should also be more prevalent among these intermediaries.

Two important issues plague studies of hedge fund performance. First, unlike mutual fund data, hedge fund data suffer from a lack of uniform reporting standards. For example, hedge fund managers can elect whether to report performance; if they do, they can decide the database(s) to which they report. They can also elect to stop reporting at their discretion. This ability to self-report biases hedge fund returns upwards (Fung and Hsieh, 2000; Liang, 2000) and raises concerns about whether the results of performance measurement studies are truly representative of the real investment performance of hedge funds. Given these limitations, there have been several attempts to control these data problems. These attempts include using a combination of statistical techniques (modeling stale reporting and database exits jointly with

returns, see Jagannathan, Malakhov and Novikov, 2009) and common-sense approaches (using diversified portfolios of hedge funds, called funds-of-funds, rather than individual hedge funds to measure industry performance, see Fung, Hsieh, Naik, and Ramadorai, 2008).

The second important issue is that hedge funds experience both fast moving exposures to underlying assets due to their dynamic trading strategies and non-linear exposures to these assets because of their use of derivative securities. This problem has spawned a growing literature focusing on developing risk-adjustment models that are appropriate for understanding hedge fund performance (e.g., Fung and Hsieh, 1997, 2004a, 2004b; Ackermann, McEnally, and Ravenscraft, 1999; Liang, 1999; Agarwal and Naik, 2004; Kosowski, Naik, and Teo, 2007; Chen and Liang, 2007; Patton, 2009; Bollen and Whaley, 2009; Patton and Ramadorai, 2009). These models contain combinations of linear and option-factors, and in recent years, account for time-variation in hedge fund exposures to these factors.

When techniques that account for potential data biases and non-linearities in hedge fund exposures are applied to performance measurement, they result in lower estimated hedge fund risk-adjusted returns. Despite this reduction, there still seems to be much evidence of skill in hedge funds' returns. Fung et al. (2008) discover that the average fund-of-funds does not deliver alpha. Yet, in their sample of more than 1,000 funds between 1994 and 2004, about 20 percent of the funds appear to have statistically significant positive and economically important persistent alpha. Jagannathan et al. (2009) also find that alpha is persistent for the top funds in their sample. Evidence in Kosowski et al. (2007), who use Bayesian and bootstrap techniques, supports this conclusion, and these authors also find a large spread between the ex-post performance of the top and bottom hedge funds ranked by ex-ante performance. Other studies arriving at similar conclusions are Fung and Hsieh (1997, 2001, 2002, 2004a, 2004b), Agarwal and Naik (2004), and Hasanhodzic and Lo (2006). However, as discussed below, reasons exist to believe that the estimated alpha may be short-lived. In particular, investors' alpha-chasing

behavior combined with capacity constraints to the implementation of hedge fund strategies presage significant declines in future alpha.

The Holdings and Trades of Institutional Investment Managers: Low Frequency Data

This section analyzes institutional investors' holdings. The analysis of mutual fund returns, while useful, does not provide much information about funds' ability in the event that managers consume the rents that they generate in the form of fees (Berk and Green, 2004). Recognizing this, Grinblatt and Titman (1989) examine mutual fund holdings. They find evidence that using measured returns extrapolated from mutual fund holdings, several funds exhibit positive and significant risk-adjusted performance.

Following this early paper, the literature on institutional holdings moved in several new directions. First, researchers have begun to study other institutions besides mutual funds, mirroring the analysis of the returns of other types of intermediaries highlighted in the previous section. For example, Lakonishok, Shleifer, and Vishny (1992) examine the behavior of pension funds, Nofsinger and Sias (1999) study institutional equity owners as defined by Standard & Poor's, Kim and Nofsinger (2005) examine annual institutional holdings in Japan's business groups, and many other recent papers study all institutions required to make quarterly 13-F filings to the Securities and Exchange Commission.

Second, the literature examines the characteristics of stocks that institutional investors hold, not just their subsequent returns. Gompers and Metrick (2001) and Bennett, Sias, and Starks (2003), for example, run cross-sectional regressions of institutional ownership on the characteristics of individual stocks and discover that institutions have a preference for large and liquid stocks. Third, researchers are becoming increasingly interested in the changes in institutional positions (their flows instead of their holdings). Quarterly institutional flows appear to be positively correlated with lagged institutional flows (Sias, 2004), contemporaneous quarterly stock returns (Grinblatt, Titman, and Wermers, 1995; Wermers, 1999, 2000; Nofsinger and Sias,

1999; Bennett et al., 2003), and future quarterly stock returns (Daniel, Grinblatt, Titman, and Wermers, 1997; Wermers, 1999; Chen, Jegadeesh, and Wermers, 2000 for mutual funds; Bennett et al. for a broader set of institutions; Nofsinger and Sias, for similar results at the annual frequency).

Others have extensively studied the relation between quarterly institutional flows and lagged quarterly stock returns, with somewhat mixed results. Burch and Swaminathan (2002) report a positive correlation between institutional flows and returns, but other authors find this to hold only for institutional purchases, not sales (Cai and Zheng, 2004), only for new institutional positions in a stock (Badrinath and Wahal, 2002), and only for stocks with high past returns (Grinblatt et al., 1995). In another recent study, Gompers and Metrick (2001) discover that past quarterly returns are negatively related to institutional flows once they control for market capitalization.

These empirical results are susceptible to different interpretations. Theoretical models in the behavioral tradition, such as DeLong, Shleifer, Summers, and Waldmann (1990), Hong and Stein (2003), Daniel, Hirshleifer, and Subrahmanyam (1998), and Barberis and Shleifer (2003) suggest that when groups of investors follow simple positive feedback strategies, stock prices diverge from their fundamental values. In support of these models, Nofsinger and Sias (1999) find evidence that institutional investors engage in such positive feedback trading and that institutional herding increases after high stock returns. Yet, Cohen, Gompers, and Vuolteenaho (2002), who find that institutions are not simply following price-momentum strategies, dispute this finding. Instead, these authors find that institutions sell shares to individuals when a stock price increases in the absence of any news about underlying cash flows.

Of course, to resolve whether institutional trading strategies change conditional on the behavior of returns rather than cash-flow news, investigating the behavior of institutional investors in the periods surrounding earnings announcements (the point of release of cash-flow relevant news by firms) is useful. Unfortunately, this is where the literature on institutional flows

is restricted by the low frequency of the available data. While some countries, such as Finland (Grinblatt and Keloharju, 2000a, 2000b) and Korea (Choe, Kho, and Stulz, 1999) record institutional ownership almost continuously, reporting in the United States is only quarterly. This makes determining whether institutions are reacting to stock price movements or causing price movements difficult because no resolution exists on the intra-quarter covariances of institutional flows and returns. Researchers have made some recent progress on measuring these intra-quarter covariances. For example, Sias, Starks, and Titman (2006) point out that monthly return data can be combined with quarterly ownership data to make at least some inferences about monthly lead-lag relations between flows and returns. Boyer and Zheng (2009) apply this methodology to equity ownership data from the flow of funds accounts. While the Sias et al. approach ingeniously extracts additional information from quarterly data, it can put bounds only on monthly leads and lags and has little to say about lead-lag relations at higher trading frequencies than monthly.

The need to investigate institutional behavior at the point of release of cash-flow relevant information relates this line of research with the well-known phenomenon of post-earnings-announcement-drift. This phenomenon is the tendency for stock prices to move in the same direction as earnings surprises (with increases in prices for positive and decreases in prices for negative earnings surprises) for up to 60-days post-announcement. This phenomenon has been well-known for a long time (at least since the publication of Bernard and Thomas, 1989), so one would expect that sophisticated investors such as institutions should trade to take advantage of it. In support of this conjecture, Bartov, Radhakrishnan, and Krinsky (2000) find that post-earnings announcement drift is strongest in firms with low institutional shareholdings. As mentioned earlier, Cohen et al. (2002) find that institutions sell shares to individuals when a stock price increases in the absence of any news about underlying cash flows. Their measure of cash flow news is obtained from a vector-autoregressive decomposition of unexpected stock returns, following the early work of Campbell and Shiller (1988). Also, Ke and Ramalingegowda

(2004) show that actively trading institutional investors move their stockholdings in the same direction as unexpected earnings and earn abnormal returns in subsequent quarters. While these results suggest that institutional investors act to take advantage of post-earnings announcement drift, their precision is somewhat limited by the low frequency of the data. Using quarterly data frequency complicates the task of saying whether institutions are reacting to stock price movements or causing price movements in the days surrounding earnings announcements. This leads to the topic of the next subsection, namely analyzing the behavior of institutional investment managers at high frequencies.

The Holdings and Trades of Institutional Investment Managers: Higher Frequency Data

Recent papers use proprietary data sets to measure high-frequency institutional behavior. Froot, O'Connell, and Seasholes (2001), Froot and Ramadorai (2005), and Froot and Teo (2008) employ custodial data from the State Street Corporation and find evidence of flow persistence and bidirectional positive Granger causality between weekly institutional flows and returns on equity portfolios in various countries. Froot and Ramadorai (2008) use daily data on currencies, and using a similar analysis to Cohen et al. (2002) find that financial institutions act as if to push currency values away from fundamentals in the short-run, but discipline currency values towards fundamentals over the longer-run. Lee and Radhakrishna (2000) and Nofsinger (2001) study the Trades, Orders, Reports and Quotes (TORQ) data set, a sample of trades with complete identification of market participants. Jones and Lipson (2003) use Audit Trail data from the NYSE, while Barber and Odean (2008) use weekly data from Plexus, a transactions-cost measuring service for a subset of money managers. Griffin et al. (2003) study the trades of NASDAQ brokerage houses that specialize in dealing with individual or institutional investors. They find that institutions buy stocks that have recently risen, both at the daily frequency and the intra-daily frequency. Related literature uses proprietary data to measure the trades of individuals, the complement to institutional trades. For instance, Kaniel, Saar, and Titman

(2008) use Audit Trail data and find that individual investor purchases (sales) precede positive (negative) movements in stock returns. Odean (1998, 1999) and Barber and Odean (2000, 2001, 2008) use data from a discount brokerage and show that individual investors appear to overtrade and underperform.

These results have several important limitations. For example, the samples are typically restricted in their coverage of institutional investors, the cross section of stocks they consider, the time span they investigate, or some combination thereof. The proprietary data could also be subject to selection bias if institutions self-select into transactions-cost measuring services or custodial pools. To generate more representative results on the trading behavior of institutional investors at high frequencies, researchers attempt to use publicly available data from the New York Stock Exchange (NYSE). For example, Kraus and Stoll (1972), Holthausen, Leftwich, and Mayers (1987), Madhavan and Cheng (1997), Ofek and Richardson (2003), Bozcuk and Lasfer (2005), and many others use block trades as a measure of institutional participation in a stock. Much of this work seeks to estimate the price impact of block trades and finds that block sales temporarily depress stock prices. Furthermore, Chan and Lakonishok (1993) and Keim and Madhavan (1995) also find asymmetric price impacts of institutional purchases and sales using proprietary data.

However, block trades account for only a modest fraction of trading volume. In recent years, the Trade and Quote (TAQ) database of the NYSE has allowed researchers to look at smaller equity trades as well. This dataset records every trade and quote on all NYSE stocks beginning in 1993. Most transactions in the TAQ database can be identified as buys or sells using the procedure of Lee and Ready (1991), which compares the transaction price to posted bid and ask quotes. A common procedure is to separate such classified buys and sells by dollar size, identifying orders above some upper (lower) cutoff size as institutional (individual), with an intermediate buffer zone of medium-size trades that are not classified. Lee and Radhakrishna (2000) evaluate the performance of several alternative cutoff rules in the TORQ data set. They

find, for example, that a $20,000 cutoff most effectively classifies institutional trades in small stocks. Hvidkjaer (2006) and Malmendier and Shanthikumar (2007) follow a similar approach. They partition TAQ into small, medium, and large trades using the Lee and Radhakrishna cutoff values. These authors acknowledge the Lee and Radhakrishna identification of small trades with individuals and large trades with institutions, but they prefer the labels ‘small traders’ and ‘large traders’ when describing their results.

Lee (1992), Bhattacharya (2001), and Shanthikumar (2004) all use variants of the Lee and Radhakrishna (2000) method to study higher frequency institutional trading around earnings announcements. Shanthikumar, for example, finds that the imbalance between small purchases and small sales is unresponsive to the direction of unexpected earnings in the first month after an earnings announcement. In contrast, the imbalance between large purchases and large sales has the same sign as unexpected earnings. Shanthikumar interprets this finding as consistent with large traders' informational superiority and with attempts by such traders to take advantage of post-earnings announcement drift. Again, as in the more general literature on flows and returns, some papers study the behavior of individuals. Hirshleifer, Myers, Myers, and Teoh (2008) use proprietary weekly data from a discount brokerage service and provide evidence that individual investors are significant net buyers after both negative and positive unexpected earnings. They do not find evidence that individuals' net trades have predictive power for future abnormal stock returns.

The approach of identifying small trades with individuals and large trades with institutions is appealing on the grounds that the wealth constraint is a useful separating mechanism between these types of investors. Yet, such an approach is inevitably subject to error arising as a consequence of misclassifications. Campbell, Ramadorai, and Schwartz (2008) (and in earlier work, Campbell, Ramadorai and Vuolteenaho, 2005) tackle this problem by marrying the TAQ data with the quarterly 13-F filings of institutional investors. Using these two datasets, they find the function, which when applied to aggregated buy- and sell-classified

intra-quarter trades of different sizes, best predicts quarter-to-quarter changes in institutional ownership for a large sample of stocks on the NYSE over the period 1993-2000. The estimated function has the property that the smallest trades are informative about the direction of institutional trading, which calls into question the usual association of small trades with individual trading activity. The authors then apply this function to daily classified buy and sell volume, creating a daily measure of institutional order flow, and investigate its behavior around earnings announcements. The results show that their institutional order flow measure predicts earnings surprises, as well as the magnitude of the post-earnings announcement drift, providing evidence that institutional investors do appear to be well-informed about the direction of cash-flows.

The evidence on the trading behavior of institutions strongly suggests that they are well-informed about the direction of cash-flow-relevant news. Yet, viewing these results in a broader context is important. While institutional investors may well be informed, they do not have complete discretion over their trading decisions because their financing comes from outside investors. This is the subject of the next sub-section.

Capital Flows to Institutional Investors

Scholars have studied the behavior of capital flows to institutional investors in great detail. Several papers document that the capital-flow past-performance relationship in mutual funds is positive (Ippolito, 1992) and convex in shape, i.e., the best performing funds receive a disproportionate share of capital from outside investors (Sirri and Tufano, 1998). Chevalier and Ellison (1997) highlight that this behavior of capital flows creates incentives for fund managers to increase the riskiness of the fund conditional on year-to-date returns. This performance-chasing behavior of capital flows also has important implications for the future performance of investment managers. For example, while finding that some hedge funds have delivered positive risk-adjusted performance, Fung et al. (2008) find that hedge fund investor flows chase

both past hedge fund returns and past hedge fund alphas. The future performance of high-performing hedge funds that receive these inflows suffers as a consequence, roughly consistent with the assumptions of the Berk and Green (2004) model (also see Zhong, 2008; Teo, 2008). Furthermore, scholars find that fund flows chase funds with high imputed managerial deltas, suggesting that investors are interested in fund managers with high incentives to perform in the future (Agarwal, Daniel, and Naik, 2009). These findings predict future declines in hedge fund risk-adjusted performance as competitive allocations of capital to these funds burden the implementation of hedge fund strategies.

There is another channel through which outside investors can affect fund performance. This uses insights from important recent literature that connects the funding from outside investors to financial intermediaries with 'fire sales' of assets by these intermediaries, and the effects on underlying asset prices as a consequence of this behavior (see Shleifer and Vishny, 1992; Pulvino, 1998; Brunnermeier and Pedersen, 2009). In an important recent paper, Coval and Stafford (2007) employ new methodology to show that this line of reasoning is empirically important for mutual fund behavior, and consequently, for price determination in U.S. stocks. They provide evidence that mutual funds and hedge funds are often forced to redeem investments as a consequence of funding shocks that originate from their investor base. When such forced redemptions (or 'fire sales') are correlated across institutions that hold particular stocks, these authors show that the prices of such stocks fall significantly (although temporarily). This fire sale channel is the subject of ongoing investigation by various financial economists (e.g., Acharya, Schaefer and Zhang, 2008; Aragon and Strahan, 2009; Jotikasthira, Lundblad, and Ramadorai, 2009) and is an important issue, especially in light of the episodes of sudden capital withdrawal from intermediaries that were witnessed during the recent financial crisis.

Do Institutional Investors Always Behave Responsibly?

The discussion thus far has implicitly assumed that institutional investors attempt to arbitrage apparent market inefficiencies in the process of making returns for their investors. However, there are many situations in which institutional investors (or arbitrageurs more generally) have incentives to 'ride' rather than trade against mispricings. For example, if they expect mispricing to increase over the short-run, arbitrageurs have an incentive to jump on the bandwagon rather than trade against the mispricing. Brunnermeier and Nagel (2004) document just such an effect during the technology bubble before the NASDAQ crash of 2000. They find that hedge funds were long technology stocks on the way up, but reduced their positions in stocks that were falling in value, thus managing to avoid much of the downturn. Evidence of Griffin et al. (2003), who find that institutional investors trend-chased NASDAQ-100 stocks at high frequencies over the period of the NASDAQ bubble, support this finding.

A related literature detects evidence of trend-chasing behavior by investors when they trade in international markets rather than domestically. In many cases these studies are conducted using data on institutional investors (see Grinblatt and Keloharju, 2000a; Choe et al. 1999; Froot et al., 2001; Kim and Wei, 2002). Edison and Warnock (2008) find that cross-border flows follow the trend in dividend yields, not just equity returns, suggesting that the trend-chasing of international flows may be related to expectations of fundamentals rather than simply positive-feedback trading or bubble-riding behavior.

Brunnermeier and Pedersen (2009) describes another class of situations in which institutional investors act to exacerbate the deviation between prices and fundamentals. These authors study 'predatory trading' occurring on the back of other investors' needs to reduce their positions. In particular, if some investors have knowledge of other investors' needs to liquidate positions, strong incentives exist for these investors to sell and subsequently repurchase the same assets. This leads to greater deviations of prices from fundamentals and greater illiquidity at precisely those moments when liquidity is sought by traders.

SUMMARY AND CONCLUSIONS

The literature on institutional investors is vast. The two main questions that researchers have sought to answer are whether institutional investors have detectable and consistently superior investment ability, and whether institutional investors act as if to discipline prices in financial markets. The answer to the first question seems to be that some institutions possess superior investment ability, but it is hard to detect and short-lived. The answer to the second question appears to be that institutions trade correctly before and after cash-flow relevant news announcements.

This apparent stabilizing behavior needs to be viewed with caution for at least three reasons. First, the fact that the post-earnings announcement drift and other anomalies continue to be persistent phenomena in equity markets suggests that even if institutional investors are trading as if to discipline prices, they are clearly not doing enough of it. Second, the behavior of capital flows to institutions places important constraints on their discretion when investing. Sudden withdrawals of capital may force their trading behavior, and the fact that capital flows to institutions are nonlinearly related to past performance is another important distortion that affects institutional investors' incentives to act as arbitrageurs. Finally, several situations exist in which institutional investors have strong incentives to engage in positive feedback or predatory trading, both of which have potentially destabilizing influences on prices.

DISCUSSION QUESTIONS

1. Should an individual investor feel comfortable delegating his portfolio to an institutional investment manager? Is such an investor guaranteed to obtain high risk-adjusted returns from such delegation?
2. Hedge funds seem like a consistently high-performing set of investment managers. What are the risks embedded in investing in hedge funds? In particular, do investors completely understand the investment strategies of hedge funds?

3. What lies beneath the apparently 'smart' behavior of institutional investors relative to that of individual investors? If individuals simply begin investing in groups rather than individually, would they make better investment decisions?
4. Given the relatively better performance of institutional investment managers compared to individual investors, will the aggregate individual investment in securities reduce to zero (i.e., full delegation)? What are the consequences for prices, returns, and market inefficiencies if this were to happen?
5. Should institutional investment managers be held responsible for not 'leaning against the tide' when bubbles form? Is there some way to regulate their behavior or create incentives for them to provide this public good?

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