What Drives Dodd-Frank Act Compliance Cost for Private Funds?

by

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ABSTRACT

To assess the effects of Dodd-Frank Act compliance costs on the private fund industry and evaluate drivers of compliance cost, I collect and code compliance cost estimates from private fund advisers (N=94) after the registration effective date for private fund advisers under Title IV of the Dodd-Frank Act. I show with two independent datasets that the number of funds managed by private fund advisers is associated with Dodd-Frank Act compliance cost. However, the size of registered private fund advisers as measured by assets under management (AUM) is not associated with the per-unit cost of Title IV compliance and other independent variables as proxies for cost. These findings are consistent with the hypothesis that the cost of financial regulation under the Dodd-Frank Act predominantly affects smaller private fund advisers. Private fund advisers' use of single versus multiple investment strategies does not have an effect on Title IV compliance costs.

Keywords: Private Funds, Dodd-Frank Act, Compliance Cost

JEL Classification: G23, G24, G28, K22

Policy makers suggest that Dodd-Frank Act compliance costs affect smaller firms more than larger firms (112th Cong. 1 [2012], Financial Services Committee [2010]). Others reason that financial regulation tends to hurt smaller firms more because the cost of compliance favors larger firms (Langevoort [2007], Malloy [2012], Bainbridge [2006], Crain and Crain [2010]), resulting in barriers to entry for smaller firms (Macey [1994], Office of the Comptroller of the Currency [2003], Brown et al. [2008]), and regulatory compliance costs in effect bring increasing returns to scale (Wheelock and Wilson [2012], Feldman et al. [2013], Elliehausen [1998], Murphy [1980], Schroeder [1985], Elliehausen and Kurtz [1985, 1988], Barefoot et al. [1993], Elliehausen and Lowrey [1997]).

Many studies have shown that an inverse relationship exists between the size of a regulated firm and the per-unit cost of compliance (Bradford [2004], Office of Management and Budget [2013], Crain [2005], Crain and Crain [2010a], Hopkins [1995]). A minority of studies finds no relationship between size of firms and the per-unit cost of compliance (Brock and Evans [1986], Evans [1986], Bickerdyke and Lattimore [1997]). Most studies in this context evaluate the effect of financial regulation on smaller banks. Some studies have evaluated the effect of the Dodd-Frank Act on larger banks (Standard and Poor [2012], Gao et al. [2011]).

Substantial uncertainty still exists as to the full impact of the Dodd-Frank Act (Government Accountability Office [2012], Financial Stability Oversight Council [2011]). There is some evidence that Title IV affects the private fund industry (Kaal [2013], Kaulessar [2012], Mirsky et al. [2013], Citi Prime Finance [2012]). One study suggests that "Because [compliance] costs are higher on a relative basis for smaller funds and lower for larger hedge funds," hedge fund managers should have more than $250 million AUM to cover their expenses (Citi Prime Finance [2012]). Another study claims that: "Smaller hedge funds seem to be spending more, both as a percentage of AUM and relative to operating costs, than their larger counterparts." (Mirsky et. al. [2013]).

These findings from prior studies could have significant policy implications. If the administrative and compliance costs created by Title IV should disproportionally affect smaller private fund advisers, it is conceivable that over time smaller fund advisers could get forced out of the market or merge with other funds. Private fund advisers who are contemplating a startup may not enter the market. A disproportionate effect of Title IV on startup private funds and smaller advisers could create barriers to market entry and precipitate a trend toward consolidation among smaller private fund advisers. A surplus of larger private fund advisers with correspondingly larger amounts in AUM could increase systemic risk.

After more than thirty years of controversy between the private fund industry and regulators, with both sides asserting their positions in an effort to determine the appropriate level of regulatory oversight, the enactment of Title IV was divisive. Industry representatives were concerned that Title IV could unnecessarily burden investment advisers and undermine clients' secrecy (Strasburg [2009]). Legislators opposing Title IV predicted that the enactment would promote unaccountable and unrestrained regulatory agencies (Ferullo et al. [2010]). The Treasury Department favored the enactment of Title IV to facilitate strong oversight for critical financial institutions (Department of the Treasury [2009]). The SEC also supported the enactment of Title IV to increase its understanding of the private fund market including the type of risk-taking

in that market, the types of securities involved, and the total dollar amount at stake. Rep. Paul E. Kanjorski (D-PA) (H14420) stated: "[F]or the first time regulators will have the information needed to better understand exactly how these entities operate and whether their actions pose a threat to the financial system as a whole." (155 Cong. Rec. H14419-20 [2009]).

Title IV and Securities and Exchange Commission (SEC) rules implementing the requirements under Title IV created a paradigm shift for the regulation of private funds in the United States. The new regulatory framework for private funds in the United States requires private fund manager registration in combination with enhanced disclosure of sensitive proprietary information (Dodd–Frank §§ 401, 402). Some of the more controversial requirements include disclosure obligations that require the reporting of, among others: positions held by the investment adviser, strategies and products used by the investment adviser and its funds, counterparties and credit exposure, risks metrics, performance and changes in performance, financing information, percentage of assets traded using algorithms, and the percentage of equity and debt (SEC [2011d], SEC [2013c], SEC [2013b]). The true impact of these regulations on the private fund industry is unclear.

Prior attempts by the SEC to register private fund advisers precipitated an upsurge in scholarly assessments (Kaal [2011]). Brown et al. [2008] evaluate the effects of private fund manager registration. Professor Douglas Cumming and his co-authors have provided important insights on the effects of private fund regulation before the enactment of Title IV (Cumming and Dai [2009, 2010b, 2010a], Cumming and Johan [2008]). Several other studies evaluate the effects of private fund regulation and governance in a pre Dodd-Frank Act regulatory environment (Hu and Black [2007], Kaal [2013, 2009]).

This study makes an unprecedented contribution to the literature because it relies on a dataset of compliance cost estimates (N=94), collected in the aftermath of the enactment of mandatory registration requirements for the private fund industry. I show with two independent datasets that the number of funds managed by private fund advisers is associated with Dodd-Frank Act compliance cost. However, the size of registered private fund advisers as measured by assets under management (AUM) is not associated with the per-unit cost of Title IV compliance and other independent variables as proxies for cost. The linear and non-linear regression results are significant and consistent across all independent variables. The study tentatively supports industry concerns over the effect of Dodd-Frank Act compliance cost and possible barriers to entry for smaller private fund advisers.

Title IV and SEC Implementation

Prior to the enactment of Title IV, the SEC had attempted to increase the regulatory oversight of private fund industry on several occasions (Kaal [2009]). Congress enacted the Private Fund Investment Advisers Registration Act of 2010 in Title IV of the Dodd-Frank Act (PFIARA, Act, or Title IV) (Dodd-Frank §§ 401-416) to close regulatory gaps and end the speculative trading practices that contributed to the 2008 financial market crisis. The Act amends the Investments Advisers Act of 1940 (Advisers Act) and establishes rules and regulations for the registration of private funds with the

SEC. Title IV attempts to provide greater protections for investors by expanding the reporting requirements of private advisers to the SEC (H.R. Rep. No. 111–517 [2010]).

Title IV mandates private fund adviser registration to increase record-keeping and disclosure (Dodd-Frank § 408). Private fund advisers with more than $150 AUM are required to register as investment advisers and have to disclose information about their trades and portfolios to the SEC (Dodd-Frank §§ 408, 403, SEC [2011a], SEC [2013a], [2011d], SEC [2013b]).

Registered investment advisers are required to maintain records and any other information that may be necessary and appropriate to avoid systemic risk (Dodd-Frank §§ 404, 405). Investment advisers must provide reports with respect to certain information related to systemic risk (Dodd-Frank § 404(b)(3)), such as trading practices, trading and investment positions, the amount of AUM, valuation policies, side letters, the use of leverage, including off-balance sheet leverage, counterparty credit risk exposures, and other information deemed necessary (Dodd-Frank § 404(b)(3)(H)). These reports are confidential and not publicly available.

Systemically relevant information includes information about the funds managed by the investment advisor, information about the investment advisor, and information about individual investors (17 C.F.R. §279.9 (2012), SEC 2013c). Investment advisers are required to disclose information pertaining to their strategies, performance and changes in performance, the products used by the investment adviser, financing information, risks metrics, credit exposure, and positions held by the investment advisor, among others (SEC 2013c).

As for the private funds advised by investment advisers, investment advisers are required to list Net Asset Value (NAV) managed by private fund strategy (SEC 2013c) and the percentage of the reporting fund's NAV managed by using computer-driven trading algorithms (SEC 2013c). Investment advisers also have to disclose the reporting fund's greatest net counterparty credit exposure (SEC 2013c), including the name of the creditor and the dollar amount owed to each creditor, information about the collateral and credit support, and changes in market factors and their effect on the long and short components of the portfolio as a percentage of NAV.

Hypothesis

Several factors can increase the complexity of reporting on Form PF and, thus, increase the associated Dodd-Frank Act compliance cost. These factors include the number of funds managed by private fund advisers, the assets under management (AUM) of private fund advisers, and the strategies employed by private fund advisers. The number of funds managed requires additional reporting on Form PF and should therefore be associated with compliance cost. Finally, the size of the private fund advisers, as measured by AUM, should matter for compliance cost. Larger private fund advisers often employ multiple strategies in multiple markets and could therefore have larger compliance cost because reporting of multiple strategies on Form PF is more difficult to quantify and overall more burdensome. Accordingly, the AUM size and the use of multiple strategies should be associated with compliance cost. The private fund industry, however, claimed that smaller private fund advisers are more affected by Dodd-Frank Act compliance cost than larger private fund advisers. If true, Dodd-Frank Act compliance cost could limit new entries into the market for private fund advisers and

push smaller private fund advisers out of the market.

Based on the available private fund literature, anecdotal evidence (Kaal 2013), and industry- and alternative views on how private fund advisers may respond to Title IV under the Dodd-Frank Act (Cumming and Dai [2009, 2010a, 2010b, 2008], Agarwal et al. [2003], Agarwal and Naik [2011], Liang [1999, 2000, 2003], Lo and Hasanhodzic [2007], Naik et al. [2007], Hu and Black [2007], Fung and Hsieh [1997, 2000, 2001, 2002, 2004, 2011], Dichev and Gwen Yu [2011], Ding and Shawky [2007]), the core hypothesis of this study is:

- Hypothesis: Dodd-Frank Effect on Private Fund Category. Smaller private fund advisers pay more relative to their size than larger private fund advisers for Dodd-Frank Act compliance.

To analyze the factors that impact Dodd-Frank Act compliance cost and to test the hypothesis, I first assess if the number of funds managed by a private fund adviser affects Dodd-Frank Act compliance costs. In a second step, I analyze if the AUM held by private fund advisers impacts the per unit compliance cost estimates. To assess the possible impact of investment strategy on compliance cost, I evaluate if the AUM of private fund advisers that apply only a single strategy to their respective portfolios affects compliance cost. To preview findings, I demonstrates that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost but adviser AUM is not associated with compliance cost. Linear, robust, and non-linear regression models show negative and statistically significant coefficients.

Data and Methodology

I evaluate factors that impact Dodd-Frank Act compliance cost with four different datasets, applying linear, robust, and non-linear regression specifications. The datasets used herein are: (1) compliance cost estimates, (2) two different datasets measuring the number of funds managed by private fund advisers, (3) AUM data for private fund advisers, (4) AUM data for single and multiple investment strategies.

The compliance cost data used for the analysis in this article was collected in the context of a 2012 survey study (Kaal [2013]) with a population of 1,264 private fund advisers, registered before the SEC's registration effective date for private funds, March 30, 2012. Respondents in the survey (N=94) answered questions in several categories designed to identify the effects of Title IV under the Dodd-Frank Act. The survey categories relevant for the compliance cost analysis in this article are also the dependent variables for the regression models in this study: cost of Title IV compliance, median cost measures, annual time required for Title IV compliance, and median annual time measures for Title IV compliance.

The two datasets measuring the number of funds managed by investment advisers and the AUM datasets were independently coded based on publicly available SEC Form ADV data.

The dependent variable for this study is compliance cost (Y=Cost) and proxies for cost, e.g. annual time and median annual time to comply with Dodd-Frank Act. Independent variables include: (1) the number of funds managed by the private fund adviser, (2) AUM managed by the private fund adviser, (3) AUM managed by the private

fund adviser divided by single and multiple fund strategies. I apply linear, robust, and non-linear regression specifications in STATA and account for per-unit costs in the regression specifications.

Selection Bias

Given the selection of compliance cost estimates via survey, the compliance cost data in this study may be subject to sample selection bias. Factors such as the non-random selection of cases and the drawing of inferences that are not statistically representative of the population can result in selection bias. However, selection bias is a generic problem because human behavior determines selection and several social science research traditions rely on empirical designs that are subject to sample selection biases.

I recognize that obtaining information through voluntary responses can create an inherent bias because people with a special interest are more likely to respond, I was unable to identify any indicia suggesting that respondents who did respond to the survey were different from individuals who did not respond. For purposes of this study, I used a population of private fund advisers who were subject to the disclosure requirements of the Dodd-Frank Act using the SEC's IARD database. To ensure a representative sample, I chose respondents who were private fund advisers and registered with the SEC as identified on the IARD database. I had no control over the selection of the sample and did not use probabilistic randomizing aids for purposes of the sample selection. It is impossible to further randomize the sample by including respondents from outside of the private fund industry or respondents other than private fund advisers because those non-adviser respondents would not have been exposed to the Dodd-Frank Act requirements. Each member of the identified population of private fund advisers had a known, nonzero chance of being selected as part of the sample. All respondents were approached using the same methodology and were volunteer participants. Moreover, the dispersion of responses suggests that respondents did not have a special interest in responding. Common characteristics of respondents include experience with private fund disclosure requirements in Form PF and a willingness to share their experiences.
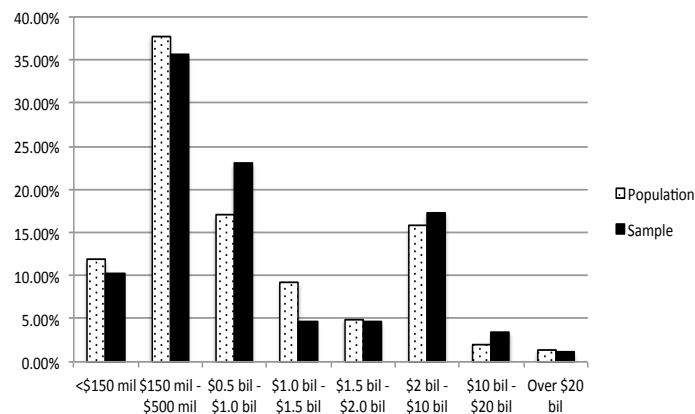
Exhibit [___]: AUM of Sample vs. Population

Exhibit [___]: Exhibit [___] compares the AUM of private fund advisers in the sample with AUM of the population. Given the similar AUM amounts in both the sample and the

population, Exhibit [___] suggests that the compliance cost data collected for purposes of this study is somewhat representative of the population of private fund advisers in the United State.

Exhibit [___]: Number of Funds Managed - Population vs. Sample
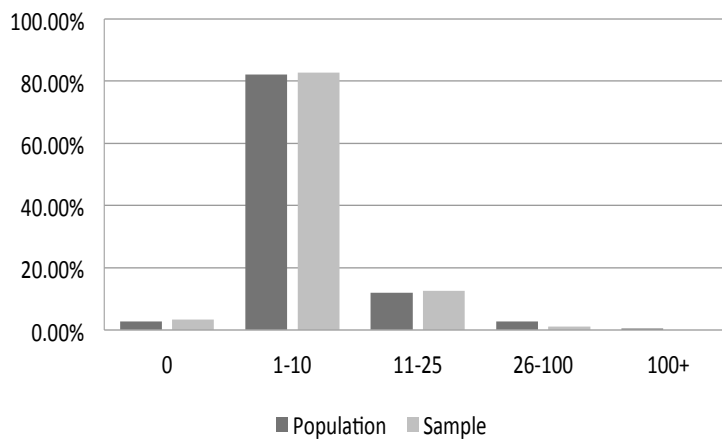
Exhibit [___]: Exhibit [___] provides more evidence regarding the representativeness of the sample. Exhibit [___] shows the number of funds managed by investment advisers in the sample compared with the number of funds managed by investment advisers in the population. The percentages for sample and population are very close and provide more evidence on the representativeness of the sample.

Descriptive Statistics

Exhibit [___]: Effect of Dodd-Frank Act Compliance on Private Fund Industry

More cost   **More admin. burden**
Limit viability of small funds   **Market less attractive**
Hurt the industry   **Consolidation**
No effect

Exhibit [_] shows a % breakdown of responses to the author's open-ended survey question pertaining to the effects of Title IV on the private fund industry. Exhibit [__] illustrates that an overwhelming majority of respondents (43.59%) opined that the industry would be affected predominantly by increased costs.

Exhibit [___]: Descriptive Statistics for Entire Sample

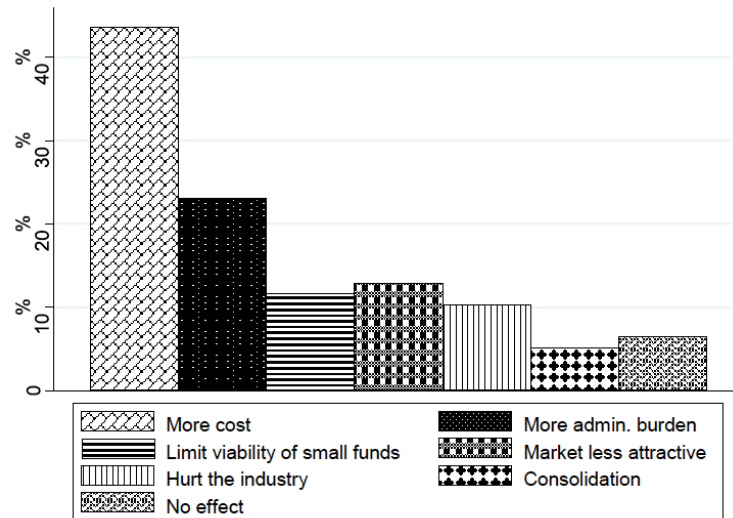| Variable	N	Mean	Std. Dev	Min	Max
Cost	50	189150	145435.3	5000	500000
Median Cost	71	149102.1	122515	5000	781250
Annual Time	49	470.3061	340.5501	50	1500
Median Annual Time	77	471.2078	353.2104	175	1500

Exhibit [___]: Descriptive Statistics for Single Strategy Subsample

Variable	N	Mean	Std. Dev	Min	Max
Cost	12	264583.3	193196.3	50000	650000
Median Cost	17	191176.5	155357.7	75000	650000
Annual Time	11	387.2727	363.3274	50	1000
Median Annual Time	18	427.7778	371.0962	175	1500

Exhibit [___]: Descriptive Statistics for Multi Strategy Subsample

Variable	N	Mean	Std. Dev	Min	Max
Cost	37	166418.9	121830	5000	500000
Median Cost	51	137965.7	111095.9	5000	781250
Annual Time	37	487.4324	336.7236	50	1500

Median Annual Time	57	414.4737	354.466	175	1500

Exhibit [___]: *Annual Title IV Compliance Cost.*
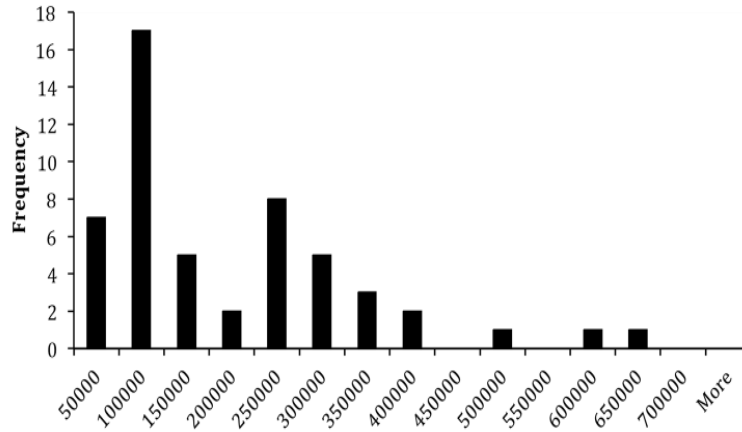
Exhibit [___] shows the frequency of survey responses pertaining to the cost of compliance (in US$) of Title IV. The majority of respondents believed that Title IV compliance costs $100,000.00 annually.

Exhibit [___]: Median Cost Measures for Title IV Compliance
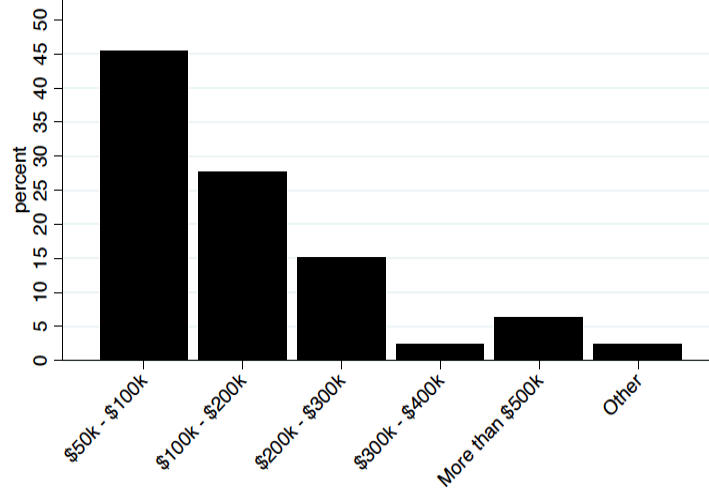
Exhibit [___] shows a percentage breakdown of annual Title IV compliance cost in six ranges ($50,000 - $100,000, $100,000 - $200,000, $200,000 - $300,000, $300,000 - $400,000, More than $500,000, and "Other"). The most common fund adviser response (47.67%) estimates the annual compliance cost of Title IV in the range of $50,000 - $100,000. The total number of respondents who answered Question 6bi was 86.

Exhibit [___]: Annual Time Required for Title IV Compliance
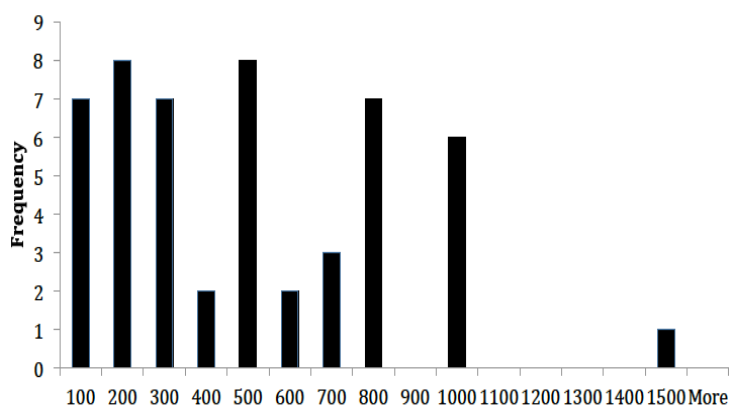
Exhibit [_] shows the frequency of survey responses pertaining to the annual time required (in hours) to comply with Title IV requirements. High frequency responses range from 100 hours to 1000 hours per year for Title IV compliance.

Exhibit [__]: Median Annual Time Measure for Title IV Compliance
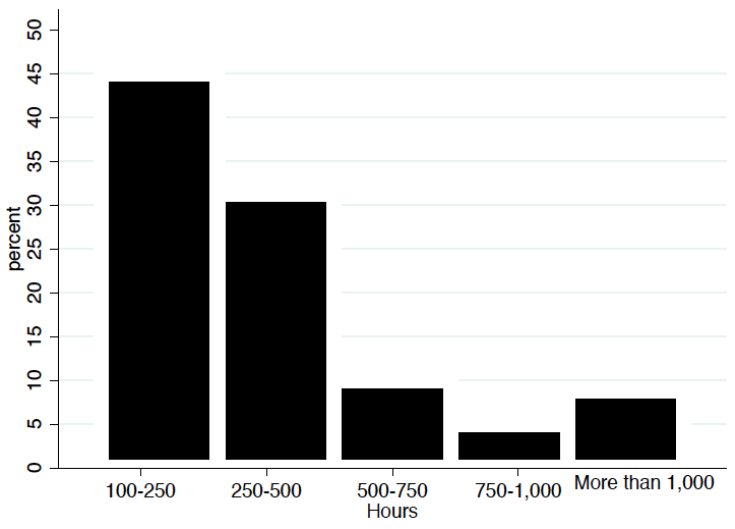
Exhibit [__]: shows the median annual time measure (in hours) for Title IV compliance divided into five groups. 46% of respondents opined that it would take them between 100 and 250 hours to comply with requirements in Title IV. 32% of respondents believed it would take them between 250 and 500 hours per year.

Exhibit [__]: Assets Under Management of Private Fund Investment Advisers
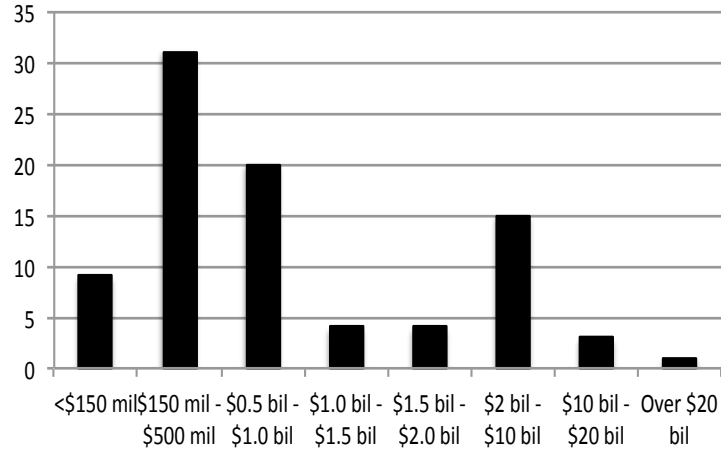
Exhibit [___]: Exhibit [___] shows the AUM of private fund advisers in the sample. The majority of advisers hold AUM between $150 – $500 mil, followed by advisers that hold $0.5bi. to $1.0 bil.

Exhibit [___]: Number of Funds Managed by Investment Advisers
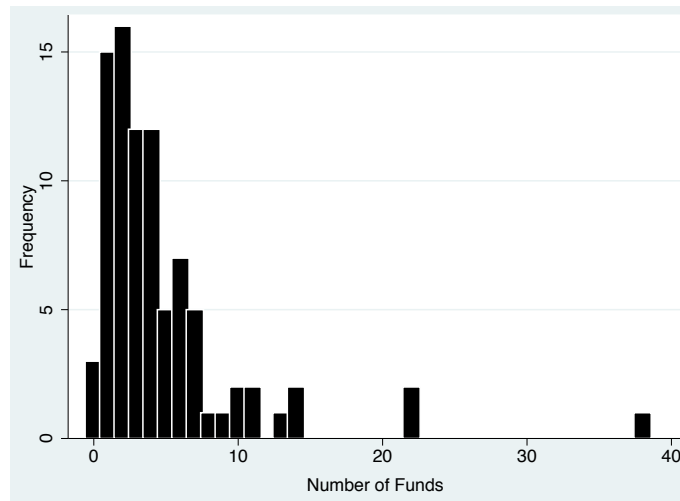
Exhibit [___]: Exhibit [___] shows the number of funds managed by investment advisers in the sample. The majority of fund advisers in the sample manages between and ten funds.

Results

Dataset 1: Number of Managed Funds as Cost Drivers - Linear Estimation Results

	OLS	Robust Reg	WLSWR	WLSWR	Poisson	QREG
Dependent Variable	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	-0.00354	-0.00357	-0.00634	-0.00497	-0.000300	-0.0110
(N = 54)	(-0.17)	(-0.16)	(-0.30)	(-0.24)	(-0.04)	(-0.30)
Median Cost	0.0354**	0.0668**	0.0330*	0.0342**	0.00292	0.0630**
(N = 76)	(2.76)	(3.36)	(2.61)	(2.68)	(0.48)	(2.81)
Annual Time	0.0299	0.0293	0.0376+	0.0338+	0.00478	0.0152
(N = 52)	(1.62)	(1.44)	(1.81)	(1.72)	(0.52)	(0.52)
Median Annual Time	0.0391**	0.0388**	0.0402**	0.0399**	0.00634	0.0292
(N = 80)	(2.96)	(2.87)	(3.05)	(3.02)	(0.80)	(1.61)

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
t statistics in parentheses

Table [__]; Table [__] shows the linear estimation results for dataset 1. I analyze the effect of the number of private fund adviser's managed funds on Dodd-Frank Act compliance cost. Table [__] shows negative but statistically insignificant coefficients in the first column for compliance cost of the Dodd-Frank Act. However, all coefficients are positive and half of the positive coefficients are statistically significant for all compliance costs proxies, including median cost estimates. This suggests that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost.

Dataset 1: Number of Managed Funds as Cost Drivers - Non-Linear Estimation Results

Dependent Variable		EXP3 Coeff.	EXP2 Coeff.	LOG3 Coeff.	LOG4 Coeff.	GOM3 Coeff.	GOM4 Coeff.
Cost	b0	6.966			-8.623***		8.293
(N = 54)		(.)			(-50.44)		(1.10)
	b1	4.912***	11.88***	11.87***	20.49	11.86***	12.90
		(33.91)	(82.31)	(69.43)	(.)	(107.10)	(.)
	b2	0.999***	11.88***	-0.245	-0.245	-0.440	-0.000761
		(229.02)	(82.31)	(-0.01)	(-0.01)	(.)	(-0.15)
	b3			52.17	54.45	184.0	-325.1
				(0.02)	(0.02)	(.)	(.)
Median Cost	b0	12.59***			11.60***		11.77***
(N = 76)		(20.57)			(125.51)		(165.60)
	b1	-1.151*	11.61***	11.77***	0.699**	12.58***	-2.900
		(-2.01)	(130.44)	(165.60)	(3.25)	(21.11)	(.)
	b2	0.916***	1.003***	-9.397	1.590	0.0918	0.478
		(11.89)	(970.19)	(.)	(0.85)	(1.09)	(.)
	b3			50.92	6.004***	-25.59	143.6
				(.)	(7.52)	(-1.28)	(.)
Annual Time	b0	6.088***			-59.30		-57.04
(N = 52)		(35.75)			(.)		(.)
	b1	-1.242+	5.782***	6.083***	65.39***	6.085***	63.13***
		(-1.78)	(42.74)	(36.42)	(384.89)	(36.16)	(371.17)
	b2	0.408	1.005***	0.985	0.905	0.944	0.901
		(1.43)	(356.28)	(1.22)	(1.28)	(1.25)	(1.28)
	b3			-1.439	-4.361	-1.592	-4.350
				(-0.82)	(-1.14)	(-0.89)	(-1.14)
Median Annual Time	b0	6.323***			-61.03		-46.78
(N = 80)		(18.79)			(.)		(.)
	b1	-1.005**	5.620***	5.794***	67.35***	5.794***	53.10***
		(-3.11)	(60.53)	(75.78)	(201.80)	(75.78)	(158.63)
	b2	0.834***	1.006***	-10.64	0.184	-18.52	0.183
		(6.80)	(495.11)	(.)	(1.24)	(.)	(1.24)
	b3			1.20298e+09	-22.77	41.13	-21.63
				(.)	(-1.28)	(.)	(-1.28)

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses

Table [___]: Table [___] assesses for dataset 1 if the number of funds managed by private investment adviser affects compliance cost through non-linear regressions. While only one third of all coefficients is negative, the overwhelming majority of significant

coefficients is positive. These results affirm the linear regression results for dataset 1 and suggest that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost.

Dataset 2: Number of Managed Funds as Cost Drivers - Linear Estimation Results

	OLS	Robust Reg	WLSWR	WLSWR	Poisson	QREG
Dependent Variable	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	0.00295	0.0626+	0.00205	0.00248	0.000247	-0.00705
(N = 54)	(0.22)	(1.98)	(0.15)	(0.19)	(0.05)	(-0.34)
Median Cost	0.0164+	0.0487**	0.0152+	0.0158+	0.00136	0
(N = 76)	(1.79)	(2.92)	(1.70)	(1.74)	(0.32)	(0.00)
Annual Time	0.0220+	0.0513+	0.0281+	0.0250+	0.00344	0.0104
(N = 52)	(1.76)	(1.80)	(1.95)	(1.86)	(0.57)	(0.47)
Median Annual Time	0.0274**	0.0502**	0.0284**	0.0281**	0.00433	0.0147
(N = 80)	(2.82)	(2.92)	(2.83)	(2.84)	(0.77)	(1.06)

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
t statistics in parentheses

Table [__]: Like Tables [__] and [__], Table [__] assesses if the number of funds managed by private investment adviser affects compliance cost. However, Table [__] shows the linear estimation results for a second dataset for the number of managed funds. The overwhelming majority of coefficients is positive, suggesting like Tables [__] – [__] that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost.

Dataset 2: Number of Managed Funds as Cost Drivers - Non-Linear Estimation Results

		EXP3	EXP2	LOG3	LOG4	GOM3	GOM4
Dependent Variable		*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	b0	6.104			12.43***		-15.63***
(N = 54)		(.)			(15.31)		(-138.73)
	b1	5.738***	11.84***	12.19***	-0.558	11.87***	27.50
		(38.52)	(79.13)	(16.35)	(-0.64)	(105.34)	(.)
	b2	1.000***	1.000***	0.0902	12.99	-0.373	-0.273+
		(446.01)	(908.91)	(0.28)	(0.00)	(-1.48)	(-1.86)
	b3			-33.54	3.698	72.36	78.88
				(-0.28)	(.)	(.)	(.)
Median Cost	b0	12.46***			11.69***		11.77***
(N = 76)		(21.58)			(161.75)		(165.60)
	b1	-1.110*	11.65***	12.46***	0.615**	12.46***	-2.507
		(-2.26)	(121.02)	(22.15)	(3.09)	(21.88)	(.)
	b2	0.929***	1.001***	0.0792	4.671	0.0762	-0.236
		(11.28)	(1353.64)	(0.86)	(.)	(0.84)	(.)
	b3			-29.41	12.74	-31.15	-65.28
				(-0.90)	(.)	(-0.89)	(.)
Annual Time	b0	6.481***			-59.58		-81.58
(N = 52)		(18.15)			(.)		(.)
	b1	-1.859*	5.758***	6.459***	66.06***	6.469***	88.06***
		(-2.32)	(41.50)	(19.61)	(186.50)	(18.93)	(247.38)
	b2	0.820***	1.003***	0.247+	0.203+	0.222+	0.201+
		(8.64)	(548.23)	(1.78)	(1.73)	(1.76)	(1.72)
	b3			-3.724	-17.46	-4.896	-19.19
				(-0.92)	(-1.57)	(-1.10)	(-1.58)
Median Annual Time	b0	6.714***			-71.12		-79.49
(N = 80)		(10.68)			(.)		(.)
	b1	-1.478**	5.611***	5.794***	77.83***	6.697***	86.20***
		(-2.81)	(58.10)	(75.78)	(124.22)	(10.88)	(137.30)
	b2	0.930***	1.004***	-304.4	0.0731	0.0786	0.0725
		(14.06)	(704.52)	(.)	(1.02)	(1.04)	(1.02)
	b3			69.34	-54.01	-17.98	-55.95
				(.)	(-1.06)	(-1.09)	(-1.06)

[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$
t statistics in parentheses

Table [__]: Table [__] shows the non-linear results for the second dataset to assess if the number of funds managed by private investment adviser affects Dodd-Frank Act compliance cost. The overwhelming majority of coefficients are positive and statistically significant, suggesting like Tables [__] – [__] that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost.

Entire Sample: X=AUM Y=Cost - Linear Estimation Results

	OLS	Robust Reg	WLSWR	WLSWR	Poisson	QREG
Dependent Variable	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	-0.0159***	-0.0154**	-0.0150***	-0.0154***	-0.0286	-0.0127*
(N = 54)	(-3.72)	(-3.42)	(-3.49)	(-3.60)	(-0.19)	(-2.36)
Median Cost	-0.0190***	-0.0265***	-0.0195***	-0.0192***	-0.0343	-0.0255***
(N = 76)	(-8.85)	(-118.88)	(-9.42)	(-9.13)	(-0.29)	(-9.63)
Annual Time	-0.00832*	-0.00835+	-0.00517	-0.00677	-0.0317	-0.00105
(N = 52)	(-2.13)	(-1.99)	(-1.22)	(-1.65)	(-0.15)	(-0.21)
Median Annual Time	-0.00658*	-0.00649*	-0.00764**	-0.00711**	-0.0231	-0.00465
(N = 80)	(-2.63)	(-2.47)	(-3.29)	(-2.94)	(-0.16)	(-1.14)

$^+ p < 0.10,$ $^* p < 0.05,$ $^{**} p < 0.01,$ $^{***} p < 0.001$
t statistics in parentheses

Table [__]: Table [__] shows the linear estimation results for the entire sample with X=AUM and Y=Per Unit Cost. All coefficients are negative and more than half of the coefficients are statistically significant. These results suggest that AUM is not associated with per unit compliance cost under Title IV of the Dodd-Frank Act.

Entire Sample: X=AUM Y=Cost - Non-Linear Estimation Results

		EXP2	EXP2a	LOG3	LOG4	GOM3	GOM4
Dependent Variable		*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	b0				0.532***		0.563***
(N = 54)					(26.08)		(94.81)
	b1	1.016***	0.563***	44.91	0.153	21.96+	-0.0171
		(6.39)	(94.81)	(.)	(0.73)	(1.81)	(.)
	b2	0.971***	0.105	-0.0295***	-0.958	-0.00791***	-0.917
		(128.85)	(.)	(-3.76)	(-0.87)	(-8.61)	(.)
	b3			-127.6**	18.43***	-144.0	5.199
				(-3.25)	(6.93)	(.)	(.)
Median Cost	b0				0.505***		0.559***
(N = 76)					(15.87)		(137.33)
	b1	1.128***	0.559***	36.01	0.188	48.56**	-0.0428
		(12.80)	(137.33)	(.)	(0.96)	(3.34)	(.)
	b2	0.966***	0.113	-0.0352***	-0.580	-0.00774***	-1.389
		(257.98)	(.)	(-8.95)	(-1.07)	(-22.26)	(.)
	b3			-97.59***	18.50***	-172.9	-2.305
				(-7.42)	(6.83)	(.)	(.)
Annual Time	b0				0.256***		0.266***
(N = 52)					(29.94)		(49.59)
	b1	0.522**	0.266***	35.55	0.105	15.80	0.0145
		(3.27)	(49.59)	(.)	(1.29)	(0.91)	(.)
	b2	0.967***	0.0850	-0.0335*	-2.054	-0.00804***	1.148
		(66.20)	(.)	(-2.20)	(-1.06)	(-5.25)	(.)
	b3			-125.8+	18.38***	-154.7	26.78
				(-1.90)	(18.92)	(.)	(.)
Median Annual Time	b0				0.276***		0.286***
(N = 80)					(44.03)		(77.79)
	b1	0.458***	0.286***	6.697	0.0238*	8.050	51.46
		(5.58)	(77.79)	(1.00)	(2.22)	(1.44)	(.)
	b2	0.977***	0.143	-0.0242**	-4.964	-0.00693***	0.0303
		(113.04)	(.)	(-2.97)	(-0.63)	(-5.78)	(.)
	b3			-108.2	19.93***	-153.5	141.0
				(.)	(56.34)	(.)	(.)

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
t statistics in parentheses

Table [__]: Table [__] shows the non-linear estimation results for the entire sample, X=AUM, Y=Per Unit Cost. Unlike the linear estimation results in Table [__], the coefficients are both negative and positive. However, the majority of all coefficients is negative. It is noteworthy that 20 of the positive coefficients are statistically significant

and only 10 of the negative coefficients are statistically significant. These non-linear results, like the linear results, suggest that AUM is not associated with per unit compliance cost under Title IV of the Dodd-Frank Act.

Single Strategy Advisers: X=AUM Y=Cost - Linear Estimation Results

	OLS	Robust Reg	WLSWR	WLSWR	Poisson	QREG
Dependent Variable	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	-0.0161+	-0.0160	-0.0155+	-0.0158+	-0.0271	-0.00752
(N = 12)	(-1.87)	(-1.65)	(-1.92)	(-1.89)	(-0.09)	(-0.55)
Median Cost	-0.0225**	-0.0209**	-0.0225**	-0.0225**	-0.0385	-0.0167+
(N = 17)	(-3.65)	(-3.29)	(-3.77)	(-3.71)	(-0.17)	(-1.90)
Annual Time	-0.0123	-0.0125	-0.0119	-0.0123	-0.0458	-0.0137
(N = 11)	(-0.99)	(-0.79)	(-1.08)	(-1.04)	(-0.09)	(-0.85)
Median Annual Time	-0.0138*	-0.0150*	-0.0143*	-0.0141*	-0.0484	-0.0220*
(N = 18)	(-2.24)	(-2.16)	(-2.49)	(-2.36)	(-0.15)	(-2.18)

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
t statistics in parentheses

Table [___]: Single Strategy Adviser. Table [___] shows the linear estimation results for the AUM of private fund advisers that apply a single investment strategy. All coefficients are negative, suggesting that the use of a single strategy does not make a difference in terms of effect on cost as compared with the entire sample of private fund advisers.

Dependent Variable		EXP3 Coeff.	EXP2 Coeff.	LOG3 Coeff.	LOG4 Coeff.	GOM3 Coeff.	GOM4 Coeff.
Cost	b0	-1.724			0.995***		0.600***
(N = 12)		(.)			-426.46		(52.82)
	b1	2.675***	1.029**	0.616***	0.0798	0.616***	-0.305
		(13.15)	(3.34)	(29.83)	(1.63)	(28.71)	(.)
	b2	0.993***	0.974***	-1.018	-3.660	-0.972	-1.604
		(267.71)	(67.81)	(-0.97)	(-0.43)	(-0.94)	(.)
	b3			24.65***	21.81***	24.80***	13.62
				(12.61)	(31.90)	(11.50)	(.)
Median Cost	b0	-3.763			0.233		0.155
(N = 17)		(.)			(0.03)		(0.01)
	b1	4.831***	1.271***	0.580***	0.494	0.580***	0.610
		(34.24)	(4.66)	(50.73)	(0.05)	(50.73)	(0.02)
	b2	0.995***	0.963***	10.03	-0.226	9.380	-0.151
		(705.79)	(95.49)	(.)	(-0.07)	(.)	(-0.05)
	b3			14.68	24.45	-10954.0	27.41
				(.)	(0.21)	(.)	(0.07)
Annual Time	b0	-1.545			-7.689***		-723.8***
(N = 11)		(.)			(-495.91)		(-48168.61)
	b1	2.088***	0.683	0.274***	7.967	0.279***	724.1
		(7.11)	(1.05)	(18.20)	(.)	(17.99)	(.)
	b2	0.993***	0.956***	18.49	-10.90	-12.51	-0.0804
		(145.35)	(21.29)	(.)	(.)	(.)	(.)
	b3			-7.235	23.27***	22.94***	887.9
				(.)	(290.73)	(298.99)	(.)
Median Annual Time	b0	-2.343			0.260***		0.283***
(N = 18)		(.)			(26.37)		(29.88)
	b1	2.924***	0.758*	0.476	0.0518**	0.283***	0.00690
		(20.76)	(2.28)	(0.33)	(3.50)	(29.88)	(.)
	b2	0.995***	0.953***	-0.122	-171.2	10.16	-21.07
		(426.46)	(46.53)	(-0.22)	(.)	(.)	(.)
	b3			23.68	20.06	11.13	10.69
				(0.50)	(.)	(.)	(.)

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

t statistics in parentheses

Table [___]: Single Strategy Adviser. Table [___] shows the non-linear regression results

for the AUM of private fund advisers that apply a single investment strategy. The coefficients are both negative and positive and often significant. Given the mixed results, the use of a single strategy does not appear to make a difference in terms of effect on cost.

Multi Strategy Advisers: X=AUM Y=Cost - Linear Estimation Results

	OLS	Robust Reg	WLSWR	WLSWR	Poisson	QREG
Dependent Variable	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
Cost	-0.0178***	-0.0169**	-0.0170**	-0.0174**	-0.0310	-0.0134+
(N = 40)	(-3.61)	(-3.21)	(-3.41)	(-3.51)	(-0.18)	(-1.83)
Median Cost	-0.0174***	-0.0176***	-0.0177***	-0.0175***	-0.0302	-0.0163***
(N = 55)	(-6.50)	(-6.02)	(-6.67)	(-6.57)	(-0.22)	(-3.56)
Annual Time	-0.00725	-0.00679	-0.00368	-0.00543	-0.0249	0.000808
(N = 39)	(-1.65)	(-1.43)	(-0.83)	(-1.23)	(-0.11)	(0.11)
Median Annual Time	-0.00413	-0.00371	-0.00525*	-0.00467+	-0.0145	-0.00297
(N = 59)	(-1.48)	(-1.31)	(-2.03)	(-1.74)	(-0.08)	(-0.70)

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
t statistics in parentheses

Table [__]: Multi Strategy Adviser. Table [__] shows the linear estimation results for the AUM of private fund advisers that apply multiple investment strategy. The results are comparable to the single strategy coefficients and suggest that the use of a single or multiple strategies does not make a difference in terms of effect on cost.

Multi Strategy Advisers: X=AUM Y=Cost - Non-Linear Estimation Results

Dependent Variable		EXP3 Coeff.	EXP2 Coeff.	LOG3 Coeff.	LOG4 Coeff.	GOM3 Coeff.	GOM4 Coeff.
Cost	b0	0.525***			0.542***		0.547***
(N = 40)		(12.24)			(17.97)		(29.69)
	b1	99.18	1.102***	37.29	0.166	24.44+	0.180
		(0.21)	(5.72)	(.)	(0.71)	(1.71)	(0.64)
	b2	0.688***	0.969***	-0.0321***	-0.845	-0.00840***	-0.482
		(3.68)	(115.49)	(-3.65)	(-0.76)	(-8.44)	(-0.67)
	b3			-108.9**	18.57***	-136.8	18.93***
				(-3.08)	(6.24)	(.)	(5.98)
Median Cost	b0	0.688***			0.521***		0.524***
(N = 55)		(3.68)			(16.64)		(17.83)
	b1	32.14	1.083***	23.09*	68.38	29.39**	162511.0
		(0.40)	(10.61)	(2.02)	(.)	(2.89)	(.)
	b2	0.731***	0.970***	-0.0315***	-0.314*	-0.00779***	-0.0225*
		(6.56)	(213.98)	(-7.17)	(-2.06)	(-15.49)	(-2.19)
	b3			-95.78	-2.370	-155.1	-99.85+
				(.)	(-0.26)	(.)	(-1.88)
Annual Time	b0	0.284***			0.290***		0.287***
(N = 39)		(24.74)			(52.14)		(40.40)
	b1	4396675.9	0.500**	12.98	0.0847*	8.992	0.101
		(0.10)	(3.23)	(0.50)	(2.47)	(0.90)	(1.64)
	b2	0.365+	0.974***	-0.0267+	-46.57	-0.00752***	-1.789
		(1.80)	(65.55)	(-1.86)	(.)	(-3.77)	(-0.82)
	b3			-120.6	18.64***	-143.0	18.83***
				(.)	(57.47)	(.)	(33.60)
Median Annual Time	b0	-0.570			-0.323		-1.242
(N = 59)		(.)			(-0.06)		(-0.03)
	b1	0.944***	0.384***	0.286***	0.680	0.286***	1.601
		(15.06)	(5.01)	(71.51)	(0.15)	(71.51)	(0.04)
	b2	0.995***	0.986***	10.40	-0.0638	10.21	-0.0565
		(305.86)	(101.59)	(.)	(-0.10)	(.)	(-0.08)
	b3			-1819.7	-0.0638	14.98	74.49
				(.)	(-0.10)	(.)	(.)

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
t statistics in parentheses

Table [__]: Multi Strategy Adviser. Table [__] shows the non-linear estimation results for

the AUM of private fund advisers that apply multiple investment strategy. The results are comparable to the single strategy linear and non-linear coefficients and suggest that the use of a single or multiple strategies does not make a difference in terms of effect on cost.

Discussion and Conclusion

The analysis in this paper shows that the number of funds managed by a private fund adviser is associated with Dodd-Frank Act compliance cost. However, adviser size as measured by AUM is not associated with cost and other independent variables as proxies for cost, such as time required to comply with Title IV. The findings of this study demonstrate that the number of funds managed by a private investment fund adviser affect the compliance costs under Title IV of the Dodd-Frank Act. Quantitatively, however, the applicable compliance costs may not justify consolidation of funds managed by an investment adviser. The results also provide evidence that private fund adviser regulation in Title IV of the Dodd-Frank Act increases returns to scale.

While financial regulation often has disparate effects on different constituents, the results of this study suggest that financial regulation in the Dodd-Frank Act can bring increasing returns to scale in private fund. These results seem to affirm studies finding that financial regulation can bring increasing returns in banking (Wheelock and Wilson [2012], Feldman et. al. [2013], Elliehausen [1998], Elliehausen and Kurtz [1985, 1988], Barefoot et al. [1993], Elliehausen and Lowrey [1997]).

Several limitations in this study seem to suggest that additional research may be required to fully investigate the impact of Title IV on the private fund industry. The Dodd-Frank Act could have disparate effects on different parts of the financial services industry. The implications of private fund adviser strategies remain unclear. The findings of this study are based on limited data and a small sample size.

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