EVERCORE ISI

Financials | Brokers, Banks & Asset Managers

April 26, 2019

Glenn Schorr
212-653-9045
Glenn.Schorr@evercoreisi.com
Kaimon Chung
212-653-9019
Kaimon.Chung@evercoreisi.com
John Dunn
212-446-9455
John.Dunn@EvercoreISI.com
Eric Young
212 653 9037
eric.young@evercoreisi.com

The Most Self-Serving Research Note Ever?

The Unintended Consequences of MiFID II: P&L Payers Underperformed in 2018

Does the consume-less model mean advantage US?: MiFID II was supposed to help the end client by making sure their asset managers got value for money with their commission dollars, and it did, but potentially at a big cost. Five-plus quarters into the new world of MiFID II, we thought we'd take a look to see if any patterns around asset managers' relative investment performance have emerged. In particular, we wanted to see if the new & different payment structure landscape has spurred divergence in results at managers that had to uproot part of their business models & consume less research (MiFID didn't tell them to do that, it just happened). Our analysis took all available equity mutual funds w/ >$100mn in AUM (3,363 funds), divided them into US-domiciled (payment through client money; 53%) and European (payment via managers' own P&Ls; 47%), then came up w/ 15 categories to measure over the course of '16-'18 to see which of the regions performed better. We did this in conjunction w/ Frost Consulting, a firm started in '07 to provide transparency & analysis of the global equity unbundled commission market.

P&L Payers Underperformed in Aggregate in 2018: Some things we saw were the number of US fund categories outperforming went up over the period with 13 of the 15 categories outperforming in '18 (up from 10 in '16), as did US funds' share of the outperformance captured (from 48% in '16 to a staggering 98%). Also, we observed that even in the spots where Europe did better, it was only by a little, as opposed to when the US beat & margins were wider (US winners outperformed by an avg of 258bps, Europe was 36bps). For sure, we know that it's early days but the numbers suggest that those that went P&L lagged in '18 after being much closer to parity before. Again, while there are likely other variables at play & it's just 1 year, if consuming/spending a handful of basis points less could actually contribute to several hundred basis points of underperformance, that would be the definition of penny-wise pound-foolish (pun intended).

In the note, we go through the observations from the data that we found the most notable, as well as our methodology & a practical, mandate-level example of how research costs can be completely dwarfed by the difference in returns.

It doesn't look like either side is changing soon: To be clear, we don't think giving a default info advantage to hedge funds & non-European investors was the motivation of regulators across the pond, but even still we may be looking at the true definition of an unintended consequence. One that may be w/ us for some time considering US regulators don't seem eager to go down the MiFID II road & move managers towards P&L. Our sense is most US managers don't appear to want to do it. For example, our read of the SEC telling SIFMA it isn't going to extend the no-action letter beyond its current expiration in July '20 is that it suggests they would rather the buy & sell-sides figure it out on their own via mkt solutions (e.g. research units as RIAs, cash accts at B/Ds, all-in mgmt fee…). That being said, it doesn't appear that the P&L payers are going to be changing back anytime soon either. When we look further down the road, this may have them in an uncompetitive position over time w/ globally uncompetitive research budgets.

CliffsNotes of observations that stood out: (1) as MiFID II approached & was initiated, the number of US funds outperforming increased markedly & so did US funds' share of the percentage of outperformance captured; (2) those two trends were even more overwhelming on a weight-AUM basis, as larger US funds did particularly well; (3) the stuff where Europe did outperform was in areas you'd probably expect they would (ex-US small cap), but even in those places, when Europe did better it was only by a little but not vice versa (i.e. when the US came out on top it was by a lot); (4) not surprisingly, there was a wide spread between the top & bottom quartiles, but if part of the divergence is attributable to research spend that would matter a lot & could persist for a protracted period; & (5) research costs are being dwarfed by the performance variance between funds in quartiles 1 & 4.

Investing with one-arm tied behind your back?: To illustrate the picture, we looked at a $50mn LC healthcare equities mandate to see the interplay between research cost & return (Fig 15). In '18, the spread between the averages of the 1st & 4th quartiles was quite wide, coming in at 1,620bps (+10% for the former vs -6% for the latter). Given what the market did, that translated to $5mn of return at the top-end compared to a $3mn loss at the other, so an $8mn was at play. Now it's no surprise that there was a gulf in perf between the book-end quartiles, but if there is indeed a close connection between research & performance, as our data suggests, that could spell trouble for P&L payers without much benefit. For example, if we assume 6bps of research cost that's a $30k outlay, basically a rounding error. To us, that disparity raises questions of which outcome is in the best interest of the pension beneficiaries & should the mandate be given the required tool/max probability for success?

<u>**Some notable observations included**</u>**:**

(1) **As MiFID II approached & was initiated, the number of US funds outperforming increased:** While in '16 the split between investment styles that were outperforming on an average-basis still favored the US, starting in '17 & continuing in '18, each year was more to the US fund managers' side. Figs 2 & 3 show the trend going from 9 styles vs 5 in 2016 to 12 vs 2 in 2017, and then to 10 vs 5 in 2018).

(2) **As did US funds' share of the percentage of outperformance captured:** The shift can also be seen when you look at the percentage alpha captured by US funds – it actually was even more pronounced. Figs 2 & 3 also show the US' share going from 67% in 2016 to 78% in 2017, all the way to 91% in 2018.

(3) **And those two trends were even more overwhelming on a weighted-AUM basis, as larger US funds did particularly well:** The trends above were even more noticeable when looked at on a weighted AUM-basis. For example, the number of US outperforming funds to European ones went from 71% / 29% in '16 to 87% / 13% two years later with only two Euro fund groups getting the gold out of 15 categories. The same goes for alpha captured where the split last year was 98% to 2% (Figs 5 & 6). If the trends in Figs 8 & 9 continue, '18 would likely be looked back upon as an inflection point, potentially influenced by choices around P&L versus non-P&L payment structures.

(4) **The stuff where Europe did outperform is in areas you'd probably expect they would (ex US small cap):** The only two European fund groups to outperform on a weighted-basis were Japan & global large-cap (Fig 7), while on an arithmetical average-basis, Europe outperformed in EM, US small-cap, Europe, global s/mid & US mid-cap (Fig 4).

(5) **But even in those places, when Europe did better it was only by a little but not vice versa (i.e. when the US came out on top it was by a lot):** Interestingly, in the spots where the European funds outperformed it was only by a little; whereas in most areas where the US funds placed above, it was by wide margins. Of the five categories where Europe outperformed, it was by only 48bps on average, while in the 10 categories where the US did better the alpha averaged 258bps (Fig 4 on an average-basis).

(6) **Not surprisingly, there's a wide spread between the top & bottom quartiles, but if part of the divergence is attributable to research spend that would matter:** The spread between the 1st & 4th quartiles averaged a full 1,312bps and was greatest in healthcare, ESG, US SC & US MC & global s/mid. On the flip-side, the spread was the narrowest in Japan, EM & Europe (Fig 10-14).

(7) **Research costs are dwarfed by the performance variance between the 1st & 4th quartile funds:** As a result one could conclude MiFID II has been a bad outcome for both asset owners & managers who should collaborate on research budgets, as both parties have a shared interest in the manager reaching its targeted-returns (Fig 16).

Methodology: In this analysis, we took all available equity MFs w/ greater than $100mn in AUM, divided them into US-domiciled (we assumed payment through traditional means such as client commissions & checks) & Europe/cross-border-domiciled (we assumed payment via managers' own P&L), and then matched-up categories w/ multiple managers running the same strategies from both geographies. We came up w/ five US categories that corresponded (e.g. ranging from LC growth to SC; Fig 1); seven global categories (from global equity to EM); and three sector categories (ESG, tech & HC). The resulting set of 3,363 funds produced a split of 53% domiciled domestically & 47% over in Europe w/ the mix of the almost $6trn of AUM weighted-heavily to the US (85% vs 15%). We then measured the outperformance of each categories' fund grouping over '16-'18 to see which of the regions came out on top.

Figure 1. 2018 MiFID II Fund Performance Data Monitor: (1) 3,363 mutual funds with greater-than $100mn in assets (a 53% versus 47% split), comprising $5.8trn of AUM (with a wider 85% to 15% distribution); (2) includes five US strategy categories, seven global categories & three sector categories with multiple managers running the strategy from both geographies; and (3) a split between client money payment and P&L

Key Potential Variable: Research funding methodology and quantum (Europe: P&L - US: Client Money)

Category Rationale: Categories with multiple managers running the strategy from both geographies.
Minimum Fund AUM $100 Million

Initial Equity Categories:

US	Global	Sectors
Small Cap	Glob. Large Cap	ESG/SRI
Mid Cap	Glob. Small/Mid-Cap	Technology
Large Cap	Global All	Healthcare
Large Cap Growth	Europe	
US - All	Asia	
	Japan	
	Emerging Markets	

	2016	2017	2018
Equity Categories	14	14	15
Funds: US	1,654	1,667	1,797
Europe	1,439	1,454	1,566
Total	3,093	3,121	3,363
AUM ($ Millions): US	4,189,375	4,293,830	4,949,043
Europe	593,802	759,768	830,558
Total	4,783,177	5,053,598	5,779,601

Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 2. Sector average outperformance (# of sectors & % captured)

Sector Summary	2016	2017	2018
US Outperforms #	9	12	10
%	64.3	85.7	66.7
Europe Outperforms #	5	2	5
%	35.7	14.3	33.3
% Outperformance Captured			
US	66.60	77.87	90.85
Europe	33.40	22.13	9.15

Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

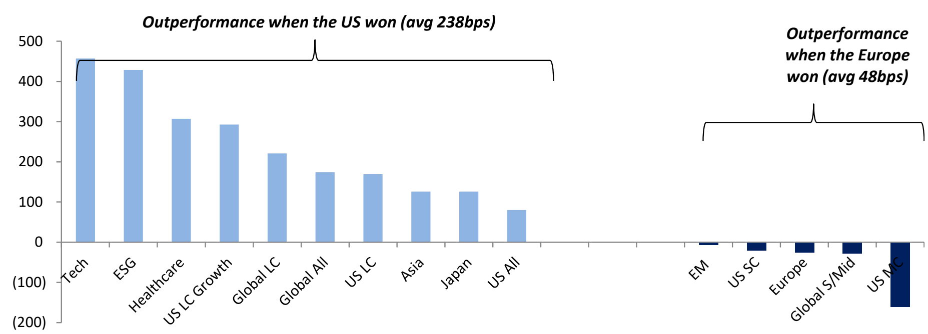
Figure 3. 2018 average performance (who did it better?)

Equity Category	# of Funds in 2018	2016 Outperformance (bps)	2017 Outperformance (bps)	2018 Outperformance (bps)
Tech	36	408	514	457
ESG	95	---	---	429
Healthcare	363	(444)	99	307
US LC Growth	266	(37)	253	293
Global LC	142	257	102	221
Global All	163	252	161	174
US LC	715	157	182	169
Asia	142	(142)	69	126
Japan	591	591	593	126
US All	1271	235	97	80
EM	132	30	80	(6)
US SC	319	289	(323)	(20)
Europe	13	(510)	(370)	(25)
Global S/Mid	20	285	21	(28)
US MC	237	(123)	267	(161)

Note: Europe Funds outperforming in shaded boxes

Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 4. Magnitude of average outperformance & skew of frequency (US vs Europe)



Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 5. AUM weighted sector outperformance (# of sectors & % captured)

Sector Summary	2016	2017	2018
US Outperforms #	10	9	13
%	71.4	64.3	86.7
Europe Outperforms #	4	5	2
%	28.6	35.7	13.3
% Outperformance Captured			
US	48.16	66.96	97.79
Europe	51.84	33.04	2.21

Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

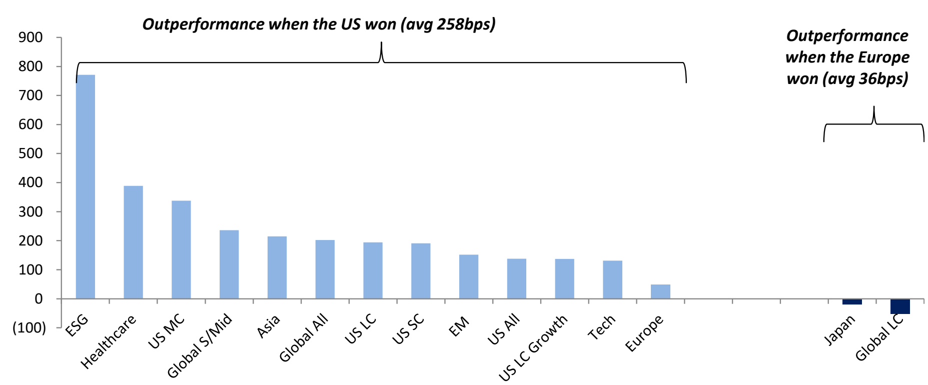
Figure 6. 2018 AUM weighted performance

Equity Category	# of Funds in 2018	2016 Outperformance (bps)	2017 Outperformance (bps)	2018 Outperformance (bps)
ESG	95	---	---	771
Healthcare	363	(363)	271	389
US MC	237	(532)	363	338
Global S/Mid	20	250	186	236
Asia	142	(284)	269	215
Global All	163	158	(209)	202
US LC	715	207	227	194
US SC	319	156	(211)	191
EM	132	28	(41)	152
US All	1271	241	144	138
US LC Growth	266	104	254	137
Tech	36	193	63	131
Europe	13	(657)	(463)	48
Japan	591	197	290	(19)
Global LC	142	172	(96)	(52)

Note: Europe Funds outperforming in shaded boxes

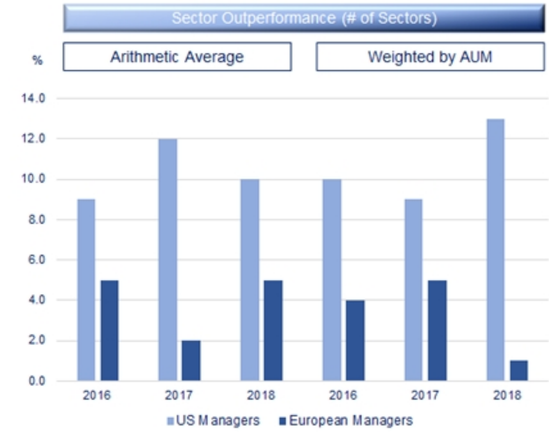
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 7. Magnitude of AUM weighted outperformance (US vs Europe)



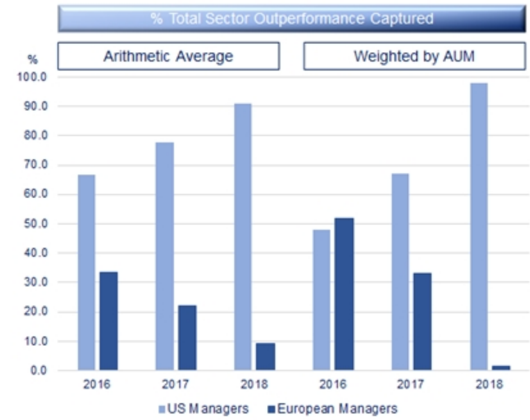
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 8. Historical number of sectors outperformance comparison



Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI

Figure 9. Historical percentage outperformance captured comparison



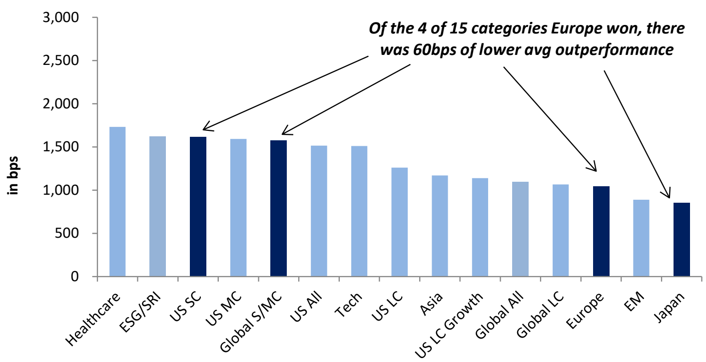
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI

Figure 10. Difference between the averages of the 1st & 4th quartiles

Equity Category	# of Funds in 2018	Difference btwn the Avg of 1st - 4th Quartiles (bps)
Healthcare	363	1,731
Global S/Mid	20	1,575
US SC	319	1,613
US MC	237	1,592
ESG	95	1,622
Tech	36	1,511
US All	1,271	1,516
US LC	715	1,261
Global All	163	1,098
US LC Growth	266	1,140
Europe	13	1,044
Global LC	142	1,067
Asia	142	1,170
EM	132	889
Japan	591	852
Average		**1,312**

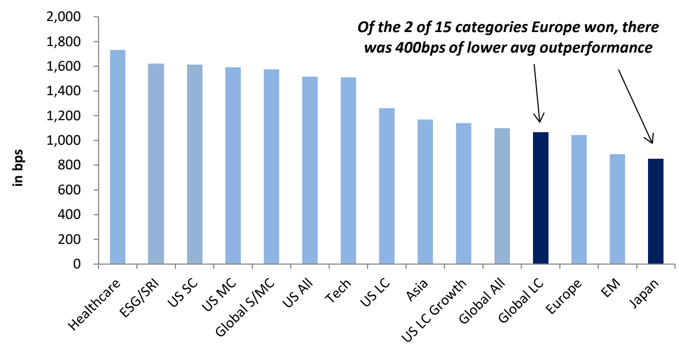
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI

Figure 11. Difference between the averages of the 1st & 4th quartiles, ranked on an average-basis



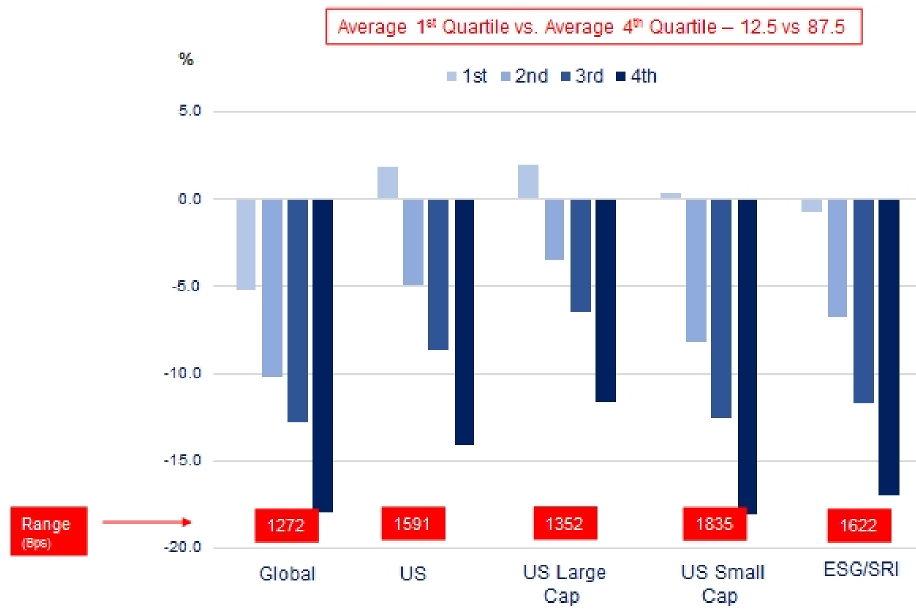
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI

Figure 12. Difference between the averages of the 1st & 4th quartiles, ranked on an AUM-basis



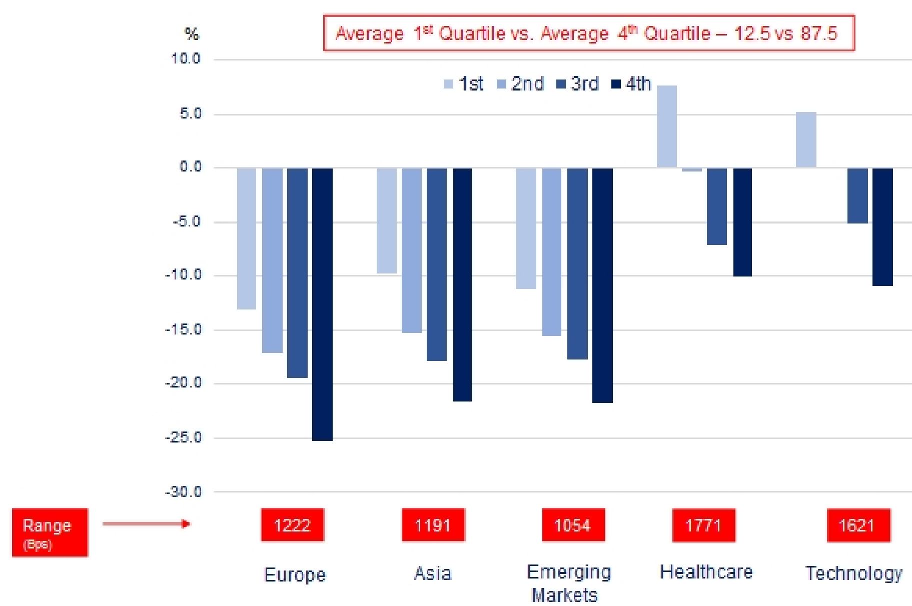
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI

Figure 13. 2018 performance quartiles for global, US, US LC, US SC & ESG



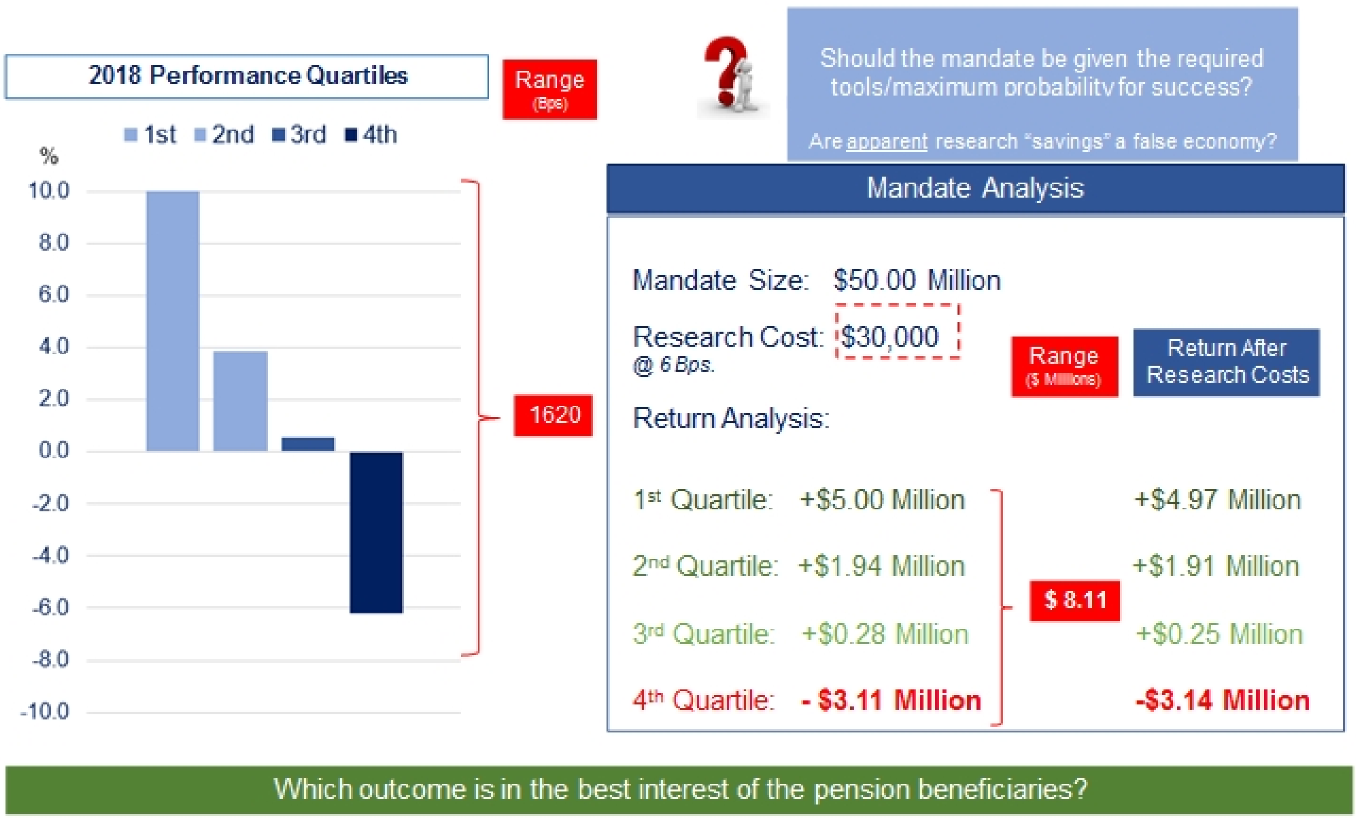
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 14. 2018 performance quartiles for Europe, Asia, EM, healthcare & tech



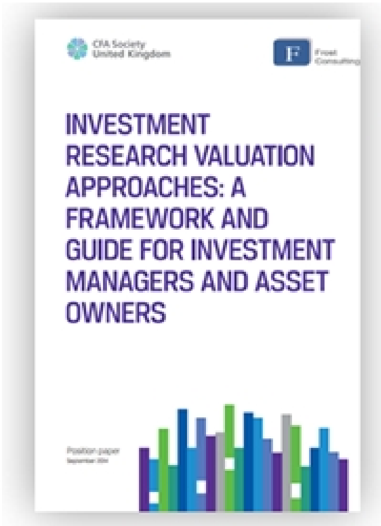
Source: Frost Consulting, Strategic Insight Simfunds, Evercore ISI Research

Figure 15. Focus on Large-Cap Healthcare Equities



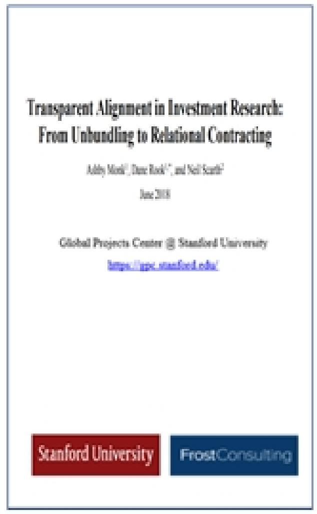
Source: Frost Consulting, Evercore ISI Research

Figure 16. Perspectives on research spending



Seminal work on Research Valuation for CFA Institute - 2014

- Research valuation is a function of investment process and portfolio construction.
- Research budgets can and should be aligned to client return objectives.



Analysis of MiFID II Impact on Asset Owners – June 2018

- MiFID II has been a bad outcome for both asset owners and asset managers.
- Asset managers and asset owners should collaborate on research budgets.
- Both parties have a shared interest in the manager's product achieving its targeted return.

Research costs are dwarfed by the performance variance between 1st and 4th Quartile funds…..

Source: Frost Consulting, Evercore ISI Research

TIMESTAMP

(Article 3(1)e and Article 7 of MAR)

Time of dissemination: April 25 2019 06:15

ANALYST CERTIFICATION

The analysts, Glenn Schorr, Eric Young, Kaimon Chung, John Dunn, primarily responsible for the preparation of this research report attest to the following: (1) that the views and opinions rendered in this research report reflect his or her personal views about the subject companies or issuers; and (2) that no part of the research analyst's compensation was, is, or will be directly related to the specific recommendations or views in this research report.

DISCLOSURES

This report is approved and/or distributed by Evercore Group LLC ("Evercore Group"), a U.S. licensed broker-dealer regulated by the Financial Industry Regulatory Authority ("FINRA"), and International Strategy & Investment Group (UK) Limited ("ISI UK"), which is authorised and regulated in the United Kingdom by the Financial Conduct Authority. The institutional sales, trading and research businesses of Evercore Group and ISI UK collectively operate under the global marketing brand name Evercore ISI ("Evercore ISI"). Both Evercore Group and ISI UK are subsidiaries of Evercore Partners Inc. ("Evercore Partners"). The trademarks, logos and service marks shown on this report are registered trademarks of Evercore Partners.

The analysts and associates responsible for preparing this report receive compensation based on various factors, including Evercore Partners' total revenues, a portion of which is generated by affiliated investment banking transactions. Evercore ISI seeks to update its research as appropriate, but various regulations may prevent this from happening in certain instances. Aside from certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Evercore ISI generally prohibits analysts, associates and members of their households from maintaining a financial interest in the securities of any company in the analyst's area of coverage. Any exception to this policy requires specific approval by a member of our Compliance Department. Such ownership is subject to compliance with applicable regulations and disclosure. Evercore ISI also prohibits analysts, associates and members of their households from serving as an officer, director, advisory board member or employee of any company that the analyst covers.

This report may include a Tactical Call, which describes a near-term event or catalyst affecting the subject company or the market overall and which is expected to have a short-term price impact on the equity shares of the subject company. This Tactical Call is separate from the analyst's long-term recommendation (Outperform, In Line or Underperform) that reflects a stock's forward 12-month expected return, is not a formal rating and may differ from the target prices and recommendations reflected in the analyst's long-term view.

Applicable current disclosures regarding the subject companies covered in this report are available at the offices of Evercore ISI, and can be obtained by writing to Evercore Group LLC, Attn. Compliance, 666 Fifth Avenue, 11th Floor, New York, NY 10103.

Evercore Partners and its affiliates, and I or their respective directors, officers, members and employees, may have, or have had, interests or qualified holdings on issuers mentioned in this report. Evercore Partners and its affiliates may have, or have had, business relationships with the companies mentioned in this report.

Additional information on securities or financial instruments mentioned in this report is available upon request.

Ratings Definitions

Current Ratings Definition

Evercore ISI's recommendations are based on a stock's total forecasted return over the next 12 months. Total forecasted return is equal to the expected percentage price return plus gross dividend yield. We divide our stocks under coverage into three primary ratings categories, with the following return guidelines:

Outperform- the total forecasted return is expected to be greater than the expected total return of the analyst's coverage universe
In Line- the total forecasted return is expected to be in line with the expected total return of the analyst's universe
Underperform- the total forecasted return is expected to be less than the expected total return of the analyst's universe
Coverage Suspended- the rating and target price have been removed pursuant to Evercore ISI policy when Evercore is acting in an advisory capacity in a merger or strategic transaction involving this company and in certain other circumstances.*
Rating Suspended- Evercore ISI has suspended the rating and target price for this stock because there is not sufficient fundamental basis for determining, or there are legal, regulatory or policy constraints around publishing, a rating or target price. The previous rating and target price, if any, are no longer in effect for this company and should not be relied upon.*

*Prior to October 10, 2015, the "Coverage Suspended" and "Rating Suspended" categories were included in the category "Suspended."

FINRA requires that members who use a ratings system with terms other than "Buy," "Hold/Neutral" and "Sell" to equate their own ratings to these categories. For this purpose, and in the Evercore ISI ratings distribution below, our Outperform, In Line, and Underperform ratings can be equated to Buy, Hold and Sell, respectively.

Historical Ratings Definitions

Prior to March 2, 2017, Evercore ISI's recommendations were based on a stock's total forecasted return over the next 12 months:

Buy- the total forecasted return is expected to be greater than 10%

Hold- the total forecasted return is expected to be greater than or equal to 0% and less than or equal to 10%
Sell -the total forecasted return is expected to be less than 0%

On October 31, 2014, Evercore Partners acquired International Strategy & Investment Group LLC ("ISI Group") and ISI UK (the "Acquisition") and transferred Evercore Group's research, sales and trading businesses to ISI Group. On December 31, 2015, the combined research, sales and trading businesses were transferred back to Evercore Group in an internal reorganization. Since the Acquisition, the combined research, sales and trading businesses have operated under the global marketing brand name Evercore ISI.

ISI Group and ISI UK:

Prior to October 10, 2014, the ratings system of ISI Group LLC and ISI UK which was based on a 12-month risk adjusted total return:

Strong Buy- Return > 20%
Buy- Return 10% to 20%
Neutral - Return 0% to 10%
Cautious- Return -10% to 0%
Sell- Return< -10%

For disclosure purposes, ISI Group and ISI UK ratings were viewed as follows: Strong Buy and Buy equate to Buy, Neutral equates to Hold, and Cautious and Sell equate to Sell.

Evercore Group:

Prior to October 10, 2014, the rating system of Evercore Group was based on a stock's expected total return relative to the analyst's coverage universe over the following 12 months. Stocks under coverage were divided into three categories:

Overweight- the stock is expected to outperform the average total return of the analyst's coverage universe over the next 12 months.
Equal-Weight- the stock is expected to perform in line with the average total return of the analyst's coverage universe over the next 12 months.
Underweight -the stock is expected to underperform the average total return of the analyst's coverage universe over the next 12 months.
Suspended- the company rating, target price and earnings estimates have been temporarily suspended.

For disclosure purposes, Evercore Group's prior "Overweight," "Equal-Weight" and "Underweight" ratings were viewed as "Buy," "Hold" and "Sell," respectively.

Ratings Definitions for Portfolio-Based Coverage

Evercore ISI utilizes an alternate rating system for companies covered by analysts who use a model portfolio-based approach to determine a company's investment recommendation. Covered companies are included or not included as holdings in the analyst's Model Portfolio, and have the following ratings:

Long- the stock is a positive holding in the model portfolio; the total forecasted return is expected to be greater than 0%.
Short- the stock is a negative holding in the model portfolio; the total forecasted return is expected to be less than 0%.
No Position- the stock is not included in the model portfolio.
Coverage Suspended- the rating and target price have been removed pursuant to Evercore ISI policy when Evercore is acting in an advisory capacity in a merger or strategic transaction involving this company, and in certain other circumstances; a stock in the model portfolio is removed.
Rating Suspended - Evercore ISI has suspended the rating and/or target price for this stock because there is not sufficient fundamental basis for determining, or there are legal, regulatory or policy constraints around publishing, a rating or target price. The previous rating and target price, if any, are no longer in effect for this company and should not be relied upon; a stock in the model portfolio is removed.

Stocks included in the model portfolio will be weighted from 0 to 100% for Long and 0 to -100% for Short. A stock's weight in the portfolio reflects the analyst's degree of conviction in the stock's rating relative to other stocks in the portfolio. The model portfolio may also include a cash component. At any given time the aggregate weight of the stocks included in the portfolio and the cash component must equal100%.

Stocks assigned ratings under the alternative model portfolio-based coverage system cannot also be rated by Evercore ISI's Current Ratings definitions of Outperform, In Line and Underperform.

FINRA requires that members who use a ratings system with terms other than "Buy," "Hold/Neutral" and "Sell," to equate their own ratings to these categories. For this purpose, and in the Evercore ISI ratings distribution below, our Long, No Position and Short ratings can be equated to Buy, Hold and Sell respectively.

Evercore ISI rating (as of 04/25/2019)

Coverage Universe			**Investment Banking Services I Past 12 Months**		
Ratings	**Count**	**Pct.**	**Ratings**	**Count**	**Pct.**
Buy	381	51	Buy	254	67
Hold	292	39	Hold	147	50
Sell	42	6	Sell	17	40
Coverage Suspended	18	2	Coverage Suspended	13	72
Rating Suspended	9	1	Rating Suspended	6	67

Issuer-Specific Disclosures (as of April 25, 2019)

Price Charts

GENERAL DISCLOSURES

This report is approved and/or distributed by Evercore Group L.L.C. ("Evercore Group"), a U.S. licensed broker-dealer regulated by the Financial Industry Regulatory Authority ("FINRA") and by International Strategy & Investment Group (UK) Limited ("ISI UK"), which is authorised and regulated in the United Kingdom by the Financial Conduct Authority. The institutional sales, trading and research businesses of Evercore Group and ISI UK collectively operate under the global marketing brand name Evercore ISI ("Evercore ISI"). Both Evercore Group and ISI UK are subsidiaries of Evercore Inc. ("Evercore"). The trademarks, logos and service marks shown on this report are registered trademarks of Evercore Inc.

This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction. The information and opinions in this report were prepared by employees of affiliates of Evercore. The information herein is believed by Evercore ISI to be reliable and has been obtained from public sources believed to be reliable, but Evercore ISI makes no representation as to the accuracy or completeness of such information. Opinions, estimates and projections in this report constitute the current judgment of the author as of the date of this report. They do not necessarily reflect the opinions of Evercore or its affiliates and are subject to change without notice. In addition, opinions, estimates and projections in this report may differ from or be contrary to those expressed by other business areas or groups of Evercore and its affiliates. Evercore ISI has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate. Facts and views in Evercore ISI research reports and notes have not been reviewed by, and may not reflect information known to, professionals in other Evercore affiliates or business areas, including investment banking personnel.

Evercore ISI does not provide individually tailored investment advice in research reports. This report has been prepared without regard to the particular investments and circumstances of the recipient. The financial instruments discussed in this report may not suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. Securities and other financial instruments discussed in this report, or recommended or offered by Evercore ISI, are not insured by the Federal Deposit Insurance Corporation and are not deposits of or other obligations of any insured depository institution. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from the financial instrument, and such investor effectively assumes such currency risk. In addition, income from an investment may fluctuate and the price or value of financial instruments described in this report, either directly or indirectly, may rise or fall. Estimates of future performance are based on assumptions that may not be realized. Furthermore, past performance is not necessarily indicative of future performance.

Evercore ISI salespeople, traders and other professionals may provide oral or written market commentary or trading strategies to our clients that reflect opinions that are contrary to the opinions expressed in this research. Our asset management affiliates and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

Electronic research is simultaneously available to all clients. This report is provided to Evercore ISI clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of Evercore ISI. Receipt and review of this research report constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion or information contained in this report (including any investment recommendations, estimates or target prices) without first obtaining express permission from Evercore ISI.

This report is not intended for distribution to, or use by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.

For investors in the UK: In making this report available, Evercore makes no recommendation to buy, sell or otherwise deal in any securities or investments whatsoever and you should neither rely or act upon, directly or indirectly, any of the information contained in this report in respect of any such investment activity. This report is being directed at or distributed to, (a) persons who fall within the definition of Investment Professionals (set out in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order")); (b) persons falling within the definition of high net worth companies, unincorporated associations, etc. (set out in Article 49(2) of the Order); (c) other persons to whom it may otherwise lawfully be communicated (all such persons together being referred to as "relevant persons"). This report must not be acted on or relied on by persons who are not relevant persons.

Applicable current disclosures regarding the subject companies covered in this report are available at the offices of Evercore ISI, and can be obtained by writing to Evercore Group L.L.C., Attn. Compliance, 666 Fifth Avenue, 11th Floor, New York, NY 10103.

In compliance with the European Securities and Markets Authority's Market Abuse Regulation, a list of all Evercore ISI recommendations disseminated in the preceding 12 months for the subject companies herein, may be found at the following site: https://evercoreisi.mediasterling.com/disclosure.