2018 SURVEY RESULTS

HEDGE FUND OPERATIONAL DUE DILIGENCE

November 2018

Kevin Lau-Hansen, Senior ODD Analyst

TABLE OF CONTENTS

BACKGROUND

- **NEPC's hedge fund research team consists of both investment specialists and a separate team focused on Operational Due Diligence ("ODD")**
- **Ongoing oversight includes an annual ODD survey, sent to all hedge funds utilized by NEPC clients and to any 1-rated funds**
  - Identifies key operational issues
    - Changes to the firm's ownership structure
    - Senior staff departures
    - Litigation or regulatory action
    - Dramatic decline in assets
    - Service provider changes
  - Allows NEPC to aggregate service providers used across all funds
    - Verify external service providers directly
    - Helps to flag any inaccurate responses
  - Highlights funds with operational "red flags" worthy of further investigation
- **Survey is sent annually in June, and the responses are compiled through the summer and fall**
  - This year, the survey period spanned from 1/1/2017 – 5/31/2018
- **NEPC services 362 retainer clients with approximately $1.0 trillion in assets across 885 investment programs ***

* as of 9/30/2018. Includes both advisory and discretionary clients.

SURVEY RESULTS

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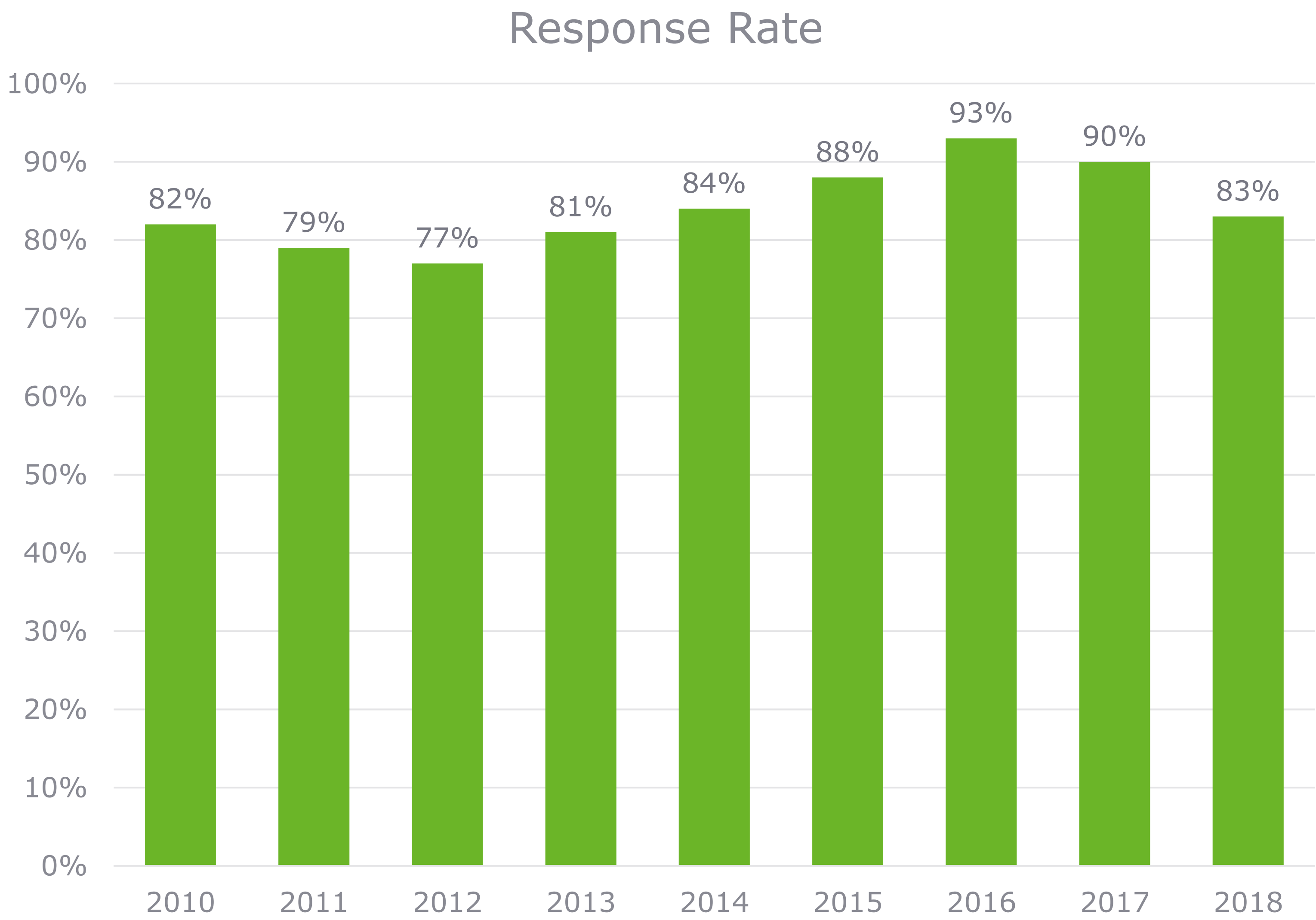
- **Each year we survey all hedge funds in place across all clients for whom NEPC advises on hedge funds**

- **The 2018 survey went to 240 managers and 200 responded (Response rate: 83%)**

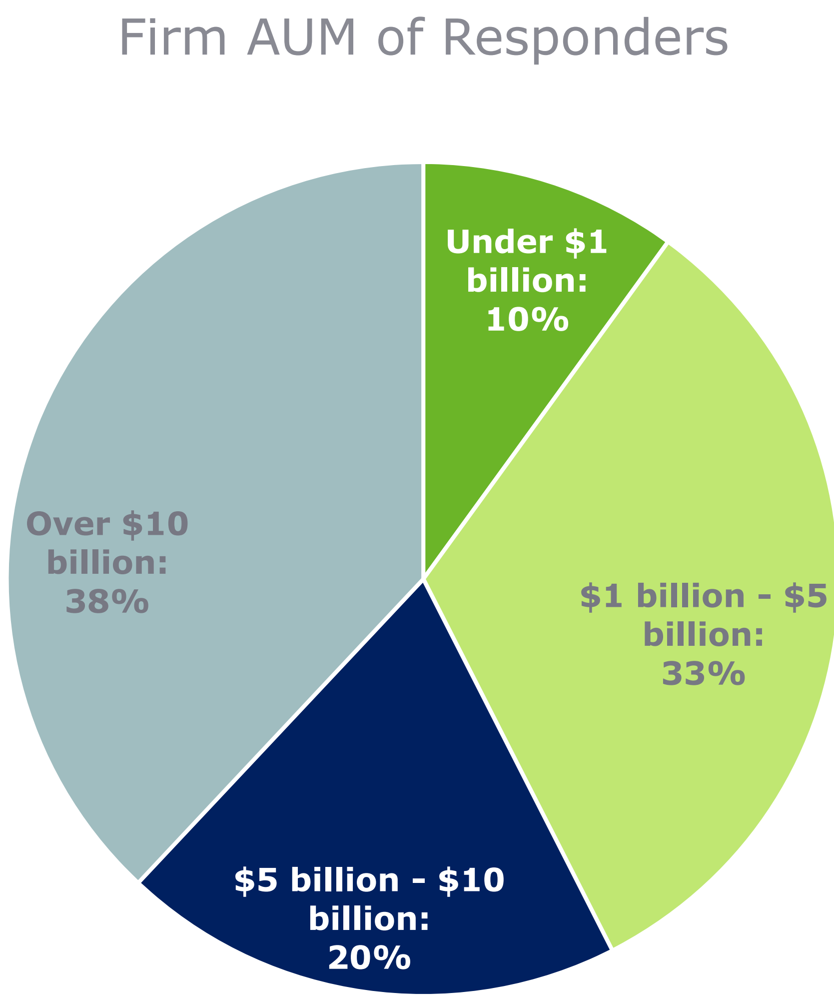
- **Information on 332 funds was provided**
  - Highlights and trends are summarized herein
  - Each fund Administrator was contacted independently by NEPC to verify the relationship reported by each manager
  - Audited Financial Statements are being reviewed

- **40 firms were non-responders**
  - Per NEPC policy, non-responders cannot be included in future searches for clients

SURVEY RESULTS



SURVEY RESULTS



SURVEY RESULTS – HIGHLIGHTS

- **Firm-level data**
  - 91% are fully registered with the SEC. An additional 8% are registered as "Exempt Reporting Advisors."
  - 26% reported receiving an inquiry from a regulator during the survey period.
  - 23% had a change in ownership.
  - 5% are involved in some form of litigation.
    - Litigation brought against the management company or fund could indicate greater operational risk.
  - 45% had senior personnel departures.
  - 17% have an affiliated broker/dealer.
    - Affiliated broker/dealers could present a conflict of interest; however, many broker/dealer affiliates of hedge fund managers exist primarily for marketing purposes and are not involved in trading.

- **Product-level data**
  - 10 different audit firms are used, with the top two being PwC (30%) and Ernst & Young (28%).
  - 32 different administrators are used, with the most-used being Citco (16%).
  - 4% of the funds are self-administered.
  - 9% have changed a service provider.
  - 2% put up gates or restricted liquidity.

SURVEY RESULTS

- **Auditors**
  - Just 10 audit firms are utilized by 329 funds
    - Three funds were reported to be separately managed accounts which did not have audit relationships directed by the manager
  - This service is highly concentrated: 90% is with the Big Four audit firms

	Provider	
1	PwC	30%
2	Ernst & Young	28%
3	KPMG	18%
4	Deloitte	14%
	All other providers (6)	10%

90%

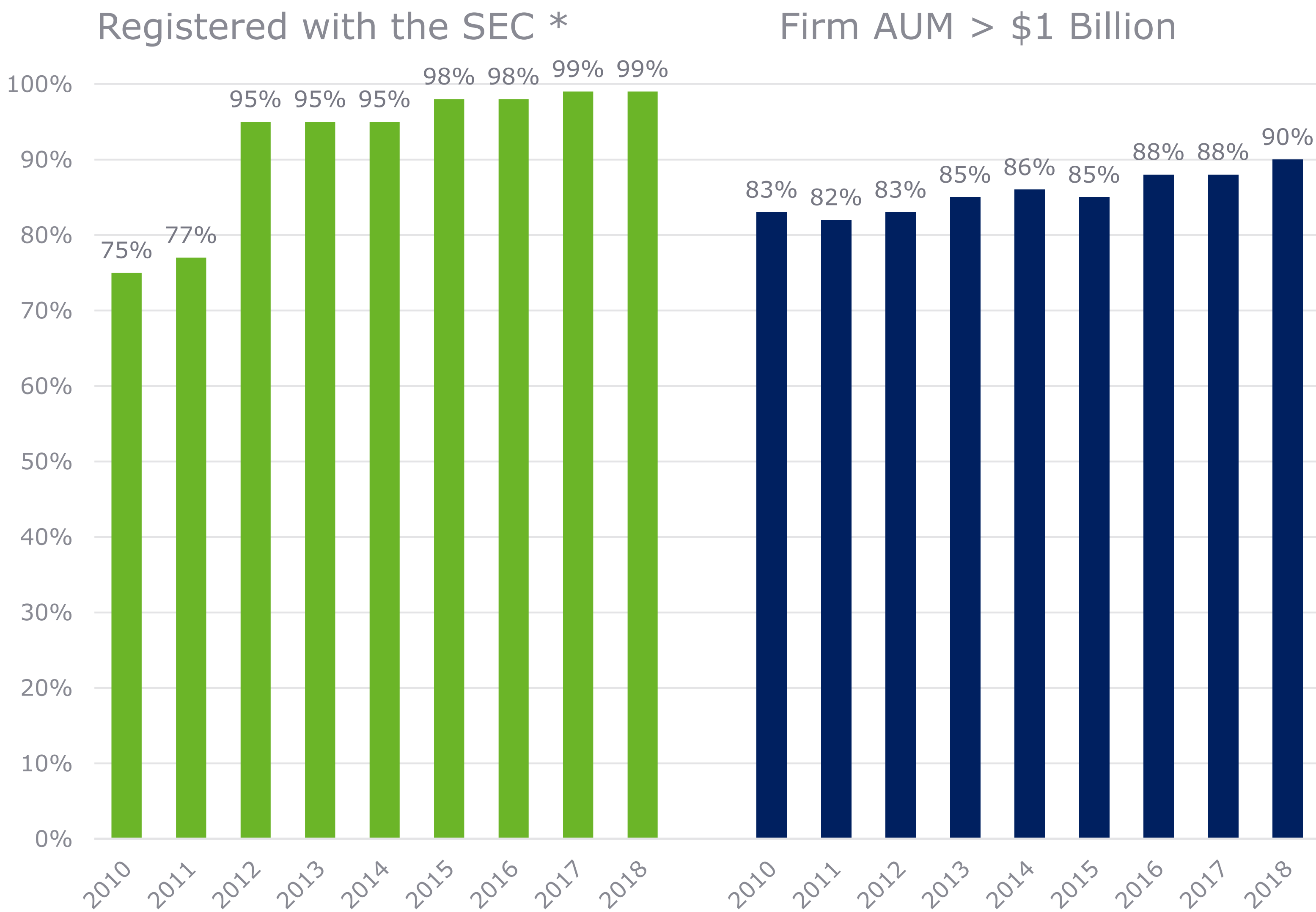
SURVEY RESULTS

- **Administrators**
  - A diverse group of providers: 32 firms across 332 funds
  - Large concentration in the top 10 (79%)
  - 9 of the bottom 22 firms service just one fund used by NEPC clients

	Provider	
1	Citco Fund Services	16%
2	SS&C GlobeOp	14%
3	IFS (International Fund Services)	13%
4	BNY Mellon	11%
5	Morgan Stanley Fund Services	5%
6	SEI Fund Administration	5%
7	Mitsubishi UFJ Fund Services	5%
8	Northern Trust Hedge Fund Services LLC	4%
9	State Street AIS	4%
10	HedgeServ	3%
	Self-Administered	4%
	All other providers (22)	17%

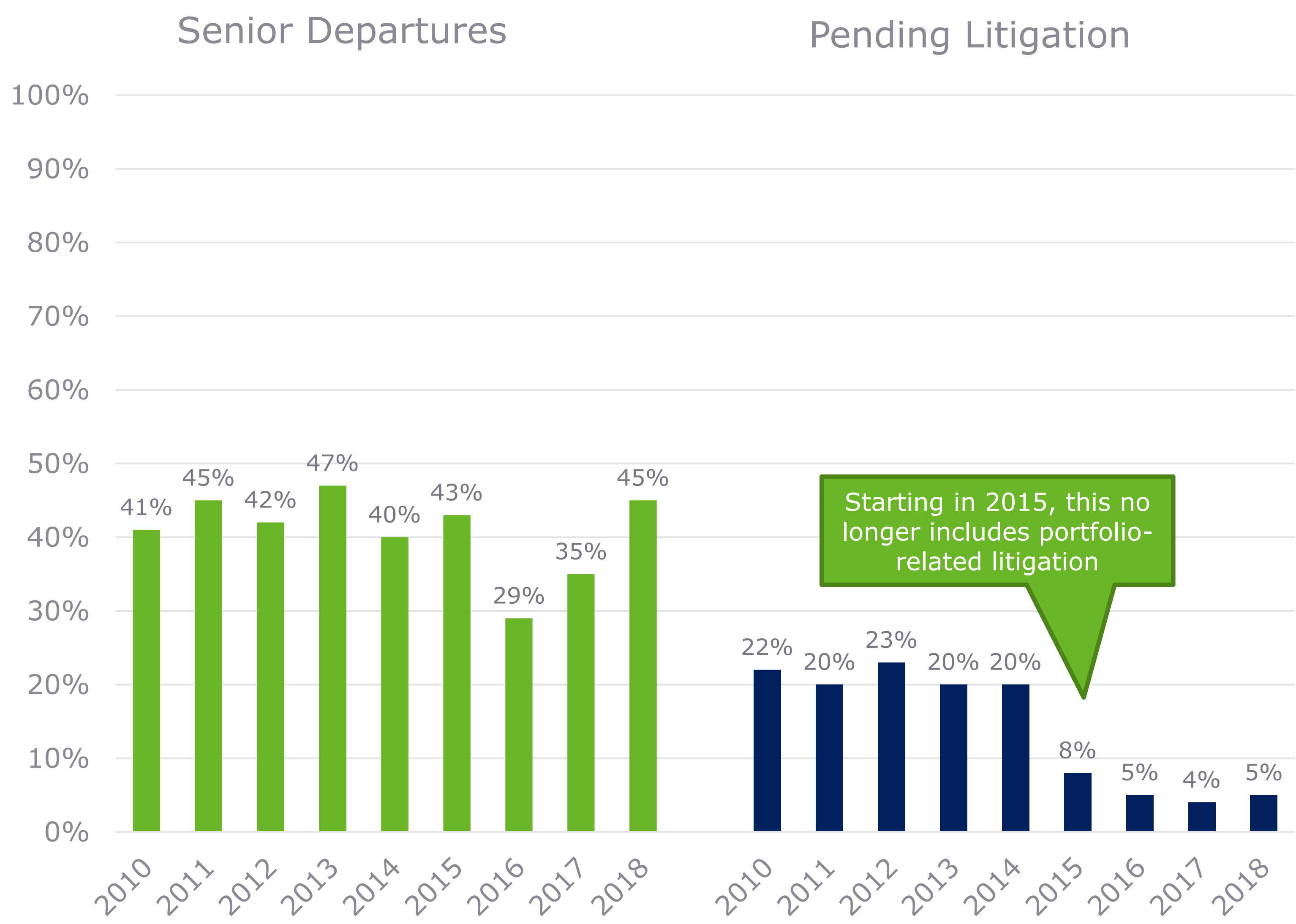
79%

SURVEY RESULTS



* Includes Exempt Reporting Advisors

SURVEY RESULTS



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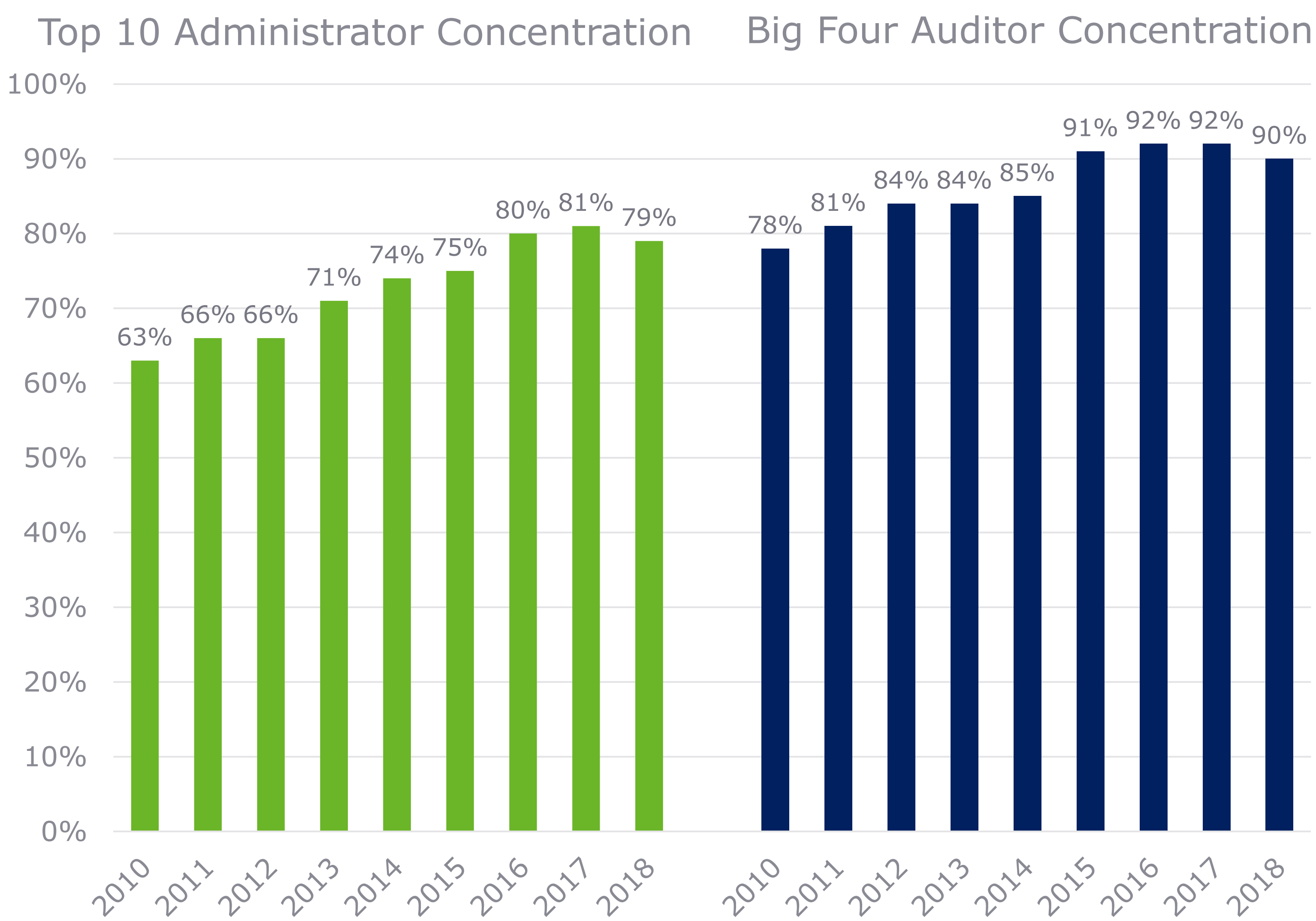

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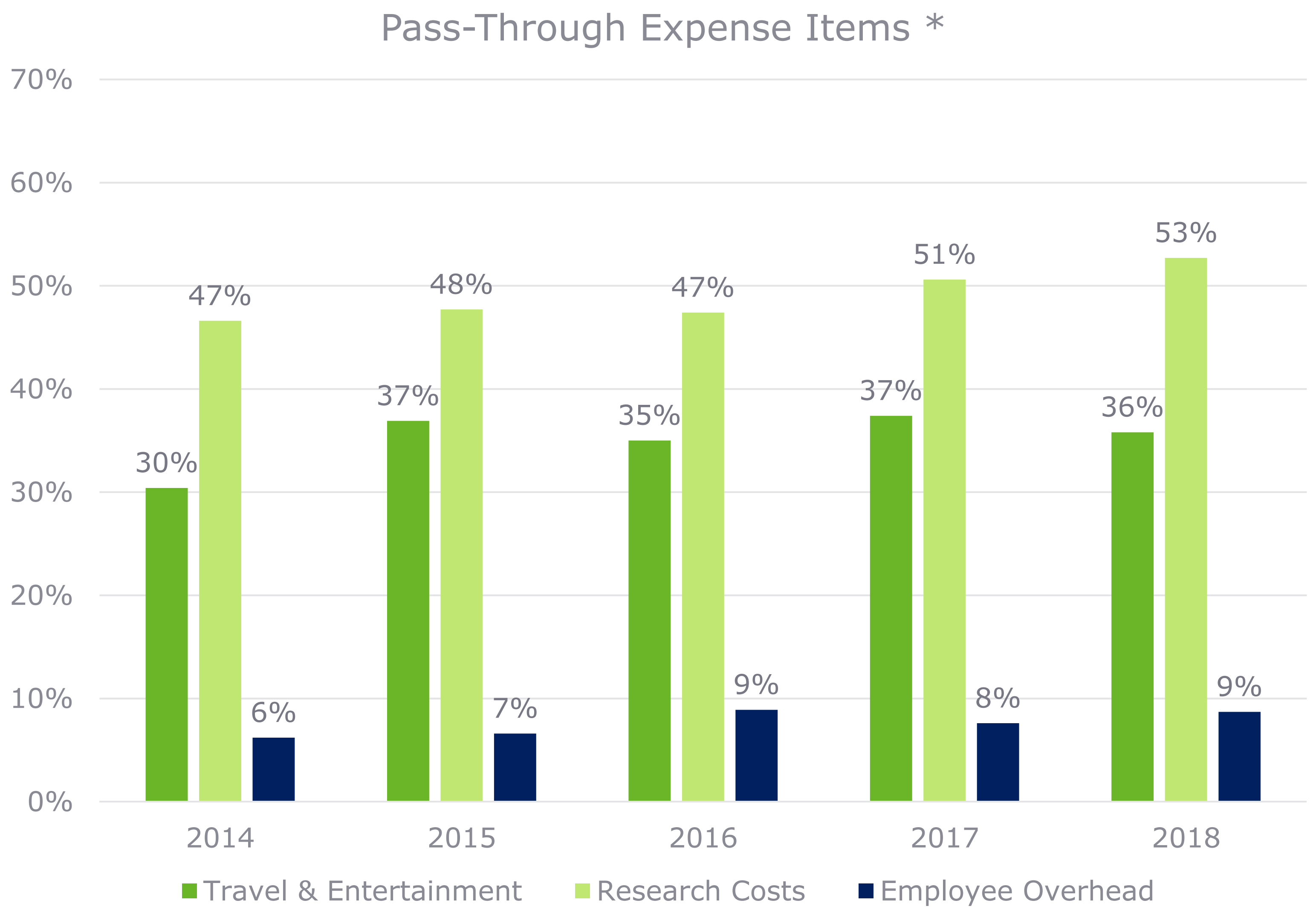

* Represents the percentage of funds surveyed that charge the specified expense types to investors

APPENDIX

SURVEY QUESTIONS

- **Firm Questions**
  - Firm AUM
  - Is the firm registered with the SEC?
  - Did the firm receive any inquiries from the SEC or another regulator during the survey period?
  - Did the firm’s ownership change during the survey period?
  - Did any key management personnel leave the firm during the survey period?
  - Is there any pending material litigation related to the firm or current members of the firm brought by any current/former investors or employees? (not including portfolio-related litigation)
  - Do you operate or are affiliated with a broker/dealer?

- **Fund Questions**
  - Fund Net Assets
  - Fund Auditor
  - Fund Administrator and service location(s)
  - Did the auditor or administrator change during the survey period?
  - Prime Brokers and/or Custodians
  - Were any of the fund’s assets held in a side pocket during the survey period?
  - Did you use a third party valuation provider during the survey period to price hard-to-value positions?
  - Did you use an expert network during the survey period?
  - Did the Fund create new gates to reduce liquidity for current investors during the survey period?
  - Are Travel & Entertainment, Research Costs, and/or Employee Overhead charged to the Fund?

INDUSTRY NEWS – GROWTH IN ASSETS AND FUNDS

US Remains Center of Hedge Fund Universe *

- The US remains the center of the hedge fund universe, holding 72% of the approximate $3.6 trillion in global assets as of the end of May, according to a report from data and intelligence provider Preqin.
- Despite growing hedge fund activity in other regions, the US accounts for 3,405 of the 5,523 institutional investors active in hedge funds, and 3,319 of the 5,383 active hedge fund managers tracked by Preqin.
- Total hedge fund assets managed within the US climbed to $2.57 trillion in December, up 8% from $2.37 trillion the previous year, according to the report.
- The report also found that most investor types have invested more capital in hedge funds over recent years, with only sovereign wealth funds, insurance companies, and asset managers reducing their aggregate allocations.
- Public pensions remain the largest allocators to hedge funds, contributing almost half of all institutional capital invested in the asset class by US-based institutional investors with $302 billion. Preqin said that despite high-profile redemptions taking effect, this total has risen every year since 2013.
- New York dominates the US hedge fund industry, representing 34% of global industry assets under management, and 47% of all US-based hedge funds.
- Single-manager hedge funds account for more than three-quarters (76%) of US-based hedge funds, with funds of hedge funds, managed futures/CTAs, and liquid alternative structures representing 13%, 6% and 3%, respectively.

* Source: *ai-CIO.com*, 8/8/2018

INDUSTRY NEWS – GROWTH IN ASSETS AND FUNDS

Hedge Fund Assets hit Record High despite Quarterly Outflows *

- Hedge fund industry assets hit yet another new peak of $3.24 trillion as of Sept. 30 — the ninth consecutive quarter of record-breaking assets under management — despite investor outflows, data released Thursday by Hedge Fund Research showed.
- Third-quarter net outflows totaled $9.1 billion, following $3.1 billion in net outflows for the second quarter. For the year, investors have redeemed an estimated $11.1 billion of hedge fund industry capital.
- Despite redemptions, hedge fund performance drove assets up. Combined asset growth for hedge funds and hedge funds of funds for periods ended Sept. 30 was 0.3% over the quarter, 1% year-to-date and 2.9% for 12 months.
- In the year ended Sept. 30, the total number of hedge funds in operation rose by 54 funds to 8,389, while the universe of hedge funds of funds declined by 48 funds to 1,371.
- "Critical drivers of investor allocation trends have expanded from performance and asset under management to also include an intense focus on fees, liquidity, firm management, European credit risk, social responsibility and interest-rate risk-factor sensitivities," said Kenneth Heinz, HFR President. "Funds which are able to position for and navigate this shifting transitional inflection point in financial markets are likely to lead industry performance and growth into 2019."

* Source: *Pensions & Investments*, 10/18/2018

INDUSTRY NEWS – GROWTH IN ASSETS AND FUNDS

Alternative Assets under Management to reach $14 Trillion by 2023, Preqin predicts *

- Private equity and hedge funds assets are expected to reach $14 trillion under management by the year 2023, according to a new report by Preqin.
- The report, which is available on Preqin's website, states the investment industry had $8.8 trillion in AUM as of Dec. 31, with that figure expected to grow 59% over the next five years.
- Private equity funds are projected to grow 58%, rising to $4.9 trillion, overtaking hedge funds to become the largest alternative asset class. Hedge funds, meanwhile, are expected to grow by 31% to $4.7 trillion.
- Private debt and real assets funds are predicted to double their AUM in the same period.
- Preqin interviewed 420 fund managers and investors. Industry participants were asked what their predictions were for AUM in each alternative asset class in 2023, based on AUM totals in 2008 and 2017. Preqin then calculated an average of their responses to produce its predictions.

* Source: *Pensions & Investments*, 10/23/2018

INDUSTRY NEWS – FUND TERMS

Fees and Performance Remain Key Challenges in the Industry *

- Investor demand for more favourable fees remains a top challenge in the industry today; 57% of fund managers surveyed felt this would be a key driver of change in 2018, behind only the performance of the industry (59%).
- Although more than half of managers reported they would reduce management fees to attract investors, 57% of institutions we spoke to in December 2017 wanted managers to reduce both management and performance fees – something just a third of hedge funds reported they would do.
- Managers are most willing to offer fee concessions in return for a large or seed investment in a fund; 38% and 37% of respondents respectively reported they would reduce fees as a result.

* Source: Preqin Special Report, 3/28/2018

Side Letter Study Shows Sharp Increase in Deals with Newer Hedge Fund Managers **

- New research by the law firm Seward & Kissel LLP into the hedge fund industry's use of side letters … shows a dramatic increase in side letter deals with newer asset managers.
- The *Seward & Kissel 2016/17 Hedge Fund Side Letter Study* reveals a sharp rise in side letters agreed to by hedge fund managers in business for less than two years. That rate nearly doubled from last year, when Seward & Kissel's inaugural side letter study put it at 13% of all funds within the study.
- The study also highlighted a growing delta between two investor types most likely to secure side letters: funds of funds accounted for 56% of all side letters (a large leap from last year's 30%), and wealthy individuals/family offices (17% of side letters) also increased their numbers over last year.

** Source: *BusinessWire*, 9/14/2017

INDUSTRY NEWS – FUND TERMS

After Years of Cutting Fees, Hedge Funds Say Enough is Enough *

- The decline of hedge fund fees may have reached a plateau. Hedge fund managers overwhelmingly indicated that they were done with fee reductions in a new survey by the Alternative Investment Management Association and PricewaterhouseCoopers.
- Asked whether they would lower the management and incentive fees paid by their investors, close to 80 percent said they had no intention to do so.
- This unwillingness to offer cheaper fee structures follows a years-long downward slide for hedge fund fees, which are currently at their lowest levels ever, according to Hedge Fund Research. The industry tracker reported in June that management fees had declined to an average of 1.43 percent in the first quarter, the lowest since the firm began tracking fees in 2008.
- Performance fees, meanwhile, averaged 17.11 percent during the first quarter, a slight uptick from the previous quarter but a far cry from the 20 percent incentive fees historically associated with hedge funds.
- That 2-and-20 structure is now all but a “relic,” according to the report from AIMA and PwC.
- “Investors are hyper-sensitive to value for money, and keenly aware of paying only for alpha, not for beta,” said Mike Greenstein, PwC’s U.S. and global alternative asset management leader. “And they want this at fee levels that many in the alternative investments industry would not have considered a decade ago.”
- Although hedge funds have made concessions up until this point, rising costs associated with investment talent and technology mean that fees are “not likely to move much further in the near term,” according to AIMA and PwC.

* Source: *Institutional Investor*, 9/19/2018

INDUSTRY NEWS – FUND ADMINISTRATION

Alternative Assets under Administration up 10.2% in 2017 *

- Alternative assets under administration as of Dec. 31 totaled $8.42 trillion, up 10.2% from the prior year, eVestment said in a survey.
- SS&C GlobeOp ranked first among firms with total alternative assets under administration of $1.52 trillion as of Dec. 31. State Street Alternative Investment Solutions was second with $1.27 trillion, followed by Citco Fund Services at $1.156 trillion, and Bank of New York Mellon's alternative investment services business at $912.9 billion.
- The rankings were identical as the previous year, as of Dec. 31, 2016.
- Among the different asset classes … the most interesting increases were among hedge fund assets under administration, which surpassed $4 trillion in AUA for the first time with $4.21 trillion, up 14% from a year earlier. Minkyu Mike Cho, senior research analyst at eVestment said "a piece of that was asset growth and investor flows into hedge funds. (Another was) the shadow administrator, which is essentially hedge fund firms duplicating the services to a certain extent and that being kind of a large effect on the result."

* Source: *Pensions & Investments*, 5/8/2018

Fund Administrators Expect More Consolidation **

- A majority of alternative fund administration firms – 74% – expect consolidation in the alts fund admin space, according to the just-released eVestment Alternative Fund Administration 2018 survey. This is up dramatically from the 47% of survey respondents who expected consolidation in 2017's survey.
- And despite technology and new players disrupting numerous industries around the world, only 11% of survey respondents expect to see new entrants into the fund administration business over the near term, down from 26% of respondents in the prior year's results.

** Source: *Alpha Week*, 5/8/2018

INDUSTRY NEWS – OTHER

Third Party Marketers are a Part of the Industry *

- Hate them or love them, third-party marketers are a part of the industry. An analysis of SEC Form ADV filings reveals that 34% of single managers and 32% of FoHFs in HFM's Billion Dollar Club use some kind of third-party marketer.

* Source: *HFM Global*, 2/14/2018

Investors Expect More from Alternative Fund Providers, says new AIMA Survey **

- It is possible that fees may have reached their low point. Over 70 per cent of alternative fund managers surveyed identified that they are not planning on lowering their fees in the near term. But some 20 per cent confirmed that they would lower their fees either to attract new investors or to retain existing ones.
- Jack Inglis, AIMA CEO, says: "The survey reveals investors today demand more from alternative fund managers. Central to this change is the shift from a fund product-led industry to a solutions-based one. It is therefore crucial that managers identify the individual needs of clients and consistently offer the performance and flexibility required to meet them."

** Source: *HedgeWeek*, 9/18/2018

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Non-traditional investment strategies including hedge funds and private equity have the following characteristics:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager’s realm of expertise or contemplated investment strategy