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Improving the “Endowment Model” Recipe **Raising the Probability of Future Success**



THE FAMILY OFFICE ASSOCIATION

Improving the “Endowment Model” Recipe

Raising the Probability of Future Success

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Improving the “Endowment Model” Recipe

ABSTRACT

This paper offers a perspective on how the endowment model might be improved, based on our experience over the past twenty years in Chief Investment Officer roles at large corporate and endowment plans.

The “endowment model” as developed and popularized by the Yale University investment office is seen by many as the gold standard of investment management practice. Endowment style investing relies on:

Equity-like investments for nearly all the investment return

Illiquid investments as a means to outperform liquid investments

Creating additional return through skillful selection of external investment managers

As of June 2015, the Yale endowment portfolio has a twenty year annualized return of 13.7%, a remarkable 6.4% per year ahead of global equities. This deserves recognition as a truly outstanding investment achievement. Nonetheless, this paper will argue that Yale’s approach could be enhanced in several important ways. With those enhancements, it would be more suitable for others to emulate in the years ahead. The need for change is motivated by current market conditions, certain shortcomings in the endowment model and the sheer difficulty of reproducing in the future what has worked so well for Yale in the past.

Section 1

The Cook and the Recipe

It may be helpful to compare the creation of an outstanding investment portfolio to the making of a delicious stew. The two primary ways to create a stew that stands out relative to all other stews are:

Option A: Use a different recipe, with different proportions of ingredients than other stew-makers

Option B: Use superior ingredients – better potatoes, better spices, better meats, etc.

Of these two approaches, Option A has much higher potential to lead to a differentiated stew than Option B. There is always wide latitude to adjust the recipe. In contrast, differences in ingredients, for instance one type of potatoes vs another, will be more subtle.

The Chief Investment Officer (CIO) of a university endowment faces similar choices. The main levers to influence portfolio outcomes are the recipe (asset allocation) and the ingredients (manager selection). As with our stew example, the recipe has the most influence on the outcome. However,

In this paper we find it helpful to compare the creation of an outstanding investment portfolio to the making of a delicious stew - the main levers to influence portfolio outcomes are the recipe and the ingredients.

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in actual practice, the focus tends to stray away from the recipe towards the ingredients. If we survey the investment strategies of large endowments today, we can make the following observations:

1. The risk postures and exposure to economic growth are similar
2. Asset allocation targets change only modestly from year to year
3. When there are large changes in target allocations, it tends to be the byproduct of external factors (market forces, capital calls and distributions) rather than being a deliberate choice of the investment staff
4. There is an almost exclusive dependence on equity-like investments for return
5. There are limitations to understanding what is actually owned
6. Most investment team efforts are spent on selection of investment managers, rather than asset allocation

Let's examine these observations further:



As with a stew, the recipe (asset allocation) has the most influence on outcome. However, in actual practice, the focus tends to stray away from the recipe towards the ingredients (manager selection).

SECTION 1

The Cook and the Recipe

1. The Recipes Are Alike

Most endowment CIO's pay close attention to the allocations of their peer endowments. In part this is because their own performance will be judged relative to that of their peers. Plan performance relative to peers is often a factor in incentive compensation for the investment staff, and impacts the career prospects of the investment professionals. If investment consultants are involved in the asset allocation decision, they also tend to offer similar advice across their clientele. The result of these influences is that endowment asset allocations are fairly similar.

The National Association of College and University Business Offices (NACUBO) conducts an annual survey of endowment investment results. The 2014 report, analyzing the returns of 832 endowments and affiliated foundations through June 2014, shows a median ten year annualized return of 7.0%. The 25th percentile for ten-year investment returns was 6.3%, while the 75th percentile was 7.7%, meaning that fully half of the plans had ten year results within just 0.7% of the median. Even in times of crisis, returns can be similar. In the June 2008 to June 2009 fiscal year, the global financial crisis (GFC) led to investment returns of -27.3% at Harvard, -24.6% at Yale, -25.9% at Stanford and -23.5% at Princeton. The narrow range of endowment investment return outcomes provides a telling indication that the level of investment risk and types of risks taken by university endowments are fairly similar to each other.

The downsides of endowment funds aligning with their peers include:

- The allocation of the average plan is rarely the best guide to what's optimal in current market conditions.
- The allocations of peer plans will not be designed to suit the specific goals and risk-taking capacity of the CIO's own fund
- It raises the challenges from a governance and career management perspective to be the first mover away from current practice, even when there is a strong case that changes would be helpful

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2. The Recipe Changes Slowly

The table below shows the annual asset allocation of the Yale endowment from 2005 through 2014, as shown in Yale's annual reports. There is also a liquid/illiquid breakdown. The absolute return (hedge fund) category is included in illiquid, though in fact there would be a broad range of liquidity terms in that category.

Table 1
Yale Endowment Annual Asset Allocation, in percentages

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Public Equity	27.7	26.2	25.1	25.3	17.3	16.9	15.7	13.6	15.7	15.4
Fixed Income & Cash	6.8	6.3	5.9	0.1	2.1	4.4	2.8	6.6	6.5	8.4
Private Equity	14.8	16.4	18.7	20.2	24.3	30.3	35.1	35.3	32.0	33.0
Real Assets	25.0	27.8	27.1	29.3	32.0	27.5	28.9	30.0	28.1	25.8
Absolute Returns	25.7	23.3	23.3	25.1	24.3	21.0	17.5	14.5	17.8	17.4
Total	100	100	100	100	100	100	100	100	100	100
Liquid	34.5	32.5	31.0	25.4	19.4	21.3	18.5	20.2	22.2	23.8
Illiquid	65.5	67.5	69.0	74.6	80.6	78.7	81.5	79.8	77.8	76.2

Over this ten year period, public equity allocations went down, but primarily to fund private equity. The public + private equity balance was relatively stable, as was the real assets allocation. Absolute return went down after 2008 to fund fixed income and cash, which we see as an effort to improve the liquidity posture. For the most part, year-over-year changes in allocations to any asset class were less than 3%.

With a mostly illiquid portfolio such as this one, it is difficult to respond tactically to current market risks and opportunities. For instance, even if Yale determined that now is a particularly bad time to be a private equity investor, it would be very challenging to actually move the allocation down with any speed. A big move down would likely require time-consuming and costly sales of private equity interests. This is a practical constraint on how much endowment asset allocations can actually change from year to year.

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3. The Recipe Changes Due to External Forces

The largest one year change in Yale allocations shown above was the 8% drop in public equity which happened in the 2008 – 2009 fiscal year (see box in Table 1). The 8% drop is not likely to be primarily the result of the Yale investment office concluding that public equity was a relatively less appealing investment in June 2009 (S&P 500 index at 926), as compared to June 2008 (S&P 500 index at 1341). That 8% drop was also not a consequence of public equities having worse performance than the rest of the portfolio. Yale reported 2008-9 public equity losses of 18.6% for domestic equities, 14.4% for foreign developed equities and 19.2% for emerging market equities, all of which were less negative than the -24.6% return of the entire endowment. Therefore, the 8% shift down in the public equity allocation in one year is most likely an involuntary consequence of public equity being the only asset class with enough liquidity to be sold to maintain funding of university spending and to cover capital calls. Perhaps this forced selling of public equity when it was attractively priced was a key motivator to Yale's decision to rebuild fixed income balances after 2008.

The main point here is that large changes in asset prices can move the asset allocation of an endowment portfolio in unpredictable ways. Even if the investment office begins with a carefully constructed target allocation, the actual mix can change involuntarily, especially when the lack of

liquidity of the portfolio significantly limits the ability of the investment team to rebalance back to the target. If the investment team wishes to get back to the intended asset allocation without resorting to inefficient purchases or sales of illiquid assets, the process can take years. This phenomenon is further exacerbated by large and unpredictable capital calls and distributions.

Large changes in asset prices can move the asset allocation of an endowment portfolio in unpredictable ways.



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4. The Ingredients All Taste the Same

Even though a large endowment may have several hundred separate manager relationships, it is not actually very well diversified. There is an almost exclusive reliance on equity-like risks. Whenever there is a large decline in global stock prices, nearly everything in the portfolio will also lose value. On average, each of the major asset classes in endowment portfolios, other than fixed income & cash, has a 0.8 or higher correlation to the performance of public equity, where 1.0 correlation is the highest possible.

The chart on the following page shows the yearly investment performance of the average endowment, as reported by NACUBO, vs. the performance of a traditional 60/40 portfolio (60% in a global stock index and 40% in the Barclays Aggregate US bond index). The relationship of endowment outcomes and 60/40 is almost exact.

The correlation between the annual performance of the average endowment and of global stocks over this period is 0.99. The 40% in bonds are a diversifier and reduce the overall risk of the portfolio. However, the 0.99 correlation indicates that practically the only thing you need to know to predict portfolio returns is the return of the stock market. This provides ample evidence of the strong equity bias in endowment investing. Endowments on average took a bit more risk (as measured by annual volatility) than 60/40 (11.6% vs. 10.7%), but achieved a slightly lower return (6.7% vs. 6.9%). Despite the efforts to increase investment complexity and provide diversification, it's disappointing that there is no evidence that the average endowment created any additional value from either asset allocation or investment manager selection.

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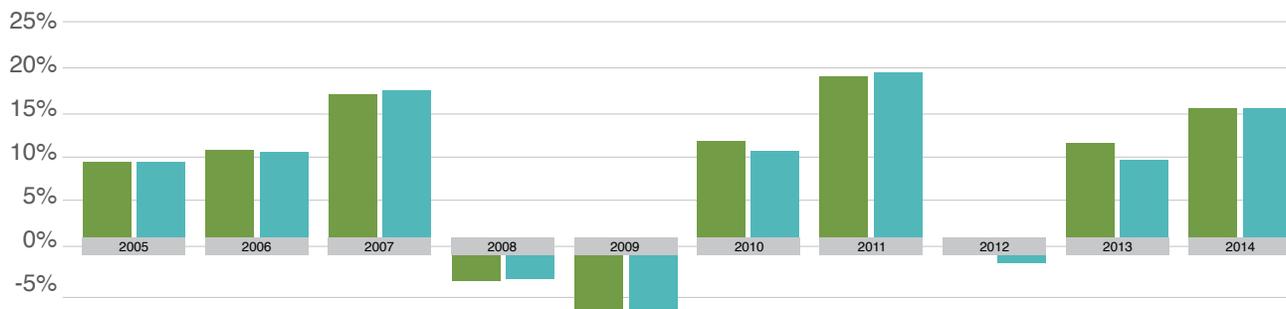
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Endowments on average took a bit more risk than 60/40 (11.6% vs. 10.7%), but achieved a slightly lower return (6.7% vs. 6.9%).

Chart 1

Yearly Investment Performance of the Average Endowment vs. Traditional 60/40



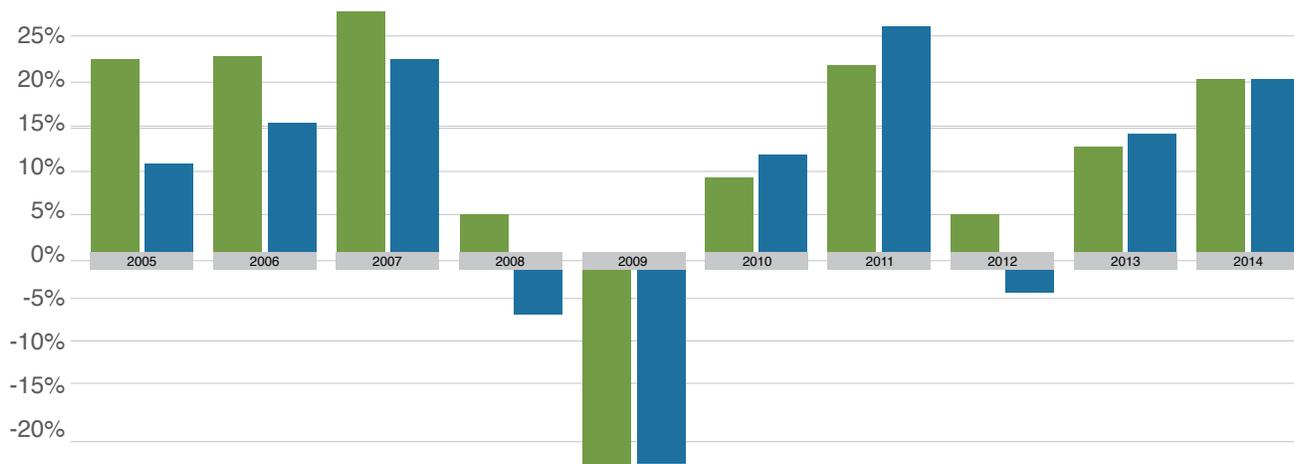
The performance of the average endowment fell well short of Yale, whose 11.0% annual return ranked number one among all endowments in the same ten year period. Yale's results also have a bit lower correlation to public equity, 0.92 vs. 0.99. One reason that Yale's returns are higher than average is they had more investment risk in the portfolio. The annual risk of Yale's ten-year return stream was 15.3%, about the same as an 85%/15% split between global stocks and fixed income. The higher level of risk should not be surprising, because Yale's asset allocation, as shown in Table 1, contains few diversifying assets. Chart 2 below compares Yale's annual results to an 85%/15% stock/bond portfolio.

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As the chart indicates, Yale's results were much better than the results of an 85/15 mix in the four years from 2005 to 2008. The average Yale advantage in that period was 9.1% per year. However, Yale outperformed an 85/15 mix in only one of the following six years. On average for 2009 – 2014, Yale could have achieved the same performance at the same risk with much less effort by investing 85% in a global stock index and 15% in Barclays aggregate benchmarked fixed income strategies. Even though the Yale investment office is regarded as one of the best investors in illiquid managers in the world, this evidence suggests that the excess returns that even they can achieve from doing so may be diminishing over time.

Chart 2

■ Yale's Annual Endowment Performance vs. ■ 85/15



The almost exclusive use of equity-like investments in the endowment model not only lowers diversification, it can also raise the risk of failure to achieve institutional objectives. One dollar invested in the S&P 500 in 1985, when David Swensen took over Yale's portfolio, would be worth \$21 today, including reinvested dividends. On average, Yale has enjoyed favorable conditions for a heavy equity bias in the investment strategy. However, it is also possible for equity markets to go many years with little or no return. For instance, one yen invested in the Nikkei 225 Japanese stock index in 1985 would have appreciated to just 1.6 yen today, thirty years later. The cumulative US stock market return was zero from 1929 to 1944. If we have another extended period during which global equities and related markets are not performing, it seems that endowment-style investors would struggle to achieve the inflation plus 5% target return that most need to preserve spending power.

Over the years, we have met many talented men and women at various professional investment institutions. We don't believe their lackluster results on average are due to a lack of hard work or investment acumen. It's just mathematically inescapable that the average external investment manager will provide results that are average for their category. And the average professionally managed portfolio will provide results that will be similar to weighted average outcome of the investments widely available to institutional investors. It's hard, even with a large, well-resourced organization, to do much better. So, if your organization has limited resources, what are your odds?

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5. What's Really in the Stew?

Yale's 2014 portfolio had 24% in public markets (equity and fixed income). For that part of the portfolio there would be excellent visibility over the value and risks of the assets. For the other 76%, not so much. This is a problem if one wants to accurately understand the impact of changing market conditions at the total portfolio level.

Managers of absolute return (hedge fund) portfolios will tend to report only a high level view of what they have in the portfolio. This partial information is reported with a delay, and with classifications that vary from manager to manager. It is challenging to map this hodgepodge of information accurately and consistently into a risk management system. And even if the mapping is somewhat accurate, by the time the report is received, the hedge fund managers could have already moved their portfolio away from the positions they reported.

Hedge funds are far from being the only area in where there's a lack of precision in understanding the portfolio. Private equity, private energy and real asset portfolios (timber, real estate, etc.) also present difficulties for the investment staff to understand the true valuation and risk of each position. This further raises the difficulty of estimating overall portfolio sensitivity to market changes.

The point of this section is that endowment style investing leads to a reduction in understanding and control over asset allocation and risk. In exchange for this loss, the investment office hopes that their less liquid investments will outperform more liquid implementations of the same types of risks. They also hope that the choices that external managers make which affect asset allocation and risk will turn out to be good ones.

As CIOs of several large pension and endowment funds, we have had responsibility to oversee positions in these illiquid asset classes during the market cycles of the last two decades. While many funds may be bundled into the same category, such as "private equity", they can have very different characteristics due to vintage year and commitment differences. Over the years, we have devoted a fair amount of staff time in efforts to map illiquid asset class positions to an appropriate mix of liquid asset class equivalents. The conclusion of this work is that any "rule of thumb" as a proxy for the alternatives bucket still leaves a wide margin for error. As our experience has increased, we have become more uncomfortable with the trade-offs involved in highly illiquid investing. A too-large allocation to asset classes that offer limited transparency and liquidity constrains the investment staff's ability to control the investments at the total portfolio level.

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6. It's All About the Ingredients (Manager Selection)

Most endowment investment offices set the asset allocation once a year or even once every 2 – 3 years, with relatively small changes from the prior asset allocation. When that is out of the way, the vast majority of the investment effort goes to investment manager selection (“seeking alpha”).

As Yale’s endowment model became famous, curiosity about their approach increased; inevitably, hordes of new prospectors were also seeking top tier external managers. The alternatives investment industry ballooned in size to meet this demand. Just how hard is it to consistently pick a top performing alternative manager?

a. Being an average investor in alternatives can cost you: A March 2015 Cambridge Associates report shows five year returns for private equity of 15.4%, less than 1% better than the 14.6% return of the Russell 2000. And this is after six years of a bull market with loose credit conditions that truly should favor highly-levered private equity investments. Meanwhile, the HFRI fund weighted composite index, as of September 2015, shows five year returns from hedge funds of only 3.3%. A key issue underlying these results is the continued acceptance by CIO’s of 2%/20% type fee structures for alternative investments. In a world where the future expected returns of the underlying investments available to private investors are likely to be lower than usual, the headwind from the lucrative fees offered to investment managers matters even more.

b. Every fund is a top quartile fund: It’s widely understood that the difference between top quartile and bottom quartile performance is enormous (for instance, according to Preqin, the difference between 25th percentile performance and 75th percentile performance in private equity funds tends to exceed 10% per year). Yet, we rarely see a fund that’s not marketed as “top quartile”. How is this possible? It turns out that for a private equity firm that has many funds running, it’s likely that some of the first funds will be in the top quartile (otherwise it’s hard for them to raise later funds), and many of the others will be of later vintage where it’s too early to know the ultimate outcome. It’s unusual to find a firm that has consistently been in the top quartile for every fund raised. Early success tends to lead to more assets under management, and more assets then may lead to diminished performance.

c. Crowding effect may have distorted the supply/demand dynamic: The endowment model is now widely copied not only at university endowments, but at many large pension funds, sovereign wealth funds and small foundations alike, with many large plans also initiating co-investment programs. It was recently reported by Preqin that industry dry powder (capital committed but not yet called) is now at a record high of \$1.3 trillion for private equity funds. Many funds have difficulty deploying so much capital, and the competition for private equity deals drives down expected returns. While the dry powder figure is staggering, the true picture is likely even less favorable as it doesn’t include the large co-investment capacity on the sidelines.

Section 2: Harvard's New Approach

In recent years, the investment returns of Harvard's \$38 billion endowment portfolio have been lower than that of most other major endowments. Stephen Blyth, Harvard Management Company's (HMC's) recently-appointed CEO, posted a letter in September 2015 which describes the results of a review of the reasons behind the disappointing performance. The letter ("A Letter from Stephen Blyth PhD '92") is mainly about improving Harvard's approach to asset allocation. Dr. Blyth says: "Asset allocation is arguably the most fundamental strategic investment decision an institutional investor can make; it is also arguably the most

challenging." Dr. Blyth then introduces "Flexible Indeterminate Factor-Based Asset Allocation (FIFAA)," suggesting a more systematic approach to asset allocation strategy than in the past. While it's understandable that the new Harvard strategy as stated in the letter is vague, we are encouraged to see that a major institutional investor such as Harvard is now looking to raise the priority given to asset allocation, rather than manager selection, as the major driver to improve future performance. This is overdue, and we are hopeful that it will generate more dialogue and introspection in our industry.

Section 3:

Our Approach for a New Recipe

For a select few investors who follow the current endowment model, it is possible that they can still deliver favorable results provided they possess the governance, team skills, resources, access and low liquidity needs. For the vast majority, however, it could be more fruitful to refocus the investment attention to:

Prioritize asset allocation over manager selection

Reduce the dependence on equity risk, with more real diversification

Be more liquid, flexible and opportunistic

1. Enhance the asset allocation process

Since asset allocation is the most important decision, it should get an appropriate level of attention. For instance, obviously, the ten year US Treasury bond tends to be a better investment proposition when the yield is 6% rather than when it is 2%. Similarly, when private equity deals are being done at record multiples of enterprise value, as is the case now, the future outcomes are likely to be worse than in the recent past. One possible way to deepen understanding of portfolio choices is to break down asset classes into more granular levels. Each geographic stock market, each sector, each sovereign bond market, etc. can be assessed on valuation, fundamentals, momentum, sentiment and volatility. Most CIO's make allocations at coarser levels (to "equities" or "emerging market equities") and then leave the more granular decisions to the subset of external managers whose mandate allows allocation flexibility. More effectiveness, consistency and control comes from doing this systematically at the investment staff level.

The key is have a disciplined approach to monitor the attractiveness of different asset classes in a consistent, disciplined and unemotional way. Investment success is not about being a market

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pundit about what the Fed will or will not do, or a global macro economist forecasting GDP or currency. It's about back to the basics: fundamental valuation and risk assessment underlying the most important investment decision an investor needs to make.

The good news is that we live in an age where access to information is abundant. The challenge comes from the investment staff's ability to use this information systematically and effectively.

2. Reduce dependency on equity risk

The over-reliance on equity-like risks for returns is a serious flaw of endowment asset allocations. Traditionally, bonds have been good diversifiers in both providing yield as well as downside protection during equity market turmoil. However, one of the biggest challenges we face as investors today is the persistent low yield environment. An institution that needs an average return of 5% over inflation cannot afford to put much of the portfolio in bonds that currently earn less than inflation. The endowment model seeks to address this problem by going into alternatives, but we've discussed at length the drawbacks of doing so.

So how do we find diversification? A better diversified portfolio would have a much higher proportion of positions that do not depend on world economic growth or equity market gains. It would have many more relative value (long/short) positions in different asset classes and markets. For instance, there would be more reliance on the value of one stock market vs. another, or one country's sovereign bonds vs. another. There would be more long/short factor positions, utilizing value,

carry, trend and volatility. All these would be scaled relative to one another such that the portfolio risk budget is utilized as efficiently as possible.

As an example, Spanish stocks are probably a better value than Irish stocks as of this writing. Of the forty-eight equity market indices that we track, Spain has the 8th best overall value score, while Ireland ranks 43rd. Nothing is certain in investing, but long Spain and short Ireland seems to be a reasonable proposition for a small part of a portfolio risk budget. Importantly, the position of long Spain and short Ireland has almost no correlation with global equities. It would be a real diversifier. A portfolio that added several dozen relative value positions across markets and factors could increase its expected return without much change in overall risk.

Most endowments have external hedge fund managers who take positions of this nature, but much of what these hedge fund managers do could be done internally by sufficiently skilled investment staff. Endowments have a long time horizon – long enough time for relative value propositions to realize value. The use of the investment staff rather than external managers for these types of positions results in more visibility, more asset allocation control, more liquidity and a significant reduction in overall costs.

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3. Be more liquid, flexible and opportunistic

For clients with privileged access to select alternatives managers, by all means, they should keep those relationships, but our recommendation would be to keep such allocations at less than 20% so that illiquid and opaque positions do not overwhelm the portfolio and reduce flexibility. If you do not already have a robust allocation to illiquid alternatives managers, the good news is you may not need to bother. Not only does a highly liquid portfolio provide better understanding and more control over asset allocation, it also enhances the ability to exploit market opportunities as they arise. This is going to be a key differentiator in the next ten years. As careful observers of the markets are aware, most asset classes today have less attractive valuations than usual. They also have exhibited low volatility over the last five years (global equity volatility has been below 14% vs. a more usual 20%) due to quantitative easing efforts. As we exit the QE programs, one should expect higher volatility, and should also be in a position to avoid major losses.

Most investors probably overestimate the additional return that can be had from illiquid investing. We often hear that if an endowment has a sufficiently long investment horizon, then the investor is able to take on illiquid investments. That does not address the question if the illiquid risk premium is worth taking. All risk premia vary over time, and the illiquidity risk is no exception. Academic research suggests the true cost should include the opportunity cost of not being able to respond to market conditions. The Ang-Papanikolaou-Westerfield (2013) approach indicates for a ten-year commitment one should demand a 6% extra annual return, far higher than the illiquidity premiums investors have actually earned. A recent example is that many institutional investors with too much in illiquid assets were simply not able to take advantage of attractive equity valuations after the GFC (as discussed in Table 1). Having dry powder is always important, but perhaps even more so today as we face aging bull markets.

CONCLUSION

The Future of the Endowment Model

The endowment model of investing has served Yale and other skilled practitioners exceptionally well over the past several decades. This very success makes it challenging for endowment investment professionals to make meaningful changes. However, the best years of the endowment model are likely in the past, not the future. Charley Ellis, the former chairman of the Yale University investment committee was recently quoted as saying: “The Yale experience has been unique. The chance that even Yale will be able to reproduce what it has done the last 25 years ... is very small at best.”

We believe a small but skilled internal investment team could outperform a traditional endowment model result over the next ten years, even with a 100% liquid portfolio, given the headwinds in most private markets today. For those who seek a differentiated approach, we have suggested here some enhancements that would make endowment investing more robust in the future, particularly:

Making asset allocation the number one priority – always understanding what is in the portfolio and keeping it ideally positioned for current market expectations

A meaningful reduction in the reliance on equity-like market risks, with more true diversification

A reduction in the reliance on illiquid external investments

A stew with an outstanding recipe, a mix of carefully selected differentiated ingredients and plenty of broth would be a tasty stew indeed.

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Ken holds a Bachelor of Science degree with honors in Mathematical Science from the University of North Carolina, Chapel Hill and a Master of Business Administration from the Stanford Graduate School of Business, where he was named an Arjay Miller scholar (top 10% of class). He has earned the Chartered Financial Analyst designation.

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Gretchen Tai is President and Chief Investment Officer at Shoreline Investment Management Company, a wholly-owned asset management subsidiary of HP Inc. that oversees the investments of retirement plan assets of HP Inc. and other benefit plan assets of affiliated companies such as Hewlett Packard Enterprise and its subsidiaries. As of December, 2014, Shoreline oversees over \$45B of assets.

Gretchen joined HP in 2003. Prior to HP, she worked as an investment banker at Merrill Lynch serving the corporate finance needs of technology companies. Earlier in her career, she worked in the asset backed securities group at Credit Suisse and as a management consultant with McKinsey & Co.

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ABOUT the FAMILY OFFICE ASSOCIATION



Family Office Association is a global community of ultra-high net worth families and their single family offices. We are committed to creating value for each family that we serve; value that grows wealth, strengthens legacy, and unites multiple generations by speaking to shared interests and passions. FOA has the resources to solve your most difficult challenges and help you achieve your collective goals: to invest intelligently, give strategically, and learn exponentially.

FOA is the community leader in serving all the key imperatives for ultra-high net worth families, respecting your privacy but enabling an intimate community of global families like yours. Our organization delivers private education and networking opportunities, proprietary research, and access to salient thought leadership that will interest all generations of your family.

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