

# Mandatory Registration and Return Misreporting by Hedge Funds

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## Abstract

In 2004, the SEC passed Rule IA-2333, which required most U.S. hedge fund advisors to register. In 2006, a federal court revoked Rule IA-2333. Differences-in-differences tests using these two changes in the regulatory regime show that increased regulatory oversight reduces return misreporting by hedge funds. Following Rule IA-2333, misreporting by newly registered funds decreased relative to previously registered funds. After Rule IA-2333 was revoked, misreporting significantly increased for the funds that chose to deregister. These effects are stronger for funds with illiquid portfolios, custody of clients' securities, stronger performance incentives, more experienced SEC examiners, and that are nearer to an SEC regional office. Tests of both the level and the performance sensitivity of flows suggest that investors value registration.

**JEL Classifications:** G20, G23, G28, K22

**Keywords:** Return misreporting, Hedge funds, Operational risk, Disclosure, Hedge fund regulation, Hedge fund registration

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As a result of highly publicized cases of fraudulent misreporting by hedge funds, both investors and regulators have devoted considerable attention towards ensuring that hedge funds do not misreport their returns. A growing body of empirical research suggests that these concerns about hedge fund return misreporting are justified. Agarwal, Daniel, and Naik (2011) and Bollen and Pool (2009, 2012) show that a large fraction of hedge funds strategically misreport their returns. Further, these studies show that misreporting results in overpayment of fees, wealth transfers between investors, and unwarranted inflows. Although return misreporting is a serious concern, historically in the U.S., there was little regulation of hedge funds.

In response to the problem of return misreporting, among other issues, in July 2004 the Securities and Exchange Commission (SEC) proposed Rule IA-2333, which required the investment advisors of hedge funds to register with the SEC. The SEC argued this rule would deter return misreporting as it "...enables us to conduct examinations of the hedge fund advisor... identify practices that may be harmful to investors, and provide a deterrent to unlawful conduct."<sup>1</sup> In addition to permitting SEC enforcement exams, the rule also required hedge fund advisors to document their performance calculations and to follow detailed compliance procedures. Rule IA-2333 was passed in December 2004, and became effective in February 2005; following which, there was an immediate increase in the proportion of hedge fund advisors that were registered. In June 2006 a Federal Court revoked Rule IA-2333, following which, many hedge fund advisors deregistered. Importantly, many of the advisors that registered in response to Rule IA-2333 chose to remain registered after the court decision.

We use the introduction and subsequent revocation of Rule IA-2333 to test whether regulatory oversight affects return misreporting by hedge funds. We first create a set of

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<sup>1</sup> See <http://www.sec.gov/rules/final/ia-2333.htm#IIA>.

misreporting flags based on suspicious return patterns identified in prior studies.<sup>2</sup> We then conduct differences-in-differences tests of return misreporting around the introduction of Rule IA-2333. Prior to the rule change, return misreporting is significantly higher for unregistered funds.<sup>3</sup> Following registration, misreporting by these newly registered funds drops and is not significantly different from that of funds that were registered prior to the rule change.

Next, we extend the differences-in-differences models to include the revocation of Rule IA-2333 and the subsequent deregistration of many funds. We categorize the funds into three groups: (1) funds that registered prior to Rule IA-2333 (Voluntary); (2) funds that registered in response to Rule IA-2333 but deregistered after revocation (Deregister); and (3) funds that registered in response to Rule IA-2333 and remained registered after revocation (Remain). The results show that relative to Voluntary funds, return misreporting by Deregister funds was significantly higher before registration, declined to the same level following registration, and then rose to a significantly higher level following deregistration.

Further, we show that return misreporting by Deregister funds again declined following the introduction of the Dodd-Frank Act, which once again required these funds to register. We also show that there are no significant differences-in-differences effects in a placebo sample of funds that were not required to register (Non-U.S. domiciled funds with Non-U.S. advisors).

Triple differences-in-differences tests show that the relation between registration and return misreporting varies with fund characteristics. Specifically, there is a greater decline in misreporting following registration for funds that: are examined by SEC offices with greater hedge fund specific examination experience, are geographically closer to an SEC examination

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<sup>2</sup> Specifically, we create two flags for December return spikes based on Agarwal, Daniel, and Naik (2011), a flag for the return discontinuity measure of Bollen and Pool (2009), two flags for abnormally low correlations with other funds based on Bollen and Pool (2012), and an aggregate flag that incorporates all of these measures.

<sup>3</sup> Technically, hedge funds do not register with the SEC; the investment advisor of the fund registers with the SEC. For ease of exposition, we sometimes refer to hedge funds as registering.

team, have internal custody of clients' securities, hold relatively illiquid assets, and have stronger performance incentives.

We next turn to the relation between registration and flows. If investors value registration, we would expect registered funds to have higher flows. We would also expect greater investor skepticism of the returns reported by unregistered funds, which would imply these funds would have lower inflows following good performance and higher outflows following poor performance. The results show that the overall level of flows increases following registration, that funds suffer large outflows following deregistration, and that the sensitivity of flows to poor performance increases following deregistration.

The empirical tests in this paper use return misreporting flags developed in prior studies. Agarwal, Daniel, and Naik (2011) show that hedge funds have disproportionately high returns in December (when performance fees are calculated), and this pattern is stronger for funds with high incentives and greater opportunities to manipulate valuations. Bollen and Pool (2009) show a significant discontinuity in hedge funds' reported returns: funds report far more small positive returns than small negative returns. Further, they show this discontinuity reverses in the subsequent month, and argue that based on this one flag alone, approximately 10% of hedge fund returns are misreported. Bollen and Pool (2012) develop two flags for hedge funds whose returns have abnormally low correlations with other funds, based on the idea that smoothing or otherwise fabricating returns reduces the relation between reported returns and index returns. Although related to these studies, this paper focuses on the change in misreporting following registration, rather than on identifying return patterns that indicate misreporting.

This misreporting of returns harms investors in several ways. First, Bollen and Pool (2012) show that return misreporting flags are significantly related to both fraud and investor lawsuits.

Second, misreporting generates undeserved fees for hedge fund advisors. Third, misreporting causes wealth transfers between investors, usually in ways that benefit the fund advisors' carried interest. For example, Jylha (2011) shows that hedge funds strategically misreport returns so that shares are overvalued when there are net inflows and undervalued when there are net outflows. Bollen and Pool (2009) estimate that one form of misreporting alone led to wealth transfers of \$1 billion to \$2 billion. Fourth, return misreporting improves flows, thus distorting the allocation of capital. Fifth, Capco (2003) shows that the majority of hedge fund failures are due to operational issues, of which return misreporting is the single largest category. Finally, Ben-David, Franzoni, Landier, and Moussawi (2013) show that hedge funds manipulate stock prices so as to improve their reported returns. Thus return misreporting affects asset prices.

To our knowledge, Cumming and Dai (2010) is the only other paper that studies return misreporting and hedge fund regulation. They conduct a cross-country comparison of return misreporting and restrictions on the marketing channels of hedge funds, and find a positive association between misreporting and the use of wrap accounts. Our paper differs, in that the regulatory events we study are related to direct regulatory oversight of hedge funds and to regulatory changes that are explicitly focused on valuation practices. Further, the restrictions studied by Cumming and Dai (2010) do not change over time, which makes it difficult to disentangle the effect of the restriction from other factors that influence the choice of domicile. In contrast, our differences-in-differences approach allows us to identify the effects of regulatory oversight on return misreporting.

Several prior studies use information from the Form ADV filings required by Rule IA-2333. Dimmock and Gerken (2012) show this information can predict fraud by investment advisors, including hedge fund advisors. Unlike Dimmock and Gerken (2012), the current paper shows

that regulatory oversight changed return misreporting, rather than testing the usefulness of the disclosures required by registration. Brown, Goetzmann, Liang, and Schwarz (2008) use information from a cross-section of Form ADV filings from February 2006. They show this information is correlated with hedge fund characteristics, and this correlated information can predict returns and fund failures. This paper differs from Brown et al. in two ways. First, we focus on return misreporting whereas they explore the broader category of operational risk. Second, Brown et al. are unable to distinguish hedge fund advisors who registered prior to Rule IA-2333 from advisors who registered in response to the rule change. Thus, Brown et al. cannot determine whether hedge funds changed their behavior in response to Rule IA-2333. Our comprehensive panel of registration filings allows us to identify when each advisor first registered, and to test whether funds changed their behavior in response to regulatory changes.

This paper contributes to the academic literature on the regulation of investment managers (see the review and discussion in Zingales (2009)), by documenting that regulatory oversight is effective even in a market characterized by sophisticated investors. This paper also has implications for ongoing policy issues: Although Rule IA-2333 was revoked, the recent Dodd-Frank Act once again requires hedge fund advisors to register with the SEC. Despite this revival of the registration requirement, to our knowledge, there are no prior academic studies of the effect of the earlier registration requirement.

## **1. Background**

The Investment Advisers Act of 1940 requires registration by all investment advisors with at least 15 U.S. clients and at least \$25 million in assets under management. Prior to Rule IA-2333, many hedge fund advisors avoided registration by counting each fund as a client, rather than counting the fund's investors. This exemption was permitted, provided the fund accepted only

qualified investors, had fewer than 100 investors, and did not advertise or conduct general solicitations. As the data section will show, prior to Rule IA-2333 the majority of hedge fund advisors in our sample were registered for various reasons, such as managing mutual or pension funds, advising 15 or more funds, or voluntarily foregoing the exemption.

In a September 2003 report, the SEC argued for increased regulation of hedge funds, saying “The lack of independent checks on a hedge fund advisor’s valuation of a hedge fund’s portfolio securities is among the most serious concerns we have identified.”<sup>4</sup> The same report argued that SEC examinations, stricter recordkeeping requirements, and tougher compliance standards would deter return misreporting and facilitate detection when misreporting did occur.

In July 2004, the SEC proposed Rule IA-2333, which eliminated the option to count a fund, instead of the fund’s investors, as the client. Following the proposal, there was a comment period, in which many people voiced strong objections. The Managed Fund Association reported that 73% of its members opposed the proposal.<sup>5</sup> Two of the five SEC commissioners publicly opposed the proposal arguing, among other things, that it was unlikely to reduce return misreporting (see Atkins (2006)). In congressional testimony, Alan Greenspan stated “Even should SEC’s proposed risk evaluation surveillance of hedge funds detect possible irregularities, which I doubt frankly, those irregularities will likely be idiosyncratic and of mainly historic interest.”<sup>6</sup> Thus even from the beginning, many thought the proposal would be ineffective.

After the comment period, Rule IA-2333 was passed in October 2004, posted in December 2004, and become effective in February 2005, after which, the SEC could conduct on-site examinations of hedge funds and hedge funds were required to follow strict recordkeeping requirements. The affected hedge fund advisors were also required to file Form ADV by

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<sup>4</sup> See page 79 of <http://www.sec.gov/news/studies/hedgofunds0903.pdf>.

<sup>5</sup> <http://www.sec.gov/rules/proposed/s73004/mfa101804.pdf>.

<sup>6</sup> <http://www.gpo.gov/fdsys/pkg/CHRG-108shrg98356/html/CHRG-108shrg98356.htm>.

February 1, 2006. In June 2006, a Federal Court revoked Rule IA-2333 in the case Phillip Goldstein et al. v. SEC. On November 24, 2006 the SEC allowed the deadline for appeal to expire. Advisors that had registered in response to Rule IA-2333 were given the option to deregister, with a deadline of January 31, 2007. Despite this option, more than half of the new registrants voluntarily remained registered. SEI (2007) discusses several reasons why these advisors chose to remain registered, including changes in investor expectations and that these advisors had already paid the fixed costs of registration.<sup>7</sup>

Rule IA-2333 did not place any restrictions on hedge funds' investment activities, trading strategies, or portfolio choices.<sup>8</sup> Nor did the rule require disclosure of portfolio holdings. The Rule did, however, change the regulatory environment in several ways. First, the SEC conducts regular examinations of registered advisors. One of the key justifications for proposing Rule IA-2333 was that "the Commission lacks the authority to examine many hedge fund advisors' books and records or conduct on-site inspections of hedge fund advisor operations, which could reveal instances of mispricing."<sup>9</sup> The U.S. Government Accountability Office reported that in the year following Rule IA-2333, the SEC examined 321 hedge fund advisors, issued deficiency letters to 294 (91.6%), and uncovered 23 cases of fraud (7.2%).<sup>10</sup> The number of deficiencies and frauds uncovered in this single year suggests that the rate of misconduct was quite high and that SEC examinations detect misconduct frequently enough to provide a meaningful deterrent.

Second, registered investment advisors are subject to the recordkeeping requirements<sup>11</sup> of the Investment Advisers Act, which include strict document retention rules (including retention

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<sup>7</sup> The SEC estimated costs of \$45,000 for the initial registration, followed by additional costs of \$25,000 per year.

<sup>8</sup> We have tested whether hedge fund factor loadings changed following registration. Relative to the control group, there is no evidence of systematic changes in factor loadings following registration.

<sup>9</sup> See page 80: <http://www.sec.gov/news/studies/hedgefunds0903.pdf>.

<sup>10</sup> See <http://www.gao.gov/assets/280/271478.html>.

<sup>11</sup> The required records include: order memoranda, bank records, all bills and statements, financial statements, all written communication including e-mails, list of discretionary accounts, advertising (including reported returns), all



of internal e-mails). Rule IA-2333 also required hedge funds to document their performance calculations on a security-by-security basis. Several prior studies suggest this focus on performance calculations is important: Cassar and Gerakos (2011) show that return misreporting is higher for hedge funds with greater control over the valuation process. Cici, Kempf, and Puetz (2012) compare CRSP stock prices with the prices hedge funds report in their 13F filings. They find significant discrepancies for 25% of hedge funds, with a conditional average overvaluation equal to 2.5% of fund value. Cici et al.'s results are especially striking given that only the largest hedge funds file Form 13F, and they find discrepancies even for liquid publicly traded stocks.

Third, Rule IA-2333 formalized investment advisors' compliance procedures. The rule required each advisor to adopt a written compliance code, implement procedures to prevent violations of the Investment Advisers Act, and appoint a Chief Compliance Officer. The compliance code and procedures were required to explicitly address valuation practices.

Fourth, registered investment advisors are subject to the custody rules of the Investment Advisers Act. Following registration, only a qualified custodian (e.g., a bank or registered broker-dealer) could hold the hedge funds' assets. Further, custodians were required to segregate client and advisor assets and to communicate directly with the customer each quarter.<sup>12</sup> If the custodian was the advisor or an affiliated firm (i.e., a firm under common control), there were additional audit requirements, including at least one surprise inspection per year.

Finally, hedge fund advisors were required to disclose information about their operations, conflicts of interest, and past legal and regulatory violations. To the extent that this information was not previously available, these disclosures provided investors with additional information.

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personal transactions of representatives and principals, powers granted by clients, disclosure statements, performance claims, customer and suitability information, and written supervisory procedures.

<sup>12</sup> Advisors with custody faced additional recordkeeping requirements. Specifically, the custodian must retain: all securities transactions and movements records, separate client ledgers, security-by-security records for each client including valuations, and client purchase and sale histories.

The disclosure requirement also increased the reputational penalties for misconduct, creating a deterrent for return misreporting.

## **2. Flags for Return Misreporting**

The main dependent variables in this paper are a set of flags for return misreporting.<sup>13</sup> We do not develop our own flags, but rather use flags identified in prior studies. Specifically, we include two variants of the December return spike reported by Agarwal, Daniel, and Naik (2011), the return discontinuity at zero reported by Bollen and Pool (2009), and two measures of abnormally low correlations with other assets developed by Bollen and Pool (2012).<sup>14</sup>

### ***A. December Return Spike and December Residual Spike***

Agarwal, Daniel, and Naik (2011) argue that because hedge funds usually calculate incentive fees at year-end, this creates an incentive to overstate December returns. They show that both raw returns and factor model residuals are abnormally high in December. To identify this pattern in the returns of individual funds, we modify the approach of Agarwal, Daniel, and Naik (2011) to create two flags. First, for the December Return flag we regress the fund's returns during the period on an indicator variable for the month of December. Second, for the December Residual flag we regress the fund's returns during the period on Fung and Hsieh's (2001) seven-factor model and an indicator variable for the month of December. For both versions, the flag is set equal to one if the December coefficient is positive and significant at the 10% level.

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<sup>13</sup> We use return misreporting flags as our dependent variable, rather than observed fraud, because observed fraud depends upon both the underlying rate of actual fraud and the rate of fraud detection. If regulatory oversight increases the probability that fraud is detected, this would severely bias our tests. As one of the expressed purposes of Rule IA-2333 was to accelerate the detection of fraud, it would not be possible to distinguish whether any relation between fraud and registration was due to changes in the underlying rate of fraud or changes in detection.

<sup>14</sup> We do not include several misreporting patterns used in prior studies, most notably the autocorrelation measure of Getmansky, Lo, and Makarov (2004) and the conditional autocorrelation variable of Bollen and Pool (2008). We do not include these two variables because Bollen and Pool (2012) do not find a relation between them and fraud.

### ***B. Kink (Return Discontinuity at Zero)***

Bollen and Pool (2009) show that reported returns are disproportionately just above zero compared to just below. To identify a discontinuity around zero for individual funds, we follow Bollen and Pool (2012) and employ the histogram approach of Burgstahler and Dichev (1997). For each fund-period, we sum the number of monthly return observations in three adjacent bins around zero: two to the left of zero and one to the right. Following Bollen and Pool (2012), we set the bin width using the algorithm of Silverman (1986):  $1.05846 \times \min\left(\sigma_i, \frac{Q_3 - Q_1}{1.34}\right) \times N^{-0.2}$ , where  $\sigma_i$  is the standard deviation of the fund's returns,  $Q_3 - Q_1$  is the interquartile range, and  $N$  is the number of observations. If the return distribution is smooth, the number of observations in the bin just to the left of zero should approximately equal the average of the two neighboring bins. The Kink flag equals one if the number of observations in the bin just to the left of zero is significantly below the average of the surrounding bins (at the 10% level).

### ***C. Low Max R<sup>2</sup> and Low Index $\beta$***

The next two flags, Low Max R<sup>2</sup> and Low Index  $\beta$ , both identify abnormally low correlations with other assets. Low Max R<sup>2</sup> is based on the maximum proportion of a hedge fund's return variation that can be explained by hedge fund style factors. Similar to Bollen and Pool (2012), we regress each fund's returns on the subset of the Fung and Hsieh (2001) hedge fund factors that maximize the fund's adjusted-R<sup>2</sup>. The Low Max R<sup>2</sup> flag is equal to one if the fund's maximum adjusted-R<sup>2</sup> is in the bottom decile of all funds.

Low Index  $\beta$  is based on the relation between the hedge fund's returns and the returns of its style index. Following Bollen and Pool, for each fund we create an adjusted style index – the equal weighted return for all other funds with the same style. We then regress the fund's returns

during the period on the adjusted style index. The Low Index  $\beta$  flag is equal to one if the coefficient on the adjusted style return is *not* positive and significant at the 10% level.

### ***E. Any Misreporting Flag***

Our final variable is Any Misreporting Flag, which is equal to one if, during the period, the fund triggers one or more of the flags just described. In the discussion of the results, we focus on this flag as it aggregates the information in the individual flags.<sup>15</sup> Figure 2 shows histograms of the reported returns for funds that do and do not trigger this flag. The most noticeable difference is not the average level of returns, but the distribution. The return distribution of funds that trigger the Any Misreporting Flag is more peaked and has smaller tails. This pattern is consistent with the nature of the misreporting flags: they measure artificial smoothing or temporary adjustments around benchmarks, rather than unidirectional overstatement of returns.

## **3. Data and Sample Description**

This study uses data from three sources: (1) SEC registration status and information from a panel of Form ADV filings; (2) Hedge fund information from the Lipper TASS database; and (3) Hedge fund information from the BarclayHedge database. We merge these data sets and create one observation per fund-period. The periods are defined based on the regulatory changes. The Mandatory period includes the 30 months from the concept release of Rule IA-2333 until the end of the deregistration relief period offered after *Goldstein v. SEC* (July 2004-December 2006). The Pre-Mandatory period (January 2002 - June 2004) and Post-Mandatory period (January 2007- June 2009) include the 30 months before and after the Mandatory period, respectively.<sup>16</sup>

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<sup>15</sup> We find similar results using an alternative dependent variable equal to the sum of the other five flags, and estimating count models similar to those reported in the paper.

<sup>16</sup> The results are similar with 24 month periods that end immediately following the court case that revoked Rule IA-2333 (July 2004 – June 2006); with 25 month periods in which the Mandatory period begins after the passing of

### *A. SEC Registration Status and Form ADV Sample*

Registered hedge fund advisors were required to file Form ADV with the SEC. We use a panel of Form ADV filings to determine when each advisor first registered, and whether the advisor deregistered. From these Form ADV filings, we also obtain information about the advisors' business operations. Historical monthly Form ADV filings, beginning in May 2007, are available on the SEC's website.<sup>17</sup> We combine these publicly available filings with a unique panel of all Form ADV filings from August 2001 - August 2006, described in Dimmock and Gerken (2012), to create a panel covering August 2001 - December 2011 (excluding August 2006-April 2007 filings, which are not available from either source). This panel of historical filings includes defunct advisors and should not be subject to a survivorship bias.

Even following Rule IA-2333, some advisors did not register. First, funds with lockup periods of at least two years were exempt. Aragon, Liang, and Park (2013) show that 2% of offshore funds and 0.5% of domestic funds appear to have changed their lockups to avoid registration; this provides some evidence of advisors actively avoiding registration, but the magnitude appears too small to drive our results. Second, some advisors that were required to register failed to do so. Unfortunately, we cannot clearly identify these advisors, as we do not observe the number of U.S. investors in each fund. Excluding these funds, however, would only bias towards our findings if, had they registered, these funds would have significantly increased misreporting. Although we cannot directly disprove this possibility, it seems unlikely.

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Rule IA-2333 (December 2004 to December 2006); or with 36 month periods that begin with the SEC report on hedge funds (January 2004 – December 2006).

<sup>17</sup> See <http://www.sec.gov/foia/iareports/inva-archive.htm>.

### ***B. Hedge Fund Data***

We obtain hedge fund data from the TASS and BarclayHedge databases, and merge share classes between the two databases following the matching algorithm of Joenvaara, Kosowski, and Tolonen (2012). First, we standardize the advisors' names, by removing text about legal structure, currency, share class, leverage, and domicile. We then merge the databases using these standardized names, as well as share class, domicile, and currency. Next, for each advisor, we identify share classes whose returns have a correlation of 0.99 or higher, and keep the share class with the longest return history (or by assets under management if the return histories are of equal length). To avoid complications from currency conversions when calculating the misreporting flags, we restrict the sample to funds that report in U.S. dollars. Joenvaara, Kosowski, and Tolonen (2012) report that the levels of return misreporting are similar among the five most commonly used hedge fund databases (which include TASS and BarclayHedge).<sup>18</sup>

### ***C. Merged Dataset***

The BarclayHedge database provides each advisor's SEC number, which can be linked directly to the Form ADV sample. For those funds that report only to TASS, we match to Form ADV using the advisors' standardized names, and verify these matches based on location, assets under management, stated client type, and the private fund data from Schedule D of Form ADV. We retain all funds in the merged TASS-BarclayHedge dataset that registered by the end of 2006. There are 1,022 investment advisors in the merged sample. We classify the 627 advisors that registered prior to the Rule IA-2333 deadline as Voluntary registrants,<sup>19</sup> and classify the remaining 395 advisors as IA-2333 registrants. Of the IA-2333 registrants, 276

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<sup>18</sup> If we estimate our tests in the TASS and BarclayHedge data separately, we find similar results in both samples.

<sup>19</sup> Although we use the term "Voluntary", some of the advisors were registered because of other business activities, such as managing mutual funds, and so were not truly voluntary.

remained registered after Rule IA-2333 was revoked, while 119 chose to deregister. Figure 1 shows the time-series of the number of funds whose advisor filed Form ADV. In early 2006 there is a sharp increase, corresponding to the Form ADV filing deadline. (Note that although the Form ADV filing deadline was in 2006, funds were subject to examinations and the recordkeeping requirements beginning in February 2005.) After Rule IA-2333 was revoked, the number of registered funds decreased, but clearly many of the IA-2333 funds did not deregister.

As estimating the return misreporting flags requires a time-series, we follow Bollen and Pool (2012) and restrict the sample to funds with at least 24-months of return data.<sup>20</sup> A potential concern is that excluding funds with fewer observations will bias the results. For example, if unregistered funds that misreport chose to cease reporting returns because of Rule IA-2333, then observed misreporting might decrease in the Mandatory period because we no longer observe the behavior of a self-selected group of funds. We address this concern in multiple ways: First, by including fund fixed effects we show that our results occur within fund, not due to changes in the sample of funds. Second, any alternative story based upon non-survival would have to explain both the decrease in misreporting following registration *and* the increase in misreporting following deregistration. Finally, and perhaps most simply, the data are directionally inconsistent with this possibility; the survival rate is lower for Voluntary funds, although this difference is only marginally significant.

#### ***D. Variables and Summary Statistics***

This subsection defines and summarizes the variables created from the merged ADV-TASS-BarclayHedge data. We report results separately for advisors that registered in response to Rule IA-2333 (IA-2333) and for advisors that were already registered (Voluntary). We also report

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<sup>20</sup> The results are similar if we require only 12 months of returns per fund-period.

results separately for the IA-2333 funds that deregistered after Rule IA-2333 was revoked (Deregister) and those that remained registered (Remain).

Panel A of Table 1 divides the investment advisors into IA-2333 and Voluntary registrants, and compares their characteristics. There is one observation per advisor, and all variables are reported as of February 2006. U.S. Advisor is equal to one if the U.S. is the advisor's "principal office and place of business." Advisor Age is based on the earliest reported return date across all of the advisors' funds, and is reported in years. Funds per Advisor is the per advisor number of funds in the return databases. Advisor Total AUM is the total assets under management for the advisor, including mutual funds and other non-hedge fund products. Primarily Hedge Fund is equal to one if 75% or more of the advisor's clients are hedge funds. Internal Custody is equal to one if the advisor (or an affiliate) has custody of clients' securities. As Panel A shows, Voluntary registrants are more likely to be located in the U.S. and to have custody of client assets, are older, and manage more funds, total assets, and non-hedge fund products.

The final two variables are related to the SEC regional office with which the advisor registers (and which is then responsible for examining the advisor). Prior to Rule IA-2333, some regional offices had more experience examining hedge funds. For example, in the Pre-Mandatory period, 24.6% of the 1,730 advisors registered with the New York regional office were hedge fund advisors. In the same period, 4.5% of the 1,754 advisors registered with the Chicago regional office were hedge fund advisors. Thus, both offices oversaw a similar number of advisors, but we define the New York office as having greater hedge fund experience than the Chicago office (24.6% versus 4.5%). For each regional office, we calculate the variable SEC Regional Office Hedge Fund Experience as the percentage of advisors registered with that office in the Pre-Mandatory period that were hedge fund advisors. Similar to Kedia and Rajgopal



(2011), we also calculate the variable SEC Regional Office Distance, as the distance in miles between the advisor and its SEC regional office; we calculate this variable for U.S. advisors only, as distances for foreign and U.S. advisors are not directly comparable.

Panel B of Table 1 reports summary statistics for the IA-2333 advisors, after dividing them into Deregister and Remains based on their decision after Rule IA-2333 was revoked. The difference between these two groups is weakly significant for one of the eight variables, but after adjusting for multiple comparisons we cannot conclude that there are significant differences.

Moving from advisors to funds, Panel A of Table 2 compares the characteristics of IA-2333 and Voluntary hedge funds. There is one observation per fund, and the values are for the Pre-Mandatory period. U.S. Domiciled equals one if the fund is domiciled in the United States. Fund Age is the age of the fund in years. Fund NAV is the reported net asset value of the fund in U.S. dollars. Return and Standard Deviation are the average monthly returns and standard deviations. Fund Alpha is the monthly alpha estimated with the Fung and Hsieh (2001) seven-factor model.<sup>21</sup> Liquidity  $\beta$  is the fund's loading on the value-weighted liquidity factor of Pastor and Stambaugh (2003) in the augmented Fung and Hsieh (2001) model. Quarterly flows are imputed using net asset values and returns. Panel A shows that Voluntary funds are more likely to be U.S. Domiciled and are larger, but IA-2333 funds have significantly higher returns, standard deviations, alphas, liquidity  $\beta$ s, and flows. Panel B shows that, compared to the Remain funds, the Deregister funds have significantly higher returns, standard deviations, and alphas.

Incentive Fee is the percent of profits taken as compensation by the hedge fund advisor, and is significantly higher for IA-2333 funds. Within IA-2333 funds, the Deregister funds have significantly higher incentive fees. One caveat is that the hedge fund databases only report many

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<sup>21</sup> We are grateful to David Hsieh for providing these factors on his website at: <http://faculty.fuqua.duke.edu/~dah7/DataLibrary/TF-FAC.xls>.

fund characteristics, such as fees, as of the end of the sample. However, using a panel of fee disclosures, Schwarz (2007) shows that fees do not change for the vast majority of funds. As an additional measure of the advisor's incentives, we calculate the Delta variable created by Agarwal, Daniel, and Naik (2009) for each fund. This is defined as the dollar change in the advisor's wealth for a 1% change in net asset values, and is reported in millions. Voluntary registrants have significantly higher Deltas.

#### ***E. Return Misreporting Flags and Registration Status***

Table 3 summarizes the proportion of funds that trigger each return misreporting flag during the Pre-Mandatory period (January 2002 - June 2004). Panel A reports results separately for IA-2333 and Voluntary funds. The IA-2333 funds have significantly higher misreporting rates for five of the six flags, including the Any Misreporting Flag. A Hotelling's T-squared test of the multivariate equality of means strongly rejects the hypothesis that return misreporting is equal between these two groups: IA-2333 funds engage in more misreporting prior to registration.

Panel B of Table 3 compares return misreporting during the Pre-Mandatory period for the IA-2333 funds that deregistered after Rule IA-2333 was revoked (Deregister) versus those that remained registered (Remain). None of the flags are significantly different between these two groups, and a multivariate test of the equality of means fails to reject the hypothesis that the misreporting flags are jointly equal between these two groups.

#### **4. Registration, Deregistration, and the Misreporting of Returns**

Because the regulatory changes we study apply to some, but not all, of the hedge funds in the sample, we can estimate differences-in-differences models to identify the effects of these regulatory changes on return misreporting, while controlling for common time-series changes.

Although the dependent variables are binary, the results presented in this section are estimated with linear regressions. Angrist (2001) show that for saturated models, such as those used in this paper, linear regressions correctly estimate the conditional mean function, even for binary dependent variables. Logit models for individual flags and count models of the number of flags both give similar results, and are available in the Internet Appendix.

### *A. The Initiation of Rule IA-2333 and Changes in Return Misreporting*

In this specification, we consider only the effect of the initial registration requirement when Rule IA-2333 was announced. As such, we include data only for the Pre-Mandatory (January 2002 - June 2004) and Mandatory periods (July 2004 - December 2006). We include one observation per fund-period<sup>22</sup> and estimate variants of the following regression:

$$Y_{i,t} = \alpha + \gamma_1 \cdot I_{IA} + \beta_1 \cdot I_{t=Mandatory} + \delta_1 \cdot (I_{t=Mandatory} \cdot I_{IA}) + \varphi \cdot X + \varepsilon_{i,t} \quad (1)$$

Where  $Y_{i,t}$  is an indicator variable equal to one if hedge fund  $i$  triggers the return misreporting flag during period  $t$ ;  $I_{IA}$  is an indicator variables equal to one for funds that registered in response to the rule change (IA-2333 funds);  $I_{t=Mandatory}$  is an indicator variable equal to one during the Mandatory period;<sup>23</sup> and  $X$  is an array of additional controls.<sup>24</sup>

The indicator variable for IA-2333 funds removes any time-invariant differences in return misreporting between IA-2333 and Voluntary funds. The indicator variable for the Mandatory period removes the period-specific level of misreporting common to both groups of funds. The key differences-in-differences parameter is the interaction between IA-2333 funds and the Mandatory period, which measures the change in misreporting for IA-2333 funds following registration, relative to the change for Voluntary funds. The identifying assumption is that, in the

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<sup>22</sup> We follow the recommendation of Bertrand, Duflo, and Mullainathan (2004), and collapse the data to one observation per fund-period to avoid biases due to serial correlation.

<sup>23</sup> In the specifications reported, this variable is subsumed by the period-style fixed effects included as controls.

<sup>24</sup> All of the results are also robust to not including any control variables.

absence of regulatory change, the time-series change in misreporting would have been the same for both groups of funds. If this is the case, then given that we control for group effects and period effects, this interaction term measures the change in misreporting due to registration.

Panel A of Table 4 includes controls for returns, standard deviations, log of the fund's age, log of the fund's NAV, a dummy for missing NAV, a dummy for U.S. advisors, and log of the total assets managed by the fund's advisor. The inclusion of these variables controls for the possibility that both return misreporting and registration status are driven by some other variable, such as performance or fund size.

Most importantly, from the perspective of avoiding omitted variable bias, we also include style-period fixed effects. i.e., all funds in a specific style, such as long/short equity, receive a separate fixed effect for each period. Including these fixed effects allows each hedge fund style to have a different period-specific level of return misreporting. We also include jurisdiction-period fixed effects. i.e., all funds domiciled in a specific legal jurisdiction receive a separate fixed effect for each period. Including these fixed effects guards against the possibility that regulatory changes in other jurisdictions drive our results.

In each column of Table 4, the dependent variable is equal to one if the fund triggers the return misreporting flag during the period. There are six columns; one for each of the misreporting flags. The t-statistics, reported below the coefficient estimates, are based on standard errors clustered by advisor.

In the first column of Panel A, the coefficient on IA-2333 Fund is positive and significant. Indicating that, over both periods, IA-2333 funds misreport returns significantly more than Voluntary funds. Our primary interest, however, is in the change in return misreporting following registration, which is measured by the interaction term  $IA-2333 \times Mandatory\ Period$ .

This coefficient is significantly negative for four of the six flags, including the Any Misreporting Flag, indicating that misreporting by IA-2333 funds decreased following registration. Further, the economic magnitude of this decrease is large. For example, as shown in the first column, the probability of triggering Any Misreporting Flag decreases by 7.3 percentage points for IA-2333 funds following registration. Given that 53.4% of IA-2333 funds triggered this flag in the Pre-Mandatory period, this represents a 13.7% decrease in misreporting.

By adding the coefficients on IA-2333 Fund and on  $IA-2333 \times \text{Mandatory Period}$ , we can compare the levels of return misreporting by IA-2333 funds during the Mandatory period with that of Voluntary funds (i.e., the sum of the coefficients shows the level of misreporting during the Mandatory period, rather than the relative change between periods). In the first column, this sum is an insignificant -0.005, indicating that the level of return misreporting by IA-2333 funds is not significantly different from that of Voluntary funds during the Mandatory period.

The results for the individual misreporting flags show significant decreases in misreporting following registration for three of the five flags. Further, the implied magnitudes of the decrease in misreporting for these three flags are large, ranging from 41.4% to 53.4%. Although the results for the Kink flag are insignificant in these fund-level tests, in tests on the pooled distribution of returns as in Jylha (2011), there is a significant decrease in the return kink of IA-2333 funds relative to Voluntary funds during the Mandatory period (see the Internet Appendix).

The differences-in-differences models in Panel B of Table 4 include fund fixed effects. In these tests, each fund is essentially benchmarked against itself. Thus, this approach controls for any concerns that the differences in the characteristics of IA-2333 and Voluntary funds drive the results, or that differences are due to changes in the sample of funds. The results are similar to those in Panel A, but slightly stronger: following registration return misreporting by IA-2333

funds decreased significantly for five of the six misreporting flags. Overall, the results in Table 4 support with the hypothesis that registration decreased return misreporting.

***B. Multiple Changes: The Initiation and Subsequent Revocation of Rule IA-2333***

In this subsection, we extend the differences-in-differences models to include both the initiation of Rule IA-2333 and its revocation. In these models, there are three periods: Pre-Mandatory, Mandatory, and Post-Mandatory. In the previous section, we divided funds into two groups, funds that registered in response to Rule IA-2333 (IA-2333) and funds registered prior to the rule (Voluntary). In this subsection, we further divide the IA-2333 funds into two groups based on their advisors' choice following revocation: those that remain registered (Remain) and those that deregistered (Deregister). We divide the IA-2333 funds for two reasons. First, we must separate the Remain and Deregister funds to estimate the effects of revocation. Second, separation allows these two groups to have different sensitivities to the initial registration requirement; this is potentially important, as deregistration reveals something about the funds' underlying type.

We recognize that funds jointly chose whether to misreport returns and whether to deregister after Rule IA-2333 was revoked, and that prior to the rule funds had some discretion over whether to register. Although funds endogenously chose whether to deregister, this does not invalidate our tests, but it does require careful interpretation. Because funds chose to deregister, we cannot interpret the coefficient estimates for deregistration as estimates of the treatment effect (i.e., the change in return misreporting that would occur if a fund was randomly selected for deregistration). The funds that chose to deregister presumably did so, at least in part, because they were particularly constrained by Rule IA-2333. As such, it is likely that the return misreporting of these funds is especially sensitive to regulatory oversight, and the coefficient

estimates for these funds are larger than the true treatment effects. (i.e., these coefficient estimates represent the treatment effect conditional upon self-selection, which is larger than the treatment effects for the full sample.) The coefficient estimates for the Deregister funds are still informative, however, as the effect of mandatory registration on funds that would not voluntarily register is especially important from a policy standpoint.

The results reported in Table 5 are based on the following regression:

$$\begin{aligned}
Y_{i,t} = & \alpha + \gamma_1 \cdot I_d + \gamma_2 \cdot I_r + \beta_1 \cdot I_{t=MANDATORY} + \beta_2 \cdot I_{t=POSTMANDATORY} \\
& + \delta_1 \cdot (I_d \cdot I_{t=MANDATORY}) + \delta_2 \cdot (I_d \cdot I_{t=POSTMANDATORY}) + \delta_3 \cdot (I_r \cdot I_{t=MANDATORY}) \\
& + \delta_4 \cdot (I_r \cdot I_{t=POSTMANDATORY}) + \varphi \cdot X + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

Where  $Y_{i,t}$  is an indicator variable equal to one if hedge fund  $i$  triggers the misreporting flag during period  $t$ ;  $I_d$  and  $I_r$  are indicator variables equal to one for IA-2333 funds that choose to Deregister and Remain, respectively;  $I_t$  are indicator variables equal to one in period  $t$ ;<sup>25</sup>  $I_{d,t}$  and  $I_{r,t}$  are indicator variables equal to one in period  $t$  for Deregister and Remain funds, respectively; and  $X$  indicates an array of additional controls. When interpreting the results, our primary interest is in the differences-in-differences coefficients  $\delta_1$ ,  $\delta_2$ ,  $\delta_3$ , and  $\delta_4$ .

The specifications reported in Table 5 are linear regressions in which the dependent variable equals one if the fund triggers the return misreporting flag during the period. There are six columns; one for each return misreporting flag. The t-statistics, reported below the coefficient estimates, are based on standard errors clustered by advisor. The regressions reported in Panel A of Table 5 include the same control variables as in Panel A of Table 4. The regressions reported in Panel B of Table 5 include fund fixed effects as well as the time-varying control variables used in Panel A.

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<sup>25</sup> As in Table 4, in the reported results the period-style fixed effects subsume the period indicator variables.

We focus our discussion on the first column, in which the dependent variable is the Any Misreporting flag. The results in Panel A show that Deregister funds have significantly higher return misreporting: the coefficient of 0.119 implies that, relative to Voluntary funds, Deregister funds are 11.9 percentage points more likely to trigger the Any Misreporting Flag during the Pre-Mandatory period. In contrast, misreporting by Remain and Voluntary funds is not significantly different during the Pre-Mandatory period. The difference between the Deregister and Remain funds is consistent with the selection effect discussed earlier; the funds that chose to deregister also chose to misreport returns.

Turning to the differences-in-differences coefficients, both panels show a significant decrease in return misreporting by Deregister funds during the Mandatory period. Further, the economic magnitudes are large: Panels A and B imply decreases in misreporting of 15.3 and 21.7 percentage points, respectively. The net effect of the Deregister coefficient and the  $\text{Deregister} \times \text{Mandatory}$  coefficient is not significantly different than zero. Thus, during the Mandatory period, the levels of misreporting by Deregister and Voluntary funds are not significantly different. In the Post-Mandatory period, however, the differences-in-differences coefficient is not significant, but the net effect (the sum of  $\text{Deregister} \times \text{Post-Mandatory}$  and the baseline Deregister coefficient) is significant and positive. Thus, following deregistration, misreporting by Deregister funds is once again significantly greater than that of Voluntary funds.

The results are much weaker for the Remain funds. First, with the inclusion of the control variables, there is little evidence that these funds had higher rates of return misreporting prior to Rule IA-2333. As such, it is unsurprising that the differences-in-differences coefficients for Remain funds are generally not significant in Panel A. In Panel B, which includes fund fixed effects, there is some evidence that misreporting by Remain funds decreased during the



Mandatory period, but the magnitude is much smaller than for Deregister funds. The weaker effect of registration on Remain funds compared to Deregister funds is consistent with a selection effect. The funds that voluntarily remain registered are less likely to engage in misreporting, even in the absence of regulation, and are thus less affected by regulatory change.

### ***C. Extending the Model to Include the Dodd-Frank Act***

In Panel A of Table 6, we extend the sample to include an additional time period: After Post-Mandatory (July 2009 – December 2011). This period begins in the month that the Dodd-Frank Act was introduced in Congress. Title IV of the Dodd-Frank Act required hedge funds to register with the SEC, and so this period provides a third regulatory change.<sup>26</sup> Panel A shows that, in the After Post-Mandatory period, misreporting by Deregister funds significantly decreased. Thus Deregister funds had higher misreporting in the Pre-Mandatory and Post-Mandatory periods, when registration was not required, but their misreporting decreased to the same level as Voluntary funds in the Mandatory and After Post-Mandatory periods, when registration was required. We view these results as providing important confirmatory evidence that registration reduces return misreporting. Further, these results rule out alternative explanations based on simple time trends, and imply that any alternative explanation must explain repeated time-series changes in the misreporting of Deregister funds.

### ***D. Comparison with Never-Registered Funds***

In this subsection, we extend the sample to include a placebo group of funds that were not required to register following Rule IA-2333. We define foreign advisors as those that did not

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<sup>26</sup> The Dodd-Frank Act was passed in July 2010, and the final rules adopted by the SEC extended the registration deadline to March 31, 2012. Thus for much of the After Post-Mandatory period, although the Deregister funds were not actually registered, the expected probability of mandatory registration was high.

register, are not located in the U.S., and do not advise any U.S. domiciled funds. The placebo group is composed of the funds managed by these foreign advisors. Unfortunately, we cannot observe the number of U.S. investors in each fund, and so the placebo group may include some advisors that were required to register but did not. However, this placebo group should exclude most of the advisors that were required to register but failed to comply, and the inclusion of miscategorized funds will only bias against our results.

The differences-in-differences results for the Foreign funds provide a placebo test of the main model. If the model is properly specified, then return misreporting by Foreign funds should not change during the Mandatory period. This is precisely what Panel B of Table 6 shows: There is no change in misreporting by Foreign funds. Further, this is not due to low power: the standard errors for the Foreign  $\times$  Mandatory coefficients are smaller than the standard errors for the Deregister  $\times$  Mandatory coefficients. The placebo group results are insignificant because of their economic magnitudes are very small. Overall, the results in Panel B do not suggest the models in Tables 4 and 5 are misspecified.

## **5. Registration and Return Misreporting: Mechanisms and Incentives**

In the prior section, the tests control for the relation between fund characteristics and the *level* of return misreporting. In this section, we continue to control for fund characteristics, but we also allow fund characteristics to affect the *sensitivity* of misreporting to regulatory changes. These tests extend the differences-in-differences models to include additional interaction terms with various fund characteristics (often referred to as triple differences models or differences-in-differences-in-differences). For the sake of brevity, we only report results with Any Misreporting Flag as the dependent variable. The results presented in Panel A of Table 7 are based on the following specification:

$$\begin{aligned}
Y_{i,t} = & \alpha + \beta_1 \cdot I_{t=Mandatory} + \gamma_1 \cdot I_{IA} + \delta_1 \cdot (I_{t=Mandatory} \cdot I_{IA}) \\
& + \delta_2 \cdot (I_{t=Mandatory} \cdot I_{IA} \cdot I_Z) + \theta_1 \cdot (I_{t=Mandatory} \cdot I_Z) \\
& + \theta_2 \cdot (I_{IA-2333} \cdot I_Z) + \theta_3 \cdot I_Z + \varphi \cdot X + \varepsilon_{i,t}
\end{aligned} \tag{3}$$

This is an extension of the specification presented in Table 4. The model includes data for the Pre-Mandatory and Mandatory periods, and there are two categories of funds: IA-2333 and Voluntary. As in Table 4, there are indicator variables for IA-2333 funds ( $I_{IA}$ ) and for the Mandatory period ( $I_{t=Mandatory}$ ). The coefficient  $\delta_1$  compares the change in return misreporting by IA-2333 funds in the Mandatory period, relative to the change in misreporting by Voluntary funds. The coefficient  $\delta_2$  is the triple interaction term; it can be interpreted as the incremental change in return misreporting for IA-2333 funds with a particular characteristic, relative to that of IA-2333 funds without the characteristic. Panel A also reports the net change in misreporting by IA-2333 funds with the characteristic:  $\delta_1 + \delta_2$ . The specification also includes the characteristic ( $I_Z$ ), as well as interactions of the characteristic with period and registration status. By including these additional variables, whose coefficients are denoted by  $\theta$ , the model is saturated, and thus the regression provides the return misreporting probabilities for all eight groups formed by the intersection of period, reporting status, and fund characteristic.

Panel B of Table 7 presents an extension of the specification in Table 5. As in Panel A, we estimate a saturated model that includes interactions with fund characteristics:

$$\begin{aligned}
Y_{i,t} = & \alpha + \beta_1 \cdot I_{t=Mandatory} + \beta_2 \cdot I_{t=PostMandatory} + \gamma_1 \cdot I_d + \gamma_2 \cdot I_r \\
& + \delta_1 \cdot (I_d \cdot I_{t=Mandatory}) + \delta_2 \cdot (I_d \cdot I_{t=PostMandatory}) + \delta_3 \cdot (I_r \cdot I_{t=Mandatory}) \\
& + \delta_4 \cdot (I_r \cdot I_{t=PostMandatory}) + \delta_5 \cdot (I_{t=Mandatory} \cdot I_d \cdot I_Z) \\
& + \delta_6 \cdot (I_{t=PostMandatory} \cdot I_d \cdot I_Z) + \delta_7 \cdot (I_{t=Mandatory} \cdot I_r \cdot I_Z) \\
& + \delta_8 \cdot (I_{t=PostMandatory} \cdot I_r \cdot I_Z) + \theta_1 \cdot I_Z + \theta_2 \cdot (I_{t=Mandatory} \cdot I_Z) \\
& + \theta_3 \cdot (I_{t=PostMandatory} \cdot I_Z) + \theta_4 \cdot (I_d \cdot I_Z) + \theta_5 \cdot (I_r \cdot I_Z) + \varphi \cdot X + \varepsilon_{i,t}
\end{aligned} \tag{4}$$

Note that the interpretation of the specification in Panel B is complicated by the endogeneity of the deregistration decision. It is possible that certain fund characteristics affect both the

sensitivity of misreporting to regulatory oversight, and also affect the decision to deregister.

Thus, although we include Panel B for completeness, we focus our discussion on Panel A.

In Table 7, we report only the coefficients of interest and include only the specifications with fund fixed effects. The Internet Appendix includes results that report all coefficients as well as results for the regressions without fund fixed effects.

The fund characteristic in the first column of Table 7 is an indicator equal to one if the fund's advisor registered with an SEC regional office that has above median hedge fund examination experience during the Pre-Mandatory period. If hedge fund specific experience matters for examinations, and there are frictions that prevent regional offices from immediately changing their staff's expertise, then regional offices with greater hedge fund expertise would conduct more effective examinations. If this is the case, then Rule IA-2333 should have a stronger effect on new registrants in SEC regions with greater experience. The results show a significant decrease in return misreporting for IA-2333 funds in SEC regions with greater hedge fund experience: the net effect implies a 14.7 percentage point decrease in misreporting, relative to the baseline group (Voluntary funds). For IA-2333 funds in SEC regions with low hedge fund examination experience, the decrease in misreporting is not significant. However, the coefficient on the triple interaction term is not significant by itself; thus we cannot conclude that IA-2333 funds in high and low experience regions have different changes in misreporting during the Mandatory period. Despite this limitation, the results are generally consistent with greater hedge fund specific examination experience increasing the effect of Rule IA-2333, and suggest that SEC compliance exams are one mechanism that reduces return misreporting.

The fund characteristic in the second column is an indicator variable equal to one if the distance between the fund's advisor and the relevant SEC regional office is below the sample

median. The intuition for these tests follows Kedia and Rajgopal's (2011) study of accounting restatements, which shows that SEC oversight is more effective for companies near to an SEC regional office. In these tests, we restrict the sample to funds with U.S. based advisors, as distances for non-U.S. advisors are not comparable. The results show a significant decrease in return misreporting for IA-2333 funds that are closer to their examiners, again suggesting that SEC compliance exams are an important mechanism in reducing misreporting.

The fund characteristic in the third column is Internal Custody, which is equal to one if the fund (or an affiliate) has custody of the clients' securities. Internal custody may facilitate return misreporting, because it is easier for the fund to manipulate valuations. As such, we would expect a greater decrease in return misreporting for IA-2333 funds with internal custody. Panel A shows that IA-2333 funds with Internal Custody have a significant decrease in misreporting during the Mandatory period. Panel B shows that both Remain and Deregister funds with Internal Custody exhibit lower misreporting during the Mandatory period. The overall pattern of results is consistent with the idea that stricter custody requirements reduce return misreporting.

The fund characteristic in the fourth column is High Liquidity  $\beta$ , which is equal to one if the fund has an above median loading on the Pastor and Stambaugh (2003) liquidity factor. Agarwal, Daniel, and Naik (2011) and Bollen and Pool (2009) find a strong positive relation between illiquidity and return misreporting, and argue this is because illiquidity permits greater discretion in valuation. The recordkeeping requirements of Rule IA-2333, combined with external examinations of those records, potentially reduced funds' ability to exploit illiquidity to misreport returns. The results in Panels A and B are generally consistent with this idea. Illiquid IA-2333 funds experience a significant decrease in misreporting relative to Voluntary funds, while liquid IA-2333 funds do not.

The investment advisors that registered in response to Rule IA-2333 included both U.S. and non-U.S. based advisors. It is possible that, because of jurisdictional constraints, the SEC has less ability to influence non-U.S. advisors. Consistent with this idea, Panel A shows the effect of registration is stronger for U.S. advisors. Panel B shows that U.S. Advisor interacts quite differently with Deregister versus Remain. In the Mandatory Period, for Deregister funds the decrease in misreporting is larger for non-U.S. advisors. For Remain funds, the decrease in misreporting is larger for U.S. advisors. Presumably this reflects a selection effect: The non-U.S. advisors that deregistered had especially high misreporting in the Pre-Mandatory period, and so had the greatest drop in misreporting following registration. In contrast, the non-U.S. advisors that remained registered had lower misreporting before registration, and presumably remained registered in the Post-Mandatory period to signal their higher quality.

The final two fund characteristics in Table 7 measure performance incentives. As shown in the theoretical model of Jylha (2011), stronger performance incentives also create stronger incentives to misreport returns. High Delta is equal to one if the fund has an above median delta (calculated following Agarwal, Daniel, and Naik (2009)). High Incentive Fee is equal to one if the fund's incentive fee is equal to or greater than 20%. Panel A shows there was a significant decrease in misreporting during the Mandatory period for IA-2333 funds with strong performance incentives. These funds had significantly higher misreporting during the Pre-Mandatory period, and so may have been especially constrained by the regulatory changes introduced by Rule IA-2333.

## **6. Registration and Investor Flows**

If registration reduces return misreporting, then investors should value registration. In this section, we test how registration affects both the level and the performance sensitivity of hedge

fund flows.<sup>27</sup> All else equal, we would expect registered funds to have a higher level of flows. We would also expect registered funds to have greater inflows following high performance, as the good performance is more credible. Similarly, we would expect unregistered funds to suffer greater outflows following poor performance, as poor performance may be underreported.

Similar to the method of Sirri and Tufano (1998), in each quarter we sort funds into terciles based on style-adjusted returns and then estimate piecewise linear regressions of the flow-performance relation. We estimate one regression per period, and compare the coefficients across periods.<sup>28</sup> We follow Ding, Getmansky, Liang, and Wermers' (2009) study of the flow-performance relation of hedge funds, and control for: standard deviation, whether the fund is open, high watermarks, leverage, fees, lockup and redemption periods, subscription time, and net asset values.

Panel A of Table 8 shows that, consistent with investors valuing registration, the level of flows rises for IA-2333 funds during the Mandatory period; the coefficients imply that IA-2333 fund flows are 5.7 percentage points higher per quarter following registration. Panel B shows that following deregistration in the Post-Mandatory period, the Deregister funds suffer outflows of 5.5 percentage points per quarter. The fact that Deregister funds suffer outflows in the Post-Mandatory period, but not in the Pre-Mandatory period, is consistent with the survey evidence in SEI (2007), that Rule IA-2333 changed industry norms. In the Pre-Mandatory period, many funds were not registered, and this had little effect on flows. In the Post-Mandatory period, registration was the norm, and investors may have viewed deregistration as a negative signal.

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<sup>27</sup> If investors value registration, they might also pay higher fees or accept lower performance for registered funds. As the managed fund literature has generally shown that flows are the margin of adjustment for differences across funds (e.g., see Berk and Green (2004) and the literature that followed), we focus on flows in this paper. In results reported in the Internet Appendix, we find that registration status has little relation with fees or performance.

<sup>28</sup> This approach is conceptually similar to our approach in the earlier tables, but the results reported in Table 8 are much easier to interpret. Differences-in-differences tests on the pooled sample give similar results and are reported in the Internet Appendix.

Post-Mandatory is the only period in which the coefficients for Deregister and Remain are significantly different (p-value = 0.016). This points to one advantage of voluntary registration: It allows funds to credibly signal their type to investors. During the Mandatory period, investors could not distinguish Deregister and Remain funds; during the Post-Mandatory period, they could. Thus, although mandatory registration reduces return misreporting, it also reduces the reward (higher flows) to funds that would not misreport even in the absence of registration.

Consistent with prior studies (e.g., Fung, Hsieh, Naik, and Ramadorai 2008), the flow-performance relation is positive. More germane to our study, this relation varies with registration status. Panel A of Table 8 shows that IA-2333 funds' flows are significantly less sensitive to low-performance during the Mandatory period (i.e., the penalty for low-performance decreases following registration). The sensitivity of flows to high-performance does not change. This is consistent with the nature of return misreporting, which primarily involves underreporting or smoothing poor performance rather than overstating good performance. Panel B shows that the Deregister funds drive the changes in sensitivity. The penalty for poor performance by Deregister funds is lower during the Mandatory period, but then increases during the Post-Mandatory period. Although the decreased sensitivity of IA-2333 flows to poor performance is consistent with our expectation, the estimated sensitivities within periods differ from our expectations. We would expect IA-2333 flows to be very sensitivity to poor performance in the Pre-Mandatory period; instead the change in the sensitivity of IA-2333 funds to poor performance is due to low sensitivity during the Mandatory period.

## **7. Conclusion**

In 2004, the SEC passed Rule IA-2333, which required many hedge fund advisors to register. In 2006, a federal court revoked Rule IA-2333. We use these two changes in the



regulatory regime to test whether regulatory oversight reduces return misreporting by hedge funds. Specifically, we use differences-in-differences tests to compare changes in the return misreporting of funds that register in response to Rule IA-2333 with that of funds that were registered prior to the rule change.

We show that return misreporting decreased significantly following registration. Extending the tests to include the revocation of Rule IA-2333, we show that return misreporting by funds that deregistered increased significantly relative to that of funds that remained registered. Extending the tests further still, to include the re-introduction of mandatory registration in the Dodd-Frank Act, we find that misreporting by the Deregister funds once again significantly decreased. Triple differences-in-differences tests show these results are stronger for funds with illiquid portfolios, custody of clients' securities, stronger performance incentives, for funds examined by SEC offices with greater hedge fund specific experience, and for funds located closer to SEC offices. We also find that registration affects investment flows: Registered funds have higher overall flows, and also have lower outflows following poor performance.

In contrast to the predictions of Rule IA-2333's critics, we find that mandatory regulatory oversight results in an economically meaningful decrease in return misreporting. The results for the Post-Mandatory period show that, when regulatory oversight is voluntary, the funds that most need oversight do not volunteer for it. Thus voluntary registration is less effective in curtailing misreporting. The flow results demonstrate, however, that investors understand the value of registration, and there are market penalties for funds that choose not to register. Our results also provide regulators and investors with evidence on the effectiveness of regulatory oversight for reducing opportunistic behavior by investment advisors, and provide support for the recent decision to include a similar registration requirement in the Dodd-Frank Act.

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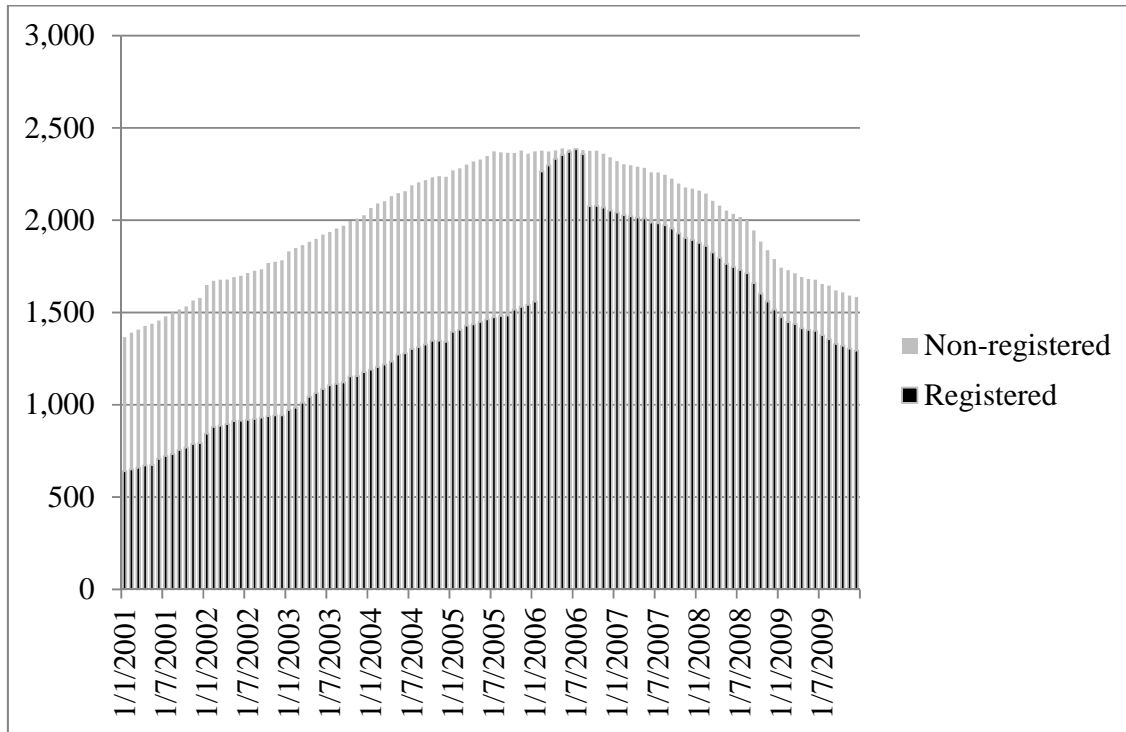
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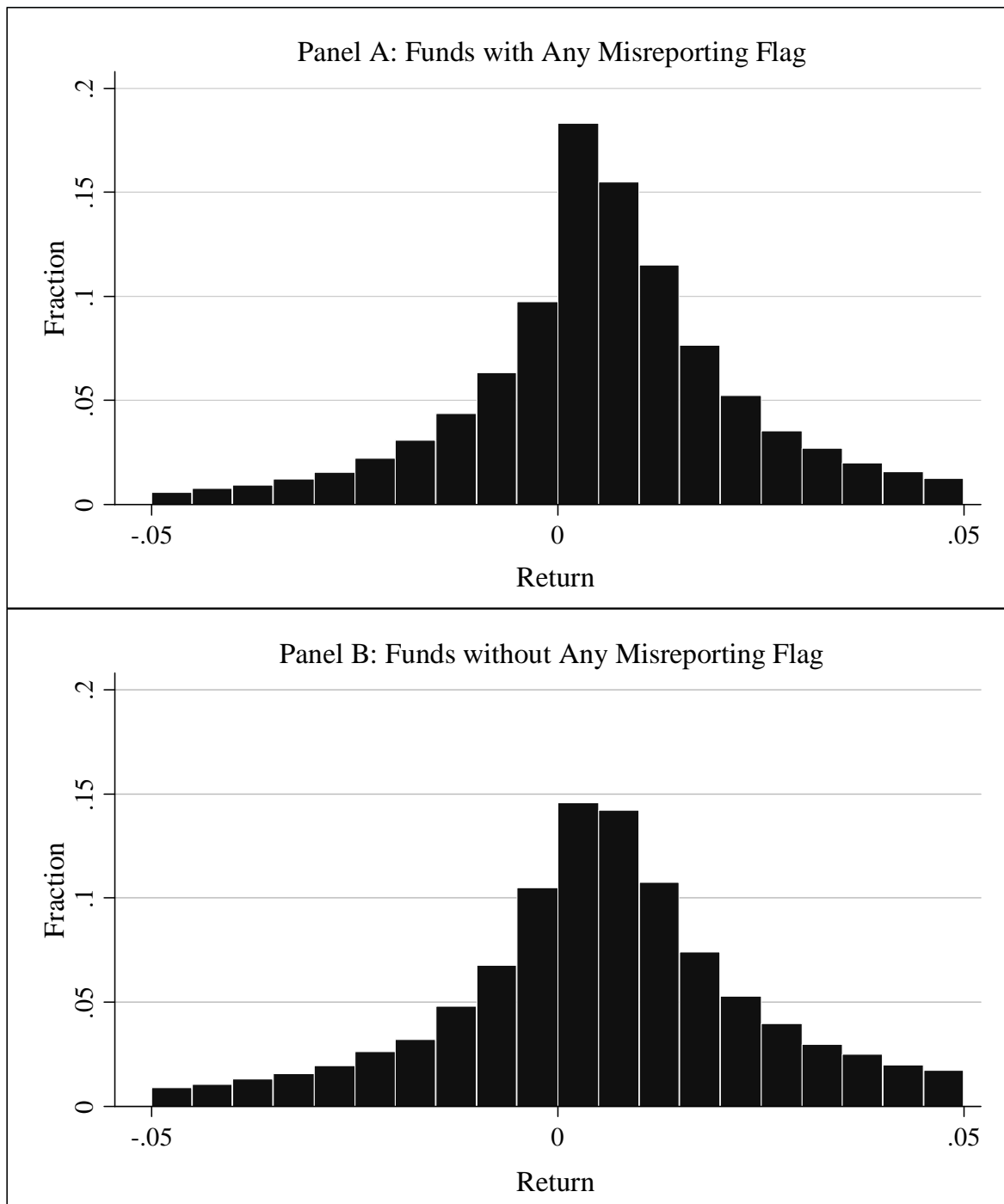
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**Figure 1. Hedge Funds Whose Advisor files Form ADV by Month**



The figure shows the number of funds managed by advisors that file Form ADV for each month during the sample period.

**Figure 2. Distribution of Monthly Reported Returns**



This figure shows a histogram of monthly returns during the Pre-Mandatory period for funds with and without Any Misreporting Flag. The distributions are truncated at -5% and 5%.

**Table 1**  
**Summary Statistics of Hedge Fund Advisors**

This table presents summary statistics of the 1,022 hedge fund investment advisors in the merged ADV-TASS-BarclayHedge sample. All values are as of February 2006. U.S. Advisor equals one if the advisor's Form ADV registration lists the United States as its main country. Advisor Total AUM reports the total assets under management for the investment advisor, including non-hedge fund assets. Primarily Hedge Fund equals one if 75% or more of the advisor's clients are hedge funds. Internal Custody equals one if the advisor retains custody of clients' securities. SEC Regional Office Hedge Fund Experience is the ratio of hedge fund advisors to total investment advisors at the SEC regional office the advisor registers with. SEC Regional Office Distance is the distance between the advisor and the SEC regional office it registers with; this is summarized only for U.S. Advisors. In Panel A, the sample includes all advisors. Averages are reported separately for advisors that registered in response to Rule IA-2333 (IA-2333) and for advisors that registered before Rule IA-2333 (Voluntary). In Panel B, the sample includes only IA-2333 advisors, and divides the sample based on whether the advisor deregistered after Rule IA-2333 was revoked. The symbols \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels based on Welch's t-test.

<b>Panel A: All Registrants</b>			
	IA-2333	Voluntary	Difference
Advisors	395	627	
U.S. Advisor	70.4%	89.5	-19.1 ***
Advisor Age (years)	4.9	5.5	-0.6 **
Funds per Advisor	2.9	3.7	-0.8 **
Advisor Total AUM (\$mil)	747.3	8,014.9	-7,267.6 ***
Primarily Hedge Fund	70.1%	40.5	29.6 ***
Internal Custody	69.4%	54.7	14.7 ***
SEC Regional Office Hedge Fund Experience	22.6%	18.2	4.4 ***
SEC Regional Office Distance	59.9	71.2	-11.3

<b>Panel B: IA-2333 Registrants</b>			
	Deregister	Remain	Difference
Advisors	119	276	
U.S. Advisor	68.1%	71.4	-3.3
Advisor Age (years)	5.3	4.7	0.6
Funds per Advisor	2.5	3.1	-0.6
Advisor Total AUM (\$mil)	708.2	764.2	-55.9
Primarily Hedge Fund	76.5%	67.4	9.1 *
Internal Custody	69.7%	69.2	0.5
SEC Regional Office Hedge Fund Experience	22.1%	22.9	-0.7
SEC Regional Office Distance	74.4	54.6	19.8

**Table 2**  
**Summary Statistics of Hedge Funds**

The table summarizes fund characteristics. U.S. Domiciled equals one if the fund is domiciled in the United States. Return is the average monthly return. Standard Deviation is the standard deviation of the monthly returns. Alpha is the estimated monthly alpha from the Fung and Hsieh (2001) seven-factor model. Liquidity  $\beta$  is the loading on the value-weighted liquidity risk factor of Pastor and Stambaugh (2003) in the augmented Fung and Hsieh (2001) model. Flows is quarterly imputed flows. Delta measures the dollar gain (in millions) to the advisor for a 1% increase in fund value, and is calculated following Agarwal, Daniel, and Naik (2009). Fund NAV is the fund's net asset value in millions. There is one observation per fund, and values are for the Pre-Mandatory period (January 2002 - June 2004). In Panel A, the sample includes all funds. Averages are reported separately for funds whose advisor registered in response to Rule IA-2333 (IA-2333) and for funds whose advisor registered before Rule IA-2333 (Voluntary). In Panel B, the sample includes only IA-2333 funds, and divides the sample based on whether the advisor deregistered after Rule IA-2333 was revoked. The symbols \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels based on Welch's t-test.

<b>Panel A: All Funds</b>			
	IA-2333	Voluntary	Difference
U.S. Domiciled	35.0%	49.8	-14.8 ***
Fund NAV (\$mil)	103.7	150.6	-46.9 ***
Fund Age (years)	5.2	5.5	-0.2
Return	0.009	0.007	0.002 ***
Standard Deviation	0.029	0.026	0.003 **
Alpha	0.007	0.005	0.002 ***
Liquidity $\beta$	0.013	-0.001	0.013 **
Flows	0.027	-0.001	0.027 ***
Incentive Fee	15.9	15.1%	0.8 **
Delta	0.132	0.177	-0.045 *

<b>Panel B: Funds from IA-2333 Registrants</b>			
	Deregister	Remain	Difference
U.S. Domiciled	37.6%	34.0	3.6
Fund NAV (\$mil)	110.0	101.0	9.0
Fund Age (years)	5.3	5.2	0.1
Return	0.012	0.008	0.004 ***
Standard Deviation	0.037	0.025	0.012 ***
Alpha	0.010	0.007	0.003 ***
Liquidity $\beta$	0.022	0.009	0.012
Flows	0.021	0.029	-0.008
Incentive Fee	17.0	15.5%	1.5 **
Delta	0.142	0.127	0.015

**Table 3**  
**Return Misreporting Flags**

This table reports the frequency of the return misreporting flags by registration status during the Pre-Mandatory period (January 2002 – June 2004). December Return equals one if the fund exhibits a significant positive December return spike. December Residual equals one if the fund's residual from the Fung and Hsieh (2001) seven-factor model exhibits a significant positive December return spike. Kink equals one if the fund's returns exhibit a significant discontinuity at zero. Low Max  $R^2$  equals one if the largest possible adjusted- $R^2$  from a regression of fund returns on the Fung and Hsieh (2001) factors is in the bottom decile across all funds. Low Index  $\beta$  equals one if the coefficient from a regression of fund returns on its style index is not significant. Any Misreporting Flag equals one if the fund triggers any of the return misreporting flags. In Panel A, the sample includes all funds. Averages are reported separately for funds whose advisor registered in response to Rule IA-2333 (IA-2333) and for funds whose advisor was registered before Rule IA-2333 (Voluntary). In Panel B, the sample includes only IA-2333 funds, and divides the sample based on whether the advisor deregistered after Rule IA-2333 was revoked. The symbols \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels based on Fisher's exact test.

<b>Panel A: All Funds</b>			
	IA-2333	Voluntary	Difference
Dec Return	12.9%	9.2	3.7 **
Dec Residual	19.0%	16.1	2.9 *
Kink	12.1%	12.6	0.5
Low Max $R^2$	16.4%	10.0	6.4 ***
Low Index $\beta$	23.0%	19.7	3.3 *
Any Misreporting Flag	53.4%	48.0	5.4 **

<b>Panel B: Funds Advised by IA-2333 Registrants</b>			
	Deregister	Remain	Difference
Dec Return	12.8%	13.0	-0.2
Dec Residual	21.1%	18.2	2.1
Kink	14.3%	11.2	3.1
Low Max $R^2$	16.5%	16.4	0.2
Low Index $\beta$	23.3%	22.8	0.5
Any Misreporting Flag	57.9%	51.5	6.4



**Table 4**  
**Return Misreporting and the Introduction of Rule IA-2333**

The dependent variable is the return misreporting flag listed at the top of the column. IA-2333 Fund is equal to one if the fund's advisor registered in response to the rule change. Mandatory Period is equal to one if the period is July 2004- December 2006. The base period is January 2002 – June 2004. The models in Panel A include, but we do not report, controls for returns, standard deviation, advisor age, net asset value, advisor assets under management, advisor location, style-period fixed effects, domicile-period fixed effects, and constants. The models in Panel B include fund fixed effects. The table reports results for linear probability models; results using logit models are available in the Internet Appendix. Standard errors are clustered by fund advisor, and t-statistics are reported in square brackets. The symbols \*, \*\*, and \*\*\* denote significance at the 10, 5, and 1 levels, respectively.

<b>Panel A: Linear Probability Model</b>						
	Any Misreporting Flag	Individual Flags				
		Dec Return	Dec Residual	Kink	Low Max R <sup>2</sup>	Low Index $\beta$
IA-2333 Fund	0.068 ** [2.00]	0.030 [1.06]	0.041 [1.55]	0.003 [0.12]	0.067 *** [3.00]	0.040 [1.46]
IA-2333 $\times$ Mandatory Period	-0.073 * [1.74]	-0.069 ** [2.12]	-0.078 ** [2.38]	0.007 [0.27]	-0.074 *** [2.83]	-0.017 [0.52]
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,536	3,536	3,536	3,491	3,536	3,536

<b>Panel B: Linear Probability Model with Fund Fixed Effects</b>						
	Any Misreporting Flag	Individual Flags				
		Dec Return	Dec Residual	Kink	Low Max R <sup>2</sup>	Low Index $\beta$
IA-2333 $\times$ Mandatory Period	-0.145 *** [2.86]	-0.082 ** [2.20]	-0.095 ** [2.43]	-0.013 [0.41]	-0.078 ** [2.58]	-0.061 * [1.92]
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,536	3,536	3,536	3,536	3,536	3,536

**Table 5**  
**Return Misreporting, Registration, and Deregistration**

The dependent variable is the return misreporting flag listed at the top of the column. Deregister is equal to one if the fund's advisor registered in response to Rule IA-2333 and then deregistered once the rule was revoked. Remain is equal to one if the fund's advisor registered in response to Rule IA-2333 and voluntarily remained registered after the rule was revoked. Mandatory Period is equal to one if the period is July 2004- December 2006. Post-Mandatory Period is equal to one if the period is January 2007- June 2009. The base period is January 2002 – June 2004. The models in Panel A include, but we do not report, controls for returns, standard deviation, advisor age, net asset value, advisor assets under management, advisor location, style-period fixed effects, domicile-period fixed effects, and constants. The models in Panel B include fund fixed effects. The table reports results for linear probability models; results using logit models are available in the Internet Appendix. Standard errors are clustered by fund advisor, and t-statistics are reported in square brackets. The symbols \*, \*\*, and \*\*\* denote significance at the 10, 5, and 1 levels, respectively.

<b>Panel A: Linear Probability Model</b>						
	Any Misreporting Flag	Individual Flags				
		Dec Return	Dec Residual	Kink	Low Max R <sup>2</sup>	Low Index $\beta$
Deregister	0.119 ** [2.39]	0.033 [0.93]	0.063 [1.61]	0.016 [0.44]	0.070 ** [2.11]	0.053 [1.16]
Remain	0.038 [0.99]	0.032 [0.98]	0.029 [0.92]	-0.009 [0.36]	0.060 ** [2.35]	0.034 [1.10]
Deregister × Mandatory Period	-0.153 ** [2.39]	-0.088 ** [2.12]	-0.101 ** [2.14]	-0.014 [0.29]	-0.100 ** [2.41]	-0.028 [0.53]
Deregister × Post-Mandatory	-0.052 [0.81]	-0.029 [0.68]	-0.080 * [1.84]	-0.025 [0.55]	-0.047 [1.16]	0.030 [0.51]
Remain × Mandatory Period	-0.036 [0.70]	-0.060 [1.52]	-0.069 * [1.79]	0.016 [0.51]	-0.063 ** [2.16]	-0.007 [0.18]
Remain × Post-Mandatory	-0.004 [0.07]	-0.050 [1.54]	-0.022 [0.67]	0.012 [0.42]	-0.048 * [1.72]	-0.002 [0.05]
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,116	5,116	5,116	5,116	5,116	5,116

**Panel B: Linear Probability Model with Fund Fixed Effects**

	Any Misreporting Flag	Individual Flags				
		Dec Return	Dec Residual	Kink	Low Max R <sup>2</sup>	Low Index $\beta$
Deregister $\times$ Mandatory Period	-0.217 *** [2.92]	-0.079 * [1.65]	-0.071 [1.31]	-0.037 [0.80]	-0.110 ** [2.36]	-0.123 *** [2.80]
Deregister $\times$ Post-Mandatory	-0.069 [0.89]	-0.022 [0.45]	-0.046 [0.94]	0.007 [0.12]	-0.100 ** [2.31]	-0.048 [0.94]
Remain $\times$ Mandatory Period	-0.097 * [1.78]	-0.077 * [1.78]	-0.092 ** [2.04]	-0.003 [0.09]	-0.062 * [1.90]	-0.028 [0.77]
Remain $\times$ Post-Mandatory	-0.041 [0.75]	-0.062 [1.50]	-0.057 [1.33]	0.028 [0.79]	-0.065 * [1.88]	-0.003 [0.09]
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,116	5,116	5,116	5,116	5,116	5,116

**Table 6**  
**Robustness Tests: Alternative Time Periods and Comparison Groups**

The dependent variable equals one if the fund triggers any of the return misreporting flags. IA-2333 Fund is equal to one if the fund's advisor registered in response to Rule IA-2333. Deregister is equal to one for IA-2333 funds whose advisor deregistered following revocation. Remain is equal to one for IA-2333 funds whose advisor voluntarily remained registered following revocation. Mandatory Period is equal to one if the period is July 2004 - December 2006. Post-Mandatory Period is equal to one if the period is January 2007- June 2009. The base period is January 2002 – June 2004. Panel A reports linear probability models for an extended sample period January 2002 – December 2011. After Post-Mandatory is equal to one if the period is July 2009 - December 2011. Panel B reports linear probability models for an extended sample that includes foreign funds that were not required to register with the SEC in 2006. Foreign is equal to one if the fund's advisor never registered with the SEC, its advisor is located outside of the U.S. and the fund is domiciled outside of the U.S. The models include, but we do not report, controls for returns, standard deviation, age, net asset value, advisor assets under management, style-period fixed effects, domicile-period fixed effects, and a constant. The even numbered columns of both panels include fund fixed effects. Standard errors are clustered by fund advisor, and t-statistics are reported in square brackets. The symbols \*, \*\*, and \*\*\* denote significance at the 10, 5, and 1 levels, respectively.

<b>Panel A: Extending the Model to Include the Dodd-Frank Act</b>		
Deregister	0.126 **	
	[2.55]	
Remain	0.037	
	[0.97]	
Deregister × Mandatory	-0.156 **	-0.213 ***
	[2.37]	[2.89]
Deregister × Post-Mandatory	-0.061	-0.095
	[0.95]	[1.27]
Deregister × After Post-Mandatory	-0.130 *	-0.145 *
	[1.85]	[1.66]
Remain × Mandatory	-0.030	-0.086
	[0.59]	[1.57]
Remain × Post-Mandatory	0.001	-0.043
	[0.03]	[0.79]
Remain × After Post-Mandatory	0.027	-0.012
	[0.51]	[0.19]
Fund Fixed Effects	No	Yes
Fund Characteristics	Yes	Yes
Style-Period Effects	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes
Observations	6,348	6,348

<b>Panel B: Placebo Group</b>				
Foreign	0.113 **		0.086 **	
	[2.28]		[2.02]	
IA-2333 Fund	0.066 **			
	[1.97]			
Remain			0.038	
			[0.97]	
Deregister			0.115 **	
			[2.42]	
Foreign × Mandatory	0.000	0.007	-0.001	-0.015
	[0.00]	[0.18]	[0.01]	[0.39]
IA-2333 × Mandatory	-0.066	-0.138 ***		
	[1.52]	[2.79]		
Remain × Mandatory			-0.029	-0.093 *
			[0.58]	[1.71]
Deregister × Mandatory			-0.147 **	-0.213 ***
			[2.34]	[3.08]
Foreign × Post-Mandatory			0.014	0.015
			[0.39]	[0.34]
Remain × Post-Mandatory			0.000	-0.041
			[0.00]	[0.74]
Deregister × Post-Mandatory			-0.047	-0.067
			[0.76]	[0.93]
Fund Fixed Effects	No	Yes	No	Yes
Fund Characteristics	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes
Jurisdiction-Period Effects	Yes	Yes	Yes	Yes
Observations	5,911	5,911	9,020	9,020

**Table 7**  
**Return Misreporting, Registration, and Deregistration: The Effect of Fund Characteristics**

This table extends the differences-in-differences models from Tables 4 and 5 by interacting the differences-in-differences terms with fund characteristics. The interaction variable is listed at the top of the column. For parsimony, we report only the differences-in-differences term, its interaction with the fund characteristic, and the net effect for the funds with the characteristic. The Internet Appendix reports the full results. The dependent variable equals one if the fund triggers the Any Misreporting Flag during the period. Mandatory is equal to one for the period July 2004 - December 2006. Post-Mandatory is equal to one for the period January 2007 - June 2009. The base period is January 2002 – June 2004. Panel A examines the base period and the Mandatory period. Panel B examines the full sample. IA-2333 Fund is equal to one if the fund’s advisor registered in response to Rule IA-2333. Deregister is equal to one for IA-2333 funds whose advisor deregistered following revocation. Remain is equal to one for IA-2333 funds whose advisor voluntarily remained registered following revocation. Each column reports a linear probability model. The models include, but we do not report, returns, standard deviation, advisor age, net asset value, advisor assets under management, style-period fixed effects, domicile-period fixed effects, and a constant. SEC RO Experienced equals one if the regional SEC office that examines the fund had an above median ratio of hedge fund advisors to total investment advisors during the Pre-Mandatory period. SEC RO Distance equals one if the fund’s advisor is an above median distance from the SEC regional office that examines the fund; only funds with U.S. based advisors are included in this specification. Internal Custody equals one if the advisor retains custody of clients’ securities. High Liquidity  $\beta$  equals one if the fund has an above median loading on the liquidity factor. U.S. Advisor equals one if the fund’s advisor is located in the U.S. High Delta equals one if the fund’s delta, calculated as in Agarwal, Daniel, and Naik (2009), exceeds the sample median. High Incentive equals one if the fund’s incentive fee is 20% or greater. Standard errors are clustered by fund advisor, and t-statistics are reported in square brackets. The symbols \*, \*\*, and \*\*\* denote significance at the 10, 5, and 1 levels, respectively.

**Panel A: Introduction of Rule IA-2333 and Fund Characteristics**

	SEC RO Exper.	SEC RO Distance	Internal Custody	High Liquidity $\beta$	U.S. Advisor	High Delta	High Incentive
(1) IA-2333 $\times$ Mandatory	-0.112 [1.32]	-0.092 [0.81]	-0.033 [0.37]	-0.074 [0.88]	-0.056 [0.63]	-0.081 [0.92]	-0.094 [1.11]
(2) IA-2333 $\times$ M.P. $\times$ Var.	-0.033 [0.32]	-0.146 [1.08]	-0.176 [1.61]	-0.157 [1.16]	-0.133 [1.23]	-0.137 [1.07]	-0.079 [0.76]
Net Effect ((1) +(2))	-0.145 ** [2.38]	-0.237 *** [3.11]	-0.209 *** [3.27]	-0.231 *** [2.74]	-0.189 *** [3.00]	-0.217 ** [2.37]	-0.173 *** [2.77]
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,446	2,656	3,536	3,536	3,536	2,465	3,531

**Panel B: Registration, Deregistration, and Fund Characteristics**

	SEC RO Exper.	SEC Distance	Internal Custody	High Liquidity $\beta$	U.S. Advisor	High Delta	High Incentive
(1) Dereg $\times$ Mandatory	-0.163 [1.32]	-0.049 [0.30]	-0.068 [0.53]	-0.089 [0.63]	-0.227 ** [1.99]	-0.143 [1.12]	-0.072 [0.51]
(2) Dereg $\times$ M.P. $\times$ Var.	-0.080 [0.53]	-0.229 [1.11]	-0.252 [1.59]	-0.252 [1.36]	0.041 [0.27]	-0.112 [0.67]	-0.211 [1.34]
Net Effect ((1) +(2))	-0.243 *** [2.79]	-0.278 ** [2.27]	-0.321 *** [3.44]	-0.341 *** [3.79]	-0.186 * [1.87]	-0.255 * [2.10]	-0.283 *** [3.55]
(3) Dereg $\times$ Post	-0.059 [0.43]	-0.173 [1.19]	0.033 [0.23]	-0.03 [0.22]	-0.073 [0.60]	0.031 [0.23]	0.073 [0.50]
(4) Dereg $\times$ P.M. $\times$ Var.	-0.010 [0.06]	0.187 [0.89]	-0.17 [1.02]	-0.042 [0.20]	0.008 [0.05]	-0.218 [1.11]	-0.219 [1.28]
Net Effect ((3) +(4))	-0.069 [0.75]	0.014 [0.09]	-0.137 [1.61]	-0.0726 [0.58]	-0.064 [0.57]	-0.188 [1.34]	-0.147 * [1.72]
(5) Remain $\times$ Mandatory	-0.076 [0.80]	-0.085 [0.66]	0.028 [0.28]	-0.053 [0.65]	0.061 [0.71]	-0.011 [0.12]	-0.105 [1.17]
(6) Remain $\times$ M.P. $\times$ Var.	-0.014 [0.12]	-0.125 [0.82]	-0.184 [1.54]	-0.09 [0.71]	-0.231 ** [2.11]	-0.205 [1.45]	0.008 [0.07]
Net Effect ((5) +(6))	-0.090 [1.40]	-0.211 *** [2.59]	-0.157 ** [2.35]	-0.143 * [1.67]	-0.17 ** [2.50]	-0.215 ** [2.17]	-0.098 [1.42]
(7) Remain $\times$ Post	-0.039 [0.33]	-0.159 [0.99]	0.036 [0.33]	-0.115 [1.27]	0.005 [0.05]	0.014 [0.13]	-0.033 [0.37]
(8) Remain $\times$ P.M. $\times$ Var.	0.013 [0.10]	0.135 [0.75]	-0.093 [0.74]	0.146 [1.17]	-0.063 [0.53]	-0.135 [0.88]	-0.027 [0.24]
Net Effect ((7) +(8))	-0.026 [0.42]	-0.024 [0.32]	-0.057 [0.90]	0.031 [0.41]	-0.058 [0.84]	-0.121 [1.28]	-0.060 [0.86]
Fund Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style-Period Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jurisdiction-Period F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,026	3,793	5,116	5,116	5,116	3,582	5,109



**Table 8**  
**Hedge Fund Flows and Registration**

This table contains regressions of the flow-performance relation. For each period, quarterly flows are regressed on funds' lagged fractional performance rankings over low, medium, and high performance ranges. Net flows are defined as the percentage change in net assets of the fund between the beginning and end of the quarter, net of quarterly returns. Fractional ranks of lagged performance are divided into terciles (Low, Mid, and High Performance). Following Ding, Getmansky, Liang, and Wermers (2011), we include controls for standard deviation, open to public, high water mark, leverage, management and performance fees, lockup, redemption period, subscription period, and fund size. In Panel A, the performance terciles are interacted with IA-2333, which is equal to one if the fund's advisor registered in response to Rule IA-2333. Columns one and two show the flow-performance relation for the Pre-Mandatory and Mandatory periods, respectively. The third column reports Chi-square tests of the difference between the two samples. In Panel B, Deregister is equal to one for IA-2333 funds whose advisor deregistered after revocation. Remain is equal to one for IA-2333 funds whose advisor voluntarily remained registered after the rule was revoked. In Panel B, the performance terciles are interacted with Deregister and Remain. The first three columns show results for the Pre-Mandatory (January 2002 – June 2004), Mandatory (July 2004- December 2006), and Post-Mandatory periods (January 2007 – July 2009), respectively. The remaining columns report Chi-square tests of the differences between the samples. Standard errors are clustered by advisor. The symbols \*, \*\*, and \*\*\* denote significance at the 10, 5, and 1 levels, respectively.

<b>Panel A: Fund Flows and the Introduction of Rule IA-2333</b>			
	Pre-Mandatory Period	Mandatory Period	$\chi^2$ Test of Difference
IA-2333 Fund	-0.011 [0.55]	0.046 ** [2.34]	4.41 **
Low Performance	0.248 *** [5.16]	0.202 *** [5.72]	0.66
Low Performance $\times$ IA-2333	0.031 [0.36]	-0.177 ** [2.41]	3.58 *
Mid Performance	0.085 ** [2.49]	0.038 [1.46]	1.20
Mid Performance $\times$ IA-2333	0.030 [0.41]	0.096 * [1.84]	0.51
High Performance	0.351 *** [6.15]	0.323 *** [7.96]	0.19
High Performance $\times$ IA-2333	0.183 * [1.67]	0.100 [1.20]	0.35
Fund Control Variables	Yes	Yes	
Fund-Quarter Observations	10,602	14,185	

<b>Panel B: Fund Flows, Registration, and Deregistration</b>						
	<u>Pre-Mandatory</u>	<u>Mandatory</u>	<u>Post-Mandatory</u>	<u>X<sup>2</sup> Tests of Differences</u>		
	(1)	(2)	(3)	(1) vs. (2)	(1) vs. (3)	(2) vs. (3)
Deregister	0.004 [0.14]	0.043 [1.60]	-0.055 ** [2.36]	1.15	2.22	9.00 ***
Remain	-0.019 [0.84]	0.048 * [1.96]	0.017 [0.76]	3.98 **	1.24	0.96
Low Performance	0.249 *** [5.17]	0.203 *** [5.73]	0.237 *** [6.02]	0.65	0.04	0.42
Low Performance × Deregister	0.025 [0.19]	-0.201 ** [2.10]	0.184 * [1.90]	2.15	0.85	8.95 ***
Low Performance × Remain	0.038 [0.39]	-0.171 * [1.85]	-0.095 [1.10]	2.40	0.97	0.36
Mid Performance	0.085 ** [2.49]	0.038 [1.45]	0.079 *** [2.61]	1.21	0.01	1.12
Mid Performance × Deregister	-0.085 [0.76]	0.084 [0.91]	-0.139 [1.55]	1.25	0.17	2.92 *
Mid Performance × Remain	0.071 [0.80]	0.099 * [1.72]	0.080 [1.18]	0.07	0.01	0.05
High Performance	0.351 *** [6.15]	0.322 *** [7.92]	0.348 *** [7.02]	0.19	0.01	0.17
High Performance × Deregister	0.253 * [1.65]	0.150 [0.93]	0.235 * [1.71]	0.18	0.01	0.17
High Performance × Remain	0.165 [1.19]	0.083 [0.95]	0.009 [0.10]	0.25	0.80	0.39
Fund Control Variables	Yes	Yes	Yes			
Fund-Quarter Observation	10,602	14,185	11,636			