NEPC, LLC

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2017 Survey Results

Hedge Fund Operational Due Diligence

November 2017

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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 additional funds rated "Preferred"**
  - 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**

- **NEPC's clients represent approximately 784 investment programs and approximately $954 billion in plan assets ***

* as of 9/30/2017. Includes both advisory and discretionary clients.

Survey Results

Survey Results

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

- **The 2017 survey went to 224 managers and 201 responded (Response rate: 90%)**

- **Information on 356 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

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

Survey Results - Highlights

- **Firm-level data**
  - 91% are fully registered with the SEC. An additional 8% are registered as "Exempt Reporting Advisors."
  - 27% reported receiving an inquiry from a regulator during 2016.
  - 21% have had a change in ownership in the past year.
  - 4% are involved in some form of litigation.
    - This figure has fallen dramatically in the past three years because we changed the structure of the question in 2015 to exclude portfolio-related litigation.
    - Litigation brought against the management company or fund could indicate greater operational risk.
  - 35% have had senior personnel departures in the past year.
  - 18% 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 do not have trading capabilities.

- **Product-level data**
  - 11 different audit firms are used, with the top two being PwC (30%) and Ernst & Young (29%). We are seeing increased concentration here (see p. 13).
  - 35 different administrators are used, with the most-used being Citco (20%).
  - 3% of the funds are self-administered.
  - 9% have changed a service provider in the last year.
  - 2% put up gates or restricted liquidity in the past year.

- **Auditors**
  - Just 11 audit firms are utilized by 355 funds
  - Highly concentrated: 92% in the Big Four audit firms

	Provider	
1	PwC	30%
2	Ernst & Young	29%
3	KPMG	19%
4	Deloitte	14%
	All other providers (7)	8%

92%

* Differs from total number of responses because the investor selects the service provider for some products

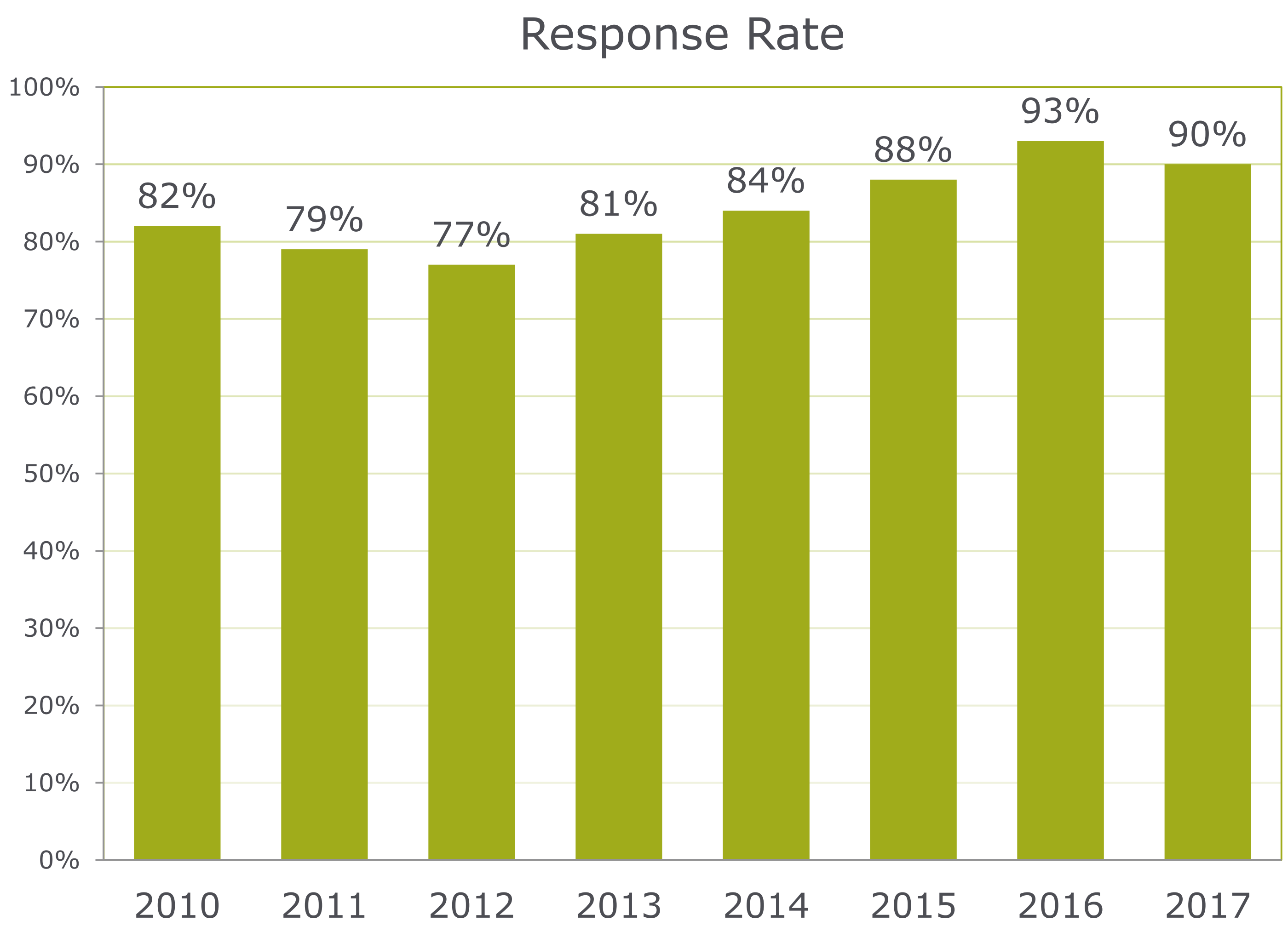
- **Administrators**
  - A diverse group of providers: 34 firms across 356 funds
  - Large concentration in the top 10 (81%)
  - 10 of the bottom 24 firms service just one fund used by NEPC clients

	Provider	
1	Citco Fund Services	20%
2	IFS (International Fund Services)	18%
3	SS&C GlobeOp	13%
4	BNY Mellon	10%
5	SEI Fund Administration	5%
6	Mitsubishi UFJ Fund Services	4%
7	Morgan Stanley Fund Services	4%
8	HedgeServ	3%
9	JPMorgan Hedge Fund Services	3%
10	State Street AIS	2%
	Self-Administered	3%
	All other providers (24)	17%

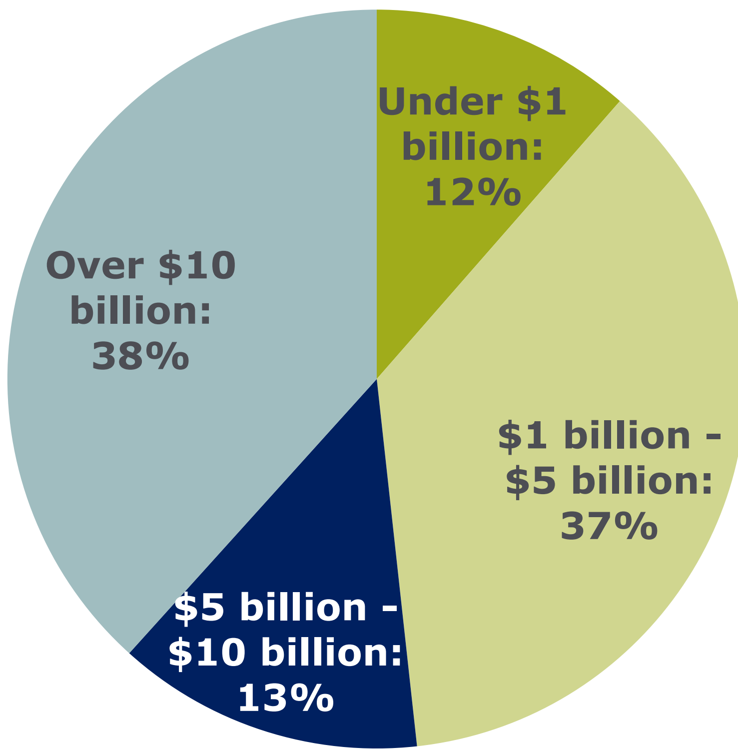
81%

Note: The sum is greater than 100% due to rounding

Survey Results

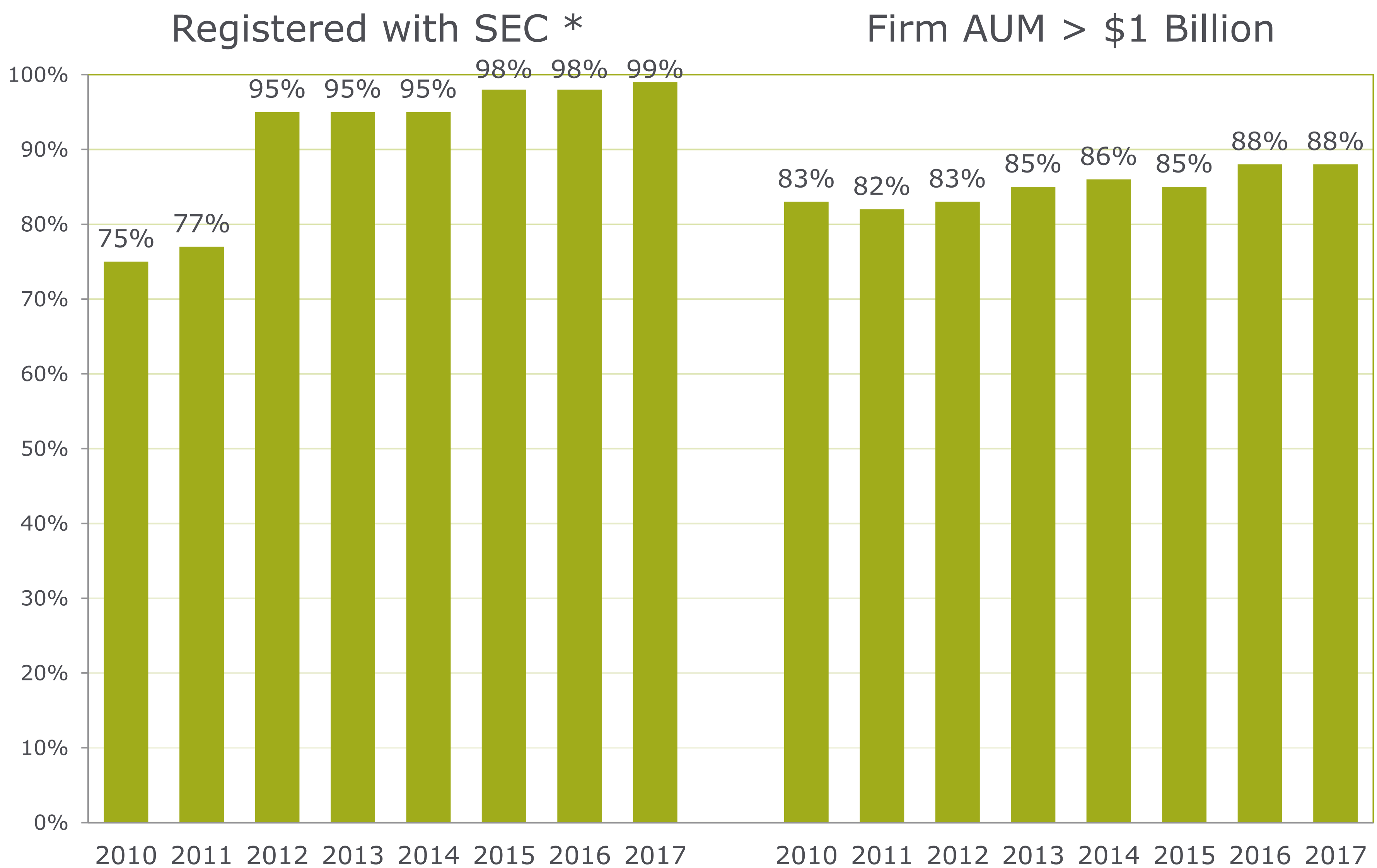


Firm AUM* of Responders



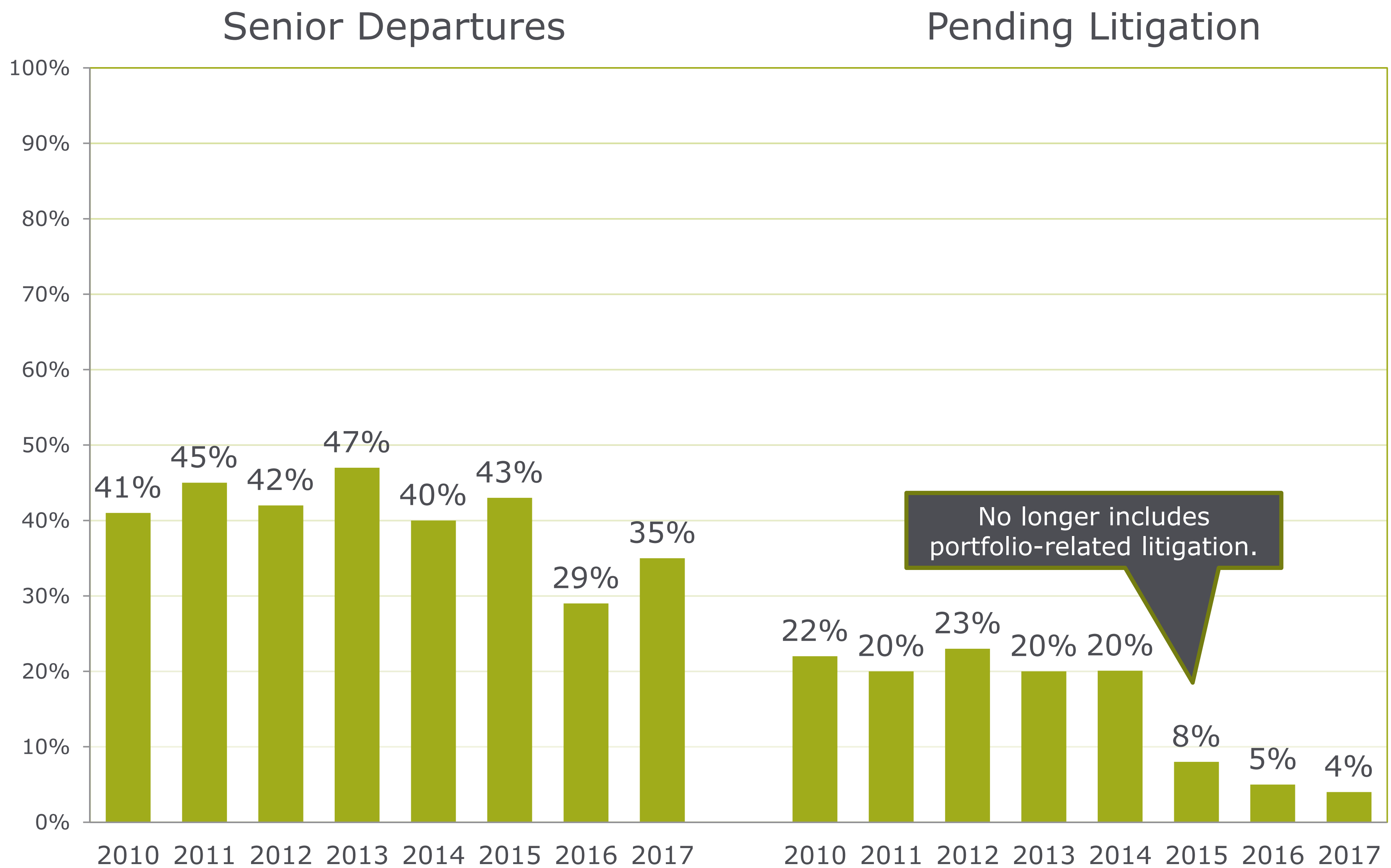
* as of 12/31/2016

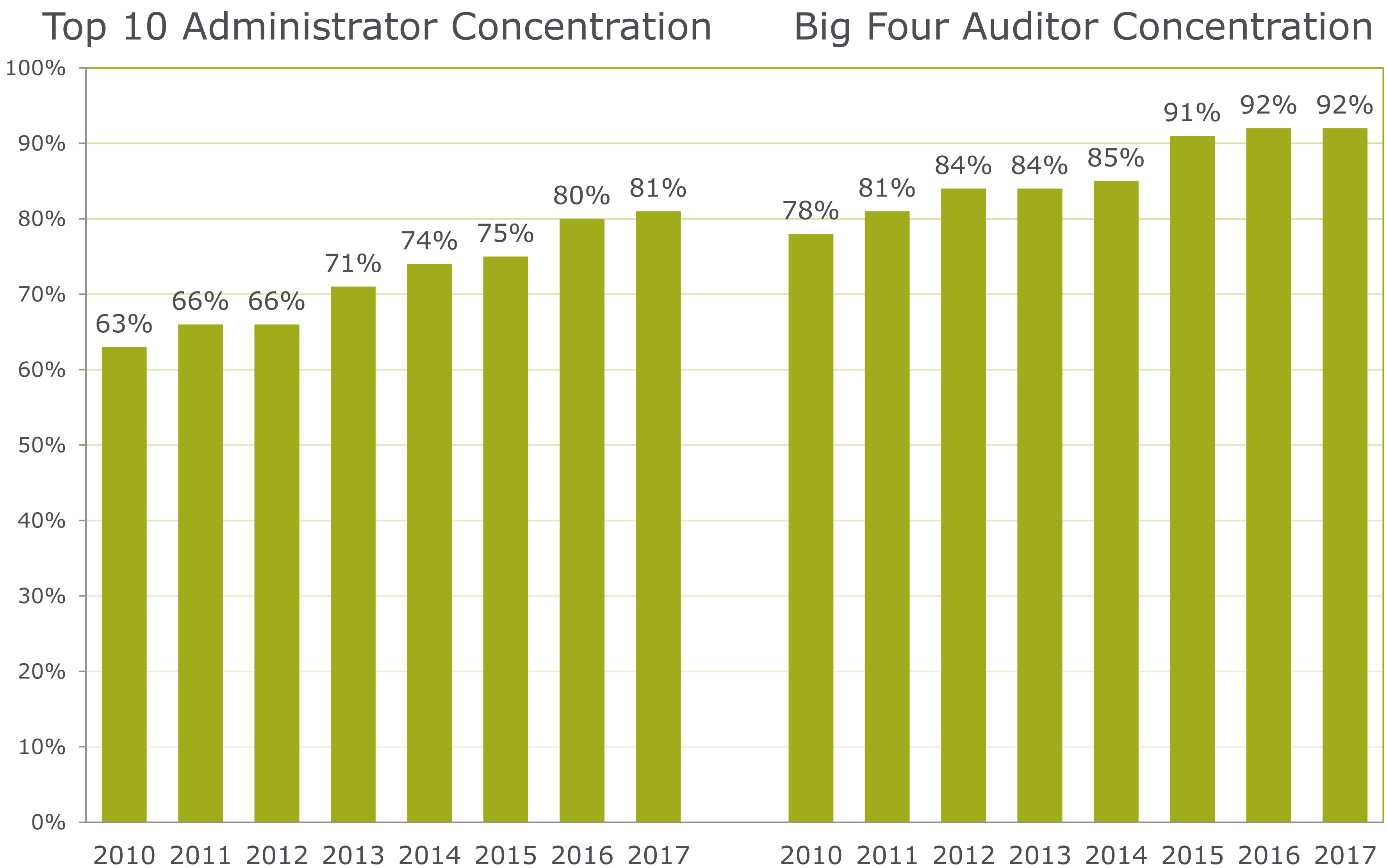
Survey Results



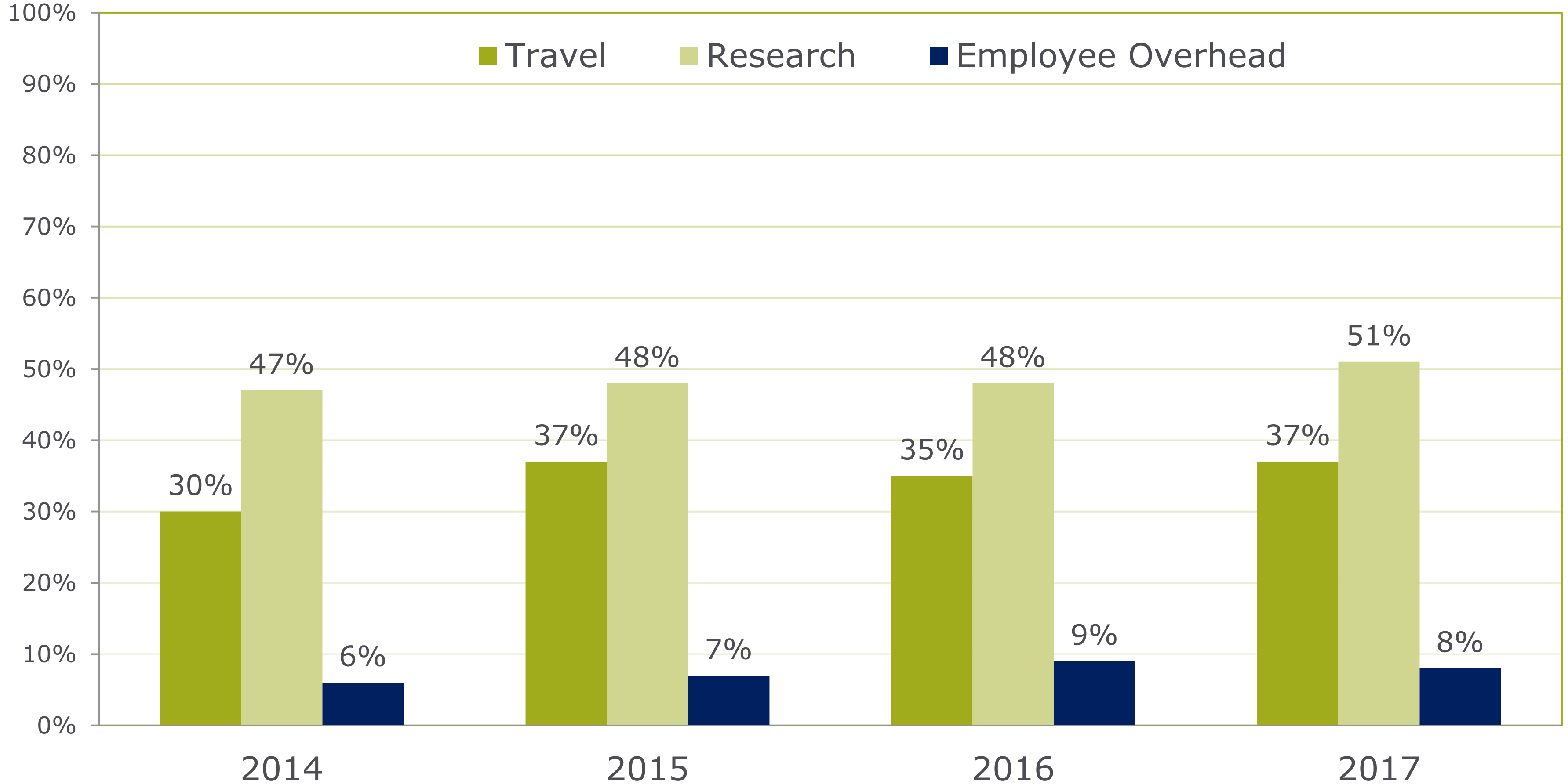
* Includes Exempt Reporting Advisors

Survey Results




Top 10 Administrator Concentration
Big Four Auditor Concentration
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
63%
66%
66%
71%
74%
75%
80%
81%
78%
81%
84%
84%
85%
91%
92%
92%
2010 2011 2012 2013 2014 2015 2016 2017
2010 2011 2012 2013 2014 2015 2016 2017

For the past four years we have been asking managers if the funds are charged certain types of expenses, specifically Travel & Entertainment, Research Costs (such as Bloomberg machines) and Employee Overhead



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 in 2016?
  - Did the firm's ownership change in 2016?
  - Did any key management personnel leave the firm in 2016?
  - Is there any pending material litigation related to the firm or current members of the firm brought by any current/former investors or employees? Do not include portfolio-related litigation.
  - Do you operate or are you affiliated with a broker/dealer?

- **Investment Product Questions**
  - Product Net Assets
  - Fund Auditor
  - Fund Administrator and service location(s)
  - Did the auditor or administrator change during 2016?
  - Prime Brokers and/or Custodians
  - Were any of the fund's assets held in a side pocket during 2016?
  - Did you use a third party valuation provider in 2016 to price hard-to-value positions?
  - Did you use an expert network in 2016?
  - Did the fund's liquidity terms change or were any gates put up last year?
  - Are any of these items charged to the fund?
    - Travel & Entertainment
    - Research costs such as Bloomberg
    - Employee overhead

Hedge fund industry AUM reaches fifth consecutive quarterly peak *

- Hedge fund industry assets hit a new peak of $3.152 trillion as of Sept. 30 — the fifth consecutive quarter of record-breaking assets under management — according to data from Hedge Fund Research.
- Combined asset growth for hedge funds and hedge funds of funds for periods ended Sept. 30 was 1.6% in the quarter and 4.3% year-to-date.
- Fully 97% of asset growth in the third quarter was the result of investment performance gains — $50.3 billion from investment returns and $1.7 billion was from net inflows.
- If the current pace of investment and positive investment performance continues, the global hedge fund industry likely will end the year with positive net inflows, in contrast to net outflows of $70.3 billion in 2016.
- In the year ended Sept. 30, the total number of hedge funds in operation dropped by 94 funds to 8,255 while the universe of hedge funds of funds declined by 102 funds to 1,475.

* Source: Pensions & Investments, 10/19/2017

Continued Growth in Hong Kong **

- Hedge fund assets managed by Hong Kong-based firms reached almost $100 billion by the end of 2016, according to Hedge Fund Intelligence (HFI). Some 24 firms in Hong Kong now manage $1bn or more in hedge fund assets and this group's combined AuM rose … last year to $49bn. Hong Kong now has as many members in HFI's vaunted Billion Dollar Club as Connecticut, while Hong Kong managers were behind two of the 10 biggest hedge fund launches last year.
- The prospects for smaller hedge fund firms in Hong Kong are promising too. A recent survey by AIMA and GPP, the boutique prime broker, found that most hedge fund firms are profitable with considerably less than $100m in assets. That was a global survey but its findings undoubtedly apply to Hong Kong firms, who are largely in the sub-$1bn bracket.

** Source: HFM Special Report, August 2017

Hedge fund population smaller than most think *

- Employees of firms managing hedge funds number 115,000 worldwide, according to research from Preqin and the Alternative Investment Management Association, both based in London.
- Preqin analyzed the employment data from 5,556 hedge fund managers and 707 hedge funds-of-funds firms and found that hedge fund manager head counts are higher on average at 29 in the U.K., compared with an average of 20 in the U.S.; and 15 in Australia, Brazil, Canada and France. The lowest average staff number — seven — is found in Hong Kong and Singapore.
- Employment in the hedge fund industry as a whole increases by 275,000 when Preqin includes companies servicing hedge fund firms, such as law firms, auditors, prime brokers and administrators.

* Source: Pensions & Investments, 5/15/2017

Funds-of-Hedge-Funds Consolidating **

- Funds of hedge funds are resorting to consolidation in order to combat a steady decline in assets under management, according to new research from Preqin, as direct investments become more popular among increasingly sophisticated investors sensitive to fees.
- Over the past decade, AUM in the funds of hedge funds industry has steadily dwindled, falling from $1.2 trillion in 2008 to $798 billion as of June 2017. As industry assets have declined, the number of new funds of hedge funds entering the market has also fallen year-on-year, from a peak of 207 in 2007 to just 10 in the first half of 2017.
- As a result, fund of hedge funds managers have turned to M&A in order to diversify product offerings and become more attractive to investors. Prior to the global financial crisis, there were a total of 13 mergers or acquisitions among funds of hedge funds. Since 2009, there have been 56.

** Source: Preqin (via FIN Alternatives), 10/26/2017

Study Shows Rise in Non-Equity Based Strategies Among New Funds *

- A rising number of newly launched hedge funds are employing non-equity-based investment strategies, according to a new study released by law firm Seward & Kissel.
- The firm's annual New Hedge Fund Study surveys U.S.-based funds that were set up in 2016 and identifies key trends. 2016's analysis indicate that as non-equity funds become more prevalent, investors are beginning to extract from them concessions similar to those they have previously won from equity-based funds.
- Highlights of the Study:
  - The portion of new hedge funds using non-equity-based strategies increased to 35% in 2016, up from 20% in 2015.
  - The percentage of non-equity funds offering special "founders" terms to investors jumped from 29% in 2015 to 36% in 2016, while the percentage of equity funds with such "founders classes" dropped from 82% to 75% over the same period.
  - Management fees charged to standard class members were down from last year, both for non-equity funds (1.43%) and equity funds (1.51%). Most strikingly, while not a single non-equity-based fund offered tiered management fees in their founders classes in 2015, 25% of them did in 2016. Tiered management fees (which step down as fund assets grow, in recognition of efficiencies of scale) were offered by 40% of equity funds this year, up just 5% from last year.
  - The percent of managers who launched a U.S. fund without also offering an offshore fund rose to 40% in 2016, up from 25% in 2015. This is the latest and most dramatic evidence of a trend that began in 2012, in which managers are first establishing a track record with a U.S. fund, and leveraging it to attract offshore investor interest later.
  - There was little deviation among funds with regard to liquidity-related terms. Nearly all funds - 94% - permitted investors to make redemptions on a quarterly or shorter basis. Balancing that permissive approach to redemption frequency, every fund in the study imposed some form of lock-up or investor level gate.

* Source: FIN Alternatives, 3/14/2017

Smaller Firms Remain the Lifeblood of the Hedge Fund Industry*

- The hedge fund industry comprises two branches. One includes firms managing $1 billion or more in assets. This branch contains about 10% of the industry in terms of the number of firms, but about 90% of the assets.
- The second branch contains firms that each run less than $1 billion in hedge fund assets. Their investors can include large institutions but family offices, funds of funds and private banking assets are more prevalent. These are small businesses led by entrepreneurs. They are often the cradle of the industry's innovations, being able to invest in niche markets without capacity concerns. Frequently, they are among the industry's best-performers. Yet the press, in general, tends to look elsewhere. The gaze of many investors, too, can be drawn to larger brand names. In some cases this is because they are unable to allocate to smaller funds due to size limitations. Other factors can include infrastructure demands, length of track record and other checklist items that can be difficult for some smaller managers to meet, according to AIMA.
- Previous widely-cited pieces of research suggested that hedge fund managers needed at least $300 million in assets to reach profitability. Taken at face value, the research in effect had written off hundreds, if not thousands, of fund managers as loss-making. This segment of the universe includes many firms that have been operating for years. Either we accept the premise that many of them are comfortable making losses year after year, or we assume that those research pieces may have been misleading.
- AIMA attempted to find the break-even average just for smaller firms, in partnership with the prime broker GPP. The headline finding of the report published in July … was that the break-even point for firms managing less than $500 million is currently around $86 million in assets. And that was only the average; a significant minority of respondents said they reached profitability when running less than $50 million.

* Source: AIMA, via FIN Alternatives, 7/26/2017

Why Are Fund Administrators Getting Fired at Alarming Rates? *

- Private fund managers are showing an increasing penchant for firing their fund administrators. A new report by Preqin shows that a surprising 36% of fund managers changed their fund administrators in 2016.
- The trend for fund administrators is unfortunately heading in the wrong direction, as this is a 29% increase from 2015. All indications are that this will continue in 2017, as the report shows that 72% of private fund managers review their fund administrators at least annually, with 30% doing so every single time they bring a new fund to market.
- A "peek under the hood" of how a private fund is managed and administered would reveal an industry seemingly stuck in the 1990s, with manpower typically being the biggest determinant of the speed and quality with which the industry operates.

* Source: Seeking Alpha, 8/10/2017

Organic growth, acquisitions and big mandate wins drive strong growth for a number of Players **

- Citco, SS&C, MUFG Investor Services and Morgan Stanley were among the large admins recording decent global growth over the past six months while a number of smaller players achieved double-digit increases.
- The latest AuA Survey, for the six months ending April 30, was the 28th biannual assets under administration survey from HFMWeek.

** Source: HFM Global, 6/21/2017

Surveys Suggest Willingness to Negotiate on Hedge Fund Fees *

- Investor pressure on the hedge fund industry for its high fees and often disappointing returns may be having an impact. Two surveys show a broad industry trend towards negotiated fee structures, according to a Reuters article citing a joint HFM/Citic study and a poll from financial services giant Barclays.
- Hedge funds have traditionally charged an annual management fee of 2% and a 20% cut of any profits they generate. However, data from Preqin last year suggests the industry is heading towards averages of 1.5% and 19%, respectively.
- In the HFM/Citic survey, 72% of respondents (78% in the U.S.) said new fee structures are being negotiated in order to attract new capital at a time when raising money is notoriously difficult for most hedge funds.
- Responses were similar in the Barclay’s poll. Interestingly, this willingness appears most pronounced among long/short equity managers, whereas computer-driven quant funds are showing the least adaptability to lower fees, the article said.

* Source: FIN Alternatives, 2/28/2017

Side Letter study shows increase in deals with newer Hedge Funds **

- 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 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.
- 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. All other fund types—endowments, nonprofits, corporate pensions and government plans—collectively accounted for only 27% of all side letters, down from 56% last year.

** Source: BusinessWire, 9/14/2017

Just eight funds launch in first year of new Maltese structure*

- Just eight funds have launched under the new Maltese fund structure since its launch in May 2016, HFMWeek can reveal.
- In May 2016, Malta launched the Notified AIF (Naif) which had many of the same characteristics as the Luxembourg Raif. Both structures allow … flexibility for managers.
- Concern about a lack of local custodians was blamed for the slow start.

* Source: HFM Compliance, 8/15/2017

Trends in the Cayman Islands*

- With about 1,230 new CIMA fund registrations in 2016, the Cayman Islands remain the undisputed leader in offshore funds.
- A closer look at the numbers reveal that 2016 has seen an interesting shift in geographical regions for Cayman fund launches. For example, the numbers from Europe are down but they increased a lot from Asia to the point where Asia now represents almost half of the new launches Cayman's PwC unit is taking on as audit clients.
- This growth is coming from two sides. Many of the new rich (in China) are looking for partners to manage money in different asset classes. New launches are also on the rise from Hong Kong … and a lot of managers on the ground there collect capital from Mainland China.
- Investors are really in the driver's seat now more than ever, and investment managers have to find new and innovative ways to differentiate themselves. More and more "funds of one" are created, typically in the $50-100 million range, but also as low as $10 million and as large as over one billion. There is also an increased use of side letters in commingled vehicles and fee pressure across all service providers.

* Source: Opalesque 2017 Cayman Islands Roundtable, 2/15/2017

Disclaimer / Disclosures

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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