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By Lauren Cohen, PhD, Dong Lou, PhD, and Christopher Malloy, PhD

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Abstract

Using a novel, proprietary database of micro-level trading activities by asset managers, we show strong evidence of asset managers engaging in strategic trading to cloak their most valuable trades. This takes the form, for instance, of a manager who sells her entire position of Microsoft on March 30, and then repurchases to re-establish the same position on April 1. This manager will be holding economically the same position throughout, yet without having to publicly signal this position. These cloaked trades earn an abnormal return of 370 basis points in the following month, or more than 36 percent per year. We further show that the same managers do not engage in such information-rich cloaked trading around other month ends (non-reporting months), nor in institutional accounts (that are not subject to the reporting requirements) at the exact same quarter-end dates. Moreover, the returns to these cloaked trades continue to accrue over the subsequent quarter and do not reverse in the following year, implying that these cloaked trades are informative about fundamental firm value, which is gradually revealed into prices.

Introduction

Delegation is the principal portfolio choice problem facing nearly all investors. One of the most complex aspects of this problem is asymmetric information regarding the ability of agents to whom the investor might delegate. A large literature has explored this topic of managerial ability, yet it remains largely an open debate, with supportive evidence on both sides. Further, delegated portfolio management has grown substantially worldwide, now representing the most common manner in which a new dollar is invested in global markets (Cremers et al. 2016). This being said, the literature has by and large ignored the important fact that delegated agents themselves are often members of larger organizations, and thus their portfolios represent a maximization under organizational constraints. Given constraints such as portfolio concentration limits, mandated allocations, within-family compulsory allocations, along with regulatory reporting requirements and scrutiny, the portfolios held by managers may in fact be a quite noisy representation of a given manager's underlying ability to selectively identify outperforming assets.

In other words, all of these safeguards put into place to protect investors (regulatory requirements, concentration limits, excessive mandated disclosure, etc.) may end up hurting them because they handcuff managers in the portfolio choices they can make.

> *We present strong evidence of strategic trading by managers in response to mandated disclosure. In particular, managers engage in cloaking trades to mask their truly informed positions.*

In this paper, we show how managers respond to one of these constraints; namely, regular mandated disclosure. We present strong evidence of strategic trading by managers in response to mandated disclosure. In particular, managers engage in cloaking trades to mask their truly informed positions. A portfolio of these informed cloaked positions yields excess returns upward of 370 basis points per month (t-statistic = 3.12), or more than 36 percent per year.

A fundamental problem that has plagued past literature in assessing ability is that it has had to rely nearly exclusively on reported quarter-end fund holdings as evidence of the information sets of respective mutual fund managers. Of course, fund managers, knowing that the snapshot of their quarter-end holdings—solely this snapshot—will be publicly viewable, will solve endogenously as to the quantity and scope of information they feel comfortable revealing through the snapshot.

To subvert this fundamental problem, we peek behind the curtain of managerial portfolio choices using a novel, proprietary database of micro-level trading activity by mutual funds. Our general premise is to allow the subtle trading behaviors of managers to guide us to the positions they most value, even given the many imposed constraints. Specifically, as mentioned above, we identify cloaked trading by mutual fund managers by exploiting the Securities and Exchange Commission (SEC) mandatory quarterly reporting requirement of investment funds (Securities Exchange Act of 1934). We define cloaked trades as trades made for the specific goal of subverting this reporting; for example, a manager who sells an

entire position of Microsoft on March 30 and then repurchases to re-establish the same position on April 1. This manager will be holding a nearly economically identical position were she to have held over all three days with the important distinction that were she to have held over all three days, she would have had to publicly signal this position.

Across the universe of mutual funds in our sample, these cloaked trades substantially outperform all other trades of these individual managers and all other trades in the mutual fund universe. Recall that a portfolio of these informed cloaked positions yields excess returns upward of 370 basis points per month ($t = 3.12$), or more than 36 percent per year. Further, these cloaked trades do not load significantly on any known return determinants. Indeed they deliver five-factor alphas of 336 basis points per month ($t = 2.51$), with statistically insignificant loadings on all five factors.

Importantly, these cloaked trades continue to accrue returns over the next quarter, and the returns never reverse. This implies that the information that managers intend to cloak through their trading is fundamentally important information that gradually does get incorporated into firm value. We also show that managers continue to significantly build and grow their positions over the quarter after cloaking the trade, and the result is a significantly larger position than pre-cloaking (i.e., end-of-quarter reporting). Thus, the incentive to cloak is compatible with plans to build larger positions and is a critical piece of the cloaked trading thesis.

Lastly, we run a number of placebo tests to show that this trading behavior we observe is indeed driven by the cloaking incentives to avoid regulatory disclosure. First, we show that all other month-ends that are not associated with disclosure (i.e., January, February, April, May, July, August, October, November) exhibit no such systematic cloaked trading behavior. Further, in those instances in which managers do happen to close and then re-initiate positions around these placebo month-ends, these trades are associated with statistically zero returns. This suggests it is simply random trading around non-reporting month ends, again highlighting the strategic aspect of the cloaked trading around quarter-end reporting dates.

Further, as a part of our data, we have access to separate managed accounts that the exact same managers manage for private clients. The interesting contrasting element of these accounts is that they are not mandated to report holdings. We show, much like the placebo month ends, that these accounts have no systematic cloaked trading at precisely the same quarter-end dates, and that any errant round-trip trades we do observe lead to statistically zero returns.

In sum, our results show that mutual fund managers engage in strategic cloaked trading of valuable positions. This cloaked trading is driven by the strategic incentive to subvert the mandatory constraint of quarter-end public position reporting. The sum of our evidence highlights the profound impact that imposed portfolio constraints have on asset manager behavior. Mandated portfolio requirements and constraints are not without merit or justification, but we must recognize their onerous nature and the distortion these constraints have on observed behavior. Most critically, we must take this into account when forming any inference regarding observed portfolio choice decisions under these constraints and mapping those constrained decisions to true managerial ability.

Background

Our paper relates to the literature on mutual fund disclosure requirements (e.g., Wermers 2001; Ge and Zheng 2006). Proponents of less-frequent portfolio disclosure identify two significant costs for mutual funds and their investors. The first cost is due to a free-rider problem. Fund managers must exert effort (or pay a cost) to gather value-relevant information that has yet to be reflected in prices. Portfolio disclosure, however, reveals a manager's private information by exposing the securities that are recently bought and sold by the fund. Thus, disclosure limits the time horizon over which managers can profit from their costly research: Managers either have to rush to complete building their positions before the next disclosure date (and pay a higher transaction cost for accelerated trading), or risk losing their information advantage once their positions are publicly known. With frequent (e.g., continuous) portfolio disclosure, a fund that conducts costly research effectively has to fully disclose its information; all other investors, who do not pay the cost, can free-ride on the fund's research and perform just as well. Thus, frequent disclosure could distort mutual funds' incentives to gather and trade on information and may have potentially negative implications for the efficiency of asset prices.

The second cost of frequent portfolio disclosure stems from the front-running effect. Mutual funds regularly put on large trades for liquidity and rebalancing reasons. For example, in response to cash inflows and outflows, mutual funds often scale up and down their existing holdings to absorb these funding shocks. The availability of timely holdings information, combined with the fact that capital flows to mutual funds are highly predictable, may allow other investors to anticipate and front-run these cash-flow related trades. Corroborating this view, Coval and Stafford (2007) and Lou (2012) show that a simple strategy that exploits the predictability of mutual funds' flow-induced trading yields highly significant abnormal returns. Shive and Yun (2013) find evidence that a subset of hedge funds indeed engages in this type of strategic trading behavior. Relatedly, Chen (2016) shows that mutual funds regularly rebalance their holdings to offset portfolio weight changes that are induced mechanically by differential stock returns. Again, timely holdings information can allow other investors to anticipate and front-run mutual funds' rebalancing trades, leading to lower fund returns.

Our results speak directly to the free-rider channel. Our evidence suggests that mutual fund managers indeed care about the forced revelation of private information through portfolio disclosure. To mitigate this free-rider problem, fund managers put on cloaked

trades to hide their most profitable trading ideas; i.e., to close their best positions right before the disclosure date and reopen the same positions right after.

Our paper also complements prior research on mutual fund managerial ability. Early studies in this literature examine the hypothesis that cross-sectional variation in managerial ability leads to performance persistence; i.e., skilled managers should persistently outperform unskilled managers. Grinblatt and Titman (1992), Goetzmann and Ibbotson (1994), and Brown and Goetzmann (1995) find persistence in mutual fund rankings based on abnormal performance. Hendricks et al. (1993), using a calendar-time portfolio approach, show that mutual funds in the top-return octile outperform those in the bottom octile by about 8 percent, risk-adjusted, in the following year. Carhart (1997) cuts the return spread by half after including price momentum as an additional common risk factor. More recently, researchers have attempted to more directly tie investment skills to manager and fund characteristics. For example, Chevalier and Ellison (1999) show that managers with higher SAT scores tend to outperform their peers. Kacperczyk et al. (2005) show that industry concentration of mutual funds strongly forecasts future fund performance. Relatedly, Cremers and Petajisto (2009) find that a more general definition of portfolio concentration, i.e., active share, also helps explain mutual fund performance in the cross section. Our paper, by focusing on a short window around the disclosure date, during which managers have the strongest incentives to hide and execute their most profitable investment ideas, suggests that some fund managers have considerable ability in picking stocks.

Another work related to ours is Agarwal et al. (2013), which examines hedge funds that delay the reporting of their holdings (as sometimes allowed by regulation), and that add positions later to existing filings. The main finding of that paper is that these delayed, added positions generate significant abnormal returns. The biggest difference between our paper and Agarwal et al. (2013) is that we find positions that managers are actively hiding such that they never have to reveal them to the market (unlike Agarwal et al. [2013], which examines delayed reporting). Moreover, the returns to cloaked trades are roughly four–five times larger than the effect documented in Agarwal et al. (2013): 3.5 percent versus 0.7 percent in abnormal returns per month.

Data

Our primary data source consists of detailed institutional stock transactions from ANcerno (formerly Abel Noser), a consulting firm that works with institutional investors to monitor and optimize their equity trading costs. ANcerno's clients include major pension plan sponsors such as California Public Employees' Retirement System (CalPERS) and United Airlines, mutual fund families (i.e., money managers) such as Fidelity Investments and Putman Investments, and a small number of brokerage firms. This dataset is also used in other studies, such as Goldstein et al. (2009), Puckett and Yan (2011), Anand et al. (2012), and Hu et al. (2013).

Our study focuses on stock transactions reported by money managers (those with a client code of 2) for the period January 1999 to November 2011. During this period, ANcerno also includes in a meta-file the names of the money managers (i.e., the fund family) as well as information regarding the individual accounts at the money manager—this information can be the individual account/fund name, fund ticker, or portfolio manager name. We match these investment accounts to the Center for Research in Securities Prices (CRSP) mutual fund database in two steps—first matching on fund family names, and then within each family matching based on fund names, fund tickers, or portfolio manager names. We automate part of the matching procedure and manually check all the potential matches. After applying all the matching criteria, we are able to identify sixty-seven mutual funds in the ANcerno database per quarter in our sample period. We label the remaining accounts that we are unable to match to the CRSP database—more than 700 each quarter—as institutional accounts, because they are likely to be investment accounts dedicated to institutional clients.

> *"We automate part of the matching procedure and manually check all the potential matches. After applying all the matching criteria, we are able to identify sixty-seven mutual funds in the ANcerno database per quarter in our sample period."*

We then extract from ANcerno detailed information regarding each stock transaction: the date and time, size, and direction of the transaction. We augment our transactions data by stock return, share price, trading volume, and shares outstanding information from CRSP daily stock files. The two datasets are linked using both ticker symbols and CUSIP numbers. We only include in our sample common stocks with a price greater than $5 a share. We then obtain accounting information for each firm from Compustat, institutional ownership from Thomson Financial 13F filings, and analyst coverage from Institutional Brokers' Estimate System.

Table 1 provides descriptive statistics of our sample. In any given quarter, the average mutual fund trades more than 21 million shares and $740 million in value, and the average institutional account trades more than 13 million shares and about $440 million in value. The average stock held by mutual funds has a market capitalization of $7.2 billion and a book-to-market ratio of 0.49. Similar stock characteristics are also preferred by institutional investors: 68 percent of the shares outstanding are held by institutional investors (compared to less than 60 percent of institutional ownership for all stocks in CRSP in our sample period); on average, these

Table 1: Summary Statistics

	Mean	Standard Deviation	Minimum	Q1	Median	Q3	Maximum
(A): ANcerno Data (quarterly observations)							
Number of mutual funds per quarter	67	27	21	53	59	66	155
Number of institutional accounts per quarter	714	378	272	290	747	986	1,435
Average trading (#MM) by a mutual fund	21.2	8.7	9.8	14.7	18.9	26.7	47.6
Average trading ($MM) by a mutual fund	741.6	328.5	343.5	463.7	662.0	894.1	1,949.6
Average trading (#MM) by an institutional account	13.2	6.3	3.1	9.6	12.3	16.2	27.5
Average trading ($MM) by an institutional account	442.7	214.2	84.5	300.5	413.1	564.3	958.5
(B): Stocks Held by Mutual Funds (pooled across all quarters)							
Market capitalization ($MM)	7.22	22.93	0.00	0.58	1.53	4.74	602.43
Book-to-market ratio	0.49	0.50	0.02	0.20	0.35	0.61	11.18
Institutional ownership	0.68	0.20	0.00	0.57	0.72	0.83	1.00
Analyst coverage	13.21	7.83	1.00	7.00	12.00	18.00	51.00
(C): Cloaked Trades by Mutual Funds (quarterly observations)							
Number of cloaked trades per quarter	64	36	7	35	63	94	134
Average size (#MM) of a cloaked trade	0.2	0.2	0.0	0.1	0.1	0.3	0.8
Average size ($MM) of a cloaked trade	8.4	6.5	1.7	3.8	5.8	10.5	31.4

Table 1 reports summary statistics of our sample, which spans the period 1999–2011. (A) reports some basic statistics of the ANcerno dataset: the number of mutual funds and institutional accounts each quarter, and their average trading volume (in million shares and million dollars) each quarter. Mutual funds are those accounts in ANcerno that we match to the CRSP mutual fund database using either the fund name or manager name, and institutional accounts are the ones that we cannot match to the CRSP mutual fund database. (B) reports basic statistics of stocks held by mutual funds in the ANcerno sample. Institutional ownership is the fraction of shares outstanding held by all institutional investors, and analyst coverage is the number of analysts covering the firm in question. (C) reports basic statistics of cloaked trades by mutual funds, which are defined in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. In the table, millions of shares is denoted (#MM) and millions of dollars is denoted ($MM).

stocks are covered by more than thirteen sell-side analysts (compared to the sample mean of about eight for all CRSP stocks).

At the end of each quarter, we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the same stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. In an average quarter, we are able to identify sixty-four such cloaked trades. The average cloaked trade is about 0.2 million shares, worth close to $8.4 million.

Results: Cloaked Trading

Portfolio Tests

In this section we examine mutual fund managers' portfolio choices. In particular, we document strategic trading behavior we term "cloaked trading." Cloaked trading is trading specifically to avoid detection of positions from public disclosure. This trading is motivated by the Securities Exchange Act of 1934 Section 13(f) mandated requirement of public disclosure of the holdings of institutions that have eligible assets greater than $100 million. This mandated public disclosure serves as a portfolio constraint around which managers must maximize.

We define cloaked trades as trades made for the specific goal of subverting this reporting; for example, a manager who sells an entire position of Microsoft on March 30 and then repurchases to re-establish the same position on April 1. This manager will be holding an almost economically identical position were she to have held over all three days with the important distinction that were she to have held over all three days, she would have had to publicly signal this position. More generally, if a mutual fund sells an entire position in a stock in the five days before the mandatory report date and buys the stock in the five days after the quarter end, we classify it as a buying cloaked trade (long) and vice versa for a selling cloaked trade (short).

We then begin by forming simple portfolios in which we long the cloaked buys and short the cloaked sells each quarter and examine the future returns to this cloaked trading. We begin portfolio formation on the sixth trading day following quarter end (report date)—following the five days of trading post quarter-end—such that all returns are predictive. From table 2A, we see the large and statistically significant excess returns that accrue to these cloaked trades. For instance, the excess returns to the simple portfolio that longs cloaked buys and shorts cloaked sells yields 370 basis points in the month following formation ($t = 3.12$), an annualized return of more than 36 percent per year.

Table 2: Cloaked Trading—Long-Short Portfolio Returns

(A): Portfolio Returns

	Excess Returns	1–factor alpha	3–factor alpha	4–factor alpha	5–factor alpha
Short	–1.73%	–1.84%	–1.66%	–1.77%	–1.16%
	(–1.32)	(–1.44)	(–1.40)	(–1.55)	(–1.23)
Long	**1.98%**	1.81%	1.88%	1.75%	2.20%
	(2.11)	(1.90)	(1.92)	(1.80)	(1.65)
L/S	**3.70%**	**3.65%**	**3.54%**	**3.52%**	**3.36%**
	(3.12)	(3.03)	(3.03)	(2.84)	(2.51)

(B): Factor Loadings

	xret	Alpha	MKT	SMB	HML	UMD	LIQ
Short	–1.73%	–1.16%	**0.688**	–0.314	–0.583	–0.036	–0.285
	(–1.32)	(–1.23)	(3.68)	(–1.23)	(–2.44)	(–0.27)	(–1.45)
Long	**1.98%**	2.20%	**0.818**	0.030	–0.301	–0.056	–0.209
	(2.11)	(1.65)	(3.21)	(0.16)	(–1.62)	(–0.56)	(–1.22)
L/S	**3.70%**	**3.36%**	0.130	0.345	0.282	–0.019	0.076
	(3.12)	(2.51)	(0.42)	(1.13)	(1.26)	(–0.10)	(0.39)

Table 2 shows calendar-time portfolio abnormal returns. At the end of each quarter, we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following month (skipping the first five trading days of the month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. (A) reports the portfolio returns from the first trading month following the cloaked trade (skipping the five-day window mentioned above), and (B) reports the factor loadings for these portfolios. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

Table 2A further shows the impact of risk-adjustments on cloaked trading returns. As can be seen, these risk-adjustments have nearly no impact on the returns from cloaked trading. For instance, the capital asset pricing model alpha of the cloaked trading portfolio yields abnormal returns of 365 basis points per month ($t = 3.03$). The portfolio has a three-factor alpha of 354 basis points per month ($t = 3.03$), and a five-factor alpha of 336 basis points per month ($t = 2.51$).

Table 2B shows the estimated factor loadings of each of the five factors on the cloaked trading portfolio. From table 2B, cloaked trading returns do not have significant loadings on any of the five factors, because each of the five factors has a factor loading statistically indistinguishable from zero.

Portfolio Tests: Subsequent Months in the Quarter

Table 2 provides evidence of the large returns to cloaked stocks in the month following the cloaking of the position. In table 3, we explore what happens to these stocks in the months that follow the initial month of returns. From tables 3A–C, we see that the abnormal returns continue to accrue throughout the quarter following the cloaking trade. In sum, the returns to the cloaked trades amass an abnormal return of more than 600 basis points over the quarter following the cloaking. For instance, the long-short portfolio mimicking these cloaked trades earns a five-factor alpha of 614 basis points ($t = 2.61$) over the entire quarter (three months) following the trade.

Figure 1 shows the longer-run event time cumulative returns to the cloaked trades. As seen in figure 1, both the long and short legs of the portfolio (cloaked buys and sells) continue to accrue large and significant returns over the quarter following trading, then continue to accrue returns but modestly flatten out in the subsequent quarter. Importantly, the large abnormal returns accruing to the cloaked trades never reverse. The information for which managers are going to these lengths to cloak is only gradually being revealed and incorporated into prices. Given that prices gradually move in the direction of the managers' trades and never revert, far from being overreaction, this implies that the cloaked trades are predicting information important for fundamental firm value that eventually is incorporated into prices.

Future Build-Up of Positions in Cloaked Stocks

Here we examine a straightforward implication of cloaked trading by the managers. If the manager behavior we document in tables 2 and 3 truly is coming from the incentive to hide trades from the public, we might expect the manager to intend to build a larger position in the underlying stock. If the manager already had built an optimal position in the underlying stock, then the manager may have a more muted incentive to cloak the trade—and in fact may

Table 3: Cloaked Trading—Portfolio Returns in the Following Quarter

(A): Portfolio Returns in Month 2					
	Excess Returns	**1-factor alpha**	**3-factor alpha**	**4-factor alpha**	**5-factor alpha**
Short	–1.03%	–0.93%	–1.05%	–1.05%	–1.47%
	(–0.80)	(–1.14)	(–1.11)	(–1.10)	(–1.39)
Long	0.26%	0.34%	0.70%	0.70%	0.70%
	(0.29)	(0.52)	(1.50)	(1.49)	(1.46)
L/S	1.29%	1.27%	**1.75%**	**1.75%**	**2.16%**
	(1.62)	(1.74)	(1.99)	(1.97)	(2.37)
(B): Portfolio Returns in Month 3					
	Excess Returns	**1-factor alpha**	**3-factor alpha**	**4-factor alpha**	**5-factor alpha**
Short	0.59%	0.29%	0.71%	–0.16%	–0.16%
	(0.44)	(0.38)	(0.94)	(–0.36)	(–0.36)
Long	1.41%	1.17%	2.13%	0.91%	0.90%
	(1.05)	(1.21)	(1.75)	(0.90)	(0.88)
L/S	0.82%	0.88%	1.42%	1.07%	1.06%
	(0.93)	(0.97)	(1.31)	(0.79)	(0.78)
(C): Portfolio Returns in Months 1–3					
	Excess Returns	**1-factor alpha**	**3-factor alpha**	**4-factor alpha**	**5-factor alpha**
Short	–2.16%	–2.53%	–1.91%	–2.01%	–1.54%
	(–1.03)	(–1.24)	(–0.95)	(–0.94)	(–0.77)
Long	**3.65%**	**3.30%**	**4.16%**	**4.13%**	**4.61%**
	(2.14)	(2.99)	(3.35)	(3.27)	(3.45)
L/S	**5.81%**	**5.83%**	**6.08%**	**6.14%**	**6.14%**
	(2.60)	(2.56)	(2.86)	(2.79)	(2.61)

Table 3 shows calendar-time portfolio abnormal returns. At the end of each quarter, we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following three months (skipping the first five trading days of the first month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. (A) reports the portfolio returns in month 2, (B) reports the portfolio returns in month 3, and (C) reports the portfolio returns in months 1–3. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

Figure 1: Cumulative Returns to the Long-Short Portfolio

Distribution of Household Expenditures by Percentile, 2003–2011, for Different Age Groups (2013 $s)

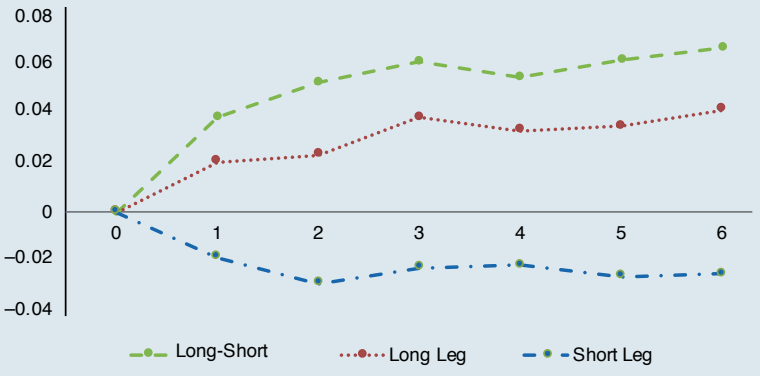

Figure 1 shows the cumulative returns to the long-short portfolio in the six months after portfolio formation. At the end of each quarter, we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following six months (skipping the first five trading days of the first month). The red curve shows the cumulative return to the long leg, the blue curve shows the cumulative return to the short leg, and the green curve shows the cumulative return to the long-short portfolio.

Table 4: Subsequent Trading

	Dependent Variable = $Buy/Sell_{t+1}$					
	[1]	[2]	[3]	[4]	[5]	[6]
$CLOAKED\_TRADE_{i,t}$	0.114**	0.117**	0.105**	0.037***	0.038***	0.035***
	[0.047]	[0.047]	[0.043]	[0.013]	[0.013]	[0.015]
$STOCK\_TRADING_{i,t}$		0.087***	0.083***		0.020***	0.019***
		[0.026]	[0.031]		[0.006]	[0.007]
$FUND\_TRADING_{i,t}$		0.013	0.019		0.003	0.004
		[0.052]	[0.053]		[0.012]	[0.012]
$MKTCAP_{i,t}$			0.084*			0.020*
			[0.049]			[0.011]
$BM_{i,t}$			–0.099			0.011
			[0.114]			[0.025]
$RET12_{i,t}$			–0.059			–0.014
			[0.103]			[0.024]
$TURNOVER_{i,t}$			0.013			0.003
			[0.018]			[0.004]
$IDIOVOL_{i,t}$			0.037			0.009
			[0.063]			[0.015]
$INSTOWN_{i,t}$			–0.043			–0.012
			[0.308]			[0.072]
$NUMEST_{i,t}$			–0.001			0.000
			[0.007]			[0.002]
Number of Observations	3,677	3,677	3,677	3,677	3,677	3,677
Pseudo/Adj-R2	0.01	0.01	0.01	0.01	0.01	0.01

Table 4 reports regressions of subsequent trading activities on lagged cloaked trades. The dependent variable in all columns is a dummy that takes the value of one if a mutual fund buys the stock in the following month (skipping the first five trading days of the month) and zero if the fund sells the stock. The main independent variable is the *CLOAKED_TRADE* dummy that takes the value of one for a buy cloaked trade and zero for a sell cloaked trade. We classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. Fund level controls include the log amount of trading by the fund in the stock in the previous quarter (*STOCK_TRADING*), and the log amount of trading by the fund in all stocks (*FUND_TRADING*) in the previous quarter. Stock level controls include market capitalization of the stock, book-to-market ratio, past-one-year returns, past-one-year monthly turnover, past-one-year idiosyncratic volatility, institutional ownership, and number of analysts covering the firm. Columns 1, 2, and 3 conduct panel logit regressions, and columns 4, 5, and 6 conduct panel ordinary least squares regressions. Standard errors, reported in brackets below the coefficients, are clustered at the quarterly level. *, **, *** denote significance at the 90-percent, 95-percent, and 99-percent level, respectively.

even want to broadcast the trade ("talking their book") to spur prices to converge even more quickly to fundamental value now that the manager already has built a final position. Note that this is not a necessary relationship; a manager may still have an incentive to cloak even if she has already built her final position. For instance, competitive pressure could incentivize this, because otherwise her competing managers may free-ride off her research—accruing the same abnormal returns while not having to invest resources in researching and processing the information to formulate the trade.

In table 4, we test for exactly this continued build-up of positions following the cloaking trades. We find strong evidence that managers who cloak trades do continue to build larger positions in the subsequent quarter following the cloaking trade. Across all specifications, the regressions in table 4 show that fund managers are significantly more likely to build positions in the same direction that they attempted to cloak. For example, if they completely sold MSFT to hide the position, they buy back into MSFT and continue to amass an even larger position in the firm's stock in the quarter subsequent to cloaking the trade.

Placebo Tests and Mechanism Behind Cloaked Trading

As discussed above, we identify cloaked trades as round-trip transactions by mutual funds that take place around quarter ends and subvert regulatory reporting. Here we explore the mechanism of the documented return pattern by relaxing one or more of the constraints in our definition of cloaked trades. Below we examine round-trip transactions around the end of other months (i.e., non-quarter ends); and round-trip transactions around quarter ends by institutional accounts, which are not required to be reported.

Table 5: Placebo Cloaked Trades—Other Month Ends

(A): Portfolio Returns in the Following Month					
	Excess Returns	1–factor alpha	3–factor alpha	4–factor alpha	5–factor alpha
Short	–1.41%	–1.21%	–0.94%	–0.94%	–0.81%
	(–1.04)	(–1.30)	(–1.01)	(–1.01)	(–0.79)
Long	**–1.91%**	**–1.83%**	–1.73%	–1.76%	–1.22%
	(–1.96)	(–2.03)	(–1.78)	(–1.85)	(–1.16)
L/S	–0.50%	–0.62%	–0.80%	–0.82%	–0.41%
	(–0.50)	(–0.74)	(–0.90)	(–0.93)	(–0.64)
(B): Portfolio Returns in the Following Quarter					
	Excess Returns	1–factor alpha	3–factor alpha	4–factor alpha	5–factor alpha
Short	–0.54%	–0.75%	–0.01%	0.07%	0.45%
	(–0.25)	(–0.47)	(–0.01)	(0.03)	(0.20)
Long	1.48%	1.34%	1.49%	1.49%	1.80%
	(0.66)	(0.71)	(0.85)	(0.84)	(0.99)
L/S	2.03%	2.09%	1.50%	1.42%	1.35%
	(1.07)	(1.10)	(0.73)	(0.67)	(0.63)

Table 5 shows calendar-time portfolio abnormal returns for alternative definitions of cloaked trades. At the end of each pseudo quarter (not subject to any reporting requirement) we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the pseudo quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the pseudo quarter end. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following month (skipping the first five trading days of the month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. (A) reports the portfolio returns in month 1 (skipping the first five trading days) and (B) reports the portfolio returns in months 1–3. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

Then, instead of round-trip transactions, we analyze one-way transactions that occur either just before the end of the quarter or just at the beginning of the next quarter (but not both). Finally, we re-run the analysis stripping all momentum stocks out of the sample.

Other Month Ends

Nearly all mutual funds report their quarterly holdings to the U.S. Securities and Exchange Commission at the end of each calendar quarter, which creates a unique window for us to detect any strategic trading behavior due to this compulsory portfolio disclosure. Here we turn to an alternative setting: Rather than round-trip transactions around each quarter end, we focus on round-trip transactions defined in the same way as cloaked trades but around other month ends (i.e., January, February, April, May, July, August, October, and November). Given that mutual funds do not disclose their holdings at non-quarter ends, they have little incentive to camouflage their best ideas around these time periods. Consequently, we should not expect to see a similar return pattern after round-trip transactions in these periods.

Table 5 shows the results for this alternative setting. At the end of each of these eight months, we construct pseudo cloaked trades as round-trip transactions that appear in the five days before and five days after the month end. If a mutual fund sells a stock in the five days before and buys the stock in the five days after the month end, we classify it as a pseudo buy cloaked trade, and vice versa for a pseudo sell cloaked trade. We then go long the buy cloaked trades and short the sell cloaked trades, and hold this long-short portfolio for the next three months (skipping the first five days).

First, it bears noting that these transactions are far less common than the cloaked trading we observe at quarter-end reporting dates. This is not surprising, given that managers have little incentive to mask positions that have no compulsory public reporting requirement. As can be seen from table 5A, the pseudo buy cloaked trades generate an excess return of –1.91 percent and the pseudo sell trades have an excess return of –1.41 percent in the following month. The –0.50 percent difference between the two (*t*-statistic = –0.50) is far from statistically significant and if anything, it goes in the wrong direction. The results remain unchanged with various risk adjustments. In table 5B, we extend the estimation window to the next three months. The return spread between the long and short positions, again, is statistically insignificant.

Institutional Accounts

In our second placebo test, we examine the trading behavior of institutional accounts. Unlike mutual funds, which are primarily retail products that gather assets from vast numbers of individuals with limited balances to invest, institutional accounts gather assets from a limited number of clients who have millions or even billions of dollars to invest. Consequently, mutual funds and institutional accounts are distributed differently, operate under different legal and regulatory structures, and most importantly for our purpose, are subject to different disclosure requirements. In particular,

Table 6: Placebo Cloaked Trades—Trading by Institutional Accounts

(A): Portfolio Returns in the Following Month					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	–0.45%	–0.63%	–0.62%	–0.97%	–0.41%
	(–0.53)	(–0.89)	(–0.83)	(–1.45)	(–0.69)
Long	0.32%	0.17%	0.18%	–0.09%	0.25%
	(0.48)	(0.29)	(0.30)	(–0.16)	(0.31)
L/S	0.77%	0.80%	0.80%	0.87%	0.66%
	(1.13)	(1.16)	(1.12)	(1.33)	(0.94)
(B): Portfolio Returns in the Following Quarter					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	0.36%	–0.06%	–0.13%	0.01%	0.28%
	(0.20)	(–0.08)	(–0.13)	(0.01)	(0.29)
Long	0.18%	–0.21%	–0.14%	0.00%	0.03%
	(0.09)	(–0.18)	(–0.13)	(–0.00)	(0.03)
L/S	–0.18%	–0.15%	–0.01%	–0.01%	–0.24%
	(–0.16)	(–0.13)	(–0.01)	(–0.01)	(–0.20)

Table 6 shows calendar-time portfolio abnormal returns for alternative definitions of cloaked trades. At the end of each quarter, we classify cloaked trades in the following way: If an institutional account (which is not subject to any public reporting requirements) sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following month (skipping the first five trading days of the month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. (A) reports the portfolio returns in month 1 (skipping the first five trading days) and (B) reports the portfolio returns in months 1–3. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

mutual funds need to disclose their holdings as a separate entity on a quarterly basis, but institutional accounts are included as part of the whole portfolio that the management company discloses through its 13F filings. Given this difference in reporting requirements, we argue that managers of institutional accounts have weaker incentives to hide their best ideas around quarter ends because any small atomistic account cannot be extracted from the large, aggregated total institutional holding report.

This prediction is strongly borne out in the data. In table 6, we repeat our analysis reported in tables 2 and 3, except that now we focus on trades by institutional accounts instead of trades by mutual funds. Cloaked trades by institutional accounts are defined in the exact same method as previously. If an institutional account sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. We then go long the buy cloaked trade and short the sell cloaked trade and hold the long-short portfolio for three months.

As in the table 5 placebo test, cloaked trading transactions in institutional accounts are far less common than the cloaked trading we document at quarter-end reporting dates for mutual funds. This is not surprising given that managers have little incentive to mask positions that are not required to be publicly reported. As can be seen from table 6A, the buy cloaked trades executed by institutional accounts have a monthly excess return of 0.32 percent (t-statistic = 0.48) and the sell cloaked trades have a monthly excess return of –0.45 percent (t-statistic = –0.53). The difference between the two of 0.77 percent (t-statistic = 1.13) is statistically insignificant. We obtain very similar results when adjusting the portfolio returns by various risk models. Table 6B reports the cumulative returns to this long-short portfolio over the next three months. The cumulative return spread of –0.18 percent (t-statistic = –0.16) is economically small and statistically insignificant. Taken together, the results of the placebo trades in table 6 support our thesis that it is portfolio disclosure that leads to the strategic trading behavior we observe from fund managers who seek to hide their best ideas.

Non-Cloaked Trades

In our definition of cloaked trades, a key feature is that the fund buys and sells the same securities around the quarter end in a manner that avoids detection of the mandatory reporting requirements. Here we relax this requirement and examine one-way transactions either before the quarter end or at the beginning of the next quarter (but not both, so that there is no cloaking aspect to these trades). We argue that these one-way trades are not different from other trades in any other period, i.e., these trades do not reflect fund managers' best ideas, thus we do not expect these trades to strongly forecast future stock returns.

The return patterns associated with these one-way transactions are reported in table 7. In table 7A, we focus solely on transactions taking place in the last five days of each quarter that are not accompanied

Table 7: Non-Cloaked Trades

(A): Quarter–End Trading Only					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	0.59%	0.41%	0.47%	0.11%	–0.05%
	(1.02)	(0.60)	(0.66)	(0.20)	(–0.07)
Long	0.82%	0.60%	0.70%	0.26%	0.77%
	(0.93)	(0.63)	(0.68)	(0.32)	(0.71)
L/S	0.23%	0.19%	0.24%	0.14%	0.82%
	(0.46)	(0.38)	(0.41)	(0.26)	(0.96)
(B): Quarter–Beginning Trading Only					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	0.28%	0.14%	0.19%	–0.09%	0.49%
	(0.47)	(0.27)	(0.37)	(–0.17)	(1.13)
Long	0.59%	0.43%	0.46%	0.34%	1.01%
	(0.92)	(0.72)	(0.81)	(0.57)	(1.47)
L/S	0.31%	0.29%	0.27%	0.43%	0.51%
	(0.82)	(0.77)	(0.67)	(1.02)	(1.07)
(C): Persistent Trading					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	0.13%	0.00%	0.12%	0.18%	0.58%
	(0.28)	(0.00)	(0.30)	(0.43)	(1.02)
Long	0.55%	0.38%	0.37%	0.29%	0.99%
	(1.00)	(0.64)	(0.61)	(0.49)	(1.14)
L/S	0.41%	0.38%	0.26%	0.11%	0.41%
	(0.58)	(0.52)	(0.36)	(0.17)	(0.59)

Table 7 shows calendar-time portfolio abnormal returns for non-cloaked trades. In (A), we focus solely on trades taking place at the end of quarter; in (B), we focus solely on trades taking place at the beginning of the next quarter; in (C), we focus solely on trades taking place at both the end of the current quarter and the beginning of the next quarter but that are in the same direction. We go long in the buy trades and go short in the sell trades in the following month (skipping the first five trading days of the month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

by a reverse trade in the first five days of the next quarter. We then go long the buy trades and short the sell trades. This long-short portfolio earns an excess return of 0.23 percent (*t*-statistic = 0.46) in the subsequent month, both economically and statistically insignificant. The results are similar with various risk adjustments.

In table 7B, we focus solely on trades taking place in the first five days of each quarter that are not accompanied by a reverse trade in the last five days of the previous quarter. The results are similar to those shown in table 7A: The return spread between the buy and sell trades of 0.31 percent (*t*-statistic = 0.82) is far from statistically significant. In table 7C, we again look at a pair of transactions in the same stock that occurs on both sides of the quarter end but in the same direction; i.e., we focus on two consecutive buy trades or two consecutive sell trades by the same mutual fund around the quarter end. The buy trades outperform the sell trades by 0.41 percent (*t*-statistic = 0.58) in the following month. All in all, the evidence from table 7 suggests that non-cloaked trades, just like the average trade by mutual funds, do not help forecast stock returns in the cross section.

Stripping Out Momentum Trades

In our final set of tests, we address the concern that some of the trades around quarter ends may be motivated by window-dressing concerns due to recent return realizations of the firms. The window-dressing hypothesis stipulates that because institutional investors are evaluated in relation to their peers, they tend to buy winners and sell losers just before the calendar quarter-end to present respectable quarter-end portfolio holdings to their investors (Lakonishok et al. 1991; Sias and Stark 1997). Because window-dressing-motivated trades are unlikely to be informative about future stock returns, it is unlikely that the window-dressing behavior is the main driver of our results.

Nonetheless, to assess the degree to which window-dressing trades are responsible for our documented return pattern, we exclude both winner and loser stocks in each quarter from our empirical analysis. We define cloaked trades in the exact same way as before, but exclude momentum stocks—i.e., those in the top and bottom deciles in terms of past-year returns—from the sample.

Table 8: Excluding Momentum Stocks

(A): Portfolio Returns in the Following Month					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	–0.96%	–1.04%	–0.93%	–1.16%	–1.19%
	(–1.21)	(–1.31)	(–1.18)	(–1.57)	(–1.37)
Long	**1.94%**	1.86%	1.90%	1.87%	2.15%
	(2.14)	(1.95)	(1.94)	(1.84)	(1.65)
L/S	**2.90%**	**2.90%**	**2.83%**	**3.03%**	**3.35%**
	(4.25)	(4.21)	(4.14)	(3.71)	(2.60)
(B): Portfolio Returns in the Following Quarter					
	Excess Returns	**1–factor alpha**	**3–factor alpha**	**4–factor alpha**	**5–factor alpha**
Short	–1.18%	–1.41%	–1.02%	–1.06%	–0.94%
	(–0.74)	(–0.90)	(–0.60)	(–0.61)	(–0.50)
Long	**3.55%**	**4.24%**	**3.05%**	**3.17%**	**2.83%**
	(2.13)	(2.80)	(3.02)	(2.92)	(3.10)
L/S	**4.91%**	**4.94%**	**5.33%**	**5.31%**	**5.63%**
	(2.63)	(2.53)	(2.57)	(2.54)	(2.28)

Table 8 shows calendar-time portfolio abnormal returns. At the end of each quarter, we classify cloaked trades in the following way: If a mutual fund sells a stock in the five days before and buys the stock in the five days after the quarter end, we classify it as a buy cloaked trade, and vice versa for a sell cloaked trade. Moreover, we require the amount of buying/selling in the five days after to be greater than 0.5 of the amount of selling/buying in the five days before the quarter end. We further exclude momentum stocks—i.e., those in the top and bottom deciles in terms of past-year returns—from the sample. We then go long in the buy cloaked trades and go short in the sell cloaked trades in the following three months (skipping the first five trading days of the first month), and the portfolios are rebalanced each quarter. Alphas and betas are the intercepts and slopes from regressions of the monthly excess portfolio returns on the corresponding factors. The explanatory variables are the monthly returns from the Fama and French (1993) factor mimicking portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. L/S is a self-financed long-short portfolio. (A) reports the portfolio returns in month 1 and (B) reports the portfolio returns in months 1–3. *T*-statistics are shown below the coefficient estimates, and 5-percent statistical significance is indicated in bold.

The results are shown in table 8. As can be seen from table 8A, after purging the extreme winners and losers from the sample, mutual funds' buy cloaked trades outperform sell cloaked trades by 2.90 percent (*t*-statistic = 4.25) in the following month. Adjusting for risk models has virtually no impact on this return spread. Table 8B extends the return horizon to the next three months. The cumulative return spread between the buy cloaked trades and sell cloaked trades is 4.91 percent (*t*-statistic = 2.63) in this period. Taken together, the evidence presented in table 8 shows that our cloaked-trading mechanism is orthogonal to mutual fund window-dressing behavior in forecasting stock returns.

Conclusions

Mutual funds are faced with a number of constraints: regulatory requirements, concentration limits, mandatory disclosure, etc. Many of these constraints, which are put in place to help fund investors better monitor their managers, could potentially hurt the investors, because these constraints handcuff managers in the portfolio choices they can make.

In this paper, we focus on how managers respond to one of these constraints—mandated portfolio disclosure. The premise of our work is that fund managers, knowing that the snapshot of their quarter-end holdings is mandated to be publicly viewable, solve endogenously as to the quantity and scope of information they choose to reveal through the snapshot. Specifically, given the free-rider issue (that other investors can copy the fund's trading ideas without paying the cost of research) and the front-running concern (that other investors may trade in the same direction and cause prices to move before the fund has finished building its position), mutual funds will have an incentive to hide (cloak) their best ideas from the quarter-end public reporting.

We identify cloaked trades as trades for which the specific goal is to subvert this reporting (i.e., unwinding an entire position of Microsoft on March 30, simply to re-establish the same position on April 1). The position will be nearly identical economically to one held over all three days with the important distinction that were it held over all three days, the position would be mandated to be publicly signaled. We present strong evidence of strategic use of these cloaked trades by managers in response to mandated disclosure. In particular, managers engage in cloaking trades to mask their truly informed positions: A portfolio of these informed cloaked positions yields excess returns upward of 370 basis points per month ($t = 3.12$), or more than 36 percent per year.

To provide additional support for our thesis of cloaked trading, we conduct a number of placebo tests to show that this trading behavior indeed is driven by mutual fund managers' incentives to avoid disclosing their most profitable ideas. First, we show that all other month ends that are not associated with disclosure (e.g., January, February, April, May, etc.) exhibit no such systematic cloaked trading behavior. Further, we repeat our analyses for managed institutional accounts that are not subject to the same disclosure requirements. We find that in these accounts there is no systematic cloaked trading for precisely the same quarter-end dates.

The sum of our evidence highlights the profound impact that imposed portfolio constraints have on asset manager behavior. Mandated portfolio requirements and constraints are not without merit or justification, but we must recognize their onerous nature and the distortion these constraints have on observed behavior. Most critically, we must take this into account when forming any inference regarding observed portfolio choice decisions under these constraints and mapping those constrained decisions to true managerial ability.

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