CFR Working Paper No. 18-01

The Impact of Labor Mobility Restrictions on Managerial Actions: Evidence from the Mutual Fund Industry

G. Cici • M. Hendriock • A. Kempf

centre for financial research
cologne

The Impact of Labor Mobility Restrictions on Managerial Actions:

Evidence from the Mutual Fund Industry

Gjergji Cici,[†] Mario Hendriock,[‡] and Alexander Kempf[*]

March 28, 2018

Abstract

This paper examines how labor mobility restrictions such as non-compete clauses in employment contracts affect the incentives and resulting behavior of employees. Using the investment industry as a testing laboratory, we find that mutual fund managers respond to heightened career concerns due to increased enforceability of non-compete clauses by increasing effort, reducing downside risk, engaging less in tournaments, making their portfolios similar to the portfolios of their benchmarks or peers, and increasing window-dressing. These concerns are, however, moderated by the presence of more developed internal labor markets, which allow managers to substitute restricted across-family mobility with within-family mobility.

[†]Mason School of Business, The College of William & Mary, e-mail: gjergji.cici@mason.wm.edu.

[‡]University of Cologne, Department of Finance, and Centre for Financial Research (CFR) Cologne, e-mail: hendriock@wiso.uni-koeln.de.

[*]University of Cologne, Department of Finance, and Centre for Financial Research (CFR) Cologne, e-mail: kempf@wiso.uni-koeln.de.

In the last few years, there has been an intense debate in the U.S. surrounding labor mobility restrictions and their impact on economic activity (e.g., White House 2016 and U.S. Department of the Treasury 2016). A supporting argument is that by preventing employees from transferring intellectual property and skills acquired on-the-job to rival firms, such restrictions protect trade secrets and thus encourage innovation and investment in employee training. A counter argument, however, is that labor mobility restrictions limit the labor market pool from which companies can hire, which can result in suboptimal matching of talent with available jobs, prevent employees from founding new companies, and stifle innovation by reducing diffusion of knowledge and ideas among companies, all of which can potentially hinder economic growth.

Firms typically restrict labor mobility through non-compete clauses in employment contracts (NCCs). Such clauses are heavily used in knowledge intensive industries (e.g., Starr, Prescott, and Bishara 2017) and for highly skilled and highly paid employees (e.g., Bishara, Martin, and Thomas 2015). They prohibit a separating employee from competing with her former employer, either by working for a competing firm or by establishing one on her own during a limited period of time and in a certain geographical area.[1] NCCs reduce the employee's opportunities in the external labor market and limit her bargaining power for more favorable future employment terms within the firm, both leading to stronger career concerns.[2]

While the literature is advancing in its understanding of the impact that NCCs have on economic growth, innovation, and investments at the regional and firm level, the analysis has typically abstracted away from the economic agents whose actions are directly targeted by these

[1] Bishara, Martin, and Thomas (2015) document that 80% of CEOs are bound by NCCs, often with a broad geographic scope, and that these generally last one to two years. The reach of NCCs has moved beyond high skill, high paying occupations, however, in recent years. Dougherty (2017) reports that in the last few years there has been a significant increase both in the use of NCCs by companies (to cover even non-technical workers such as sandwich makers and hairstylists) and the number of NCC lawsuits brought by companies.

[2] See Fallick, Fleischman, and Rebitzer (2006) and Marx, Strumsky, and Fleming (2009) for earlier evidence and Jeffers (2018) for more recent evidence on the extent to which NCCs restrict labor mobility.

labor restrictions.[3] The objective of our study is to fill this gap. In particular, we study whether and how NCCs affect the career concerns and resulting behavior of labor force participants. Our investigation is inspired by economic theory, which suggests that employees respond to implicit incentives, such as career concerns, in addition to explicit incentives resulting from the compensation contract (e.g., Holmstrom 1982, Gibbons and Murphy 1992, Holmstrom 1999, and Andersson 2002).

We use the mutual fund industry as a testing laboratory to examine the effect that NCCs have on the career concerns and resulting behavior of mutual fund managers. The mutual fund industry represents an ideal setting for our investigation. First, since the mutual fund industry is knowledge intensive and fund managers fit the income and industry profile of employees that are typically subjected to such restrictions, we expect NCCs to be widely spread among mutual fund managers.[4] Second, for mutual fund managers, data availability allows us to directly observe their actions, i.e., their trades, as well as their production output, i.e., portfolio composition and performance. Third, given the relatively small number of players involved in the management of a mutual fund, we can more easily attribute production output to the actions of a mutual fund manager. The same cannot be said for corporations, where the output usually is the result of a complex network of interactions between a large set of production factors and economic agents. Finally, knowing mutual fund returns and fund trades allows us to analyze the different ways in which fund managers respond to their career concerns. For example, they might respond to these concerns by increasing their effort in detecting profitable trading strategies, or by reducing the risk

[3] See, e.g., Bishara and Starr 2016, Prescott, Bishara, and Starr 2016, and Bishara and Thomas 2015 for recent reviews of the literature that looks at NCCs at the state and firm level.
[4] See Appendix for more detailed information on the prevalence of NCCs in the mutual fund industry.

of their trading strategies, or by even increasing window dressing of their portfolios in an attempt to impress investors.

Our identification strategy for measuring the impact of NCCs exploits three well-documented exogenous shocks to the enforceability of NCCs that happened during 1992-2004 in three states: Texas, Florida, and Louisiana (Garmaise 2011). This setting helps us handle endogeneity concerns because these changes were introduced by state governments or Supreme Court rulings and were thus unlikely to be caused by fund or manager characteristics. Another useful feature is that these shocks change the enforceability of NCCs in different directions, i.e., they come with increased enforceability for Florida, decreased enforceability for Texas, and decreased and later increased enforceability for Louisiana. Thus, we can examine whether increased or decreased enforceability of NCCs leads to effects on our variables of interest that have opposite signs, as hypothesized.

Drawing from previous research, which suggests that career concerns give rise to implicit incentives to work harder (e.g., Fama 1980, Lazear and Rosen 1981, Gibbons and Murphy 1992, Holmstrom 1999, and Andersson 2002), we expect NCCs to cause fund managers to increase their effort in order to reduce the risk of being laid off. However, career concerns could also have an opposing effect on effort. NCCs make it harder for employees to extract higher compensation due to limited bargaining power within the firm and limited mobility that restricts opportunities in the external labor market. For this reason, employees might put less effort toward achieving extreme positive performance in the presence of NCCs given the limited upside that they face. Thus, it is not clear ex-ante how NCCs will affect the effort of fund managers and, consequently, the performance of mutual funds.

Our first set of results shows unambiguously that increased enforceability of NCCs leads to better fund performance. This result holds regardless of whether we: use different ways of measuring fund performance, i.e., raw returns, style-adjusted returns, Carhart alphas, or DGTW-adjusted returns; use different test designs, i.e., a generalized difference-in-differences (DID) approach or simple DID approach; and employ control variables or not. The result is also economically significant. For example, the increase in NCC enforceability in Florida gives rise to a return improvement of affected mutual funds of 312 basis points per year. This result is consistent with increased enforceability of NCCs leading to increased effort by the affected mutual fund managers who now face more serious career concerns.

Our second set of tests is guided by the hypothesis that increased career concerns due to stricter NCC enforceability cause fund managers to play it safe. The rationale is that a fund manager benefits less from risk taking because of limited upside potential and also faces costlier consequences if laid off. More specifically, we hypothesize that increased career concerns cause fund managers to (i) reduce downside risk, (ii) engage less in tournament behavior, and (iii) make their portfolios look similar to those of their benchmarks or peers in order to avoid extremely poor performance – in absolute terms and relative to their peers. We find strong evidence supporting all three hypotheses.

Next we hypothesize that increased career concerns incentivize fund managers to make themselves useful to the organization in ways that are unrelated to fund performance, for example, by attracting new customers with portfolios that have been dressed up at reporting dates (e.g., Lakonishok, Shleifer, Thaler, and Vishny 1991, Sias and Starks 1997, and Agarwal, Gay, and Ling 2014). This is indeed what we find, i.e., fund managers increase the amount of portfolio window dressing after an increase in NCC enforceability.

Finally, we relate the impact of changes in NCC enforceability on the behavior of affected managers to how developed are the internal labor markets in which they operate. Developed internal labor markets allow managers to replace restricted across-family mobility with within-family mobility (Papageorgiou 2014, 2018). More specifically, in a large family there will be more internal employment options for a manager when he is either promoted or demoted. Thus, we expect the size of the internal labor markets to moderate the impact of NCC enforceability on the actions of managers. More specifically, we hypothesize that the negative effect of increased career concerns on risk taking becomes weaker in the presence of developed internal labor markets because internal labor markets increase the upside potential and reduce the downside consequences of risk taking. In a similar spirit, we hypothesize that the positive effect of increased career concerns on window dressing becomes weaker when internal labor markets are more developed. However, the consequences of internal labor markets on effort are not clear. We expect that the effort increase due to the risk of being laid off becomes weaker but, on the other side, the effort decrease due to limited upside potential also becomes weaker. Which effect dominates is not clear ex-ante.

Our empirical results show that fund managers increase effort even more in large fund families after NCC enforceability becomes stricter. This is consistent with the view that the concerns for a limited upside due to stricter NCC enforceability are moderated in larger families to a larger degree than the concerns related to the risk of being laid off. We also find support for the hypothesis related to risk taking: the reduction in downside risk and tournament behavior managers undertake in response to stricter NCC enforceability is weaker in larger families. Furthermore, we find – again consistent with our hypothesis – that fund managers increase window dressing in response to stricter NCC enforceability to a lesser extent when they are members of a

larger fund family. Both, the risk taking and the window dressing result, are consistent with larger families, with more employment opportunities even when a manager is demoted, moderating the concerns stemming from termination in a stricter NCC enforceability regime.

Our paper is related to a growing literature that studies the impact of NCCs on economic activity at the state and firm level. This literature looks at the effect of NCCs on the innovation process (e.g. Gilson 1999, Fallick, Fleischman, and Rebitzer 2006, Marx, Strumsky, and Fleming 2009, Samila and Sorenson 2011, Marx, Singh, and Fleming 2015, and Barnett and Sichelman 2016), entrepreneurship (e.g., Stuart and Sorenson 2003a, and Stuart and Sorenson 2003b, Samila and Sorenson 2011, and Starr, Balasubramanian, and Sakakibara 2017), employee mobility (e.g., Fallick, Fleischman, and Rebitzer 2006, Marx, Strumsky, and Fleming 2009, and Jeffers 2018), firm-sponsored versus employee-paid training (e.g., Garmaise 2011, Starr, Prescott, and Bishara 2016, Starr 2018, and Starr, Ganco, and Campbell 2018), wages (e.g., Mukherjee and Vasconcelos 2011 and Balasubramanian, Chang, Sakakibara, Sivadasa, and Starr 2018), firm's output (e.g., Bishara 2011, Bishara and Orozco 2012, Lobel and Amir 2014, and Anand, Hasan, Sharma, and Wang 2018), as well as on the firms' financial reporting choices (e.g., Chen, Zhang, and Zhou 2018). Our paper contributes to this literature by furthering our understanding of how participants of the labor force respond to NCCs. Notably, our novel finding that NCCs have a disciplining impact on managers, eliciting more effort from them due to heightened career concerns, contributes a new insight to the ongoing debate regarding the effect of NCCs on the economy.

Beyond the NCC literature, our paper also makes a contribution to the literature that studies the career concerns of fund managers. There is a theoretical literature which argues that in an optimal contracting equilibrium, a manager responds to both implicit and explicit incentives. Explicit incentives derive from a compensation contract that is tied to performance while implicit

incentives are related to considerations such as career concerns, and firms (the principals) structure contracts so as to optimize total incentives (e.g., Gibbons and Murphy 1992, Holmstrom 1999, and Andersson 2002). A key prediction from this literature is that implicit incentives of managers brought about by their career concerns cause managers to exert more effort (e.g., Fama 1980, Lazear and Rosen 1981, Gibbons and Murphy 1992, Holmstrom 1999, and Andersson 2002). There is also a parallel empirical literature that studies various actions that mutual fund managers take in response to their implicit incentives (e.g., Scharfstein and Stein 1990, Lakonishok, Shleifer, Thaler, and Vishny 1991, Sias and Starks 1997, Chevalier and Ellison 1999, and Agarwal, Gay, and Ling 2014). In the context of this literature, ours is, to the best or our knowledge, the first study to show empirically that career concerns cause managers to exert more effort, thus providing support for a key prediction from the theoretical literature. Moreover, we show that increased career concerns cause managers to reduce their portfolio risk and tournament behavior, increase their herding behavior, and increase their window dressing, in effect confirming similar findings from the previous mutual fund literature. However, our distinct contribution is that we use an "exogenous shock" approach that allows us to draw causal inferences rather inferences based on association.

1. Data

1.1 Identification strategy

Our identification strategy exploits three well-documented shocks to examine the causal effect of changes on NCC enforceability on our variables of interest.[5] These changes were

[5] These three cases were first identified and employed in the empirical work of Garmaise (2011). Moreover, analyzing Malsberger (2004), Garmaise (2011) finds that, with the exception of these three cases, state laws were largely static with respect to enforceability of NCCs during our sample period.

introduced by state governments or Supreme Court rulings and were thus unlikely to be caused by fund or manager characteristics.

In June 1994, Texas Supreme Courts redefined the legal standards for NCCs, making it more difficult to enforce NCCs (Garmaise 2011).[6] For an NCC to be valid, the employment contract needed to explicitly mention the compensation the employee gets for signing the NCC. This new rule applied not only to newly signed contracts but also to existing ones.

In late May 1996, Florida state legislature introduced a new law strengthening the employer's position enforcing NCCs. There were three major changes. First, there is a reversal of the burden of proof: the employee now has to prove that the NCC is not violated whereas before 1996 the employer had to prove the violation of the NCC. Second, courts must no longer consider "any individualized economic or other hardship that might be caused to the person against whom enforcement is sought".[7] Finally, even if the NCC states an overbroad time period or geographic range, the contract is no longer considered illegal but is applied in a modified version deemed as reasonable.

Louisiana experienced two opposing changes. In June 2001, Louisiana Supreme Court effectively banned NCCs largely by voiding all agreements not pertaining to the case where the former employee seeks to establish a new business by herself.[8] However, in 2003 the former status quo was reestablished.[9]

[6] *Light v. Centel Cellular Co. of Tex.*, 883 S.W.2d, 664-45 (Tex. 1994). https://www.courtlistener.com/opinion/201525150/light-v-centel-cellular-co-of-texas/

[7] Florida Sate Law §542.335(g)(1), http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0500-0599/0542/Sections/0542.335.html.

[8] *SWAT 24 Shreveport Bossier, Inc. v. Bond*, 808 So. 2d 294 (La. 2001), http://caselaw.findlaw.com/la-supreme-court/1085030.html.

[9] See, e.g., Terrel (2004) and Ecker (2015).

Another useful feature is that these changes have opposite effects on the enforceability of NCCs, i.e., increased enforceability for Florida and decreased enforceability for Texas, which allows us to test the effect of an increase and a decrease of NCC enforceability separately.

1.2 Sample construction and data sources

Our sample period starts in 1992 and ends in 2004. The reason for this choice is that, as described above, during this period three states faced substantial amendments to their legal standards related to enforcement of NCCs, while NCC enforceability stayed constant in all the other states.[10]

Our sample incorporates several data sets. We start with the Center for Research on Security Prices (CRSP) Survivorship Bias Free Mutual Fund Database from where we get fund names, family names, monthly net returns, total nets assets under management, investment objectives, and further fund specific information such as expense and turnover ratios. For mutual funds with different share classes, we aggregate all observations at the fund-level based on the asset value of the share classes. We limit the universe to include only diversified, domestic U.S. equity funds, thereby excluding index, balanced, bond, money market, and sector funds. The portfolio holdings data come from the Thomson Financial Mutual Fund Holdings database, which we merge with the CRSP mutual fund data using the MFLINKS database and with the CRSP stock data using stock CUSIPS. Portfolio holdings for each fund are either of quarterly or semi-annual frequency. Names of fund managers and the periods during which they managed individual funds are obtained from Morningstar Direct. Our choice to use Morningstar Direct to obtain such information is motivated by previous research showing that the manager name information from

[10] Our choice is consistent, among others, with Garmaise (2011) and Chen, Zhang, and Zhou (2018), who use the same sample period. Moreover, like us, these studies use the amendments to NCC enforceability outlined in Section 1.1.

officially mandated SEC filings matches best with manager names provided in Morningstar Direct relative to other data sources such as the CRSP mutual fund data (Patel and Sarkissian 2017).

NCC enforceability is governed by state law and changes in NCC enforceability take place at the state level. To determine the relevant state, we rely on N-SAR filings by mutual funds, which we retrieve through the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system maintained by the SEC. We download all N-SAR A and B filings and match them to our CRSP sample funds by name. The fund managers conducting the actual asset management are employees of the fund's "advisor" (item #8) and the advisor's "state of headquarter" (item #8.D) is the relevant state, the laws of which govern the pertinent NCC law applicable to the fund managers.[11] Each fund with one unique advisor state is assigned one distinct NCC jurisdiction.

1.3 Definition of key variables

We employ the following four measures of fund performance: raw return (*Return*); style-adjusted return (*Style-adj. Return*); Carhart (1997) alpha (*Carhart*); and characteristic-adjusted return (*DGTW*). To measure style-adjusted returns, we subtract from the return of a given fund the mean return of funds belonging to the same investment category. We calculate a fund's four factor alpha according to Carhart (1997) as the difference between the actual return minus the expected return, estimated using factor loadings computed from a regression of the preceding 36 monthly excess returns on the four factor-mimicking portfolios.[12] Finally, we calculate stock characteristic-adjusted returns following Daniel, Grinblatt, Titman, and Wermers (1997) and Wermers (2004).

[11] As the enforcement of NCC is subject to employment law instead of corporate law, the relevant jurisdiction is typically the state in which the employee works (Pentelovitch 2003, Malsberger 2004, Garmaise 2011 and Pollard 2014), which is usually the headquarter's state, not the state of incorporation.

[12] Returns for the factor mimicking portfolios and the proxy for the risk-free rate are available via http://mba.tuck.. dartmouth.edu/pages/faculty/ken.french/data_library.html.

In particular, we determine a stock's characteristic adjusted return in a given month by subtracting from its return the return of the benchmark portfolio, which that particular stock belongs to.[13] Each stock's benchmark portfolio is a value-weighted portfolio that includes all stocks that are part of the same size, book-to-market, and one-year past return quintile. From characteristic-adjusted stock returns, we calculate a fund-level performance measure as the value weighted sum of stock-level DGTW returns.

To measure risk taking, we employ the following variables: our first measure of downside risk, *Semi-Deviation*, uses a fund's past twelve months' returns. It reflects deviations from the mean for returns that were below the mean. Our measure for downside market risk, *Downside-β,* is based on Whaley (2002). It computes *Downside-β* based on the covariance with the market only when the excess fund and market returns are both below the zero threshold. To quantify how much a fund engages in tournament behavior, we use the risk adjustment ratio of Kempf, Ruenzi, and Thiele (2009):

$$RAR_{i,s,t} = \frac{\sigma_{i,s,t}^{(2),\text{int}}}{\sigma_{i,s,t}^{(1)}} \tag{1}$$

It captures how much fund managers change their risk in the second half of the year relative to the first half. $\sigma_{i,s,t}^{(1)}$ denotes the realized portfolio risk of fund *i* in state *s* in the first half of year *t*. It is calculated using the actual portfolio holdings and the actual volatility of the corresponding portfolio returns in the first half of the year. The intended portfolio risk, $\sigma_{i,s,t}^{(2),\text{int}}$, in the second half of year *t* is calculated using the actual portfolio holdings in the second half and the forecast of the

[13] The DGTW benchmarks are available via http://www.smith.umd.edu/faculty/rwermers/ftpsite/Dgtw/coverpage.htm.

volatility of the corresponding portfolio returns in the second half of the year (which is proxied by the realized stock volatility of that same portfolio in the first half of the year).[14]

To capture a fund's deviation from its benchmark, we measure a fund's *Active Share* following Cremers and Petajisto (2009) and Petajisto (2013).[15] Next, we employ a herding measure, *Herding*, to quantify a fund's propensity to follow its peers. In particular, we first calculate a stock-level based herding measure following Lakonishok, Shleifer, and Vishny (1992), which we then aggregate at the fund level by value-weighting it over all stocks in a fund's portfolio.

Finally, to quantify a fund's window dressing, we employ two measures developed by Agarwal, Gay, and Ling (2014). The first one, *Rank Gap*, measures the gap between a fund's return rank and a rank based on its stock holdings. The latter is calculated as the average of a rank based on the proportion of winners (the higher the proportion of winners, the higher the rank) and losers (the lower the proportion of losers, the higher the rank). The intuition is that if a fund's return was low relative to other funds, despite its portfolio covering a relatively high amount of winners and low amount of losers, this is interpreted as evidence of window dressing. The second measure of window dressing is the backward holding return gap, *BHRG*.[16] It is measured as the difference between the quarterly return, net of expenses and trading costs, of a hypothetical portfolio consisting of a fund's end-of-quarter holdings assumed to have been held through the whole quarter up until the next report date and the fund's actual quarterly return. As with *Rank Gap*, high values of *BHRG* indicate that reported holdings suggest higher returns than actually realized, consistent with window dressing.

[14] This approach for measuring intended risk is the same as the one used in Ma, Tang, and Gómez (2018) and Kempf, Ruenzi, and Thiele (2009). For more details please see the appendix of Kempf, Ruenzi, and Thiele (2009).
[15] We download data on active share from http://www.petajisto.net/data.html.
[16] Studies using *BHRG* include Solomon, Soltes, and Sosyura (2014), Brown, Sotes-Paladino, and Jiaguo (2017), and Chuprinin and Sosyura (2018).

1.4 Descriptive Statistics

Our sample from 1992 to 2004 includes 2,063 funds managed by 3,396 distinct managers. Out of the sample funds, 110 (5.3%) are from one of the treated states. Similarly, out of the 3,396 sample managers, 198 (5.9%) come from a state experiencing a change in NCC enforceability.

[please insert Table I here]

Table I provides descriptive statistics for the total sample as well as the treated and untreated subsamples separately. Panel A shows that the average fund manages almost $1 billion in assets, has an annual expense ratio of 1.4%, and turns over its portfolio approximately once per year (mean turnover ratio of 96%). On average, sample funds are 12 years old. The mean annual flow, defined as the percentage growth in assets under management not attributable to fund performance, reflects the large overall growth of the active mutual fund industry during this period. The average sample family has about 24 billion in assets, manages 14 funds, and employs roughly 16 managers. In terms of assets as well as flows, funds from the control and treated group are largely comparable. Treated funds exhibit slightly lower turnover than the control group (89% versus 96%). They are also two years older and charge 16 basis points higher in fees. Consistent with a large number of families from the control group operating in financial centers like New York, California, and Pennsylvania, families from treated states are significantly smaller both in terms of totals assets and number of funds managed but not in terms of number of managers employed. Panel B provides information on performance, risk, and window dressing for the treated and untreated subsamples separately. Funds from the treated subsample exhibit significantly lower *Downside-β* and more window dressing behavior than their untreated counterparts. Besides these differences, there are no other discernible differences between the subsamples.

2. Main Results

In this section, we test the main hypotheses of our paper, which, as outlined in the introduction, posit that fund managers respond to an increase in NCC enforceability by (i) adjusting their effort, (ii) reducing risk taking, and (iii) trying to attract new customers with portfolios that have been dressed up at report dates.

2.1 The Impact of NCCs on Fund Performance

We hypothesize the presence of two countervailing effects on effort due to increased NCC enforceability. On one hand, fund managers are expected to work harder to avoid termination since job loss becomes costlier. On the other hand, the concern for a more limited upside in compensation and promotion associated with increased NCC enforceability might cause some managers to put less effort. Thus, it is not clear ex-ante what the net effect of stricter NCC enforceability will be on effort and, consequently, on performance.

To determine whether enforcement of NCCs affects the effort of fund managers, we examine whether changes in NCC enforceability have an impact on fund performance. We do this by estimating a generalized difference-in-differences regression model that resembles the one employed by Bertrand and Mullainathan (2003) to examine the effects of anti-takeover law changes:[17]

$$Perf_{i,s,t} = \beta_0 + \beta_1 \cdot \Delta NCC_{i,s,t} + Controls + FE + \varepsilon_{i,t}, \quad (2)$$

where $Perf_{i,s,t}$ is the performance of fund i from state s in month t. Following Garmaise (2011), we use the changes in the legal environment detailed above to generate our main independent variable, $\Delta NCC_{i,s,t}$, and assume that the legal changes affect managerial behavior

[17] This approach is also used in the NCC literature where it was first introduced by Garmaise (2011).

starting in the year following their occurrence. Accordingly, this variable is set to -1 for funds in Texas from 1995 to 2004, +1 for funds in Florida from 1997 to 2004, and -1 for funds in Louisiana in 2002 and 2003 and is set to 0 otherwise. *Controls* denotes fund-level control variables, which are described in Table I and typically employed in previous research on fund performance. In particular, we include the fund's expense ratio (*Expense Ratio*), turnover ratio (*Turnover Ratio*), flows (*Flow*), age [*Log(Age)*], and total net assets [*Log(TNA)*]. *FE* denotes various fixed effects. We use fund fixed effects to control for time-invariant differences between treated and non-treated funds, time fixed effects to account for common time variant factors, and style fixed effects to control for commonalities within investment styles. We cluster standard errors at the state level in all specifications.

[please insert Table II here]

Results are presented in Table II. Panel A reports regression results with our four performance measures as dependent variables, both with and without control variables included. The results provide strong evidence that increased enforceability leads to improved fund performance. For each performance measure, the coefficient of ΔNCC is statistically significant at the 1% level and its magnitude implies a large economic impact. For example, results based on *DGTW* without controls indicate that a change toward stricter enforcement of NCCs leads to an alpha increase of 13 basis points per month, which corresponds to a 156 basis points improvement on an annual basis. Looking at all the performance measures, suggests that the shift towards stricter NCC enforceability leads to a performance improvement that ranges from 156 to 276 basis points per year. When we include control variables, the coefficients decline to roughly 2/3 of the values obtained without controls, although they remain statistically significant at the 1%-level. In sum, the results form Panel A suggest that an increase in NCC enforceability amplifies the career

concerns of mutual funds managers, which in turn causes a significant increase in their effort and the resulting fund performance.

Equation (2) staggers changes in enforceability in both directions, that is, it includes both increases and decreases in NCC enforceability. However, our data allows us to discern how fund managers react to opposite changes in NCC enforceability by looking separately at the effects of increased enforceability and decreased enforceability. In Panel B and C of Table II, we examine whether increased or decreased enforceability of NCCs leads to effects on fund performance that have opposite signs. Accordingly, in Panel B we replace the variable ΔNCC with *Reduced NCC*, which equals +1 for funds with advisors headquartered in Texas from 1995-2004 and 0 otherwise. In Panel C we replace the variable ΔNCC with *Increased NCC*, which equals +1 for funds from Florida during 1997-2004 and 0 otherwise.[18] We expect a negative coefficient on *Reduced NCC* for Texas and a positive one on *Increased NCC* for the Florida. This is indeed what we find in Panels B and C of Table II, thus providing additional confidence to our Panel A results. Regarding statistical and economic significance, the results are at par with the results of the aggregated analysis in Panel A.[19]

In summary, the evidence from our analysis thus far suggests that fund managers are aware of how changes in NCC enforceability influence their costs associated with job termination. Our results suggest that fund managers work harder in response to these increased career concerns and this ultimately translates into better fund performance. In contrast, fund managers seem to reduce

[18] We are unable to conduct a similar analysis for Louisiana given that there is a very small number of treated funds in this case. There are only three treated funds in Louisiana in 2001 and seven in 2003.

[19] Fund fixed effects subsume differences across treated and non-treated funds and time fixed effects subsume differences before and after the treatment. Thus, separate dummies for these effects are not needed. Results are, however, very similar when we use a more traditional Difference-In-Differences methodology where we include a dummy for the treated funds, a dummy for the post-treatment period, and the interaction of the two.

their effort when their NCC-related career concerns become weaker, and this leads to deterioration of fund performance.

2.2 The Impact of NCCs on Risk Taking

In addition to increasing their effort level, fund managers can try to mitigate increased career concerns arising due to increased NCC enforceability by reducing risk. We analyze various ways in which fund managers can do so. First, managers could avoid extremely poor performance, which is likely to trigger termination, by reducing portfolio downside risk. Second, fund managers could scale down their engagement in tournaments.[20] The reason is that fund managers with poor interim performance, who typically have an incentive to increase risk to catch up with interim winners, have less of an incentive to do so when the costs associated with being laid off are higher (as first documented by Kempf, Ruenzi, and Thiele 2009). This is because an increase in risk not only increases the chance of catching up with the winners but also the risk of ending up with an extremely poor performance and being fired. Third, as managers are evaluated on a relative basis, it is rational for them to play it safe by making their portfolios similar to those of their benchmark or their peers (Chevalier and Ellison 1999). This idea was first introduced by Keynes (1936) and later formalized by Scharfstein and Stein (1990), who argue that investment managers might prefer to herd because an unprofitable investment decision will not hurt their reputation as much when other managers make the same mistake.

[20] Brown, Harlow, and Starks (1996) are the first to examine the risk taking incentives of fund managers in a tournament setting. They show that fund managers with a poor interim performance increase their risk taking in the second half of the year to catch up with the interim winners. The economic rationale underlying this behavior is the convex performance-flow relationship between inflows of new money into funds and past performance as documented by Sirri and Tufano (1998) and many subsequent studies.

2.2.1 Downside Risk

We predict that increased NCC enforceability will cause managers to reduce downside risk. To test this, we run Regression (2) with downside risk measures as dependent variables.

[please insert Table III here]

Table III presents the results with and without control variables. In Panel A, where we present our results jointly exploiting the three well-documented exogenous shocks to the enforceability of NCCs, we see that, as expected, increased enforceability of NCCs leads to a decrease in portfolio downside risk. Specifically, an increase in NCC enforceability leads to a decrease in *Semi-Deviation* of 36 basis points and a decrease in *Downside-β* of more than 0.09, which are both sizable relative to the sample means of these variables. For example, the decrease of 0.09 in *Downside-β* corresponds to a reduction of about 9% of the sample mean. Thus, this evidence suggests that managers are reducing their portfolio downside risk in response to increased career concerns arising due to increased enforceability of NCCs.

In Panel B and C of Table III, we analyze the effect of an increase and a decrease in enforceability of NCCs separately to test whether they lead to effects on downside risk taking that have opposite signs. Like in Table II, we replace the variable ΔNCC with *Reduced NCC* in Panel B, which equals +1 for funds with advisors headquartered in Texas from 1995-2004 and 0 otherwise. In Panel C we replace the variable ΔNCC with *Increased NCC*, which equals +1 for funds from Florida during 1997-2004 and 0 otherwise. We hypothesize a positive coefficient on *Reduced NCC* for Texas and a negative one on *Increased NCC* for the Florida. This is what we find. When the enforceability of NCCs gets weaker, fund managers take more downside risk. In contrast, they reduce their downside risk when the enforceability gets stronger.

2.2.2 Tournament Behavior

Starting with the seminal paper of Brown, Harlow, and Starks (1996), previous research has documented that the structure of the mutual fund industry creates tournament-like incentives whereby fund managers compete against each other to achieve a high performance rank by the end of a year when fund investors decide on which funds to invest. Since the performance-flow relationship is convex, i.e., top ranked funds receive the lion share of the new money but bottom ranked funds are not punished by money outflows, fund managers face an option-like incentive structure. This makes it rational for fund manager that are not top ranked in the middle of the year to increase their risk in the second half of the year. However, Kempf, Ruenzi and Thiele (2009) show that fund managers take career concerns into account when deciding on their optimal risk taking in the tournament. Career concerns dampen their willingness to take more risk because more risk taking does not only increase the chance of catching up with the winners but also the risk of achieving an extremely poor performance and consequently being laid off. Thus, since an increase in NCC enforceability increases the cost of being laid off, we expect fund managers to cut back on their tournament-driven actions in the face of increased NCC enforceability.

To test this hypothesis, use the risk adjustment ratio (1) as the dependent variable in our regression where we test for the impact of changes in NCC enforceability on tournament behavior:

$$RAR_{i,s,t} = \beta_0 + \beta_1 \cdot Perf_{i,s,t}^{First} + \beta_2 \cdot \Delta NCC_{i,s,t} + \beta_3 \cdot Perf_{i,s,t}^{First} \cdot \Delta NCC_{i,s,t} + Controls + FE + \varepsilon_{i,t}, \qquad (3)$$

$Perf_{i,s,t}^{First}$ denotes the performance of the fund *i* in state *s* during the first half of year *t*. We measure performance as the style-adjusted returns or as ranks based on raw returns. Ranks are calculated for each market segment and year separately. They are normalized so that they are equally distributed between zero and one, with the best fund manager in its respective segment getting

assigned the rank of one. According to the traditional tournament literature, we expect a negative coefficient on $Perf_{i,s,t}^{First}$ ($\beta_1 < 0$), i.e. the lower the performance in the first half of the year, the more fund managers increase risk in the second half of the year. Like in Equation (2), ΔNCC captures the change in the enforceability of NCCs, *Controls* denotes the fund-level controls and *FE* the various fixed effects. The main variable of interest is the interaction term. The coefficient β_3 shows how a change in enforceability impacts tournament behavior. Since we expect that fund managers engage less in tournaments when their career concerns get stronger due to increased enforceability of NCCs, we expect β_3 to have to opposite sign of β_1.

[please insert Table IV here]

Table IV present the results. The generalized difference-in-difference approach of Panel A shows that an increase in NCC enforceability mitigates the tournament behavior of fund managers. Whereas we observe a general tendency for a tournament behavior ($\beta_1 < 0$), we see that this behavior changes when NCC enforceability is increased ($\beta_3 > 0$). This change is strong, both in statistical and economic terms. β_3 is statistically significant at the 1%-level in each of the four model specifications. Furthermore, the size of β_3 is larger than the size of β_1 in absolute terms, i.e. the change effect dominates the baseline tournament effect. This implies that an increase in NCC enforceability prevents fund managers from engaging in a tournament. They no longer increase the risk of their portfolio in response to a poor interim performance but instead play it safe. This finding which is consistent with Kempf, Ruenzi, and Thiele (2009) again highlights the importance of career concerns resulting from NCCs.

Panel B (Panel C) of Table IV show separate results for Texas (Florida) where the enforceability of NCCs was decreased (increased). We expect to see more tournament behavior in Texas after the change but less in Florida. That is exactly what the data tell us. The coefficient β_3 is statistically significant at the 1%-level in each specification in each state and economically important.

2.2.3 Investing with the Crowd

Since fund managers are evaluated on a relative basis, it is rational for them to play it safe by making their portfolios similar to those of their benchmark or their peers when they face heightened career concerns due to increased NCC enforceability. To test this, we run Regression (2) with *Active Share* and *Herding* as dependent variables, respectively. Active share captures how much a fund manager deviates from her benchmark and herding provides information about how closely a fund manager sticks with her peers. We hypothesize that an increase in NCC enforceability leads to lower active share and more herding.

[please insert Table V here]

The results are presented in Table V. Panel A provides strong support for our hypotheses. The negative coefficient of ΔNCC in regressions with *Active Share* as the dependent variable is consistent with fund managers moving closer to their benchmark after increased NCC enforceability. The reduction of 3.71 percentage points, significant at the 1%- level, corresponds to roughly 5% of the sample mean of the *Active Share* measure. The positive and significant coefficient of ΔNCC in regressions with *Herding* as dependent variable suggests that an increase in NCC enforceability leads to more herding by the affected fund managers. This increase in

herding appears to be of striking economic magnitude, in that the coefficient of ΔNCC amounts to 179% of the sample mean for the *Herding* measure. The effects described are statistically significant at the 1%-level in all cases.

Looking at Texas (Panel B) and Florida (Panel C) separately provides further support for our hypotheses. In Texas where NCC enforceability was reduced, fund managers increase their active share and deviate more from their peers, whereas we observe the opposite when looking at Florida where NCC enforceability was increased.

Overall, the results of Table III - V tell the story of managers following several risk reduction strategies in response to increased NCC enforceability: They respond by reducing downside risk, cutting back on their tournament behavior, and staying closer to their benchmarks and peers.

2.3 The Impact of NCCs on Window Dressing

In addition to adjusting their effort level or portfolio risk, managers can counter the increased career concerns due to increased NCC enforceability by making themselves useful to the organization in another way. In particular, by attracting new customers and thus inflating assets under management fund managers can directly improve the profitability of their fund family and increase their own job security. Fund managers can do so by window dressing their portfolios at report dates (e.g., Lakonishok, Shleifer, Thaler, and Vishny l991, Sias and Starks 1997, and Agarwal, Gay, and Ling 2014).

We expect that in the face of increased NCC enforceability, fund managers will increase the level of window dressing in order to counter their heightened career concerns. To test this hypothesis, we estimate Regression (2) with the two measures of window dressing introduced in Section 1.3 as dependent variables, both with and without fund control variables included.

[please insert Table VI here]

Results are presented in Table VI. In Panel A, the positive coefficients of ΔNCC, statistically significant at the 1%-level, are consistent with managers increasing their window dressing behavior after an increase in NCC enforceability. These results are also economically significant. For example, a coefficient of 0.0037 in the regression using *BHRG* as the dependent variable corresponds to an increase in window dressing behavior that amounts to 65% of the sample mean for *BHRG*. High economic significance for this effect is also observed in the regression that uses *Rank Gap* as the dependent variable.

Panels B and C report the respective results when looking at Texas and Florida separately. Consistent with our hypothesis, we find that fund managers engage in less window dressing after NCC enforceability becomes weaker in Texas (Panel B). The opposite behavior is seen in Florida after an increase in NCC enforceability: Fund managers engage more in window dressing (Panel C). Both results hold no matter which herding measure we use or whether or not we use control variables in the regressions. The effects are strong in economic and statistical terms (significant at the 1%- level in all model specifications).

In sum, our analysis strongly suggests that one of the ways in which fund managers try to offset heightened career concerns due to increased NCC enforceability is by increasing the level of their portfolio window dressing. This finding is consistent with Chen, Zhang, and Zhou (2018) who show that management of public companies engaged in more earnings management following increased NCC enforceability.

3. Moderating Effect of Developed Internal Labor Markets

In this section we examine how developed internal labor markets affect the actions of managers in response to increased NCC enforceability. The presence of developed internal labor markets, which are more likely to be found in large fund families, can potentially alleviate the career concerns that arise among fund managers in such a setting. The rationale is that in fund families with developed internal labor markets, fund managers would be able to substitute restricted across-family mobility due to increased NCC enforceability with within-family mobility (Papageorgiou 2018). In other words, in such families there will be more employment options internally for a manager when he is either promoted or demoted. Thus, we expect the size of the internal labor markets to moderate the impact of NCC enforceability on the actions of managers documented in the previous section.

3.1. Developed Internal Labor Markets and NCC Impact on Performance

In the introduction we hypothesize that there are two opposing effects on effort in response to increased NCC enforceability. One is that managers will increase effort due to their concerns associated with a higher cost of job termination. The other is that managers will put less effort towards achieving extreme positive performance because of the limited upside in compensation and promotion that they expect in a regime with stricter NCC enforceability. A developed internal labor market is expected to mitigate both of these opposing effects, i.e., mitigate the effort-increasing effect in response to termination risk and also mitigate the effort-decreasing effect in response to limited upside. However, the magnitude of mitigation could be different across the two effects and it is not clear ex-ante what the net impact that a developed internal labor market will have on the performance effect of stricter NCC enforceability.

To examine how the size of the internal labor market affects the performance impact of NCC enforcement, we augment Equation (2) with two variables: the size of the internal labor market, *SILM*, which is captured by the number of funds in a fund family, and the interaction of ΔNCC with *SILM*. We employ the number of funds within the fund family where the manager works as the most relevant measure in terms of employment opportunities.[21] Consistent with our discussion above, we expect the interaction term to be negative.

[please insert Table VII here]

Results from this regression are reported in Table VII. They show that the interaction of *SILM* and ΔNCC has a significant and positive sign in seven out of the eight specifications. This provides evidence that developed internal labor markets amplify the performance effect associated with higher enforceability of NCCs that we document in Section 2.1. This finding suggests that the mitigation of the effort-reducing effect due to limited upside from stricter NCC enforceability dominates the mitigation of the effort-increasing effect due to increased concerns associated with job termination. This is consistent with the view that after an increase in NCC enforceability, the associated concerns for a limited upside after great performance are moderated for fund managers in families with developed internal labor markets while these managers are still concerned about being laid off after poor performance even if the fund family could alternatively demote them to other funds.

[21] This is analogous to the number of occupations available within a firm used by Papageorgiou (2018).

3.2. Developed Internal Labor Markets and NCC Impact on Risk Taking

In Section 2.2 we show that managers respond to greater career concerns associated with increased NCC enforceability by changing certain risk-related aspects of their portfolios, i.e., by reducing downside risk, reducing their tournament behavior, and investing more with the crowd. In this section, we examine whether the presence of a developed internal labor market weakens these effects.

3.2.1 Developed Internal Labor Markets and NCC Impact on Downside Risk

Consistent with the hypothesized mitigating impact of developed internal labor markets, we predict that the reduction in downside risk in response to increased NCC enforceability will happen to a lesser extent in families with a developed internal labor market. To test this, we modify Regression (2) with downside risk measures as dependent variables and augment it with two variables: The size of the internal labor market, *SILM*, which is captured by the number of funds in a fund family, and the interaction of ΔNCC with *SILM*.

[please insert Table VIII here]

Results are presented in Table VIII. There we observe that the interaction term is positive and statistically significant at the 1%-level for both measure of downside risk, *Semi-Deviation* and *Downside-β.* This result supports the hypothesis that developed labor markets mitigate career concerns that arise due to stricter NCC enforceability. In other words, because managers have more internal options in a larger family, even when they are demoted, they feel a weaker urge to avoid extreme negative performance outcomes by reducing downside risk.

3.2.2 Developed Internal Labor Markets and NCC Impact on Tournament Behavior

We next examine whether operating in a fund family with a developed internal labor market mitigates the reduction in tournament behavior that we documented in Section 2.2.2. To do so, we augment Equation (3) with the following variables: the size of the internal labor market, *SILM*, which is captured by the number of funds in a fund family; the interaction of $Perf_{i,s,t}^{First}$ with *SILM;* the interaction of ΔNCC with *SILM;* and the triple interaction of $Perf_{i,s,t}^{First}$, ΔNCC, and *SILM*. The key variable is the triple interaction, which we expect to have a negative coefficient.

[please insert Table IX here]

Results are presented in Table IX. As expected, the coefficient on the triple interaction is negative and statistically significant at the 1%- or 10%-level (based on one-sided tests), respectively. This suggests that the tendency of mutual fund managers documented in Section 2.2.2 to play it safe by reducing their tournament behavior in response to heightened career concerns is tempered in larger fund families, where the benefits from developed internal labor markets offset the career concerns that come with increased NCC enforceability.

3.2.3 Developed Internal Labor Markets and NCC Impact on Investing with the Crowd

We next examine whether fund families with developed internal labor markets mitigate the tendency we document in Section 2.2.3 for fund managers to play it safe by making their portfolios similar to those of the benchmark or their peers. To test for this effect, we modify Regression (2) with *Active Share* and *Herding* as the dependent variables, respectively, and also augment it with two variables: The size of the internal labor market, *SILM*, which is captured by the number of funds in a fund family, and the interaction of ΔNCC with *SILM*.

[please insert Table X here]

Table X presents results. The interaction of ΔNCC with *SILM* is statistically insignificant for all specifications with the *Active Share* and *Herding* as dependent variables. Thus, developed internal labor markets do not appear to moderate the reduction in Active Share and the increase in Herding in response to career concerns associated with stricter NCC enforceability.

3.3 Developed Internal Labor Markets and NCC Impact on Window Dressing

In Section 2.3 we show that another way in which managers counter their elevated career concerns due to increased NCC enforceability is by trying to impress existing and new fund clients through portfolio window dressing. This is done in order to increase assets under management and increase job security. However, given that larger fund families, with developed internal labor markets, mitigate such concerns, we expect family size to moderate their window dressing behavior in response to stricter NCC enforceability. To test this hypothesis, we modify Regression (2) with the two window-dressing variables as dependent variables, respectively, and augment it with the two variables: The size of the internal labor market, *SILM*, which is captured by the number of funds in a fund family, and the interaction of ΔNCC with *SILM*.

[please insert Table XI here]

Results are reported in Table XI. The results show that family size mitigates the observed increase in window-dressing behavior in response to stricter NCC enforceability. While we observe a general tendency for funds to increase their window dressing in response to increased NCC enforceability, we observe that this effect gets weaker for larger families, as documented by the negative coefficient on the interaction term. The coefficient on the interaction term is negative

and statistically significant at the 1%-level for both specifications with the different window-dressing measures.

4. Conclusion

In the last few years, non-compete clauses in employment contracts, intended to restrict labor mobility, have received growing attention from academics, regulators, politicians, companies, and the public at large. While the focus of this debate has been on how these restrictions affect overall state or firm economic activity, we know little about how the targeted members of the labor force respond to such restrictions. Our paper contributes to this ongoing debate through a unified examination of the effect that NCCs have on the implicit incentive structure and resulting behavior of managers, which we do by looking at a number of possible actions that managers can undertake to respond to heightened career concerns.

Using the mutual fund industry as a testing laboratory, we show that, in line with economic theory, managers respond by improving portfolio performance, which is consistent with them increasing effort in response to greater career concerns caused by increased enforceability of NCCs. Their response goes beyond performance improvements, however, as the affected managers also reduce downside risk, engage less in fund tournaments, deviate less from their benchmarks and peers, and window dress more.

Our study also uncovers the power of developed internal labor markets in countering the effect that labor mobility frictions arising due to enforceability of NCCs can have on the incentives of fund managers. Larger families, with more developed internal labor markets, allow managers to substitute restricted across-family mobility due to increased NCC enforceability with within-family mobility. Our results confirm this intuition.

References

Agarwal, Vikas; Gay, Gerald D., and Ling, Leng (2014). Window Dressing in Mutual Funds, *Review of Financial Studies*, Vol. 27, No. 11, pp. 3133–3170.

Amir, On, and Lobel, Orly (2013). Driving Performance: A Growth Theory of Noncompete Law, *Stanford Technology Review*, Vol. 16, No. 3, pp- 833-874.

Anand, Smritit; Hasan, Iftekhar; Sharma, Priyanka, and Wang, Haizhi (2018). State enforceability of noncompete agreements: Regulations that stifle productivity!, *Human Resource Management*, Vol. 57, No. 1, pp. 341-254.

Andersson, Frederik (2002). Career Concerns, Contracts, and Effort Distortions, *Journal of Labor Economics*, Vol. 20, No. 1, pp. 42-58.

Balasubramanian, Natarajan; Chang, Jin Woo; Sakakibara, Mariko; Sivadasa, Jagadeesh, and Starr, Evan (2017). Locked in? The Enforceability of Covenants Not to Compete and the Careers of High-Tech Workers, *Working Paper*.

Bansal, Paritosh and Ablan, Jennifer (2014). How Bill Gross became too hot for Pimco to handle. *Reuters*, September 26.

Barnett, Jonathan M., and Sichelman, Ted M. (2016). Revisiting Labor Mobility in Innovation Markets, *Working Paper*.

Berk, Jonathan B., van Binsbergen, Jules H., and Liu, Binying (2017). Matching Capital and Labor, *Journal of Finance*, Vol. 77, No. 6, pp. 2467-2504.

Bertrand, Marianna, and Mullainathan, Sendhil (2003). Enjoying the Quiet Life? Corporate Governance and Managerial Preferences, *Journal of Political Economy*, Vol. 111, No. 5, pp. 1043-1075.

Bishara, Norman D. (2011). Fifty Ways to Leave Your Employer: Relative Enforcement of Covenant Not to Compete Agreements, Trends, and Implications for Employee Mobility Policy, *University of Pennsylvania Journal of Business Law*, Vol. 13, No. 3, pp. 751-795.

Bishara, Norman D., and Orozco, David (2012). Using the Resource-Based Theory to Determine Covenant Not to Compete Legitimacy, *Indiana Law Journal*, Vol. 87, No. 3, pp. 979-1031.

Bishara, Norman D.; and Starr, Evan (2016). The incomplete noncompete picture, *Lewis & Clark Law Review*, Vol. 20, No. 2, pp. 497-547.

Bishara, Norman D.; Martin, Kenneth J., and Thomas, Randall S. (2015). An Empirical Analysis of Noncompetition Clauses and Other Restrictive Postemployment Covenants, *Vanderbilt Law Review*, Vol. 68, No. 1, pp. 1-50.

Brown, Keith C.; Harlow, W. V., and Starks, Laura W. (1996). Of Tournaments and Temptations: An Analysis of Managerial Incentives in the Mutual Fund Industry, *Journal of Finance*, Vol. 51, No. 1, pp. 95-110.

Brown, Stephen J.; Sotes-Paladino, and Wang, Jiaguo (George) (2017). Starting on the wrong foot: Seasonality in mutual fund performance, *Journal of Banking and Finance*, Vol. 82, pp. 133-150.

Capon, Andrew (2002). The accidental money manager, *Institutional Investor*, May 1.

Carhart, Mark (1997). On Persistence in Mutual Fund Performance, *Journal of Finance*, Vol. 52, No. 1, pp. 57-82.

Chen, Tai-Yuan; Zhang, Guochang, and Zhou, Yi (2018). Enforceability of non-compete covenants, discretionary investments, and financial reporting practices: Evidence from a natural experiment, *Journal of Accounting and Economics*, Vol. 65, No. 1, pp. 41-60.

Chevalier, Judith, and Ellison, Glenn (1999). Career Concerns of Mutual Fund Managers, *Quarterly Journal of Economics*, Vol. 144, No. 2, pp. 389-432.

Chuprinin, Oleg, and Sosyura, Denis (2018). Family Descent as a Signal of Managerial Quality: Evidence from Mutual Funds, *Review of Financial Studies* (forthcoming).

Cremers, K. J. Martijn, and Petajisto, Antti (2009). How Active Is Your Fund Manager? A New Measure That Predicts Performance, *Review of Financial Studies*, Vol. 22, No. 9, p. 3329-3365.

Daniel, Kent; Grinblatt, Mark; Titman, Sheridan, and Wermers, Russ (1997). Measuring Mutual Fund Performance with Characteristic-Based Benchmarks, *Journal of Finance*, Vol. 52, No. 3, pp. 1035-1058.

Dornbrook, James (2017). Leawood money manager takes just 18 months to top $1B in AUM. Kansas City Business Journal, July 12.

Dougherty, Conor (2017). How noncompete clauses keep workers locked in, *New York Times*, May 13.

Ecker, Jacob (2015). At the Breaking Point: Adapting Louisiana Employment Noncompete Law to the Information Age, *Louisiana Law Review*, Vol. 75, No. 4, pp. 1317–1362.

Fallick, Bruce; Fleischman, Charles, and Rebitzer, James (2006). Job-Hopping in Silicon Valley: Some Evidence Concerning the Microfoundations of a High-Technology Cluster, *Review of Economics and Statistics*, Vol. 88, No. 3, pp. 472-481.

Fama, Eugene (1980). Agency Problems and the Theory of the Firm, *Journal of Political Economy*, Vol. 88, No. 2, pp. 288-307.

Franecki, David (1999), Pilgrim Baxter is off the block – again, *Wall Street Journal*, October 25.

Garmaise, Mark J. (2011). Ties that Truly Bind: Noncompetition Agreements, Executive Compensation, and Firm Investment, *Journal of Law, Economics, and Organization*, Vol. 27, No. 2, pp. 376-425.

Gibbons, Robert, and Murphy, Kevin (1992). Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence, *Journal of Political Economy*, Vol. 100, No. 3, pp. 468-505.

Gilson, Roland J. (1999). The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete, *New York University Law Review*, Vol. 74, No. 3, pp. 575-629.

Healy, Beth (2001). 'Golden handcuffs' keep Boston investment executives unemployed longer, *KRTBN Knight Ridder Tribune Business News*, August 3.

Herbst-Bayliss, Svea (2009). Citadel sues former employees who set up Teza Tech, *Reuters*, July 9.

Holmstrom, Bengt (1982). Managerial incentives – a dynamic perspective, *Essays in honor of Lars Wahlbeck*.

Holmstrom, Bengt (1999). Managerial Incentive Problems: A Dynamic Perspective, *Review of Economic Studies*, Vol. 66, No. 1, pp. 169-182.

Jeffers, Jessica (2018). The Impact of Restricting Labor Mobility on Corporate Investment and Entrepreneurship, *Working Paper*.

Kacperczyk, Marcin; Sialm, Clemens, and Zheng, Lu (2008), Unobserved Actions of Mutual Funds, *Review of Financial Studies*, Vol. 21, No. 6, pp. 2379-2416.

Kempf, Alexander; Ruenzi, Stefan, and Tanja Thiele (2009). Employment risk, compensation incentives, and managerial risk taking: Evidence from the mutual fund industry, *Journal of Financial Economics*, Vol. 92, No. 1, pp. 92-108.

Keynes, John Maynard (1936). The General Theory of Employment, Interest, and Money, *Macmillan.*

Lakonishok, Josef; Shleifer, Andrei, and Vishny, Robert (1992). The impact of institutional trading on stock prices, *Journal of Financial Economics*, Vol. 32, No. 1, pp. 23-43.

Lakonishok, Josef; Shleifer, Andrei; Thaler, Richard, and Vishny, Robert (1991). Window Dressing by Pension Fund Managers, *American Economic Review*, Vol. 81, No. 2, pp. 227-231.

Lazear, Edward, and Rosen, Sherwin (1981). Rank-Order Tournaments as Optimum Labor Contracts, *Journal of Political Economy*, Vol. 89, No. 5, pp. 841-864.

Lohr, Steve (2016). To compete better, states are trying to curb noncompete pacts, *New York Times*, Jun 28.

Ma, Linlin; Tang, Yuehua, and Gómez, Juan-Pedro (2018). Portfolio Manager Compensation in the U.S. Mutual Fund Industry, *Journal of finance* (forthcoming).

Malsberger, Brian M. (2004). Covenants Not to Compete: A State-by-State Survey, *BNA Books*.

Marx, Matt; Jasjit Singh, and Fleming, Lee (2015). Regional disadvantage? employee non-compete agreements and brain drain, *Research Policy*, Vol. 44, No. 2, pp. 394-404.

Marx, Matt; Strumsky, Deborah, and Fleming, Lee (2009). Mobility, Skills, and the Michigan Non-Compete Experiment, *Management Science*, Vol. 55, No. 6, pp. 875-889.

Papageorgiou, Theodore (2014). Learning Your Comparative Advantages, *Review of Economic Studies*, Vol. 81, No. 3, pp. 1263-1295.

Papageorgiou, Theodore (2018). Large firms and within firm occupational reallocation, *Journal of Economic Theory*, Vol. 174, pp. 184-223.

Patel, Saurin, and Sarkissian, Sergei (2017). To Group or Not to Group? Evidence from Mutual Fund Databases, *Journal of Financial and Quantitative Analysis*, Vol. 52, No. 5, pp. 1989-2021.

Pentelovitch, W. (2003). Enforcing Noncompetition Agreements Across State Lines: The California and Texas Problems, *Maslon Edelman Borman & Brand, LLP*.

Petajisto, Antti (2009). Active Share and Mutual Fund Performance, *Financial Analyst Journal*, Vol. 69, No. 4, pp. 73-93.

Pollard, Jonathan (2014). Choice of Law Has Huge Consequences, Especially in NC Non-Compete Case, August 29.

Prescott, J.J.; Bishara, Norman D., and Starr, Evan (2016): Understanding Noncompetition Agreements: The 2014 Noncompete Survey Project, *Michigan State Law Review*, Vol. 2016, No. 1, pp. 369-469.

Regan, Michael (2016). Q&A With Jack Bogle: 'We're in the Middle of a Revolution', *Bloomberg Markets*, November 13.

Sakelaris, Linda (1998). And the battle continues … Russell, Utah sue Wellington over noncompete clause, *Pensions & Investments*, April 6.

Samila, Sampsa, and Sorenson, Olav (2011). Noncompete covenants: Incentives to innovate or impediments to growth, *Management Science*, Vol. 57, No. 3, pp. 425-438.

Scharfstein, David D., and Stein, Jeremy C. (1990). Herd Behavior and Investment, *American Economic Review*, Vol. 80, No, 3, pp. 465-479.

Scharfstein, David, and Stein, Jeremy (1990). Herd Behavior and Investment, *American Economic Review*, Vol. 80, No. 3, pp. 465-479.

Sias, Richard W., and Starks, Laura T. (1997). Return autocorrelation and institutional investors, *Journal of Financial Economics*, Vol. 46, No. 1, pp. 103-131.

Sirri, Erik R., and Tufano, Peter (1998). Costly Search and Mutual Fund Flows, *Journal of Finance*, Vol. 53, No. 5, pp. 1589-1622.

Solomon, David H.; Soltes, Eugene, and Sosyura, Denis (2014). Winners in the spotlight: Media coverage of fund holdings as a driver of flows, *Journal of Financial Economics*, Vol. 113, No. 1, pp. 53-72.

Starr, Evan (2018). Consider This: Training, Wages, and the Enforceability of Covenants Not to Compete, *Working Paper*.

Starr, Evan; Balasubramanian, Natarajan, and Sakakibara, Mariko (2017). Screening Spinouts? How Noncompete Enforceability Affects the Creation, Growth, and Survival of New Firms, *Management Science*, Vol. 64, No. 2, pp. 552-572.

Starr, Evan; Ganco, Martin, and Campbell, Benjamin A. (2018). Strategic Human Capital Management in the Context of Cross-Industry and Within-Industry Mobility Frictions, *Working Paper*.

Starr, Evan; Prescott, J. J., and Bishara, Norman D. (2017). Noncompetes in the U.S. Labor Force, *Working Paper*.

Stevenson, Alexandra, and Goldstein, Matthew (2016), Confronting Wall Street's secretive culture, *New York Times*, October 18.

Stuart, Toby E., and Sorenson, Olav (2003a), The geography of opportunity: spatial heterogeneity in founding rates and the performance of biotechnology firms, *Research Policy*, Vol. 32, No. 2, pp. 229-253.

Stuart, Toby E., and Sorenson, Olav (2003b), Liquidity events and the geographic distribution of entrepreneurial activity, *Administrative Science Quarterly*, Vol. 48, No. 2, pp. 175-201.

Terrell, Daniel S. (2004). The Louisiana Legislature's Response to SWAT 24 Shreveport Bossier, Inc. v. Bond: The Noncompete Pendulum Swings Toward Debt Peonage. Will the

Judiciary's Answer Achieve the Fragile Employer-Employee Balance?, *Louisiana Law Review*, Vol. 64, No. 3, pp. 699–730.

Thomas, Randall S., and Bishara, Norman D. (2015). CEO Employment Agreements and Non-competition Provisions: A Literature Survey, *Executives Director's Compensation in Comparative Corporate Perspective, The Regulatory Framework*, van der Elts, Christoph (ed.), Wolters Kluwer Law & Business International.

Treasury, U.S. (2016). Non-compete Contracts: Economic Effects and Policy Implications.

Valiulis, Anthony (1985). Covenants Not to Compete: Forms, Tactics, and the Law, *John Wiley & Sons*.

Vasconcelos, Luis, and Mukherjee, Arijit (2010). Optimal job design in the presence of implicit contracts, *RAND Journal of Economics*, Vol. 42, No. 1, pp. 44-69.

Wermers, Russ (2003). Is Money Really 'Smart'? New Evidence on the Relation between Mutual Fund Flows, Manager Behavior, and Performance Persistence, *Working Paper*.

Whaley, Robert E. (2002). Return and Risk of CBOE Buy Write Monthly Index, *Journal of Derivatives*, Vol. 10, No. 2, pp. 35-42.

White House (2016). Non-Compete Agreements: Analysis of the Usage, Potential Issues, and State Responses.

Appendix: NCCs in the investment industry

NCCs are very common in knowledge-intense industries (e.g., Starr, Prescott, and Bishara 2017). Since mutual fund families almost exclusively consist of human capital (e.g. Berk, van Binsbergen, and Liu 2017), there is a strong rationale for the use of NCCs in the fund industry. They are intended to help with talent retention and keep fund managers from disseminating any trade secrets related to investment processes, investment strategies, and trading algorithms to competitors. In addition, another rationale for investment firms to use NCCs is to keep their portfolio managers from taking the firms' clients with them when they join a competitor or start their own firm. For example, when Arnold Schneider, a former portfolio manager with Wellington Management Company, left in December 1996 to start his own firm, three large institutional clients that included pension plans attempted to follow Schneider at his new firm. Wellington brought a lawsuit in the state of Massachusetts against Schneider, claiming that Schneider violated the non-compete clause in his employment contract with Wellington. As a result, Schneider was not allowed by the court to manage money for his former Wellington clients (Sakelaris 1998). This stands in contrast to the departure of famous portfolio manager, Bill Gross, from PIMCO. Gross had not signed a NCC with PIMCO since such agreements are not enforceable in the state of California where Gross conducted business for PIMCO (Bansal and Ablan 2014). Therefore, when Gross resigned from PIMCO and moved to Janus Capital, some clients followed him there, and, unlike in the case of Wellington, there was not much PIMCO could do to stem its clients' migration.

There are no requirements for investment firms such as mutual fund families and affiliated entities to report information on the use and details of NCCs for their fund managers, thus detailed data on their use is unavailable. Nonetheless, the mutual fund industry is human capital- and knowledge-intensive and there are a number of indications that NCCs are commonly used in this

industry. There is some indirect evidence that comes from the survey of Starr, Prescott, and Bishara (2017). Although the survey does not single out mutual fund managers, these individuals fit the income and industry profile of employees that the survey shows to be typically subjected to such restrictions. For example, Starr, Prescott, and Bishara (2017) document that employees in the highest income bracket ($150K+) have the highest incidence rate, as high as about 60%, of being subjected to NCCs. Moreover, the broader industry in which they work, i.e., financial services, is close to the top 20% of industries with the highest incidence rate of NCCs.

There is also some direct, albeit rather limited, evidence in the public domain on the use and details of NCCs by investment firms.[23] Some of this evidence comes from business press coverage of lawsuits filed by investment firms against their former fund managers for breach of their NCCs. A notable case was the above mentioned lawsuit by Wellington Management Company against its former portfolio manager Arnold Schneider, claiming breach of his three year non-compete agreement with Wellington, which became one of the most followed and discussed NCC lawsuits in the investment industry. Other asset management companies that brought similar lawsuits against their former fund managers that we could identify from the business press include Boston Partners Asset Management, Pilgrim, Baxter & Associates, State Street, Bridgewater Associates, and Citadel Investment Group.[24] Further evidence comes from business press coverage of career moves of well-known fund managers, whereby sometimes it is revealed that a certain

[23] It is worth noting that Jack Bogle, former CEO of Vanguard Group and influential figure in the mutual fund industry, was subject to a NCC with Wellington Management Company after leaving in 1974 to found the Vanguard Group. The outstanding NCC restricted Bogle from entering the active fund management business, but it did not apply to passive management, which allowed Bogle to introduce the first index fund (Regan 2016).

[24] Lawsuits by these companies are respectively mentioned by Healy (2001), Franecki (1999), Capon (2002), Stevenson and Goldstein (2016), and Herbst-Baylis (2009). It is likely that some other unreported disputes were settled earlier on out of court and never became public knowledge.

manager joins the new firm after her NCC with her/his former employer has expired.[25] Upon review of many such articles, we identified a number of investment companies that at one point had a pending NCC with at least one departing fund manager.[26] These NCCs typically ranged from one to three years and in some cases were accompanied by non-solicitation agreements barring fund managers from doing business with their former firms' clients. Finally, textual analysis of SEC filings by mutual fund companies (e.g., Prospectus or Statement of Additional Information) identified a small number of mutual funds self-reporting that their portfolio managers were restricted by NCCs.[27] However, the information from these filings was very scant, revealing primarily whether portfolio manager(s) were subject to a NCC and for how long, without providing any additional information.

[25] For example, in a recent description of one such career move we are told that Ryan Caldwell, a portfolio manager for Waddell & Reed "resigned from Waddell & Reed in June 2014, and as soon as his noncompete agreement elapsed, he launched the Chiron Capital Allocation Fund." (Dornbrook 2017).

[26] The list includes AIM Fund Management, Boston Company, Boston Partners Asset Management, Bridgewater Associates, Citadel Investment Group, Fidelity Management & Research, Pilgrim, Baxter & Associates, Putnam Investments, State Street, Wadell & Reed, and Wellington Management Company.

[27] For example, a 2014 filing by Natixis Funds states that "The non-competition and non-solicitation undertakings will expire the later of one year from the termination of employment, or one year after the period during which severance payments are made pursuant to the agreement."
(see Natixis filing https://www.sec.gov/Archives/edgar/data/1406305/000119312514271200/d755211d485apos.htm).

Table I. Descriptive Statistics

This table reports descriptive statistics. Means are provided for the total sample, the group of treated funds, comprising funds advised from either Texas, Florida or Louisiana, and the control group, comprising all remaining funds. The last two columns provide the difference between the mean value for the treated and for the control group and the corresponding t-statistic. Panel A reports descriptive statistics for fund and family characteristics. Fund size is given by the total net assets under management (AUM) in $ millions. Expense ratio is the annual expense ratio in percent. Turnover ratio is the annual portfolio turnover ratio in percent. Fund age is the age in years. Flow is the percentage growth in net assets under management unrelated to fund performance. Family Size [$ million] measures the total net assets under management aggregated over the fund family in $ millions. Family Size [#managers] is the number of managers employed be the fund family. Family Size [#funds] is the total number of funds run by the family. Panel B reports descriptive statistics for performance, risk, and window dressing measures. Style adjusted returns (Style-adj. Return) are computed by subtracting from the raw return of a fund the mean raw return of funds with the same investment objective. Carhart alpha is computed for a given fund each month as the difference between the actual return minus the expected return, estimated using factor loadings computed from a regression of the preceding 36 monthly excess returns on the four risk factors. DGTW-adjusted returns are estimated as in Daniel, Grinblatt, Titman, and Wermers (1997), where a stock's characteristic-adjusted return in a given month is computed by subtracting from its return the return of the benchmark portfolio to which that particular stock belongs. All performance measures are reported in percent per year. Our risk measures include the square root of the lower partial second centered moment (Semi-Deviation) in percent, the Whaley (2002) Downside-β (Downside-β), Active Share in percent, and the holdings value weighted sum of the Lakonishok, Shleifer and Vishny (1992) herding measure (Herding). Our two window dressing measures are the relative window dressing measure introduced by Agarwal, Gay, and Ling (2014) (Rank Gap) and the Backwards Holding Return Gap (BHRG) in percent per quarter.

Panel A: Fund and family characteristics

	total sample	treated group	control group	Difference	t-stat	
Fund size [$ million]	977.92	902.94	981.90	-78.96	-0.69	
Expense ratio [%/year]	1.40	1.56	1.40	0.16	5.98	***
Turnover ratio [%/year]	95.53	89.24	95.87	-6.63	-1.96	*
Fund age [years]	11.84	13.75	11.73	2.02	3.29	***
Flow [%/year]	39.07	33.68	39.36	-5.67	-0.75	
Family Size [$ million]	23,686	15,488	24,123	-8,636	-6.49	***
Family Size [#managers]	15.63	15.23	15.65	-0.43	-0.51	
Family Size [#funds]	14.27	11.81	14.41	-2.60	-4.20	***

Panel B: Performance, risk and window dressing measures

	total sample	treated group	control group	Difference	t-stat	
Return [%/year]	9.38	9.90	9.35	0.55	0.69	
Style-adj. Return [%/year]	0.00	-0.26	0.01	-0.28	-0.69	
Carhart [%/year]	-1.77	-1.78	-1.77	0.00	0.00	
DGTW [%/year]	0.71	0.39	0.72	-0.33	-0.37	
Semi-Deviation [%/year]	39.76	39.47	39.77	-0.31	-0.37	
Downside-β	1.05	1.09	1.05	0.04	1.87	*
Active Share [%]	78.52	77.75	78.56	-0.81	-0.63	
Herding	0.73	0.68	0.73	-0.05	-0.36	
Rank Gap	0.00	0.01	0.00	0.01	2.84	***
BHRG [%/quarter]	0.57	0.75	0.56	0.19	2.08	**

Table II. Impact of changes in NCC enforceability on performance.

This table presents results from pooled OLS regressions that relate performance measures with changes in NCC enforceability at the state level. The analysis is done at the fund and monthly level. Our performance measures include: The raw return (Return), style-adjusted returns (Style-adj. Return), Carhart alpha (Carhart) and DGTW-adjusted return (DGTW). Style adjusted returns are computed by subtracting from the raw return of a fund the mean raw return of funds with the same investment objective. Performance measures and fund control variables are calculated as in Table I. Our main independent variable in Panel A is ΔNCC, which equals 1 for firms in Florida in 1997–2004 , −1 for firms in Texas in 1995–2004 and for firms in Louisiana in 2002–03, and 0 otherwise. In Panel B, focusing on the change in Texas separately, the ΔNCC variable is replaced by the variable Reduced NCC, which equals 1 for firms in Texas in 1995–2004 and 0 else. Analogously, in Panel C, focusing on the change in NC enforceability in Florida, the ΔNCC variable is replaced by the variable Increased NCC, which equals 1 for firms in Florida in 1997-2004 and 0 otherwise. Regressions are run with fund, calendar month, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A: All changes in enforceability

	Return		Style-adj. Return		Carhart		DGTW	
ΔNCC	0.0023***	0.0014***	0.0023***	0.0016***	0.0018***	0.0015***	0.0013***	0.0007***
	(21.00)	(2.81)	(13.49)	(2.81)	(4.24)	(3.46)	(10.77)	(2.87)
Expense Ratio		-0.0007		0.0066		0.0059		0.0601*
		(-0.02)		(0.16)		(0.09)		(1.77)
Turnover Ratio		0.0004		0.0004		0.0002		0.0002
		(1.35)		(1.33)		(0.56)		(0.40)
Flow		0.0022**		0.0020***		0.0009		0.0024***
		(2.54)		(2.76)		(1.22)		(3.83)
Log(Age)		0.0033***		0.0021***		-0.0009		0.0028***
		(3.96)		(2.76)		(-1.21)		(5.95)
Log(TNA)		-0.0053***		-0.0046***		-0.0031***		-0.0025***
		(-13.49)		(-13.10)		(-8.63)		(-14.52)
Observations	104,043	104,043	104,043	104,043	70,656	70,656	95,011	95,011
Adjusted R^2	0.650	0.653	0.006	0.014	0.078	0.082	0.631	0.631

Panel B: Reduced enforceability in Texas

	Return		Style-adj. Return		Carhart		DGTW	
Reduced NCC	-0.0024***	-0.0020***	-0.0025***	-0.0023***	-0.0021***	-0.0020***	-0.0013***	-0.0008***
	(-7.47)	(-5.61)	(-7.87)	(-7.06)	(-4.57)	(-5.93)	(-6.00)	(-3.45)
Expense Ratio		-0.0009		0.0064		0.0057		0.0601*
		(-0.02)		(0.16)		(0.09)		(1.77)
Turnover Ratio		0.0004		0.0004		0.0002		0.0002
		(1.35)		(1.33)		(0.56)		(0.40)
Flow		0.0022**		0.0020***		0.0009		0.0024***
		(2.54)		(2.77)		(1.22)		(3.83)
Log(Age)		0.0032***		0.0021***		-0.0008		0.0028***
		(3.94)		(2.74)		(-1.23)		(5.95)
Log(TNA)		-0.0053***		-0.0046***		-0.0031***		-0.0025***
		(-13.48)		(-13.09)		(-8.62)		(-14.51)
Observations	104,043	104,043	104,043	104,043	70,656	70,656	95,011	95,011
Adjusted R^2	0.650	0.653	0.006	0.014	0.078	0.082	0.631	0.631

Panel C: Increased enforceability in Florida

	Return		Style-adj. Return		Carhart		DGTW	
Increased NCC	0.0026***	0.0009***	0.0026***	0.0012***	0.0023***	0.0013***	0.0014***	0.0005**
	(7.20)	(2.90)	(6.91)	(3.49)	(5.59)	(3.84)	(5.49)	(2.09)
Expense Ratio		-0.0007		0.0066		0.0059		0.0601*
		(-0.02)		(0.16)		(0.09)		(1.77)
Turnover Ratio		0.0004		0.0004		0.0002		0.0002
		(1.35)		(1.33)		(0.57)		(0.41)
Flow		0.0023**		0.0020***		0.0009		0.0024***
		(2.54)		(2.76)		(1.22)		(3.83)
Log(Age)		0.0033***		0.0021***		-0.0009		0.0029***
		(3.97)		(2.77)		(-1.18)		(5.91)
Log(TNA)		-0.0053***		-0.0046***		-0.0031***		-0.0025***
		(-13.49)		(-13.11)		(-8.63)		(-14.51)
Observations	104,043	104,043	104,043	104,043	70,656	70,656	95,011	95,011
Adjusted R^2	0.650	0.653	0.006	0.014	0.078	0.082	0.631	0.631

Table III. Impact of changes in NCC enforceability on downside risk

This table presents results from pooled OLS regressions that relate downside risk measures with changes in NCC enforceability at the state level. The analysis is done at the fund and year level. Our risk taking measures are the square root of the lower partial second centered moment (Semi-Deviation) and the Whaley (2002) Downside-β (Downside-β). Downside risk measures are calculated as in Table I. The independent variables are the same as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A: All changes in enforceability

	Semi-Deviation		Downside-β	
ΔNCC	-0.0043**	-0.0036**	-0.1160**	-0.0926**
	(-2.22)	(-2.28)	(-2.30)	(-2.24)
Expense Ratio		0.1680		1.8940**
		(0.58)		(2.15)
Turnover Ratio		0.0004		-0.0174**
		(0.56)		(-2.03)
Flow		0.0000**		0.0000*
		(2.05)		(2.00)
Log(Age)		-0.0022		-0.0633***
		(-0.98)		(-3.00)
Log(TNA)		0.0045***		0.1180***
		(3.31)		(9.72)
Observations	8,514	8,514	8,514	8,514
Adjusted R^2	0.714	0.716	0.309	0.330

Panel B: Reduced enforceability in Texas

	Semi-Deviation		Downside-β	
Reduced NCC	0.0019*	0.0017	0.0537***	0.0406**
	(1.98)	(1.54)	(2.98)	(2.25)
Expense Ratio		0.1681		1.8981**
		(0.58)		(2.15)
Turnover Ratio		0.0004		-0.0174**
		(0.55)		(-2.03)
Flow		0.0000**		0.0000*
		(2.05)		(1.99)
Log(Age)		-0.0022		-0.0642***
		(-1.00)		(-3.06)
Log(TNA)		0.0045***		0.1181***
		(3.32)		(9.73)
Observations	0,8514	8,514	8,514	8,514
Adjusted R^2	0.714	0.716	0.308	0.330

Panel C: Increased enforceability in Florida

	Semi-Deviation		Downside-β	
Increased NCC	-0.0077***	-0.0061***	-0.2020***	-0.1588***
	(-6.25)	(-4.23)	(-6.69)	(-6.12)
Expense Ratio		0.1676		1.8850**
		(0.58)		(2.13)
Turnover Ratio		0.0004		-0.0175**
		(0.55)		(-2.04)
Flow		0.0000**		0.0000*
		(2.05)		(1.99)
Log(Age)		-0.0022		-0.0642***
		(-1.00)		(-3.08)
Log(TNA)		0.0044***		0.1178***
		(3.31)		(9.76)
Observations	8,514	8,514	8,514	8,514
Adjusted R^2	0.714	0.716	0.308	0.330

Table IV. Impact of changes in NCCc enforceability on tournament behavior.

This table presents results from pooled OLS regressions that relate risk shifting from the first to the second half of the year with relative mid-year performance and changes in NCC enforceability at the state level. The analysis is done at the fund and year level. Our risk shifting measures is the risk-adjustment ratio of Kempf, Ruenzi, and Thiele (2009). Our main independent variable is ΔNCC, which equals 1 for firms in Florida in 1997–2004, −1 for firms in Texas in 1995–2004 and for firms in Louisiana in 2002–03, and 0 otherwise. We interact ΔNCC with $Perf^{First}$, which we measure either by Rank, which is the rank of a fund in its segment based on raw returns in the first half of the year, or by style-adjusted return in the first half of the year. Control variables at the fund level are the same as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A: All changes in enforceability

	Ranks		Style-adj. Return	
$Perf^{First}$	-0.019**	-0.0191**	-0.3954***	-0.3856***
	(-2.2)	(-2.14)	(-3.61)	(-3.46)
ΔNCC	0.0098	0.0041	0.0301**	0.0257*
	(0.63)	(0.26)	(2.18)	(1.82)
$Perf^{First} \cdot$ ΔNCC	0.0499***	0.0512***	0.4154***	0.4394***
	(5.61)	(5.8)	(8.67)	(9.11)
Expense Ratio		0.1828		0.2915
		(0.58)		(0.89)
Turnover Ratio		0.0027		0.0027
		(0.23)		(0.23)
Flow		-0.0025		-0.0019
		(-0.66)		(-0.49)
Log(Age)		0.0187*		0.0171*
		(1.94)		(1.77)
Log(TNA)		-0.0058		-0.0036
		(-1.65)		(-1.05)
Observations	4,244	4,244	4,244	4.244
Adjusted R^2	0.131	0.132	0.139	0.137

Panel B: Reduced enforceability in Texas

	Ranks		Style-adj. Return	
$Perf^{First}$	-0.018**	-0.0181*	-0.3882***	-0.3779***
	(-2.06)	(-2.00)	(-3.47)	(-3.32)
Reduced NCC	-0.0255*	-0.0190	-0.0458***	-0.0408***
	(-1.87)	(-1.29)	(-4.34)	(-3.29)
$Perf^{First}$ · Reduced NCC	-0.0594***	-0.0606***	-0.4456***	-0.4692***
	(-5.13)	(-5.13)	(-3.94)	(-4.18)
Expense Ratio		0.1857		0.2922
		(0.59)		(0.90)
Turnover Ratio		0.0026		0.0026
		(0.22)		(0.22)
Flow		-0.0025		-0.0019
		(-0.66)		(-0.50)
Log(Age)		0.0186*		0.0170*
		(1.93)		(1.76)
Log(TNA)		-0.0059		-0.0037
		(-1.67)		(-1.07)
Observations	4,244	4,244	4,244	4,244
Adjusted R^2	0.130	0.132	0.138	0.139

Panel C: Increased enforceability in Florida

	Ranks		Style-adj. Return	
$Perf^{First}$	-0.0200**	-0.0201**	-0.4058***	-0.3963***
	(-2.21)	(-2.15)	(-3.65)	(-3.48)
Increased NCC	-0.0143*	-0.0204***	0.0103	0.0055
	(-1.93)	(-3.35)	(1.43)	(0.85)
$Perf^{First}$ · Increased · NCC	0.0485***	0.0497***	0.4475***	0.4714***
	(5.38)	(4.68)	(3.91)	(3.63)
Expense Ratio		0.1897		0.2918
		(0.61)		(0.89)
Turnover Ratio		0.0028		0.0028
		(0.24)		(0.23)
Flow		-0.0024		-0.0018
		(-0.63)		(-0.46)
Log(Age)		0.0190*		0.0175*
		(1.98)		(1.82)
Log(TNA)		-0.0060*		-0.0037
		(-1.73)		(-1.10)
Observations	4,244	4,244	4,244	4,244
Adjusted R^2	0.130	0.131	0.137	0.138

Table V. Impact of changes in NCC enforceability on Active Share and Herding

This table presents results from pooled OLS regressions that relate Active Share and Herding, respectively, with changes in NCC enforceability at the state level. The analysis is done at the fund and year level. Active Share (Active Share) is defined as in Cremers and Petajisto (2009) and Petajisto (2013). The herding measure (Herding) is the holdings value weighted sum of the Lakonishok, Shleifer, and Vishny (1992) measure. The independent variables are the same as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A: All changes in enforceability

	Active Share		Herding	
ΔNCC	-0.0327***	-0.0371***	1.2453***	1.2560***
	(-2.74)	(-3.20)	(4.51)	(4.53)
Expense Ratio		-0.6890		6.0960
		(-0.54)		(0.24)
Turnover Ratio		0.0040		-0.0130
		(0.98)		(-0.16)
Flow		0.0000		0.0040***
		(0.32)		(2.94)
Log(Age)		0.0028		-0.2340
		(0.21)		(-0.92)
Log(TNA)		-0.0083**		-0.1200
		(-2.71)		(-1.16)
Observations	1,804	1,804	2,231	2,231
Adjusted R^2	0.891	0.892	0.157	0.157

Panel B: Reduced enforceability in Texas

	Active Share		Herding	
Reduced NCC	0.0370**	0.0422***	-1.1976***	-1.1796***
	(2.35)	(2.80)	(-3.24)	(-2.91)
Expense Ratio		-0.6323		3.8980
		(-0.50)		(0.16)
Turnover Ratio		0.0040		-0.0149
		(0.98)		(-0.18)
Flow		0.0000		0.0040***
		(0.31)		(2.93)
Log(Age)		0.0025		-0.2231
		(0.18)		(-0.86)
Log(TNA)		-0.0083**		-0.1229
		(-2.72)		(-1.18)
Observations	1,804	1,804	2,231	2,231
Adjusted R^2	0.891	0.892	0.156	0.156

Panel C: Increased enforceability in Florida

	Active Share		Herding	
Increased NCC	-0.0162	-0.0168	1.4295**	1.4770***
	(-1.10)	(-1.19)	(2.70)	(3.01)
Expense Ratio		-0.6407		4.0959
		(-0.50)		(0.17)
Turnover Ratio		0.0038		-0.0081
		(0.92)		(-0.10)
Flow		0.0000		0.0041***
		(0.20)		(3.04)
Log(Age)		0.0017		-0.2122
		(0.12)		(-0.81)
Log(TNA)		-0.0081**		-0.1288
		(-2.56)		(-1.24)
Observations	1,804	1,804	2,231	2,231
Adjusted R^2	0.891	0.892	0.156	0.156

Table VI. Impact of changes in NCC enforceability on window dressing

This table presents results from pooled OLS regressions that relate window dressing measures with changes in NCC enforceability at the state level. The analysis is done at the fund and quarterly level. Our two window dressing measures are the relative window dressing measure introduced by Agarwal, Gay, and Ling (2014) (Rank Gap) and the Backwards Holding Return Gap (BHRG). The independent variables are the same as in Table II. Regressions are run with fund, quarter, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A: All changes in enforceability

	BHRG		Rank Gap	
ΔNCC	0.0038***	0.0035***	0.0170***	0.0180***
	(7.95)	(8.02)	(6.74)	(6.89)
Expense Ratio		-0.2661		-0.0447
		(-0.95)		(-0.09)
Turnover Ratio		0.0016**		0.0006
		(2.04)		(0.23)
Flow		0.0010		-0.0011
		(0.53)		(-0.32)
Log(Age)		0.0019		0.0008
		(1.02)		(0.13)
Log(TNA)		0.0019**		0.0174***
		(2.29)		(6.72)
Observations	24,973	24973	24,998	24998
Adjusted R^2	0.356	0.357	0.151	0.159

Panel B: Reduced enforceability in Texas

	BHRG		Rank Gap	
Reduced NCC	-0.0042***	-0.0037***	-0.0195***	-0.0190***
	(-5.71)	(-4.34)	(-5.96)	(-7.35)
Expense Ratio		-0.2688		-0.0591
		(-0.96)		(-0.11)
Turnover Ratio		0.0016**		0.0007
		(2.04)		(0.24)
Flow		0.0010		-0.0011
		(0.53)		(-0.33)
Log(Age)		0.0019		0.0008
		(1.01)		(0.12)
Log(TNA)		0.0019**		0.0173***
		(2.28)		(6.71)
Observations	24,973	24,973	24,998	24,998
Adjusted R^2	0.356	0.357	0.151	0.159

Panel C: Increased enforceability in Florida

	BHRG		Rank Gap	
Increased NCC	0.0030***	0.0035***	0.0177***	0.0226***
	(3.97)	(4.36)	(8.00)	(13.33)
Expense Ratio		-0.2660		-0.0412
		(-0.95)		(-0.08)
Turnover Ratio		0.0016**		0.0007
		(2.06)		(0.25)
Flow		0.0010		-0.0011
		(0.53)		(-0.32)
Log(Age)		0.0020		0.0011
		(1.04)		(0.17)
Log(TNA)		0.0019**		0.0174***
		(2.29)		(6.72)
Observations	24,973	24,973	24,998	24,998
Adjusted R^2	0.356	0.357	0.151	0.159

Table VII. Size of the internal labor market and NCC impact on fund performance

This table presents results from pooled OLS regressions that relate fund performance measures with changes in NCC enforceability at the state level and their interaction with the size of the internal labor market. The analysis is done at the fund and monthly level. The performance measures and the control variables at the fund level are the same as in Table II. Our main independent variables include ΔNCC, which equals 1 for firms in Florida in 1997–2004, −1 for firms in Texas in 1995–2004 and for firms in Louisiana in 2002–03, and 0 otherwise. We interact ΔNCC with SILM, which is given by the total number of funds in the family to which the fund belongs. Regressions are run with fund, calendar month, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	Return		Style-adj. Return		Carhart		DGTW	
ΔNCC	0.0008	0.0004	0.0009	0.0005*	0.0012**	0.0009**	0.0008**	0.0006**
	(1.09)	(1.34)	(1.48)	(1.73)	(2.52)	(2.58)	(2.52)	(2.33)
SILM	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000
	(0.89)	(0.57)	(1.25)	(1.00)	(0.39)	(-0.56)	(0.02)	(-0.10)
ΔNCC · SILM	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0000***	0.0000
	(5.91)	(3.70)	(5.48)	(4.13)	(6.02)	(4.20)	(2.83)	(0.86)
Fund level controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	103,308	103,308	103,308	103,308	70,184	70,184	94,324	94,324
Adjusted R^2	0.651	0.654	0.007	0.014	0.078	0.082	0.632	0.632

Table VIII. Size of the internal labor market and NCC impact on downside risk

This table presents results from pooled OLS regressions that relate downside risk measures with changes in NCC enforceability at the state level and their interaction with the size of the internal labor market. The analysis is done at the fund and yearly level. Our downside risk measures are the same as in Table III and the independent variables are the same as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	Semi-Deviation		Downside-β	
ΔNCC	-0.0090***	-0.0085***	-0.1890***	-0.1740***
	(-8.73)	(-9.59)	(-6.09)	(-8.02)
SILM	-0.0000	-0.0000	0.0004	0.0006
	(-0.52)	(-0.34)	(0.64)	(0.96)
ΔNCC · SILM	0.0004***	0.0005***	0.0071***	0.0082***
	(5.06)	(6.81)	(5.96)	(8.61)
Fund level controls	No	Yes	No	Yes
Observations	8,454	8,454	8,454	8,454
Adjusted R^2	0.715	0.717	0.311	0.333

Table IX. Size of the internal labor market and NCC impact on tournament behavior.

This table presents results from pooled OLS regressions that relate risk shifting from the first to the second half of the year with relative mid-year performance and changes in NCC enforceability at the state level, and their interaction with the size of the internal labor market. The analysis is done at the fund and yearly level. Our risk shifting measures are the same as in Table IV. Our main independent variable is ΔNCC, which equals 1 for firms in Florida in 1997–2004, −1 for firms in Texas in 1995–2004 and for firms in Louisiana in 2002–03, and 0 otherwise. We interact ΔNCC with $Perf^{First}$, which we measure either by Rank, which is the rank of a fund in its segment based on raw returns in the first half of the year, or by style-adjusted return in the first half of the year. Further, we interact ΔNCC with SILM, which is given by the total number of funds in the family to which the fund belongs. Control variables at the fund level are the same as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	Rank		Style-adj. Return	
$Perf^{First}$	-0.0182*	-0.0183*	-0.4337**	-0.4322**
	(-1.76)	(-1.70)	(-2.25)	(-2.17)
SILM	0.0000	0.0000	0.0000	0.0000
	(0.06)	(0.06)	(0.08)	(0.11)
ΔNCC	-0.0116	-0.0153*	0.0184***	0.0153***
	(-1.47)	(-1.84)	(3.78)	(2.82)
$Perf^{First} \cdot$ SILM	0.0000	0.0000	0.0038	0.0045
	(0.07)	(0.12)	(0.40)	(0.45)
$Perf^{First} \cdot$ ΔNCC	0.0612***	0.0621***	0.6932***	0.7183***
	(4.33)	(4.36)	(4.83)	(4.93)
SILM · ΔNCC	0.0013**	0.0012**	0.0007	0.0007
	(2.37)	(2.16)	(1.56)	(1.42)
$Perf^{First} \cdot$ SILM · ΔNCC	-0.0007	-0.0007	-0.0274***	-0.0278***
	(-1.44)	(-1.47)	(-2.91)	(-2.94)
Fund level controls	No	Yes	No	Yes
Observations	4,211	4,211	4,211	4,211
Adjusted R^2	0.127	0.127	0.135	0.135

Table X. Size of the internal labor market and NCC impact on investing with the crowd

This table presents results from pooled OLS regressions that relate Active Share and Herding with changes in NCC enforceability at the state level and their interaction with the size of the internal labor market. The analysis is done at the fund and year level. Active Share (Active Share) and the herding measure (Herding) are defined as in Table V and the independent variables as in Table II. Regressions are run with fund, year, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	Active Share		Herding	
ΔNCC	-0.0224***	-0.0230***	0.708	0.7090
	(-3.51)	(-3.92)	(0.78)	(0.78)
SILM	0.0003	0.0003	-0.0054	-0.0059
	(1.07)	(0.88)	(-0.61)	(-0.69)
ΔNCC · SILM	-0.0003	-0.0004	0.0149	0.0146
	(-0.62)	(-1.13)	(0.62)	(0.59)
Fund level controls	No	Yes	Non	Yes
Observations	1,784	1,784	2,217	2,217
Adjusted R^2	0.892	0.893	0.158	0.158

Table XI. Size of the internal labor market and NCC impact on window dressing

This table presents results from pooled OLS regressions that relate window dressing measures with changes in NCC enforceability at the state level and their interaction with the size of the internal labor market. The analysis is done at the fund and quarter level. Our window dressing measures are the same as in Table VI and the independent variables are the same as in Table II. Regressions are run with fund, quarter, and investment objective fixed effects. T-statistics, based on standard errors clustered at the state level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	BHRG		Rank Gap	
ΔNCC	0.0062***	0.0064***	0.0331***	0.0339***
	(4.34)	(4.28)	(3.53)	(3.74)
SILM	-0.0001	-0.0001	-0.0005*	-0.0004
	(-0.96)	(-0.80)	(-1.99)	(-1.67)
ΔNCC · SILM	-0.0002***	-0.0002***	-0.0014***	-0.0012***
	(-2.76)	(-2.73)	(-5.72)	(-4.26)
Fund level controls	No	Yes	No	Yes
Observations	24,802	24,802	24,833	24,833
Adjusted R^2	0.359	0.365	0.154	0.224

CFR Working Paper Series

centre for financial research cologne

CFR working papers are available for download from www.cfr-cologne.de.

Hardcopies can be ordered from: centre for financial research (CFR), Albertus Magnus Platz, 50923 Koeln, Germany.

2018

No.	Author(s)	Title
18-01	G. Cici, M. Hendriock, A. Kempf	The Impact of Labor Mobility Restrictions on Managerial Actions: Evidence from the Mutual Fund Industry

2017

No.	Author(s)	Title
17-04	G. Cici, P.B. Shane, Y. S. Yang	Do Connections with Buy-Side Analysts Inform Sell-Side Analyst Research?
17-03	G. Cici, S. Gibson, R. Moussawi	Explaining and Benchmarking Corporate Bond Returns
17-02	S. Jaspersen, P. Limbach	Knowing Me, Knowing You? Similarity to the CEO and Fund Managers' Investment Decisions
17-01	J. Grammig, E.-M. Küchlin	A two-step indirect inference approach to estimate the long-run risk asset pricing model

2016

No.	Author(s)	Title
16-12	A.Betzer, M. Ibel, H.S. Lee, P. Limbach, J.M. Salas	Are Generalists Beneficial to Corporate Shareholders? Evidence from Sudden Deaths
16-11	P. Limbach, M. Schmid, M. Scholz-Daneshgari	Do CEOs Matter? Corporate Performance and the CEO Life Cycle
16-10	V. Agarwal, R. Vashishtha, M. Venkatachalam	Mutual fund transparency and corporate myopia
16-09	M.-A. Göricke	Do Generalists Profit from the Fund Families' Specialists? Evidence from Mutual Fund Families Offering Sector Funds
16-08	S. Kanne, O. Korn, M.Uhrig-Homburg	Stock Illiquidity, Option Prices and Option Returns
16-07	S. Jaspersen	Market Power in the Portfolio: Product Market Competition and Mutual Fund Performance
16-06	O. Korn, M.-O. Rieger	Hedging With Regret
16-05	E. Theissen, C. Westheide	Call of Duty: Designated Market Maker Participation in Call Auctions

16-04	P. Gomber, S. Sagade, E. Theissen, M.C. Weber, C. Westheide	Spoilt for Choice: Order Routing Decisions in Fragmented Equity Markets
16-03	T.Martin, F. Sonnenburg	Managerial Ownership Changes and Mutual Fund Performance
16-02	A.Gargano, A. G. Rossi, R. Wermers	The Freedom of Information Act and the Race Towards Information Acquisition
16-01	G. Cici, S. Gibson, C. Rosenfeld	Cross-Company Effects of Common Ownership: Dealings Between Borrowers and Lenders With a Common Blockholder

This document only covers the most recent CFR working papers. A full list can be found at www.cfr-cologne.de.

centre for financial research
cfr/university of cologne
Albertus-Magnus-Platz
D-50923 cologne
Fon +49(0)221-470-6995
Fax +49(0)221-470-3992
kempf@cfr-cologne.de
www.cfr-cologne.de