April 2017

How Can You Enhance Your Core-Satellite Approach? Consider Removing the Core.

Executive Summary

- Consultants at Cambridge Associates have shown how to build what they believe is a better "core-satellite" portfolio. Get rid of the passive core component (such as an S&P 500 Index fund) completely and load up on the satellites.
- The team compared hypothetical core-satellite portfolios with hypothetical "donut" portfolios, which lacked the core component.
- "…over sufficient time periods, not only were the median and higher-end outcomes better for the donut portfolio, but the lowest percentile performance was similar to the core-satellite portfolios," said Cambridge Managing Director Hamilton Lee. "And these results are net of fees."
- If you are employing this structure, it's important not to look at individual manager performance, but at the composite level — and to look at it over a longer time frame, not shorter time frames.
- "It's interesting that among proponents of passive management I have gotten less pushback than I expected," said Cambridge Managing Director Jackie Williams. "The results are compelling."

Seeking to Generate Alpha

Consultants at Cambridge Associates have shown what they say is a way to get more bang out of U.S. equity manager structures. Comparing the traditional core-satellite structure—which comprises a passive core surrounded by concentrated, high active share "satellite" managers—with a "donut" structure composed entirely of satellite managers, the consultants found that over a 17-year period the donut structure yielded better returns without an equivalent increase in risk.

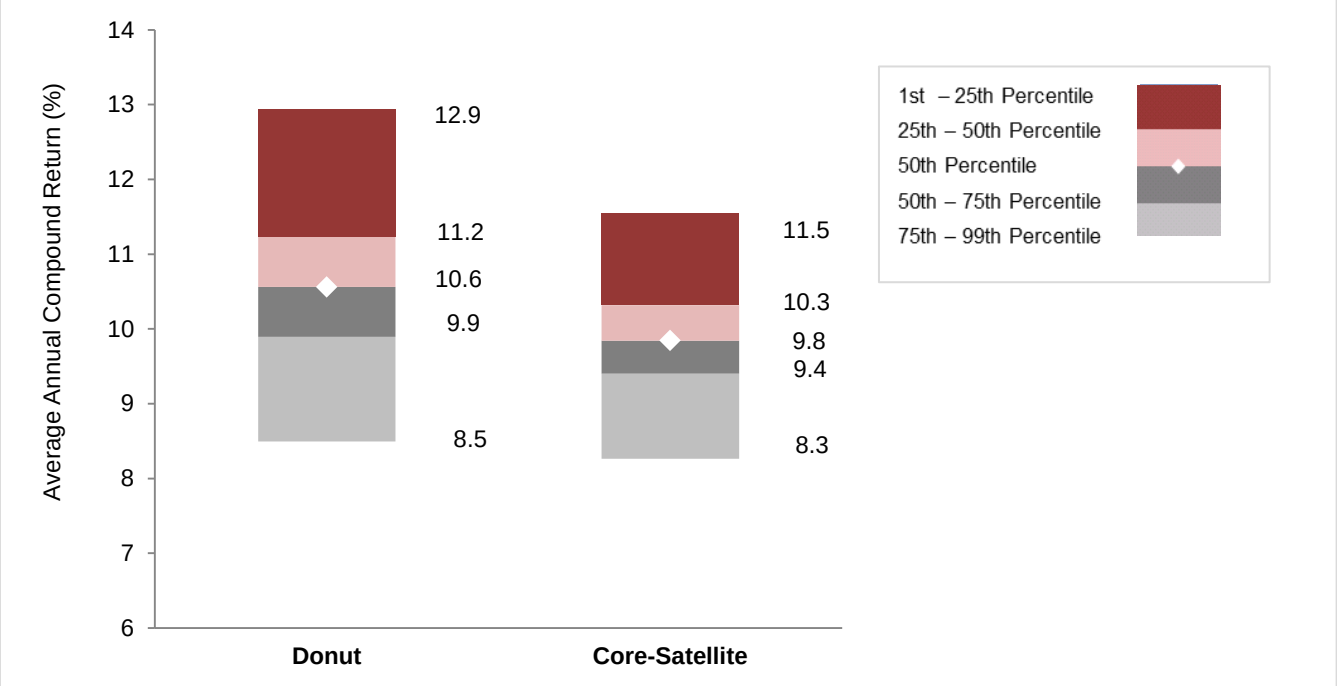
Three colleagues from the Boston-based firm spoke at a Brandes Institute Summit in New York and shared more details from an intriguing 2015 study, "Constructing Superior Equity Portfolios." The trio also fielded questions from Institute Advisory Board members on their report.

Cambridge Managing Director Hamilton Lee said the study was spurred by a desire to help foundations and other institutional investors generate alpha in what his firm expects may be a continued low-return environment. The team compared hypothetical core-satellite portfolios with hypothetical "donut" portfolios, which lacked the core component; they studied returns and volatility for the two approaches over 17 years and found some surprising results, as shown in Exhibit 1.

Methodology Highlights

- 10,000 hypothetical, model-constructed donut portfolios each allocated to 5 randomly selected, high-active-share equity strategies
- Core/satellite portfolios added a 30% passive allocation and reweighted the active strategies to maintain style and market capitalization exposures
- Universe of 108 institutional portfolios from Cambridge's database
- All returns were net of fees
- Study period: Jan. 1997 to Dec. 2013

Exhibit 1: Donut Performance Was Superior Across All Quartiles from 1997 through 2013
Results Reflect Average Annual Compound Returns (AACR) for 10,000 Iterations



Source: Cambridge Associates, as of 12/31/13. Past performance is not a guarantee of future results. This hypothetical example is used for illustrative purposes only. It does not represent the performance of any specific investment. Actual results will vary.

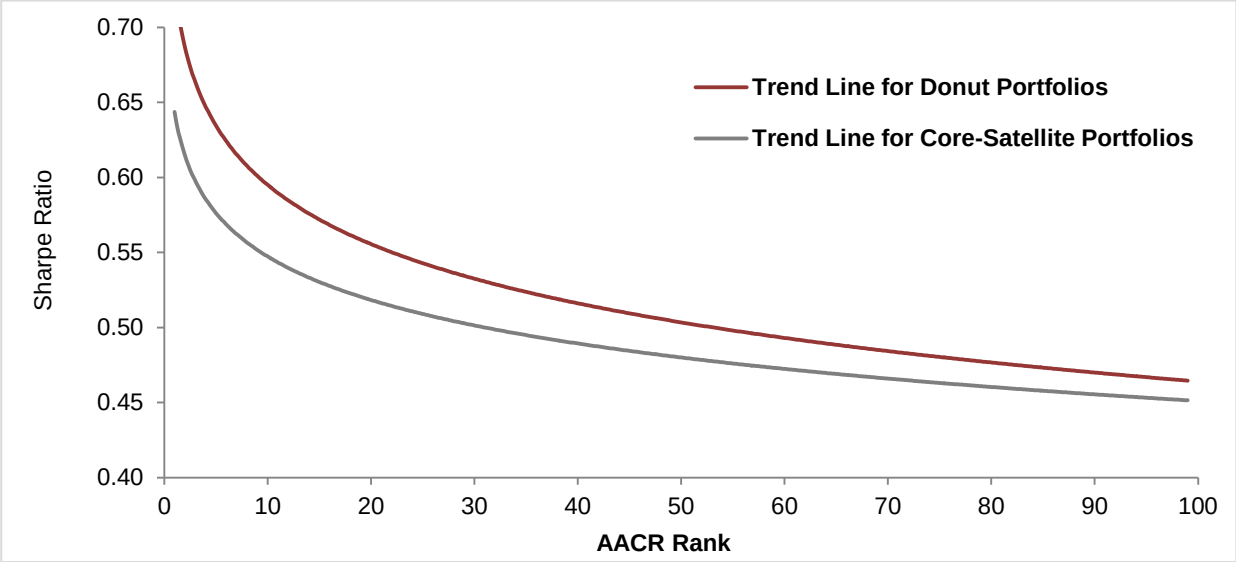
"I see clients looking at a core-satellite structure as a way of controlling costs and risk," Lee said. "Their assumption is while core-satellite often employs high-active share managers around the edges, using a passive core is cheaper and leads to lower tracking error.

"But over sufficient time periods, not only were the median and higher-end outcomes better for the donut portfolio, but the lowest percentile performance was similar to the core-satellite portfolios. And these results are net of fees."[1]

Associate Investment Director Cameron Wakley added, "While volatility of the donut portfolio was higher, it was very minor. We looked at Sharpe Ratios for the [hypothetical] 10,000 portfolios we created and a log trend of average annual compound return ("AACR") rank. [In the chart shown as Exhibit 2], the red line shows the trend for the donut. At all quartiles, there was a better Sharpe Ratio for the donut."

[1] Cambridge accounted for fees where it had the information for specific managers. In cases where it didn't have specifics, analysts used an assumption about fees based on the asset class. For example, the assumed fee for a large-cap manager was lower than for a small-cap manager.

Exhibit 2: Donut Portfolios Consistently Showed Higher Returns and Risk-Adjusted Returns (1997-2013)
Superior AACR Rankings and Higher Sharpe Ratios Versus Core-Satellite Portfolios



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Taking a Long-term Approach

Lee acknowledged that investors may not have a 17-year horizon over which to invest, so the team also focused on distinct, shorter periods. "The worst outcomes for the donut structure were below the outcomes for core-satellite structures over each subperiod — yet the donuts did better over the long term. If you are employing this structure, it's important not to look at individual manager performance, but at the composite level — and to look at it over a longer time frame, not shorter time frames. It's really a question of short-term underperformance but long-term strong returns."

He added, "If you have a portfolio of five managers, one of the bigger risks I see is new committee members coming in and saying, 'This one manager is underperforming; we need to get rid of them.' But even within the best-performing portfolio, underperforming managers were not an indication that something was wrong."[2]

Managing Director Jackie Williams added, "I have a background in investment management and focus a lot on investment process and whether that process makes sense and whether it's repeatable. If the process is logical and it has some proven success and it's repeatable, I'm willing to stick with them for a long time."

The Effects of Rebalancing

The team also explored the effects of rebalancing these portfolios on an annual basis. Rebalancing generally tended to enhance returns for the donut and core-satellite portfolios. At the same time, there were sub periods, such as the technology bubble, when rebalancing was detrimental as assets were rotated away from portfolios that delivered gains over an extended period.

[2] Hamilton's assessment parallels work the Brandes Institute has done over the years showing that portfolios with exceptional 10-year returns often suffer shorter periods of poor performance (relative to peers and/or a benchmark) within that 10-year span. See our "Death, Taxes and Short-Term Underperformance" series for more details.

"Annual rebalancing generally helped the donut structure more than the core-satellite portfolios," Williams said. "Over the full period, for the first percentile portfolio, rebalancing added 21 basis points vs. negative 18 basis points for core-satellite.

The median was an additional 28 basis points for the donut vs. 17 basis points for core-satellite. (See Exhibit 3.) The tech bubble was the anomaly."

Exhibit 3: Value Added or Detracted by Annual Rebalancing, 1997 through 2013

Full Period (97-13)		
Percentile	Donut	Core-Satellite
1st	21 bps	-18 bps
25th	24 bps	9 bps
Median	28 bps	17 bps
75th	30 bps	22 bps
99th	26 bps	18 bps

Tech Bubble (97-00)		
Percentile	Donut	Core-Satellite
1st	-130 bps	-103 bps
25th	-98 bps	-62 bps
Median	-71 bps	-34 bps
75th	-26 bps	-12 bps
99th	-16 bps	-10 bps

Tech Bust (00-02)		
Percentile	Donut	Core-Satellite
1st	77 bps	78 bps
25th	131 bps	90 bps
Median	176 bps	128 bps
75th	238 bps	167 bps
99th	318 bps	235 bps

Bull Market (02-07)		
Percentile	Donut	Core-Satellite
1st	-8 bps	-52 bps
25th	-3 bps	-22 bps
Median	3 bps	-13 bps
75th	7 bps	-3 bps
99th	2 bps	14 bps

Crash (08)		
Percentile	Donut	Core-Satellite
1st	5 bps	-53 bps
25th	36 bps	4 bps
Median	46 bps	26 bps
75th	48 bps	40 bps
99th	70 bps	70 bps

Stimulus-Driven Market (09-13)		
Percentile	Donut	Core-Satellite
1st	-16 bps	-72 bps
25th	-34 bps	-38 bps
Median	-26 bps	-21 bps
75th	-15 bps	-1 bps
99th	17 bps	35 bps

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"We were thinking in terms of practically implementing this and wondering if investors might think, 'If I put it in place and leave it alone, am I doing a disservice? Should I rebalance?' The donut structure's success is not dependent on rebalancing, but it tends to have a larger impact on the donut vs. the core-satellite structure."

The Study Universe and Survivorship Bias

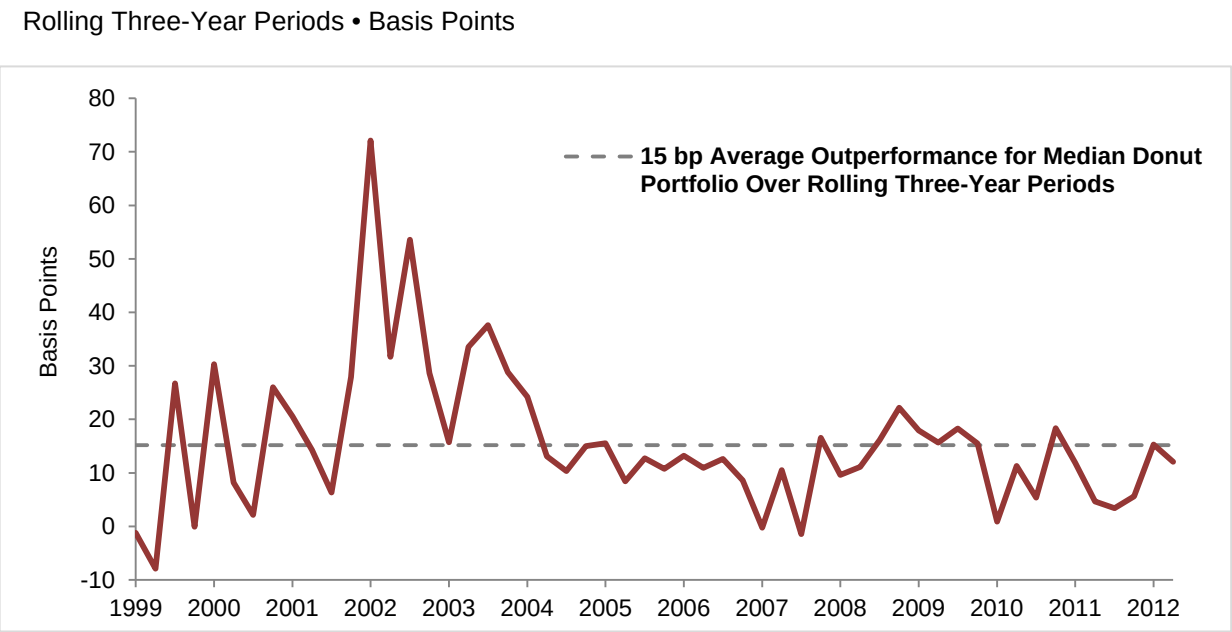
The study's universe came from Cambridge's database of equity products, which includes more than 1,400 institutional portfolios. That sample was narrowed to about 700 by filtering out the products without 17 years of performance data and then further reduced to the 108 managers with high active share and with investment styles that could be categorized as all-cap, large-cap value, large-cap growth, small-cap value, or small-cap growth. Each of the hypothetical donut portfolios was allocated to one active manager from each asset class (20% to all-cap, 25% to large-cap growth, 25% to large-cap value, 15% to small-cap growth, and 15% to small-cap value). Each of the hypothetical core-satellite portfolios was allocated 14% to each type of manager and the remaining 30% to a passive element. The study created 10,000 model portfolios, meaning that there were 10,000 different combinations of active managers from each asset class.

Skeptics may focus on survivorship bias in the results. But Williams said the team put a great deal of time and effort into addressing this. "A lot of work was done by hand. We probably spent as much time dealing with survivor bias as we did with

the research and analysis for the entire paper, but I think it was worth it."

Comparing rolling 3-year periods for the surviving portfolios versus those that reported results for only a portion of the full 17-year period showed the survivors outperformed by 46 basis points for the donut structure and 31 basis points for the core-satellite structure on an average annualized basis — a difference of 15 basis points. "Obviously, there is survivor bias; we expected the top performers to be survivors and this does inflate returns over time," said Williams. "But at the end of the day, it was only 15 basis points and, in my opinion, that's not very much."

Exhibit 4: Impact of Survivorship Bias Seems Limited
Estimate Averages Just 15 Basis Points Over Rolling, 3-Year Periods (1997-2013)



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Practical Application

In sharing the findings with investors, Lee said reaction to this portfolio structure has been "very positive." The results have helped overcome concerns about hiring managers with volatile returns. "Actually, the very best results came with higher tracking-error managers," he said.

"With this approach, behavioral issues can have a big impact," Williams said. "It's interesting that among proponents of passive management I have gotten less pushback than I expected. The results are compelling."

The complete Cambridge Associates report is available here: "Constructing Superior Equity Portfolios."

Shane Finneran contributed to this report.

Disclosures

Active share: The difference between a portfolio's holdings and those of its benchmark index.

Alpha: A portfolio's excess return relative to its benchmark's return.

Sharpe ratio: The average return from an investment minus the risk-free rate, divided by the standard deviation of the return.

Tracking error: The difference between a portfolio's performance and its benchmark's performance.

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