Why constrain your mutual fund manager?

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Abstract

We examine the form, adoption rates, and economic rationale for various mutual fund investment restrictions. A sample of U.S. domestic equity funds from 1994 to 2000 reveals systematic patterns in investment constraints, consistent with an optimal contracting equilibrium in the fund industry. Restrictions are more common when (i) boards contain a higher proportion of inside directors, (ii) the portfolio manager is more experienced, (iii) the fund is managed by a team rather than an individual, and (iv) the fund does not belong to a large organizational complex. Low- and high-constraint funds produce similar risk-adjusted returns, also consistent with an optimal contracting equilibrium.

Keywords: Mutual funds; Corporate governance; Investment restrictions

JEL classi…cation: G23; G32

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1. Introduction

The money management industry has often been used as a laboratory for exploring issues of general interest in corporate finance. For example, Starks (1987) examines the effect of incentive compensation on a portfolio manager's risk-taking decisions, while Khorana (1996) and Chevalier and Ellison (1999) consider the "career concerns" of mutual fund managers. The availability of detailed data and, perhaps more important, the fact that the investment opportunity set and the range of managerial decisions are more proscribed in the fund industry than for a general industrial corporation constitute compelling reasons to study contracting in this industry.

Although much has been written about the return performance and investment styles of professional asset managers, the academic literature has devoted surprisingly little attention to the restrictions commonly found in the investment policies that define the contracts between investors and managers. Mutual fund constraints are widespread and restrict the investment policy of a portfolio in various ways. Managers might be prohibited from taking short positions in stocks, from borrowing to finance the portfolio, or from holding positions in a variety of securities, including equity options, index futures, and restricted stock. Simply put: Why do investors trust their funds to professional managers but then place constraints on their actions?

The purpose of this study is to provide a detailed examination of the motivation for and economic impact of the kinds of constraints that are most commonly found in mutual fund investment policy statements. We will proceed along three main lines of inquiry. First, we document the type of constraints adopted in practice, the frequency of their use, and how those adoption practices have changed over time. We examine the investment restrictions adopted by a large sample of U.S. domestic equity funds over the period from 1994-2000. We report evidence on prohibitions against six specific investment practices: borrowing, purchasing securities on margin, short-selling, holding individual equity options, trading in equity index futures, or purchasing restricted securities. Our results indicate that the adoption patterns for these restrictions – considered on both an individual and an aggregate basis – are neither random nor uniform, but rather demonstrate significant cross-sectional and time-series variation.

The second part of our investigation relates the presence of investment restrictions to other fund characteristics in an effort to establish an economic rationale for such constraints. We view investment restrictions as one component of the set of monitoring mechanisms that reduce the costs arising from frictions in the principal-agent relation. In this regard, investment constraints are analogous to protective covenants to mitigate the agency problems inherent in their relation with the firm's bondholders; see Smith and Warner (1979). In order to organize our empirical analysis, we consider the following control mechanisms as alternatives to explicit investment restrictions: (i) direct monitoring and the role of fund directors, (ii) labor market monitoring and managerial career concerns, (iii) peer monitoring and the role of mutual fund complexes, and (iv) product market monitoring and the structure of fund sales charges.

In support of the view that explicit constraints are substitutes for these other means of monitoring, we find that investment restrictions are more likely: (i) when boards contain a higher proportion of inside directors, (ii) when fund managers are more experienced and funds are team-managed rather than run by an individual manager, and (iii) when the fund does not belong to a large organizational complex (i.e., a fund family). On the other hand, we find no evidence that the adoption of investment restrictions is related to the presence of fund load charges or to the structure of those fees.

We interpret these results as evidence of optimal contracting in the mutual fund industry. Our results on boards are in line with previous findings in the corporate finance literature that outsider-dominated boards are more effective monitors of investors' interests. For a recent survey of the role that boards play in solving agency problems, see Hermalin and Weisbach (2002). Our results on career concerns corroborate the findings in Chevalier and Ellison (1999) on manager age and complement them with the additional finding that team-managed funds, where the team members have less of their reputation at stake than would an individual manager, are constrainted relatively more frequently. Finally, our finding that large fund complexes use relatively fewer constraints is consistent with the existence of peer monitoring to preserve fund reputational capital.

Having addressed the issues of how and why investment restrictions are used, we finish the study by examining the impact of these constraints on fund performance. We consider two types of return-based evidence. First, we perform a series of matched-fund analyses by forming zero-investment portfolios consisting of long positions in relatively unconstrained funds financed by short positions in relatively constrained ones. Second, we also estimate various multiple linear regressions of fund return and risk measures on a policy constraint index and other fund characteristics. Both approaches produce similar findings, supporting the conclusion that differences in the level of investment policy restriction do not affect fund performance in either an economically or statistically significant manner. We view this evidence as consistent with the idea that mutual funds adopt the set of constraints necessary to produce an optimal contract with their investors.

To the best of our knowledge, this is the first paper to examine portfolio policy constraints in a comprehensive way. Koski and Pontiff (1999) and Deli and Varma (2002) concentrate on the ability of funds to use derivative securities, while Clarke, de Silva, and Thorley (2002) consider the narrower conceptual question of how investment restrictions on position size and portfolio turnover impact a manager's ability to produce superior risk-adjusted returns. By focusing on a broader set of constraints and by relating the use of direct restrictions to alternative monitoring mechanisms, we offer a more complete perspective on the trade offs involved in monitoring a managed portfolio. We report new facts about the cross-sectional determinants of the fuller range of investment restrictions used in practice and the consequences of those decisions on portfolio performance.

The remainder of the paper is organized as follows. In Section 2, after discussing the potential impact of the regulatory environment on constraint adoption practices, we describe our fund sample and data sources, define the individual and aggregate restriction measures we employ, and catalog their use during our sample period. Section 3 offers more detailed explanations for the various monitoring hypotheses that motivate the use of investment restrictions, while Section 4 describes the variables in our empirical tests of those hypotheses and summarizes the findings. Section 5 examines the relation between constraints and fund returns. Our overall conclusions are in Section 6.

2. Mutual fund investment constraints: adoption and use patterns

2.1. Regulation and constraint

Not all of the investment restrictions that mutual funds face are necessarily the result of voluntary contracting between investors and managers. Starting in the 1930s, the U. S. Congress has enacted a series of regulations that define the general way in which mutual funds can conduct their operations. These regulations cover practices such as how funds can issue shares, how and when they must distribute dividends and capital gains, and how they must report their policies and performance to investors.

The Investment Company Act of 1940 restricts the investment activities of the funds.[1] However, the restrictions are often broadly worded or otherwise subject to interpretation. For example, the legislation authorizes the SEC to regulate both short sales and margin trading, but the Commission has chosen not to impose any special regulations on these activities. Furthermore, many of its provisions have been modified considerably over the past 60 years. A good example involves the statutory ability of a mutual fund manager to use traditional forms of leverage. Section 13(a) of the Act states: "No registered investment company shall, unless authorized by the vote of a majority of its outstanding Voting Securities, borrow money." However, subsequent policy has evolved to the point that funds are now routinely permitted to borrow up to 33 1/3% of their total assets in a variety of ways.

The 1940 Act requires that investment companies disclose in their stated investment policies the restrictions that govern their investment activities. Consistent with the notion that the role of investment restrictions goes well beyond regulatory mandates, it is increasingly common practice for a fund to split its stated investment policy into two parts: fundamental and non fundamental. The goal of the fundamental policy, which can only be altered with shareholder approval, is often to provide the manager with as much investment flexibility as possible, within the context of the restrictions dictated in the 1940 Act. On the other hand, the fund's non fundamental policy can be altered at the discretion of the fund's board of directors and includes more business-specific restrictions (e.g., no international securities held in a domestic portfolio, even if the fund's fundamental policy permits their inclusion). The intention of the non-fundamental policy is to capture the richer set of restrictions that investors and managers feel are necessary to best define the fund's investment style. Collectively, the fundamental and non fundamental policies represent the effective contract between the manager and the investors.[2]

In summary, the regulatory environment that governs the mutual fund industry provides the framework within which investors and managers negotiate specific investment policy restrictions. Certainly, the SEC makes no claim to supervise the daily investment activities of the funds under its jurisdiction, nor does it presume that oversight ensures any level of performance. Indeed, the cross-sectional and intertemporal variation in the pattern of how investment constraints are adopted in practice, as reported below, strongly suggests that such restrictions are not mere regulatory prohibitions. Thus, the question remains: What role do investment constraints play in the contracts formed by investors and managers?

2.2. Constraint definitions and data collection

Our data on the adoption of investment restrictions are extracted from the SEC's Form N-SAR that registered investment companies must file twice a year. Form N-SAR is short for "Form N, Semi-Annual Report." A fund must file form N-SARA to cover its activities for the first half of the reporting year, while form N-SARB covers the full year. These filings are available electronically from the SEC's Edgar database starting in 1994. For each fund, we use data from one such filing in a given year, using the report with the latest filing date. In addition to descriptive information about the management company, fees, and general financial information, the N-SAR also requires companies to answer a series of questions related to their investment policies.

We gather data for all funds available on both the Center for Research in Security Prices (CRSP) Mutual Fund database and the SEC Edgar database from 1994 to 2000 that satisfy the following conditions: (i) The fund is a U.S. domestic equity fund from one of the following objective categories: balanced (BL), income (IN), growth and income (GI), long-term growth (LG), and aggressive growth (AG); and (ii) the fund did not identify itself as an index fund on the N-SAR (question 69). The requirement that funds be listed in both databases is necessary in order to ensure that information on the incidence and use of contractual investment restrictions and fund characteristics are available for use later in our analysis. Matching funds from the CRSP database with the SEC data required matching fund names with the central index key (CIK) used to identify funds in the SEC database. This selection procedure yields investment constraint data for a cumulative total of 9,525 funds across the seven-year sample period. The annual sample sizes range from a low of 679 funds in 1994 to a high of 1,838 funds in 2000.

Survivorship bias is an important issue for any study using mutual fund returns. As Brown, Goetzmann, Ibbotson, and Ross (1992) demonstrate, funds that disappear from a sample following a period of poor performance can generate spurious persistence in performance for the remaining funds. We guard against this bias in two ways. First, the use of the CRSP database substantially reduces the potential for survivorship problems. Second, we are careful to include funds in the sample right up to the time of their disappearance.

2.2.1. Individual constraint definitions

Question 70 on Form N-SAR solicits information from mutual fund managers about investment practices permissible under their investment policy statements. More precisely, the form requires a manager to respond "yes" or "no" to two questions about each of several different practices: (i) Is the practice permitted by the investment policy? (ii) If permitted by the investment policy, did the fund engage in the practice during the reporting period? The answers to these two questions define the basic data for the adoption and use statistics that we report and discuss in Sections 2.3 and 2.4.

The six specific investment practices that are relevant to the day-to-day operations of domestic equity funds are: (i) borrowing of money, (ii) margin purchases, (iii) short selling, (iv) writing or investing in options on equities, (v) writing or investing in stock index futures, and (vi) investments in restricted securities. Restrictions (i)-(iii) affect a fund's ability to use leverage, (iv) and (v) its ability to use derivatives, and (vi) its ability to invest in illiquid assets.

Formally, a restricted security is one that is acquired in an unregistered, private sale from the issuer or an affiliate of the issuer. In order to resell these securities to the public, Rule 144 de…nes …ve “safe harbor” conditions that could potentially limit a fund manager’s ability to dispose of her shares in a timely manner and at their fair market value. Consequently, we interpret a limitation on the use of restricted securities as a liquidity constraint.

2.2.2. Combinations of constraints

The precise meaning of whether a fund is “constrained” or “unconstrained” is no longer clear once we consider a broad set of investment restrictions. For example, if a fund manager is allowed to borrow but not allowed to invest in index futures, is that manager constrained? To get a better sense of the cumulative impact of the constraints imposed by its policies, we construct a “constraint score” as a means of indexing a fund’s overall restrictiveness.

The aggregate score places an equal weight across the three economically distinct categories described above (leverage, derivatives, and illiquid assets) and is constructed in two steps. First, a within-category weight is assigned based on the proportion of restricted activities in that category for that fund. Second, each of the three within-category scores receives an equal (1/3) weight. For instance, if a fund is constrained in two of the three leverage-related restrictions and one of the two derivative-use categories, and it can hold restricted stock, the score for that fund will be: 1/3 £ 2/3 + 1/3 £ 1/2 + 1/3 £ 0 = 7/18 = 0.389. By construction, the scores lie between 0 and 1 and a higher score indicates a more constrained fund.[3]

2.3. The pattern of constraint adoption

Table 1 summarizes how the six restrictions from Form N-SAR are employed across our fund universe, as well as how the adoption patterns of those constraints change over time. To get a better sense of the composite level of investment restriction imposed on these funds, the table also reports how the sample-wide mean level of the constraint score changed over the 1994-2000 period.

Panel A of Table 1 lists, for each restriction, the proportion of the funds in our sample that were not permitted to engage in that particular investment practice in a given year. For instance, 73.3% of the 679 funds that

…led Form N-SAR in 1994 reported that their investment policies formally restricted them from selling short. By 2000, however, the total number of reporting funds had increased considerably (to 1,838) and the proportion restricted from shorting had declined to 66.1%. The growth in the fund population is somewhat in‡ated by the fact that not all of the equity funds had their Form N-SAR responses reported in the SEC's Edgar database. This omission could have been due to either the fund's failure to report or, more likely, the SEC's conversion to an electronic reporting system. During this same period, the score metric also declined – from 0.399 in 1994 to 0.335 in 2000 – indicating that the incidence of total fund constraint adoption roughly mirrored the pattern for short selling. Finally, the last row in Panel A lists the overall restriction proportions and the constraint score for the 9,525 Form N-SAR …lings that occurred during the sample period. These overall proportions (e.g., 68.9% for the short-selling constraint) can be viewed as weighted averages of the annual proportions reported for the seven years in the sample period.

In Panel B of Table 1, we examine the constraints imposed on funds sorted into three age cohorts depending on fund inception: prior to 1980, from 1980 to 1990, or after 1990. This panel lists the proportion of that cohort that was restricted from using a particular investment practice. For example, of the 1,838 funds reporting in year 2000, 1,352 were created after 1990 and 65.9% of that newest fund cohort (or 891 Cohort 3 funds) were not permitted to short individual stocks in that year. Notice that the sample is heavily weighted toward funds that came into existence in the most recent decade; Cohort 3 represents roughly half of the total sample in 1994 and about three-quarters of the sample in 2000.

There are three major conclusions that we draw from the evidence reported in Table 1. First, it is apparent that adoption practices vary widely by individual constraint. Focusing on the overall restriction statistics listed in the last line of Panel A, we see that the proportion of funds not permitted to use certain practices ranges from 17.9% for the buying or selling of restricted securities to 91.1% for margin purchases. Second, for a given constraint, the incidence of adoption declines substantially during the sample period. For each of the six individual restrictions, the proportion of constrained funds is smaller in 2000 than it was in 1994. Further, as noted above, the score composite measure of constraint also declined during the sample period. Third, constraint adoption practices vary signi…cantly by fund age cohort. The evidence in Panel B indicates that this is particularly true in comparisons of the youngest funds (Cohort 3) to the more established ones (Cohorts 1 and 2). In particular, for all six individual restrictions and the aggregate constraint score, the overall values listed for Cohort 3 are never larger than those for the other two subgroups, suggesting that newer funds tend to be less constrained than older ones.

2.4. Self-imposed restrictions and partial constraints

Even when a particular investment practice is permissible,a fund manager will not necessarily choose to use it. Circumstances requiring the use of certain investment practices might not arise in a given reporting period (e.g., in a rapidly increasing market a fund might choose not to short sell). Alternatively, it is possible for a portfolio manager to adopt a constraint on a purely voluntary basis (e.g., a manager attempting to minimize benchmark tracking error might prefer not to short individual securities). Table 2 reports the extent to which the funds in our sample that can use a particular investment practice actually do use that practice.

The …rst row of Panel A shows that 11.0% of the funds that were allowed to short stocks in 1994 actually did so. Recall, however, that 73.3% (498) of the 679 sample funds faced a formal restriction against this practice, meaning that only 20 funds (= 0.11 £ 0.267 £ 679) actually shorted individual securities in the management of their portfolios. Once again, three major conclusions can be drawn from the …ndings in Table 2. First, the overall proportions reported in the last line of Panel A show that restricted securities (which was the least constrained practice to begin with) are used by almost 20% of the funds that can do so, sharply contrasting with the low margin use by permitted funds (2.7%). Thus, even when permitted, the six investment practices de…ned by Form N-SAR tend to be used with di¤erent intensities, although none of them appear to be employed very frequently. Second, use of the allowed investment practices varies over time, although there is no evidence of the clear trends that exist in Table 1. Finally, there are apparent di¤erences across the fund age cohorts. In particular, managers of older funds (i.e., Cohort 1), who are generally more constrained initially, tend to use a given investment practice more often when they are permitted to do so.

In addition to the likelihood that managers impose constraints on themselves when no explicit restriction exists, it is also possible that funds face partial, rather than complete, constraints on a given investment practice. An example of this might be a fund whose policy permits the purchase of call or put options but does not allow the manager to write them. In such a case, the constraint adoption statistics reported in Table 1 would understate the true level of restriction that the fund faces.

To see why this is true, consider this question: "Is the following practice permitted by investment policy: Writing or investing in options on equities?"[4] The word "or" in the question dictates answering in the affirmative if the manager can, in fact, invest in equity options even if he or she cannot write them. A similar problem would arise if, say, short selling were permissible but only up to a certain percentage of the net portfolio value. Thus, given inherent limitations in the way that funds report investment policy information to the SEC, the constraint proportions (as well as the constraint scores) listed in Table 1 should be viewed as a lower bound for the actual level of restriction imposed on fund managers.

Unfortunately, partial constraints are difficult to detect in our data. By design, the SEC requires that responses to Form N-SAR be in an electronic format, which precludes the sort of explanatory information that might more accurately convey the nature of the constraints funds face. The summary data in Table 1 suggest that this is most likely to affect constraints involving more complex investment practices, like the deployment of derivative securities. Admittedly, the potential presence of partial restrictions can affect the interpretation of our findings. That said, we find no compelling reason to expect that they either follow systematic patterns that explain the previously documented empirical regularities or are systematically related to other fund characteristics. Thus, in the regression analysis below, we turn our attention to understanding the economic determinants of constraints as defined and reported by the funds themselves, without making explicit adjustments for the effects of partial constraints.

3. Explaining investment constraints: conceptual framework

3.1. Agency, monitoring, and constraints

The principal-agent paradigm (Ross, 1973, and Jensen and Meckling, 1976) provides a natural framework for investigating the existence and the use of investment restrictions. An investor (principal) …nds it desirable to contract with a manager (agent) due to the manager's investment skills or advantages in the collection or processing of information. However, con‡icts of interest can emerge between the investor and the manager about either the portfolio allocation (e.g., portfolio risk or asset class) or the level of e¤ort required to …nd mispriced securities.

Perhaps the most immediate mechanism for controlling the investor-manager agency con‡ict is the manager's compensation contract. Direct restrictions on investment practices can certainly play a role in such contracts. For instance, Dybvig, Farnsworth, and Carpenter (2001) and Garcia (2001) explicitly examine fund manager compensation in a setting where managers acquire costly private information and then be induced to reveal that information to the principal. Gomez and Sharma (2001) consider how short-selling constraints interact with incentive pay in contracts designed to induce e¤ort-averse managers to gather information. However, the lack of detailed data on compensation contracts for individual fund managers rules out an explicit empirical examination of this matter. Another strand of the literature (see, for example, Grinblatt and Titman, 1989, and Brown, Harlow, and Starks, 1996) has explored how a convex payo¤ can distort the portfolio choice of a money manager by increasing his or her appetite for risk. Payo¤s to portfolio managers can be convex due to the fund-‡ow/performance relation. Chevalier and Ellison (1997) and Sirri and Tufano (1998) document nonlinear ‡ow-for-performance relations that yield de facto convex payo¤ functions. Notice, however, that the convexity induced in the relation between total management fees and fund performance is not necessarily passed on to fund managers. These papers suggest that risk-taking incentives can potentially be controlled by restricting the manager's ability to implement trades that increase portfolio risk and, consequently, that cross-sectional di¤erences in constraint adoption might be related to characteristics that proxy for managerial risk aversion.

We pursue an alternative approach by postulating that direct investment restrictions substitute for less passive monitoring mechanisms (e.g., board or peer oversight) and that investment restrictions are more likely to be used when these other monitoring mechanisms are relatively more costly to use. Speci…cally, we examine whether the adoption of explicit policy constraints is related to: (i) direct monitoring by the fund's board of directors, (ii) labor market monitoring through managerial career concerns, (iii) peer monitoring and the role of mutual fund complexes, and (iv) product market monitoring and the structure of fund charges.

3.2. Alternative monitoring mechanisms

3.2.1. Direct monitoring: the role of the fund's board

Under the Investment Company Act of 1940, the board of directors of a fund must oversee the fund's operations and ensure that the interests of the fund's advisor or management company are aligned with the interests of the shareholders of the fund. This directive resembles the mandate on boards in public corporations, where boards must also represent shareholder interests and must help to solve the agency problems inherent in managing an organization characterized by the separation of ownership and control. The SEC has established that directors must monitor the fund to verify compliance with stated investment policies and restrictions without, as an SEC (1992) report emphasized, micro managing a fund's daily operations. The fund's board must also oversee the management of the fund's portfolio of securities, monitoring both the liquidity of the portfolio and the ongoing composition of the fund's investments.

The empirical literature on corporate governance has related board composition (de…ned as the number of outside and inside directors on the board) and board size to …rm decision-making and pro…tability. The consensus view, as re‡ected in Jensen (1993), is that larger boards and boards with fewer independent directors are less e¤ective in performing their monitoring duties. Hermalin and Weisbach (1991) fail to document a strong empirical connection between board composition and corporate performance, but Yermack (1996) and Eisenberg, Sundgren, and Wells (1998) …nd a signi…cantly negative relation between board size and …rm value. In the mutual fund industry, board composition is considered of fundamental importance if the board is to perform as an e¤ective monitor of managers.[5] Evidence of the important role played by outside directors in the proper governance of a mutual fund can be found in the Investment Company Act of 1940, which requires that at least 40% of a fund's board consist of independent directors (i.e., directors without any significant relation with the fund advisor or underwriter). Board composition has recently received intense scrutiny from representatives of the mutual fund industry as well as from regulators. In June of 1999, an advisory group appointed by the Investment Company Institute released a report on best practices for fund directors (available at www.ici.org). Their main recommendation was "that at least two-thirds of the directors of all investment companies be independent directors." In January 2001, the SEC strengthened the requirement for independent board members so that after July 1, 2002 independent directors must constitute at least 50% (rather than at least 40%) of the fund's board.

Two studies have found economically interesting effects of board composition in the mutual fund industry. Tufano and Sevcik (1997) find that a fund's board composition affects the fees charged by the fund to its shareholders. Among other things, they find lower fees in the presence of smaller boards and when boards have a greater fraction of independent directors. Using a sample of closed-end funds, Del Guercio, Dann, and Partch (2002) find that funds with smaller, more independent boards exhibit lower expense ratios and a higher likelihood of measures that enhance shareholder value. We hypothesize that investment restrictions are more likely to be imposed on funds with larger boards and fewer independent directors.

3.2.2. Managerial career concerns

Fama (1980) suggests that discipline from the labor market (i.e., career concerns) can reduce agency problems. Holmström (1999) confirms that, if optimal dynamic managerial contracts are not enforceable, career concerns affect managerial decisions, but he also shows that labor market effects coexist with the misalignment of incentives that commonly occur in the principal-agent setting. Chevalier and Ellison (1999) further document the existence of career concern effects in the mutual fund industry. They show that the decision to terminate a young manager is more sensitive to recent performance than the termination decision for an older manager. They also establish that the portfolio holdings of younger managers contain less unsystematic risk than the holdings of older managers.

If undereffort or excessive risk-taking are relevant issues, we would expect to observe that explicit investment policy constraints are less prevalent in funds whose managers have stronger career concerns. These career concerns manifest themselves in two distinct ways. First, as shown in Chevalier and Ellison (1999), our analysis should account for the age of the manager. All else equal, younger managers will be subject to stronger career concerns. Second, the use of a team approach, as opposed to individual management, to manage the fund's assets can also play a significant role. Career concerns should be more compelling in the case of individually managed funds, where a specific manager's reputation will be affected more strongly by the success or failure of the fund. Conversely, labor market discipline will be less effective for the various members of a management team, where it is difficult to determine who is responsible for a fund's successes or failures. Team-managed funds can also create a free-rider problem in the provision of effort. This provides a separate role for constraints in controlling management behavior. Holmström (1982) provides a seminal analysis of the "moral hazard in teams" problem. We predict a lower incidence of constraints in funds run by younger managers and in those managed by individuals.

3.2.3. Peer monitoring: the role of mutual fund complexes

Peer monitoring has been identified as a device to control agency problems (see, for example, Arnott and Stiglitz, 1991; Armendariz de Aghion, 1999). If an agent's peers can observe the agent's actions, then a principal can increase contract efficiency by relating that agent's payoffs to his or her results as well as to the results of any peers. In a mutual fund context, peer monitoring can occur when the fund operates within a large fund complex. A fund complex's reputational capital provides direct incentives for the managers of other funds within the complex to have concerns about the performance of peer funds. Mutual fund complexes frequently use a pooled board structure, with the same group of individuals overseeing all the funds of the fund family. Pooled boards, which prevent duplication of presentation and discussions on issues common to many funds in a complex, constitute an important vehicle for peer monitoring. We postulate that investment constraints will be less prevalent, all else equal, in funds that belong to large complexes.

3.2.4. Fund charges and monitoring

Load charges can be related to the intensity of the agency problem between managers and investors through two mechanisms. The first is connected to the existence of clientele effects in the mutual fund industry. Any fee structure that includes load expenses – regardless of when those fees are assessed – will tend to attract investors with longer expected holding periods, who might find it more costly to liquidate their position quickly after the initial investment. The second mechanism applies exclusively to back-end load fees. Regardless of the investment horizon, these charges discourage redemption and therefore can exacerbate the managerial agency problem. This is consistent with the evidence reported in Chordia (1996), who shows that fund load fees discourage redemptions by shareholders. Notice that both of these arguments implicitly rely on the effect of portfolio size on a manager's compensation. If fund manager compensation increases with the amount of assets under management, then early share redemption will be costly for managers, which makes the threat of early investor exit a means of controlling agency problems. In any case, load charges that dissuade share redemption make constraints more valuable. This suggests a positive association between load charges and investment restrictions. This hypothesized relation should be stronger in the case of funds with back loads.

3.3. Non-agency explanations for constraints

There are at least two other (non-agency-related) rationales for the existence of investment restrictions. First, these constraints could be purely marketing devices used to differentiate funds as distinct financial products. In the following section, we investigate this possibility by considering whether the use of investment restrictions is systematically related to Morningstar investment style categories, which arguably are the observable variables most closely related to meaningful product differentiation in this industry. Second, in their analysis of derivative-based constraints, Koski and Pontiff (1999) and Deli and Varma (2002) argue that savings on transactions costs can provide an alternative rationale for the relaxation of these restrictions. Their argument suggests that, all else equal, prohibiting the use of derivatives will be more costly for a fund that faces more volatile expected net inflows and outflows and can be extended to accommodate the broader view that a manager attempts to match the liquidity of the fund's assets and liabilities. In such a case, funds subject to strong liquidity shocks are more likely to forbid their managers from investing in illiquid instruments (e.g., restricted stock) and to allow them to use investment practices (e.g., derivatives) that help ameliorate the effects of such shocks. We will use fund turnover ratio as a measure of a fund's transaction costs and examine the relation between turnover and the availability of different investment practices to the fund's managers.

4. The determinants of constraint adoption: empirical analysis

4.1. Variable definitions

4.1.1. Monitoring hypothesis variables

The first two variables – the total number of directors on a fund's board ($BoardSize$) and the proportion of those directors who are non-interested (i.e., independent) persons ($PropInd$) – are proxies for the intensity of direct monitoring by the board.[6] We expect results consistent with the view that smaller boards and boards with a higher proportion of independent directors are more effective monitors of managerial actions.

The next two regressors, $Team$ and $MgrAge$, are proxies for capturing potential career concerns of the portfolio manager(s). The $Team$ dummy variable equals one if Morningstar reports the fund as being team managed (i.e., no specific manager name reported) or if there are multiple managers in charge of the fund. $MgrAge$ proxies for managerial age and is calculated as follows. For individually managed funds, we subtract from the current year the earliest start date for a given manager with any fund in the Morningstar database. For funds managed by multiple managers, we average the individual measure over the managers in charge of the fund. We assign a zero value to $MgrAge$ for funds managed by multiple managers whose names are not reported. Similar results were obtained from an analysis that excluded anonymous team observations which constitute approximately 5% of the sample. We expect a positive relation between $Team$ and $MgrAge$ and the use of fund constraints. Although it is possible to use college graduation dates from the Morningstar databases and calculate an alternative proxy for age, as in Chevallier and Ellison (1999), the lack of availability for that variable reduces our sample to 4,800 fund-years. (We obtained similar results to those reported in Tables 3 and 4 when running the models using this definition of manager age rather than experience.)

$Top10$ equals one if the fund belongs to a family classified among the largest ten fund complexes. This regressor is intended to capture the peer monitoring function performed by other individuals from within the fund complex, an effect that we predict will be particularly strong for large complexes where substantial reputational capital is at stake. The monitoring hypothesis predicts a negative relation between this variable and a fund's restrictiveness. Finally, we include two regressors that measure the effects of load charges on the use of constraints. $FrontLoad$ equals one if the fund charges a front-end load fee and zero otherwise, and $BackLoad$ equals one if the fund charges a back-end load fee and zero otherwise. Funds classified as $FrontLoad$ ($BackLoad$) are those that have the majority of assets under management associated with share classes that charge front-end (back-end) load fees. The investor-monitoring hypothesis suggests a positive relation between load fees and measures of investment restriction.

4.1.2. Control variables

We include control variables that either account for alternative hypotheses for the use of constraints or are unrelated to the specific hypothesis of interest, but must be included in the regression in order to ensure that they do not influence our results as important omitted variables. These controls are: (i) $LogFundAge$, the logarithm of the number of years since fund inception plus one; (ii) $LogTNA$, the logarithm of the amount of total net assets under management, i.e., the size of the fund; (iii) $Turnover$, the minimum of the fund's dollar purchases or dollar sales for the year divided by the monthly average value of the portfolio, a variable that we use as a control for liquidity-based explanations for investment restrictions; and (iv) a set of dummies for the fund's investment objective as identified using the nine Morningstar style categories. This classification uses the median market capitalization of the stocks in the portfolio to group funds into small-, mid-, or large-cap categories as well as the portfolio's median price-earnings and book-to-market ratios to group funds into growth, blend, or value categories; in our analysis, the large-cap value style class is the omitted category.

4.2. Collection of the data

The regressions that we present below combine information from three di¤erent databases: Morningstar, CRSP, and SEC Edgar. From the Morningstar database, we construct $MgrAge$ and $Team$, obtain information about investment styles, and rank fund families by assets managed to identify the top ten families and determine what funds belong to those families (i.e., $Top10$). From the CRSP database, we obtain the load characteristics of funds (i.e., $BackLoad$ and $FrontLoad$ dummies), fund age, fund size, and turnover of fund assets (i.e., $LogFundAge$, $LogTNA$, and $Turnover$). CRSP is also the source of fund return information used in Section 5. Finally, from the SEC Edgar database, we get N-SAR electronic forms with information of investment restrictions. We also download and hand-collect information on board composition from Forms $485APOS$ and $485BPOS$.

As a consequence of the consolidation of the three databases, the sample of funds available for regression analysis shrinks from the original universe of 9,525 to 7,259 fund-year observations. Information is lost for two primary reasons: (i) inability to trace board composition from Forms $485APOS$ and $485BPOS$, particularly in 1994 and 1995;[7] and (ii) inability to match funds in CRSP and Morningstar databases, due to the di¤erent fund identi…ers used in the two databases as well as di¤erences in naming abbreviations, which eliminates some information on investment styles.

If the omitted …rms di¤er from the remaining …rms in important ways, then our estimated coe¢ cients could be biased. To explore this possibility, we perform two robustness checks. First, we examine the available characteristics of the excluded and included funds and …nd them to be very similar. Second, we run the regressions described in the next subsection using the subsample for which board composition variables are not available, i.e., using all fund characteristics except $BoardSize$ and $PropIndep$.[8] Regression coe¢ cients for the included variables have the same signs and similar signi…cance levels to those described below. The …ndings from these checks suggest that sample selection biases are not likely to have an important e¤ect on our conclusions.

Treating each fund year as an observation in our sample, fund boards have a mean (median) of 7.47 (7) members with 73% (75%) independent directors. In comparison, Tufano and Sevcik (1997) report nine members for the median fund, with 71% independent directors for open ended funds, and Del Guercio, Dann and Partch (2002) report seven members with 71% independent directors for closed-ended ones. Half of the funds are managed by a single manager, with average (median) experience of 6.23 (5.25) years. Average (median) fund age is seven (six) years and average (median) fund size, as measured by the net value of assets under management, is $188 ($194) million. For most of the funds, no-load shares constitute the majority of assets under management: 13% (27.8%) of funds have predominantly back (front) load share classes. Finally, of the total number of funds analyzed, 12.1% belong to a Top10 fund complex.

4.3. Regression analysis of overall fund restrictiveness

Table 3 contains the results of four alternative regression models, estimated using all of the fund-year observations. Models run by pooling fund-year observations can produce more efficient estimators because they take advantage of the panel structure of the entire sample. In each of the four specifications, we regress score (the aggregate constraint measure) on the set of monitoring and control variables using all available observations from the 1994-2000 period.[9]

The first column of results in Table 3 reports the coefficient estimates from a pooled OLS equation that we use as our base case. This procedure includes a correction to the standard error estimates that accounts for the dependence introduced into the errors when the same fund is present at several dates. In particular, this correction accounts for block-diagonal structure in the error covariance matrix (see Huber, 1967, or Rogers, 1993). As in the other three regressions presented in this table, however, different funds are treated as independent observations in the cross-section. Consistent with our first hypothesis – that managers are less likely to face active constraints if the board has a larger proportion of independent directors – we find that the coefficient on PropIndep is negative and statistically significant. (This stands in contrast to the effect of board size, which does not appear to be significantly related to a fund's overall constraint score.) The effects of managerial career concerns are also strongly supported by the pooled OLS regression. The coefficient estimates on both $Team$ and $MgrAge$ are positive and strongly statistically significant. These results imply that funds that are managed by teams or by older managers tend to rely more heavily on direct investment restrictions. In addition, there is clear evidence in favor of the peer monitoring hypothesis, in the form of a strongly significant negative coefficient on the $Top10$ variable. This finding says that funds that are a part of a prominent fund family are less likely to use direct restrictions.

Finally, there is also no evidence of investor monitoring. The estimated coefficients on the two load charge variables (Frontload and BackLoad) are not significantly different from zero. This lack of evidence can be due to the presence of a countervailing monitoring force, namely the implicit monitoring exerted by brokers (on behalf of investors) on fund managers. As one executive with a leading mutual fund company suggested, load charges are primarily marketing fees paid to brokers who might be monitoring the managers on the investors' behalf. She framed the relationship between brokers and portfolio managers this way: "The intention of the non fundamental portion of the investment policy is to create the set of business-specific restrictions that reflect what the investors expect. This is hard for the portfolio managers of a public fund to do without the input of the marketing and distribution group, who are the ones with the direct customer contact." This in turn would suggest that funds that employ brokers (i.e., charge load fees) might be less likely to impose policy restrictions than those that do not. Starks, Yong, and Zheng (2002) consider a similar argument in the context of the tax counseling that brokers could be giving to individual investors in municipal bond funds.

Some of the control variables are also statistically significant. Older funds are more likely to be constrained than younger ones, as indicated by the positive coefficient on $LogFundAge$. This finding is also consistent with the cohort-based analysis in Tables 1 and 2. The coefficient on the proxy for fund size (LogTNA) is significantly negative, suggesting that larger funds are less likely to be constrained by direct investment restrictions. Finally, the negative and statistically significant coefficient on the proxy for asset turnover (Turnover) indicates that funds with investment strategies that have higher turnover rates tend to be the least constrained.

The pooled OLS results also document the fact that Morningstar investment style classifications, used as proxies for non-agency-related marketing devices, generally have insignificant coefficients. This suggests that there is no evidence of any important cross-sectional or time-series correlations between a fund's style and its constraint adoption patterns. Mid-cap growth funds appear to be the notable exception to this statement. These funds appear to be less likely to be constrained than other investment styles.

The second pooled model we estimate is a random-effects panel data model that allows for a fund-specific random factor. This corresponds to a (feasible) generalized least square estimator (GLS). Another way to interpret this estimator is as a weighted average of two others: one that averages funds across time and then runs an OLS regression with their means (i.e., the "between" estimator) and another that largely ignores cross-sectional information and examines how the time-series of determinants affects the time-series of the dependent variable (i.e., the "within" estimator). The results from this model, reported in the second numerical column of Table 3, are virtually identical to the pooled OLS results. All of the significant (insignificant) monitoring variables in the first column remain in the random-effects column. This is generally the case for the control variables as well, with LogFundAge being the only exception. That particular result could arise if LogFundAge is capturing two opposing effects: the presence of time trends in the use of constraints (i.e., older funds are born with more constraints) and the reduction of constraints within the same funds over time. The signs of the coefficients in both the pooled OLS and random-effects estimators are identical, but the absolute value of the coefficient is generally lower in the random-effects model.

The third model summarized in Table 4 is a simple between-estimator OLS regression of the average fund values across groups. By transforming the data so as to be based on the means of the respective annual observations, the between-estimator model focuses on the cross-sectional variation in the sample while still using all of the available observations. These results, which have been adjusted for heteroskedasticity due to the unbalanced nature of the panel, are consistent with the coefficient estimates in the first two columns of Table 3. Further, the point estimates are, in all cases, very close to those of the pooled OLS estimators. The only noteworthy difference between the between-estimator and the earlier estimators is that the Morningstar mid-cap growth dummy is not statistically significantly different from zero.

The fourth pooled model that we estimate is a double-censored panel

Tobit model, and these results are reported in the last column of Table 3. This specification involves the estimation of a panel regression in which we take into account that the dependent variable (score) ranges between zero and one and has positive probability mass in both extremes. This design explicitly recognizes potential biases that can occur due to the censored nature of our dependent variable. For instance, when a fund exhibits maximal restrictiveness, i.e., score equals one, it could be that further restrictions are desirable but impossible to enact. The coefficient estimates (and their statistical significance) are consistent with the simpler specifications employed in the prior three columns, and these results confirm that our findings are not driven by the truncated nature of the score measure.

Notice that the results from the between-estimator regression are very similar to those generated by the pooled OLS model. When contrasted with the random-effects GLS model, these findings imply that the most compelling variation in the sample occurs between funds rather than across time for a particular fund. This, in turn, suggests that the "true" model is cross-sectional in nature and that the panel dimension, by incorporating the effect of the time-series of the determinants into account, tends to adds noise to the estimation process. Alternatively, the time-series of constraint adoption could be affected by variables that are omitted from the regression specification. Notice that the estimated parameters from the panel Tobit regression shown in the final column of Table 3 are more comparable in size to those for the random-effects GLS model, which is to say that they are smaller than the parameters for the pooled and between-estimator OLS regressions. Nevertheless, the findings once again confirm that the proxies for the monitoring hypotheses are meaningful determinants for understanding how mutual funds policy restrictions are set.

We also estimate a fifth pooled model, the "within" (or fixed-effects) estimator, which focuses on time-series (rather than cross-sectional) variation in the variables. The results from this estimation (which are not reproduced here) confirm our earlier observation that the random-effects GLS model can be viewed as a weighted average of the between- and within-estimator models. More important, these findings also corroborate the conclusion that the economically meaningful relations we find are generated by the cross-sectional variation in the fund sample.

Finally, it is interesting to consider the economic effect of the relations implied by the estimated parameters. As an example, the coefficient of -0.039 on the $Top10$ variable (in the pooled OLS regression) indicates that the marginal impact of a fund's belonging to one of the largest families would be to lower its overall constraint score from, say, 0.333 to 0.294. Depending on the particular year in which such a change in the fund's status occurred, this adjustment to the score measure could significantly affect how its overall level of constraint was viewed on a relative basis. In 1996, for instance, the median score value was indeed 0.333, but a decline of 0.039 would still keep a fund near the top of the third quartile of the cross-sectional distribution. Conversely, a decline from the 1999 median value of 0.222 to 0.183 would move the fund into the least restricted quartile for that annual cross-section. Similar statements can be made about the economic impact of the other monitoring and control variables, most notably $PropIndep$, $Team$, and $LogFundAge$.

4.4. Regression analysis of individual fund restrictions

Having just considered explanations for overall fund restrictiveness, we now examine the influences of a fund's decision to adopt a specific constraint. To establish the economic determinants of policy restrictions imposed on individual investment practices, we use panel data for the entire 1994-2000 sample period to estimate a system of six seemingly unrelated pooled probits, one for each constraint. The dependent variables in this system assume a value of one if a particular practice is prohibited and zero otherwise. This estimation method – where standard errors are adjusted to account for dependencies in the dataset, both across time as well as across constraints for a given fund – allows us to test hypotheses regarding coefficients across all constraints. (In theory, one could alternatively estimate a multivariate probit but, in this case, this is impractical due to dimensionality of the problem.) Table 4 reports summary statistics for overall coefficient significance from these pooled regressions.

The results in Panel A of Table 4 strongly support the conclusion that some combination of monitoring and control variables are related to the likelihood that a fund will use a specific restriction. This demonstrates that the results in Table 3 are not an artifact of the use of an overall constraint measure. In fact, every one of the specific investment restrictions examined in Tables 1 and 2 is strongly related to the set of regressors used in Table

3.

Panel B of Table 4 shows that the conclusions from Table 3 with respect to the individual monitoring variables are – in almost all cases – robust to whether constraints are de…ned in the aggregate or for individual constraints. PropIndep, Team, MgrAge, and Top10 are all strongly signi…cant in explaining the observed patterns in the use of individual constraints, and FrontLoad and BackLoad are not statistically signi…cant. The noteworthy exception to the general agreement between the results in Tables 3 and 4 is the signi…cance of BoardSize. In the pooled estimates based on score, only the panel Tobit found a statistically signi…cant (negative) relation between board size and overall constraint use (smaller boards use more constraints). In Table 4, we can reliably reject the null hypothesis that the coe¢ cient on BoardSize is zero across all constraints, but we cannot reject the hypothesis that the average coe¢ cient value across constraint types is zero.[10]

5. Do constraints a¤ect fund performance?

Throughout the study, our maintained hypothesis has been that investment policy constraints are an important part of the optimal contract between investors and managers. In equilibrium, explicit restrictions are substitutes for labor market monitoring (career concerns), peer monitoring (by complexes), and direct monitoring (by boards). Overall, the empirical …ndings in the previous section suggest that alternative contractual arrangements between investors and managers do coexist. Managers and investors can choose a “low constraint” arrangement, where monitoring addresses agency problems, or they can use direct restrictions extensively with little or no explicit or implicit monitoring from other sources.

The existence of alternative arrangements leads to a natural question: Do contracting choices a¤ect fund returns? In order to address this question, we consider two approaches for analyzing fund returns. The …rst approach consists of two di¤erent matched-fund analyses that compare the performance of zero-investment portfolios formed on the basis of fund constraints. In one strategy, we construct long positions in unconstrained funds and short positions in constrained ones, based on the score measure. In an alternate strategy, we take long positions in funds that have constraint use patterns that are consistent with the regressions in the previous section, and we take short positions in funds that deviate from the observed contracting patterns by using either too many or too few constraints, given other observable characteristics of the fund. In addition to these portfolio returns, we also estimate annual cross-sectional regressions that relate risk-adjusted returns to proxies for constraint severity and the likelihood of constraint adoption.

Before we present the analyses, a caveat is in order. The interpretation of the differences in the performance of constrained versus unconstrained funds is affected in a fundamental way by the nature of the contracting equilibrium that we postulate. A governance system that uses explicit constraints as part of the solution to the shareholder-manager contracting problem might be appropriate when the marginal cost of alternative constraint mechanisms is high, but it is inappropriate when monitoring is already provided from other sources. So, if the patterns of constraints that we observe in the data reflect the equilibrium outcome of an optimal contracting problem, it is difficult to predict what systematic differences in returns – if any – should be observed across constrained versus unconstrained funds. However, if exogenous shocks in the economic environment have rendered a sub optimal match between fund characteristics and fund constraints, the effect of constraints on returns could become apparent.

5.1. Zero-investment portfolio returns

The first investment strategy that we examine uses the information in score. In particular, for each of the nine Morningstar categories and for the universe of all funds, we do the following: (i) in December of each year from 1994 to 2000 we rank all funds from the lowest to the highest score value; (ii) we form a portfolio of all funds with score values less than the average value (in the given category), weight each fund in this portfolio in proportion to its distance from the average value, and go long one dollar in this portfolio; (iii) we form another portfolio from the funds that are above the average score value, form portfolio weights that are proportional to the (absolute value) of the difference between the average value and a fund's score value and go short one dollar in this portfolio; and (iv) we hold these positions for the next calendar year, and then repeat the portfolio formation in the following December. We rebalance the portfolio monthly to account for funds that drop out of and enter into the sample.

Using this strategy, we construct 84 months of returns, from January 1995 through December 2001. This information comes from the CRSP Mutual Fund database, which reports returns net of management fees, operating expenses, and 12b-1 fees.

Elton, Gruber, and Blake (2001) note some potential biases that result from the CRSP Mutual Fund database. The current CRSP database addresses these issues but still indicates the presence of two biases. The first arises when funds have several classes of shares. Our analysis is unaffected by this problem because we calculate average returns, across share classes, for such funds. We have checked that our results are robust to value- and equal-weighting schemes. The second bias, which might affect our analysis, arises when private funds and their (presumably above-average) return histories are added to the database (see the CRSP manual for a description). The use of net-of-fee (rather than gross) returns allow us to capture the potential benefits accruing to managers who can adjust their fund positions more cheaply using derivatives than through physical rebalancing, as suggested by Koski and Pontiff (1999).

In addition to the average returns, we also estimate the three-factor model from Fama and French (1993) over the full 84 months of returns. This estimation generates both a measure of abnormal returns and factor sensitivities for the strategy as it is applied to the set of funds in each of the Morningstar style categories. All inference in the Fama-French regressions is done using Newey-West robust standard errors, in order to account for both heteroskedasticity and autocorrelation in the regression residuals. The three factors from Fama and French (1993) are the excess return on the value-weighted market portfolio (MF), the return to a zero-investment portfolio that goes long in a portfolio of small market capitalization stocks and short a portfolio of large market capitalization stocks (SMB), and a zero-investment portfolio that goes long a portfolio of high B/M stocks and short a portfolio of low B/M stocks (HML).[11]

The mean and standard deviation of the total returns to the strategy, applied to all funds and the different Morningstar categories, are shown in the second and third columns of Table 5. The returns to the strategy are not statistically significantly different from zero. This can be verified quickly by dividing the standard deviation by $\sqrt{84} = 9.17$ and comparing that result with the corresponding point estimate of the mean return. This holds for all funds and within every style category. The Fama-French alphas are also not significantly different from zero in any style category or overall. The explanatory power of these time-series regressions, as indicated by the R^2 statistic reported in the last column of the table, is larger for value as opposed to growth funds, and the explanatory power is higher for funds holding large stocks compared to small stocks.

The long and short portfolios in the various style categories load differently on the Fama-French factors. The short position in the strategy has a consistently higher exposure to the market factor, across Morningstar styles, when compared to the long position. This is evident from the strongly statistically significant negative coefficients in six of the nine portfolios in the column labeled β_{MF}. Along the same lines, the β_{HML} column reveals that the short position in the strategy generally loads more heavily on high B/M stocks. In this case, five of the nine coefficients are significant. While these risk differences are clearly statistically meaningful, they may not be economically significant since they do not translate into measurable differences in realized average returns to the strategy. However, it is conceivable that with a longer time-series of hedge portfolio returns, these same risk differences could produce reliable return differences. Finally, the relatively low R^2 levels indicate that much of the risk in these hedge portfolios is unsystematic in nature.

As we noted earlier, the fact that there are no discernible return differences from a strategy based on raw values of score is not surprising. We do not have a theory that suggests that – unconditionally – the use of explicit constraints compared to alternative monitoring mechanisms is more or less efficient at controlling investor-manager conflicts of interest. An experiment that is more consistent with our contracting equilibrium intuition is based on a long-short strategy applied to the absolute errors from year-by-year regressions of constraints on the monitoring variables and controls. These errors measure the extent to which a given fund deviates from the average behavior of a fund with a given set of observable characteristics. The strategy based on absolute errors is constructed in a manner that is identical to the score-based strategy, except long positions are taken in small absolute error funds and short positions in large absolute error funds. In the formulation of this strategy, we make the assumption that it is equally wrong to be explicitly constrained when you should be unconstrained (a large positive error) or explicitly unconstrained when you should be constrained (a large negative error).

The properties of the returns to this second strategy are contained in Table 6. As in the score-based strategy, average total returns, across all categories, are not statistically significantly different from zero. This same finding holds for all of the Fama-French alphas. Furthermore, the returns to these strategies load on the market factor and HML in a manner that is qualitatively similar to the score-based returns.

The conclusion that we draw from the results in Tables 5 and 6 is that differences in the level of constraints – or in observed deviations of constraint use from their predictions based on regressions – do not affect fund returns in economically or statistically significant ways. As a robustness check, we consider several variations on the experimental design reported above. The first variation is to add back fund expenses and check for return differences on a gross-of-expense basis. Second, we consider strategies in which the long and short positions are determined by the actual regression error and not the absolute value of the error. Finally, portfolios are formed using extreme constraint deciles (both overall and within Morningstar categories) rather than weighting funds in proportion to their deviation from the mean. The basic conclusions from Tables 5 and 6 are robust to all of these different methodologies for constructing returns.

5.2. Cross-sectional return regressions

The results just described are consistent with the conclusion that there are no systematic, statistically significant differences in the returns to constrained versus unconstrained funds. However, it is difficult to determine whether or not fund characteristics that are related to both fund performance and constraint usage (e.g., turnover) might obscure the impact of score. Cross-sectional regressions of funds' Fama-French alphas on the constraint score, both with and without control variables, provide an alternative, and possibly more powerful, analysis of the constraint/performance relation.

As a first step in the analysis, we run a time-series regression of monthly returns on the Fama-French factors. For every fund over the period from 1995-2001, including those which at some point drop out of the database, an alpha is calculated for each calendar year using (net) returns that are available in that year. For funds that survive the entire year, 12 monthly observations are used in the Fama-French three-factor model. Funds that disappear during the year but for which at least five observations are available are included in the cross-sectional analysis. No performance measure is calculated for funds with fewer than five monthly observations. In order to explore the possibility that dropping these funds creates a look-ahead bias (see Carpenter and Lynch, 1999), we perform the analysis with the excluded fund alphas calculated using additional returns from the preceding 12 months. The inclusion of these additional alphas has no qualitative impact on the results.

The next step is to run a cross-sectional regression, each year, relating performance to score. The most general form of this regression is:

$$\hat{\alpha}_{i\tau} = \gamma_0 + \delta_\tau \cdot score_{i\tau} + \psi_\tau' Y_{i\tau} + \varepsilon_{i\tau}, \qquad (1)$$

where $\hat{\alpha}_{i\tau}$ is the estimate of fund i's Fama-French alpha in year τ, score is the constraint score measure that applies during the year, and $Y_{i\tau}$ is a vector of fund level monitoring and control variables. We also examine a version of Eq. (1) that omits control variables and examines only the univariate relation of score and unexplained return. The design of this regression explicitly assumes that the Fama-French factors adequately control for risk. Furthermore, by using 12-month periods for estimating the model, we allow for the possibility that fund factor loadings change over time.

In panel A of Table 7, we present four sets of estimates of the coefficients in Eq. (1), each exploiting the information available from the cross-section and time-series dimensions of the dataset in different ways. The first and second columns of results report coefficients from a pooled OLS estimation and a random-effects model, respectively. As discussed earlier, these estimators capture the dependencies introduced by measuring individual fund alphas and the relation to score over several years. In the third column, we report findings for a between-estimator that considers the average relation between alphas and score. Finally, as an alternative approach, we run seven separate cross-sectional regressions, one for each of the years 1994 to 2000, that relate alphas to fund score measures. Then, following a Fama-MacBeth approach, we average the coefficients from seven yearly regressions and report them in the last column.[12] None of the four models provides evidence of a significant relation between the score measure and Fama-French alphas.

Panel B of Table 7 reports the estimated coefficients with the full set of monitoring and control variables also included in the regression. These regressions confirm that, holding other fund characteristics constant, there is no effect of the prior level of fund constraint on subsequent performance. Note that, in contrast, several monitoring variables in the regression appear significant, confirming the power of our estimation. In addition, we perform the analysis on separate subsamples (e.g., no-load and load groups) and find consistent results.

6. Conclusion

Investment policy restrictions are a common feature of the contracts that define the interactions between mutual fund portfolio managers and their investors. These constraints assume a variety of forms, including prohibitions against short sales, borrowing, derivatives, and the holding of illiquid assets. Using a large sample of domestic equity mutual funds from 1994 to 2000, we demonstrate that restriction adoption practices vary significantly across funds and that the overall level of constraint in the industry has changed over time. In particular, we show that older funds tend to face more restrictions and that fund managers in general have become less constrained in more recent years.

We also consider the economic determinants of constraint adoption. Our results support the view that direct investment restrictions interact with a variety of alternative monitoring mechanisms to control shareholder-manager conflicts of interest. These mechanisms include fund boards of directors, managerial career concerns, and peer monitoring through the existence of fund complexes. The data suggest that there are two ways of controlling fund agency costs: through direct investment policy restrictions or through a variety of competing explicit and implicit monitoring mechanisms. Our findings are consistent with an equilibrium in which monitoring mechanisms and constraint use are substitutes.

We complete the study by considering whether restriction adoption practices impact fund performance. We compare the returns produced by otherwise similar high-constraint and low-constraint funds in several ways. The findings from this investigation strongly indicate that, after controlling for factors such as fund size, investment style, and portfolio turnover, variations in the level of policy restriction do not produce economically or statistically significant return differentials. We interpret this evidence as supporting the notion that participants in the fund industry adopt the set of policy restrictions necessary to produce the optimal investment contract between investors and managers.

The evidence presented here on the use, motivation, and impact of portfolio constraints suggests a number of directions for future research. What, for instance, are the long-term implications of investment restrictions for the performance measurement literature, which typically ignores the presence of constraints and their effect on a manager's incentive to collect and trade on information? Although fund returns are unaffected by differences in investment restrictions in our study, such variations could have more subtle effects in areas such as security selection methods or fund manager retention over an extended period of time. Further, do the set of direct investment restrictions commonly found in the investment policy statements of private asset management firms differ substantially from the ones we examine for public funds? The private contracting problem—in which a manager negotiates directly with a single, well-endowed client rather than indirectly with a large number of smaller investors—provides an alternative environment in which to study the principal-agent problem. Comparing the constraint-adoption practices of private money managers with those obtained here is an interesting task left for future research.

Table 1: Incidence of constrained and unconstrained funds

Panel A: All funds, by year

Year	N	Borrow	Margin	Short	Options	Futures	Restricted	Score
1994	679	0.212	0.931	0.733	0.290	0.409	0.222	0.399
1995	1,050	0.235	0.916	0.724	0.304	0.409	0.239	0.407
1996	1,201	0.230	0.910	0.700	0.277	0.379	0.209	0.384
1997	1,411	0.219	0.915	0.671	0.247	0.357	0.187	0.364
1998	1,605	0.240	0.918	0.689	0.241	0.352	0.165	0.358
1999	1,741	0.224	0.910	0.684	0.230	0.330	0.144	0.342
2000	1,838	0.206	0.893	0.661	0.227	0.314	0.149	0.335
Overall	9,525	0.224	0.911	0.689	0.252	0.355	0.179	0.363

[The table is continued on the next page.]

Table 1: Continued

Panel B: Funds divided by cohort and by year

Cohort 1: Fund inception prior to 1980

Year	N	Borrow	Margin	Short	Options	Futures	Restricted	Score
1994	131	0.252	0.939	0.809	0.366	0.489	0.221	0.439
1995	187	0.310	0.941	0.775	0.388	0.487	0.235	0.450
1996	188	0.303	0.931	0.745	0.381	0.505	0.213	0.439
1997	191	0.288	0.916	0.712	0.318	0.461	0.173	0.401
1998	199	0.367	0.930	0.774	0.345	0.442	0.186	0.424
1999	193	0.337	0.912	0.725	0.258	0.373	0.130	0.368
2000	194	0.320	0.912	0.696	0.263	0.366	0.180	0.379
Overall	1,283	0.314	0.925	0.745	0.329	0.443	0.189	0.413

Cohort 2: Fund inception from 1980 to 1990

Year	N	Borrow	Margin	Short	Options	Futures	Restricted	Score
1994	224	0.192	0.960	0.749	0.304	0.478	0.259	0.429
1995	302	0.199	0.950	0.737	0.312	0.492	0.256	0.430
1996	298	0.219	0.943	0.740	0.293	0.428	0.222	0.406
1997	289	0.205	0.944	0.735	0.274	0.431	0.198	0.394
1998	298	0.243	0.946	0.740	0.250	0.395	0.182	0.383
1999	285	0.208	0.923	0.708	0.222	0.363	0.155	0.353
2000	292	0.193	0.907	0.652	0.214	0.362	0.141	0.338
Overall	1,988	0.209	0.938	0.722	0.266	0.420	0.201	0.389

[The table is continued on the next page.]

Table 1: Continued.
Panel B: Funds divided by cohort and by year

Cohort 3: Fund inception after 1990

Year	N	Borrow	Margin	Short	Options	Futures	Restricted	Score
1994	324	0.210	0.907	0.691	0.250	0.330	0.198	0.364
1995	561	0.228	0.889	0.701	0.271	0.339	0.232	0.381
1996	715	0.215	0.891	0.672	0.243	0.326	0.203	0.360
1997	931	0.209	0.905	0.642	0.223	0.314	0.187	0.347
1998	1, 108	0.216	0.908	0.660	0.220	0.324	0.156	0.340
1999	1, 263	0.211	0.907	0.673	0.227	0.316	0.143	0.336
2000	1, 352	0.192	0.888	0.659	0.225	0.296	0.146	0.328
Overall	6, 254	0.209	0.899	0.666	0.232	0.317	0.170	0.345

This table provides summary statistics on the incidence of investment restrictions in the sample of domestic equity funds. The table shows the proportion of funds that reported they were not permitted to engage in the practices listed in the column heads. Options refers to the use of individual equity options, Futures to the use of index futures contracts, Restricted to the holding of restricted stock in the fund portfolio, and Borrow, Margin, and Short to whether or not the fund is allowed to borrow, trade on margin, or short sell. Score is the overall investment restriction de...ned in Section 2.2.2. Panel A describes the results for all funds and Panel B divides the funds into age cohorts.

Table 2: Use of investment techniques by unconstrained funds
Panel A: All funds, by year

Year	Borrow	Margin	Short	Options	Futures	Restricted
1994	0.099	0.128	0.110	0.124	0.147	0.234
1995	0.076	0.056	0.102	0.118	0.130	0.227
1996	0.072	0.046	0.117	0.085	0.130	0.220
1997	0.081	0.025	0.101	0.090	0.145	0.213
1998	0.099	0.008	0.089	0.104	0.148	0.186
1999	0.113	0.013	0.089	0.089	0.142	0.153
2000	0.121	0.005	0.097	0.086	0.163	0.178
Overall	0.097	0.027	0.098	0.096	0.145	0.194

[The table is continued on the next page.]

Table 2: Continued

Panel B: Funds divided by cohort and by year

Cohort 1: Fund inception prior to 1980						
Year	Borrow	Margin	Short	Options	Futures	Restricted
1994	0.122	0.000	0.000	0.193	0.194	0.412
1995	0.070	0.000	0.071	0.191	0.188	0.399
1996	0.076	0.000	0.083	0.162	0.161	0.412
1997	0.081	0.000	0.109	0.176	0.223	0.418
1998	0.095	0.000	0.133	0.168	0.198	0.383
1999	0.109	0.000	0.094	0.104	0.182	0.310
2000	0.167	0.000	0.085	0.140	0.211	0.321
Overall	0.102	0.000	0.089	0.159	0.195	0.376
Cohort 2: Fund inception from 1980 to 1990.						
Year	Borrow	Margin	Short	Options	Futures	Restricted
1994	0.127	0.111	0.107	0.115	0.120	0.283
1995	0.091	0.000	0.127	0.106	0.144	0.272
1996	0.073	0.000	0.117	0.110	0.141	0.316
1997	0.083	0.000	0.079	0.096	0.152	0.312
1998	0.089	0.000	0.065	0.131	0.134	0.248
1999	0.129	0.000	0.084	0.154	0.155	0.204
2000	0.120	0.000	0.050	0.149	0.184	0.225
Overall	0.101	0.008	0.087	0.124	0.149	0.264

[The table is continued on the next page.]

Table 2: Use of investment techniques by unconstrained funds
Panel B: Funds divided by cohort and by year

Cohort 3: Fund inception after 1990

Year	Borrow	Margin	Short	Options	Futures	Restricted
1994	0.070	0.167	0.140	0.107	0.143	0.135
1995	0.069	0.081	0.095	0.105	0.111	0.153
1996	0.071	0.064	0.124	0.059	0.120	0.132
1997	0.080	0.034	0.105	0.073	0.130	0.140
1998	0.101	0.010	0.088	0.088	0.144	0.136
1999	0.110	0.017	0.090	0.073	0.133	0.117
2000	0.116	0.007	0.108	0.065	0.153	0.148
Overall	0.095	0.035	0.103	0.077	0.136	0.136

This table provides univariate summary statistics on the actual use of di¤erent investment practices by funds that are permitted to engage in these practices. Options refers to the use of individual equity options, Futures to the use of index futures contracts, Restricted to the holding of restricted stock in the fund portfolio, and Borrow, Margin, and Short to whether or not the fund is allowed to borrow, trade on margin, or short sell. Panel A describes the results for all funds and Panel B divides the funds into age cohorts.

Table 3: Pooled regression estimates

Variable	Pred. sign	Pooled OLS	R.E. (GLS)	Between-estimator	Panel Tobit
Monitoring hypothesis					
BoardSize	+	-0.003	-0.001	-0.003	-0.002
		(0.093)	(0.419)	(0.214)	(0.047)
PropIndep	¡	-0.217	-0.073	-0.239	-0.105
		(0.000)	(0.000)	(0.000)	(0.000)
Team	+	0.030	0.010	0.033	0.020
		(0.001)	(0.047)	(0.004)	(0.001)
MgrAge	+	0.005	0.002	0.005	0.003
		(0.000)	(0.007)	(0.000)	(0.000)
FrontLoad	+	-0.004	-0.015	-0.006	-0.005
		(0.178)	(0.060)	(0.657)	(0.484)
BackLoad	+	-0.019	-0.016	-0.017	-0.011
		(0.697)	(0.079)	(0.306)	(0.315)
Top10	¡	-0.039	-0.059	-0.049	-0.063
		(0.009)	(0.000)	(0.016)	(0.000)

[The table is continued on the next page.]

Table 3: Continued

Variable	Pred. sign	Pooled OLS	R.E. (GLS)	Between-estimator	Panel Tobit
Control variables					
LogFundAge		0.060	0.002	0.066	0.023
		(0.000)	(0.719)	(0.000)	(0.000)
LogTNA		-0.028	-0.012	-0.027	-0.014
		(0.000)	(0.000)	(0.000)	(0.000)
Turnover		-0.016	-0.005	-0.019	-0.005
		(0.029)	(0.001)	(0.000)	(0.002)
LB		0.001	0.000	-0.008	-0.007
		(0.932)	(0.963)	(0.707)	(0.279)
LG		-0.011	-0.005	-0.013	-0.004
		(0.514)	(0.577)	(0.540)	(0.640)
MV		-0.016	0.004	-0.035	0.008
		(0.309)	(0.625)	(0.170)	(0.395)
MB		-0.018	-0.008	-0.035	-0.004
		(0.298)	(0.409)	(0.299)	(0.667)
MG		-0.037	-0.024	-0.036	-0.022
		(0.019)	(0.012)	(0.124)	(0.032)
SV		-0.015	0.010	0.009	0.023
		(0.442)	(0.394)	(0.698)	(0.045)
SB		0.008	-0.002	0.018	0.009
		(0.657)	(0.825)	(0.592)	(0.438)
SG		-0.009	-0.011	-0.020	-0.007
		(0.610)	(0.292)	(0.427)	(0.543)
Constant		0.540	0.468	0.541	0.475
		(0.000)	(0.000)	(0.000)	(0.000)
# of Funds		7,259	7,259	7,259	7,259
F or χ^2		9.19 (F)	65.37 (χ^2)	9.97 (F)	91.09 ¡ χ^2 ¢
		(0.000)	(0.000)	(0.000)	(0.000)
R^2		0.107	0.053	0.107	n.a.

[The table description is on the next page.]

Table 3 Description:

This table reports estimated parameters for four di¤erent pooled observation models. The dependent variable is score, the overall measure of fund constraint constructed in Section 2.2.2. $Boardsize$, $PropIndep$, $Team$, $MgrAge$, $Backload$, $Frontload$, and $Top10$ are the explanatory variables related to the di¤erent contracting hypotheses for the use of direct investment restrictions. $LogFundAge$, $Turnover$, and $LogTNA$ are control variables, and LB through SG are indicator variables for Morningstar style categories that are also included as controls. The di¤erent columns correspond to di¤erent estimation methods based on pooling all of the fund-year data. The …rst column is the pooled OLS estimator. The second column is the random-e¤ects (R.E.) model. The third column is the "between" OLS cross-sectional estimator constructed from the time-series averages. The …nal column is a double-censored Tobit estimator that explicitly accounts for the truncated nature of score and uses the information in the probability mass at 0 and 1. P-values are reported in parentheses underneath the regression coe¢cients. Summary statistics for the regressions are reported in the last three rows. The F- or χ^2-statistic tests for the joint signi…cance of all the monitoring variables.

Table 4: Summary tests from individual constraint pooled probits.

Panel A: Joint significance of coefficients by constraint type

	Options	Futures	Restricted	Borrowing	Margin	Short
χ^2 Test Statistic	44.32	52.77	70.39	21.65	17.43	30.26
	(0.000)	(0.000)	(0.000)	(0.003)	(0.015)	(0.000)

Panel B: Joint significance of monitoring and control variables across constraints

	BoardSize	PropIndep	Team	MgrAge	FrontLoad	BackLoad	Top10
All Zero	31.28	54.11	17.53	33.11	10.39	10.90	32.25
	(0.000)	(0.000)	(0.000)	(0.000)	(0.109)	(0.092)	(0.000)
Avg. Zero	2.40	15.96	12.46	9.70	0.62	1.28	5.26
	(0.121)	(0.000)	(0.000)	(0.002)	(0.429)	(0.257)	(0.022)

This table reports the summary statistics for tests based on coefficients from pooled probit models of the individual fund restrictions. There are $7,259$ funds in the samples used for each regression. The dependent variable equals one if the particular investment practice is prohibited and zero otherwise. $Boardsize$, $PropIndep$, $Team$, $MgrAge$, $Backload$, $Frontload$, and $Top10$ are the explanatory variables related to the different contracting hypotheses for the use of direct investment restrictions. $LogFundAge$, $Turnover$, and $LogTNA$ are control variables, and LB through SG are indicator variables for Morningstar style categories that are also included as controls. P-values – based on robust standard errors – are reported in parentheses underneath the regression coefficients. The χ^2-statistic tests for the joint significance of all the monitoring variables in a given equation is reported in Panel A. Panel B reports joint tests of the hypotheses that all of the coefficients equal zero (asymptotically distributed Chi-squared with six degrees of freedom) and that the average coefficient value equals zero (asymptotically distributed Chi-squared with one degree of freedom).

Table 5: Summary statistics on the returns to a long-short strategy based on score

Investment style	Returns		Fama-French regressions				
	Mean	Std. Dev.	α	β_{MF}	β_{SMB}	β_{HML}	R^2
LV	¡ 0.00115	0.00448	-0.00046	**-0.078**	**0.025**	**-0.019**	0.61
			(0.125)	(0.000)	(0.002)	(0.024)	
LB	¡ 0.00060	0.00619	0.00026	**-0.094**	-0.008	0.011	0.61
			(0.579)	(0.000)	(0.376)	(0.435)	
LG	0.00079	0.00786	0.00134	**-0.059**	-0.020	0.021	0.24
			(0.140)	(0.046)	(0.171)	(0.253)	
MV	¡ 0.00064	0.00572	0.00013	**-0.085**	-0.004	**-0.043**	0.41
			(0.79)	(0.000)	(0.724)	(0.003)	
MB	0.00012	0.00985	0.00059	-0.054	0.009	**-0.106**	0.27
			(0.632)	(0.136)	(0.699)	(0.000)	
MG	¡ 0.00015	0.00685	0.00041	**-0.062**	-0.004	-0.019	0.15
			(0.597)	(0.035)	(0.843)	(0.311)	
SV	¡ 0.00146	0.00758	-0.00091	**-0.059**	**-0.056**	**-0.075**	0.23
			(0.319)	(0.046)	(0.010)	(0.001)	
SB	0.00190	0.01242	0.00252	-0.072	0.032	**-0.091**	0.17
			(0.166)	(0.270)	(0.372)	(0.005)	
SG	0.00065	0.01091	0.00017	0.054	-0.009	-0.021	0.08
			(0.899)	(0.141)	(0.840)	(0.501)	
Overall	¡ 0.00041	0.00410	0.00003	**-0.050**	0.004	**-0.063**	0.59
			(0.911)	(0.000)	(0.717)	(0.000)	

[The table description is on the next page.]

Table 5 Description:

This table presents returns to a zero net investment strategy formed by going long in funds whose $Score$ value is lower than the average – either overall or within a Morningstar style category – and short funds whose $Score$ value is above the average. Weights in the long and short portfolios are proportional to the distance of a fund's $Score$ value from the average. Investment style refers to Morningstar categories, where L is 'large-cap', M is 'mid-cap', S is 'small-cap', V is 'value', B is 'blend', G is 'growth', and LV (for example) is 'a large-cap value' portfolio. The Fama-French factors are: MF (excess market return), SMB (the returns to a zero investment portfolio that is long a small-cap portfolio and short a large-cap portfolio), and HML (the returns to a zero investment portfolio that is long a portfolio of high B/M stocks and short a portfolio of low B/M stocks). P-values based on robust standard errors (Newey-West estimator with six lags) are reported in parentheses beneath the Fama-French abnormal returns (α) and the Fama-French factor loadings ($\beta_{MF}, \beta_{SMB}, \beta_{HML}$).

Table 6: Summary statistics on the returns to a long-short strategy based on absolute errors in the regression of score on the economic determinants of constraint use.

	Returns		Fama-French regressions				
Investment style	Mean	Std. Dev.	α	β_{MF}	β_{SMB}	β_{HML}	R^2
LV	¡ 0.00143	0.00488	-0.00063	-0.091	0.018	-0.010	0.69
			(0.058)	(0.000)	(0.005)	(0.030)	
LB	0.00021	0.00553	0.00071	-0.055	-0.025	0.005	0.33
			(0.174)	(0.005)	(0.030)	(0.637)	
LG	¡ 0.00106	0.00945	-0.00039	-0.071	-0.016	0.067	0.42
			(0.693)	(0.000)	(0.372)	(0.000)	
MV	0.00026	0.00862	0.00076	-0.055	-0.002	0.004	0.10
			(0.588)	(0.042)	(0.929)	(0.758)	
MB	0.00058	0.00819	0.00071	-0.013	-0.019	0.005	0.02
			(0.464)	(0.890)	(0.577)	(0.613)	
MG	¡ 0.00027	0.00886	0.00027	-0.059	-0.013	0.011	0.14
			(0.788)	(0.078)	(0.597)	(0.547)	
SV	0.00039	0.00802	0.00119	-0.087	-0.040	-0.053	0.25
			(0.181)	(0.000)	(0.032)	(0.011)	
SB	¡ 0.00044	0.01008	0.00019	-0.066	-0.069	-0.055	0.14
			(0.820)	(0.003)	(0.025)	(0.021)	
SG	0.00223	0.01104	0.00190	0.042	-0.061	0.035	0.11
			(0.255)	(0.303)	(0.061)	(0.310)	
Overall	¡ 0.00032	0.00421	0.00015	-0.052	-0.005	-0.023	0.28
			(0.808)	(0.000)	(0.686)	(0.002)	

[The table description is on the next page.]

Table 6 Description:

This table presents returns to a zero net investment strategy formed by going long in funds with small absolute regression errors in the $Score$ regressions ...nanced by short positions in funds with large absolute regression errors. We repeat these strategies both overall and within a Morningstar style category. Weights in the long and short portfolios are proportional to the size of the absolute errors. Investment style refers to Morningstar categories, where L is 'large-cap', M is 'mid-cap', S is 'small-cap', V is 'value', B is 'blend', G is 'growth', and LV (for example) is 'a large-cap value' portfolio. The Fama-French factors are: MF (excess market return), SMB (the returns to a zero investment portfolio that is long a small-cap portfolio and short a large-cap portfolio), and HML (the returns to a zero investment portfolio that is long a portfolio of high B/M stocks and short a portfolio of low B/M stocks). P-values based on robust standard errors (Newey-West estimator with six lags) are reported in parentheses beneath the Fama-French abnormal returns (α) and the Fama-French factor loadings ($\beta_{MF}, \beta_{SMB}, \beta_{HML}$).

Table 7: Fund level cross-sectional regressions of Fama-French α on score, monitoring, and control variables.

Panel A: Regressions with score alone

	Pooled OLS	R.E. (GLS)	Between estimator	Fama-MacBeth
score	-0.010	-0.021	0.023	0.000
	(0.819)	(0.676)	(0.719)	(0.997)
Constant	-0.089	-0.079	-0.093	-0.117
	(0.000)	(0.001)	(0.001)	(0.251)

Panel B: Regressions with score, monitoring, and control variables

	Pooled OLS	R.E. (GLS)	Between estimator	Fama-MacBeth
score	0.011	-0.051	0.108	0.011
	(0.832)	(0.402)	(0.160)	(0.873)
$BoardSize$	-0.001	0.005	0.008	-0.006
	(0.899)	(0.373)	(0.268)	(0.227)
$PropIndep$	-0.092	0.023	-0.247	-0.161
	(0.359)	(0.836)	(0.111)	(0.072)
$Team$	0.034	0.052	0.012	0.011
	(0.173)	(0.065)	(0.760)	(0.575)
$MgrAge$	0.008	0.009	0.009	0.008
	(0.000)	(0.007)	(0.029)	(0.019)
$FrontLoad$	-0.192	-0.186	-0.241	-0.124
	(0.000)	(0.000)	(0.000)	(0.148)
$BackLoad$	-0.166	-0.146	-0.214	-0.148
	(0.000)	(0.002)	(0.000)	(0.100)
$Top10$	0.076	0.046	0.029	0.110
	(0.026)	(0.393)	(0.676)	(0.061)
Constant	0.045	0.105	-0.049	0.052
	(0.639)	(0.927)	(0.725)	(0.251)

[The table description is on the next page.]

Table 7 Description:

This table reports results from the regression of the alpha from the Fama-French three-factor model, estimated using one year of monthly observations, on *Score* (or *Score*, monitoring, and control variables) measured at the beginning of the period. The supplementary variables are described in detail in Section 4. They include governance measures, career concerns, load fee, peer monitoring, liquidity measures, fund size and age, turnover, and Morningstar style categories. In the interest of saving space, the coefficient estimates for the control variables are not reported. The omitted Morningstar category is large-cap value. The first column is the pooled OLS estimator. The second column is the random-effects (R.E.) model. The third column is the "between" OLS cross-sectional estimator constructed from the time-series averages. The fourth column reports the average coefficient from yearly regressions. P-values are reported in parentheses, based on robust standard errors for all the models and on the Fama-MacBeth procedure for the averages.

Notes

1. Provisions of the tax code may also restrict the investment activities of a fund. For example, funds that wish to be considered "pass-through" entities, so that capital gains and income taxes will accrue to the individual investor, must hold well-diversified portfolios. Another historically relevant regulation, repealed in the Taxpayer Relief Act of 1997, was the "short-short" rule that indirectly limited funds' ability to use short sales and derivatives.

2. Sanctions that can be imposed by the SEC if a mutual fund violates its investment restrictions vary depending upon the severity and duration of the violation and the actions taken by the fund's advisor to rectify the situation. Generally, the advisor's compliance screening process will catch the violation and the advisor will simply take the appropriate corrective actions, including making the fund's investors whole if any losses were incurred as a result of the mistake. If the SEC, which might also uncover violations in its periodic audit of a fund, is not satisfied with the actions of the advisor, it might impose sanctions, fines, or censure on either the company or the individual manager.

3. As a second approach, we create an alternative score measure by relating the economic benefit of a constraint to the extent to which funds that are permitted to use a particular investment practice actually did so. For each restriction, we compute the number of funds that report themselves as unrestricted. Next, among the unrestricted funds, we calculate the percentage of funds that actually used the investment practice covered by the restriction. These use rates form the basis for assigning weights to each constraint. High constraint scores are assigned to those funds that could not engage in apparently useful investment techniques. The actual weights are determined by dividing each of the percentages found above by their sum. Since the two alternative measures have a simple correlation in excess of 0.99, we only report the results for the measure described in the text. The results with the alternative measure are available from the authors upon request.

4. For all practical purposes, this is Question 70(b) on Form N-SAR. The following interpretation has greatly bene…ted from conversations with representatives of two large fund complexes who are in charge of …ling the actual N-SAR forms (and who asked to remain unnamed) as well as with Carolyn Miller of the SEC. We would like to thank them for their assistance.

5. Former SEC Chairman Arthur Levitt refers to mutual fund directors as those "on the front line for investors." See "Understanding the Role of Mutual Fund Directors" edited by the Investment Company Institute (1999) and posted on-line at www.ici.org.

6. The 1940 Act includes as "interested" directors those a¢liated with the investment company, its advisor, and any other person determined by the SEC to have "a material business or professional relationship with the company" (see Pozen, 1999, p. 113 for details.)

7. From 1996 on, funds were required to …le information on board composition every 18 months, and on changes on board compositions if they occur in the interim period.

8. These results are available from the authors.

9. We also estimated year-by-year cross-sectional OLS regressions of score on the monitoring and control variables. These results are quite similar to those for the pooled regressions reported in the text, and they are available on request.

10. The coe¢cient point estimates for BoardSize (not reported in the paper) were statistically signi…cantly di¤erent from zero for the futures, restricted, borrowing, and margin probits. These point estimates were negative for futures, restricted, and margin probits, and the coe¢cient for BoardSize in the borrowing probit was positive. Recall that the agency story predicts a positive relation between the probability of a given restriction and BoardSize.

11. The factors were downloaded from Ken French's web page at

    http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

12. For each coefficient in the last column, we compute a test statistic of the form $\frac{\bar{\delta}}{\text{s.e.}(\bar{\delta})}$ which is t-distributed with 6 degrees of freedom, where $\bar{\delta} \equiv 7^{-1} \sum_{\tau=1}^{7} \hat{\delta}_\tau$, and $\text{s.e.}\left(\bar{\delta}\right)$ is the simple standard error of the sample mean of the δ_τ estimates, computed as $\text{s.e.}\left(\bar{\delta}\right) = \frac{1}{\sqrt{7}} \sqrt{\frac{1}{7-1} \sum_{\tau=1}^{7} \left(\hat{\delta}_\tau - \bar{\delta}\right)^2}$.

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