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## INTEGRATING PORTFOLIO MANAGEMENT WITH FINANCIAL OBJECTIVES AND CONSTRAINTS

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### MARKETS AND FINANCES

Investments of an operating non-profit should not be invested in a vacuum. Our operating non-profit clients (colleges and universities, and hospitals, primarily) have a variety of investments – balance sheet assets, endowment and foundation assets, retirement plans, and self-insurance pools – invested in marketable and illiquid strategies. These assets are managed according to policies that set forth guidelines for asset allocation and selection of investments. Yet in addition to investment assets, and an organization's concern that they are managed properly, operating nonprofits also have financial priorities such as cash flow and balance sheet debt. Market

volatility can affect both investment assets and financial priorities, so it is imperative that trustees, staff, and advisors understand the relationship between an organization's finances and investments, and the sensitivity to market volatility. Investment policy must be integrated with financial priorities, especially its liquidity needs, debt covenants, and other financial considerations.

This article shows the importance of integrating investments with financial priorities. It describes several ways markets affect finances and provides an example of how financial modeling can help explain the relationship between investments and finances.

## STOCK MARKET DOWNTURNS

What does it mean to a hospital or university if the stock market plunges?

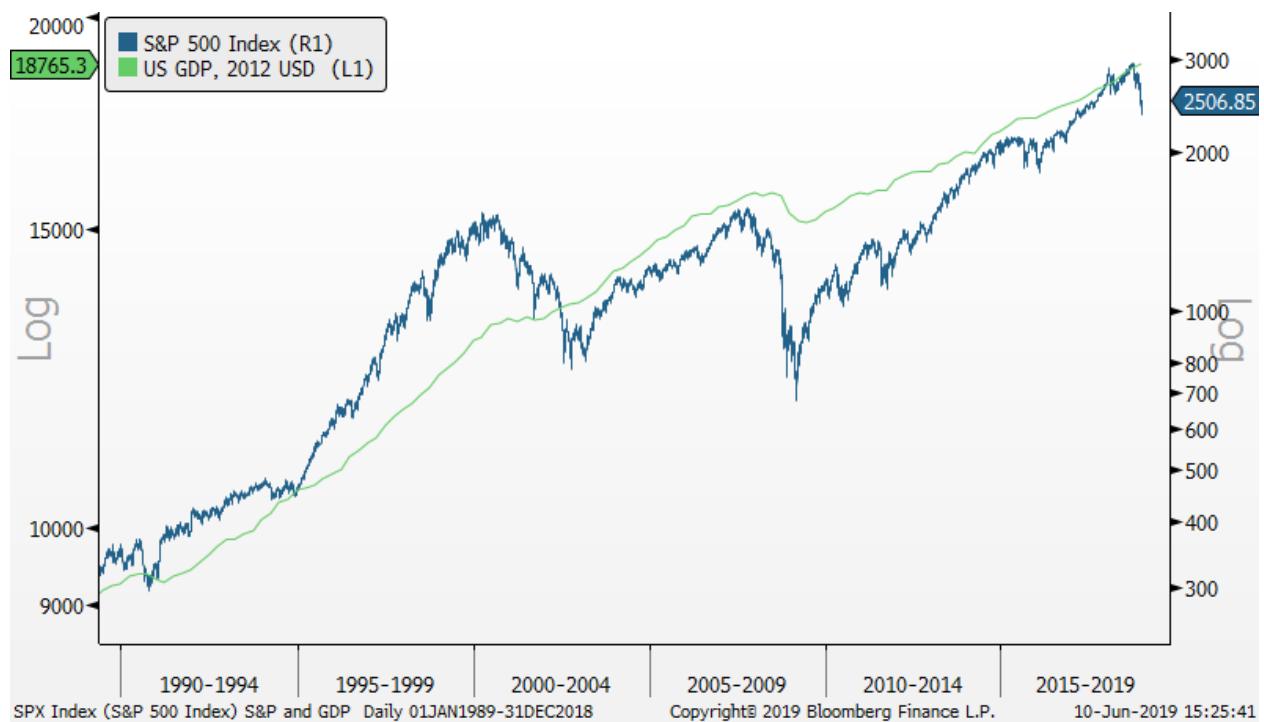
The obvious answer is that its investments decline, but that is far from the total effect. For example, endowment portfolios may have a spending policy, and a market downturn could result in lower distributions. A university or hospital could have debt and interest payments tied to its endowment, and pension obligations linked to plan assets, so lower markets could affect cash flow and capital expenditures. A market decline could test debt covenants or reduce the funded status of the pension and hurt credit ratings. Though universities and hospitals are not in the investment business, investments can have a profound impact on their financial condition.

## MARKETS ARE VOLATILE

Institutions invested in public markets during the last ten years have done well. Yet as the economic and market expansion begins its eleventh year, there is a greater chance of slowing economic growth devolving into a recession, and of markets becoming more susceptible to declines.

These concerns are not unique to our situation today, and volatility is a part of investing; no one can predict by how much or when declines may occur. These are the uncertainties for which fiduciaries must plan and prepare their investment portfolios.

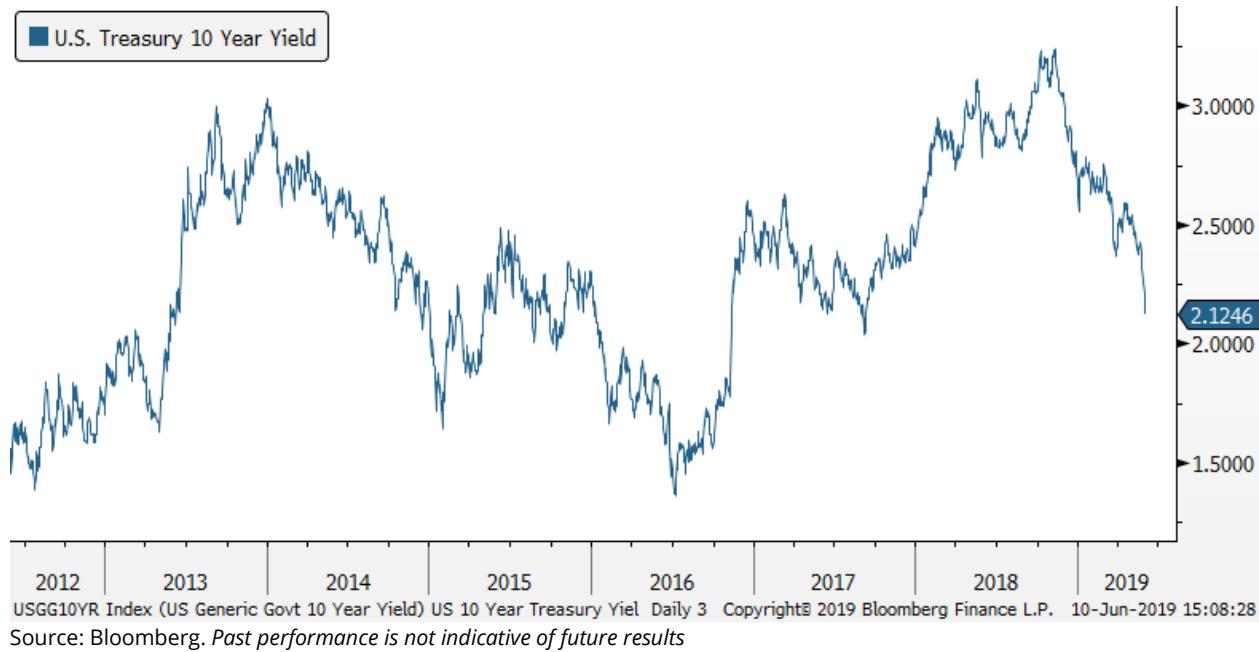
Over long time periods, however, U.S. equity markets generally have trended up. The chart on the next page illustrates this going back to 1989:



Source: Bloomberg. From 1/1/1989 to 12/31/2018. Past performance is not indicative of future results.

A nonprofit that made an investment in the S&P 500 in 1989 with no changes through 2018 would have realized a cumulative total return of 1,624%; for every \$100 invested in 1989, the institution could have \$1,624 in 2018. As significant as that return was, however, the institution also would have seen S&P 500 downturns of 47% during the burst of the technology bubble in 1999, and 55% during the financial crisis in 2008. More recently, it would have experienced volatility caused by the devaluation of China's currency, falling oil prices, Brexit, and tariff threats.

Fixed income investments, like equities, also can be volatile. As seen in the chart on the next page, in the last seven years, there have been three meaningful surges in the 10-Year US Treasury yield related to a Federal Reserve announcement (2013), the Presidential election (2016), and concerns about inflation (2018). With the inverse relationship between yield and price, these spikes in yield resulted in losses for longer duration bonds. Future selloffs are certainly a possibility.



## WHAT DOES THIS MEAN FOR MY INSTITUTION?

Let's go back to the nonprofit that invested in the S&P 500 Index in 1989. Had it not needed to sell the investments, and the portfolio had not been tied to some liability, the nonprofit could have remained in the market and ignored market volatility. This is not, however, the reality of most institutional asset pools.

As mentioned earlier, a nonprofit may have various pools of assets invested in volatile markets – it is important to distinguish between investment objectives and financial objectives and to understand how they interact.

Below is a comparison of investments and financial priorities. It indicates some of the financial priorities that could have been affected by market downturns.

Investment Objectives	Financial Objectives
<ul style="list-style-type: none"> <li>• Total Return</li> <li>• Cash Flow / Income</li> <li>• Volatility</li> <li>• Liquidity</li> <li>• Drawdown / Value at Risk (VaR)</li> <li>• Interest Rate Sensitivity</li> </ul>	<ul style="list-style-type: none"> <li>• Spending/Income</li> <li>• Debt Service Coverage</li> <li>• (Un)Realized Gains/Losses</li> <li>• Days Cash on Hand</li> <li>• Debt / Capital</li> <li>• Pension Funded Status</li> </ul>

Nonprofits may have different investment objectives – increasing returns, reducing volatility, or limiting interest rate sensitivity – and might change the mix of their investments to achieve these objectives. Such changes, however, may not have the desired effects if they are not linked to financial objectives, as well. For example, if a nonprofit wants to increase spending, it might decide to build its endowment, taking more risk, and increasing the volatility of its portfolio. Over time this may build the endowment and the University's ability to spend. But the University also should consider whether a corresponding decline in assets, caused by greater risk in the endowment portfolio, could actually hurt spending and the operating budget. Further, if the nonprofit has debt, there may be additional risks related to covenants such as days cash on hand or debt service coverage ratios that need to be considered. Institutions need to look carefully at both sides – investment and financial – when making portfolio decisions.

## A PRACTICAL EXAMPLE

The Clearstead investment process involves developing an understanding of the institution's financial situation and making investment recommendations within that context. We generally develop a financial model for an operating non-profit to illustrate the relationship between investments and finances.

Below is a simplified hypothetical example of how we might develop a model to help understand a nonprofit's sensitivity to market volatility. In this case, a health system has its balance sheet assets invested in marketable securities, and debt on its balance sheet with financial covenants such as debt service coverage, debt to capitalization, and days cash on hand. The challenge is how to integrate the investment approach for balance sheet assets with this debt without unduly reducing expected returns.

### *Case Study Background*

- **The Problem:** How should balance sheet assets be invested to limit risk of covenant violation and protect capital without diminishing returns?
- **Institution:** Health System ABC
- **Asset Pool:** Balance Sheet Assets (Unrestricted)
- **Investment Assets:** \$100 million
- **Initial Asset Allocation:** 50% Equity / 25% Alternative Investments / 25% Fixed Income and Cash
- **Background:** The System recently refinanced a portion of its debt, resulting in new debt covenants
- **Investment Objectives:** Stability, growth, and income

- **Investment Constraint:** No more than 25% of the portfolio can be invested in illiquid strategies (e.g. private equity, real estate, and hedge funds)
- **Financial Constraints (covenants):** Debt Service Coverage Ratio (DSCR) of 1.25x, Debt to Capitalization of 50% and Days Cash on Hand of 125 Days

*Step 1: Evaluate Sensitivity to Financial Constraints*

The first step is to understand which financial constraints – in this case debt covenants – are sensitive to investment returns. The chart below illustrates our findings:

Days Cash on Hand (125 days)	Debt to Capitalization (50%)	Debt Service Coverage Ratio (1.25x)
<ul style="list-style-type: none"> <li>• Current 278 days</li> <li>• Investment Impact High</li> <li>• Area of Concern TBD</li> </ul>	<ul style="list-style-type: none"> <li>• Current 20%</li> <li>• Expected debt issuance No</li> <li>• Investment Impact Low</li> <li>• Area of Concern No</li> </ul>	<ul style="list-style-type: none"> <li>• Most Recent 1.4x</li> <li>• Investment Impact Moderate</li> <li>• Area of Concern Yes</li> </ul>

**Days Cash on Hand:** Debt covenants require the System to have at least 125 days cash on hand, including balance sheet assets and operating cash. Currently, the System has 278 days, which seems healthy, but could be affected by an increase in average daily operating expenses or a decrease in investments and cash. We would want to test days cash on hand to be sure.

**Debt to Capitalization:** The System is not planning to issue any more debt. Further, a 20% debt to capital ratio is below the 50% limit, and the ratio is calculated by including non-investment assets that do not fluctuate in value. Thus, volatility in the value of balance sheet assets is not likely to affect this ratio meaningfully and is not a concern at this time.

**Debt Service Coverage Ratio:** This ratio measures the System's cash flow divided by its current debt service requirements. Consistent positive cash flow is important if the System is to meet the required minimum of 1.25x. The recent ratio of 1.4x is concerning and needs to be tested.

*Step 2: Testing for Sensitivity to Market Volatility*

The next step is to see how these ratios change when markets are volatile. Using historical equity beta and fixed income duration, we can try to **estimate equity market and interest rate sensitivity for the total portfolio**. On the next page is an illustration:

Balance Sheet Assets - Total Return (%)							
Rate Change	Equity Return						
	25%	15%	5%	0%	-5%	-15%	-25%
	16.7%	10.5%	4.3%	1.2%	-1.8%	-8.0%	-14.2%
	16.1%	9.9%	3.7%	0.6%	-2.5%	-8.7%	-14.8%
	15.5%	9.3%	3.1%	0.0%	-3.1%	-9.3%	-15.5%
	14.8%	8.7%	2.5%	-0.6%	-3.7%	-9.9%	-16.1%
	14.2%	8.0%	1.8%	-1.2%	-4.3%	-10.5%	-16.7%

Balance Sheet Assets - Change in Market Value							
Rate Change	Equity Return						
	25%	15%	5%	0%	-5%	-15%	-25%
	\$116,699,500	\$110,516,500	\$104,333,500	\$101,242,000	\$98,150,500	\$91,967,500	\$85,784,500
	\$116,078,500	\$109,895,500	\$103,712,500	\$100,621,000	\$97,529,500	\$91,346,500	\$85,163,500
	\$115,457,500	\$109,274,500	\$103,091,500	\$100,000,000	\$96,908,500	\$90,725,500	\$84,542,500
	\$114,836,500	\$108,653,500	\$102,470,500	\$99,379,000	\$96,287,500	\$90,104,500	\$83,921,500
	\$114,215,500	\$108,032,500	\$101,849,500	\$98,758,000	\$95,666,500	\$89,483,500	\$83,300,500

Please see footnote 1 in the appendix.

According to the charts above, a 15% decline in equities and a 1% decrease in interest rates could result in an estimated return of -8.0%. Under these circumstances the portfolio value could drop from \$100 million to \$91.9 million. In an environment in which equity markets did not drop, however, but interest rates went up or down 1%, the portfolio value could fluctuate only 1.2%, which is not as meaningful. Based on our example, we can conclude that the value of the portfolio is more sensitive to equity returns than changes in interest rates.

Therefore, as we evaluate the sensitivity of debt covenants to the investment portfolio – integrating investment and financial considerations – we should be more concerned with equity market volatility than changes in interest rates.

### Days Cash on Hand

**Equity market volatility can have a direct effect on days cash on hand, as do changes in daily operating expenses.** Below is a chart that shows the effects of days cash on hand of changes in equity market returns and daily operating expenses.

Daily Operating Expenses	Days Cash on Hand						
	Equity Return						
	25%	15%	5%	0%	-5%	-15%	-25%
\$300,000	422.0	401.4	380.8	370.5	360.2	339.6	319.0
\$350,000	361.7	344.1	326.4	317.6	308.7	291.1	273.4
\$400,000	316.5	301.0	285.6	277.9	270.1	254.7	239.2
\$450,000	281.3	267.6	253.9	247.0	240.1	226.4	212.6
\$500,000	253.2	240.8	228.5	222.3	216.1	203.7	191.4
\$550,000	230.2	218.9	207.7	202.1	196.5	185.2	174.0

Example for informational purposes. Results are hypothetical.

Current daily operating expenses are approximately \$400,000 per day. If, however, daily operating expenses increased to \$550,000 and markets dropped 25%, the System could have days cash on hand of 174 days, well above the required 125 days. Even in this extreme scenario, days cash on hand remains in compliance with covenants.

We would point out, as a related observation, that days cash on hand is one of many financial metrics that rating agencies use in evaluating the financial wellness of a health system. The table below demonstrates how this measure varies across rated health systems:

Rating	AA	A	BBB	Speculative
2016	264.4	168.6	115.8	53.6
2015	280.7	183.4	115.4	74.2

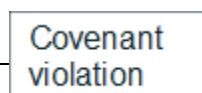
Source: Standard & Poors – U.S. Not-For-Profit Health Care System Median Financial Ratios

If the System wanted to maintain an A credit rating, it would have to maintain days cash on hand of approximately 168 days. As indicated by the sensitivity testing, the System's days cash on hand is unlikely to fall below that threshold.

#### Debt Service Coverage Ratio

**The System's debt service coverage ratio is sensitive to *realized losses* in the portfolio, so *unrealized mark-to-market losses* are not as much of a concern.** The System could face financial issues if it needed to raise cash for operations or capital projects, and that cash draw coincided with a decline in equities.

The chart below shows the effect on debt service coverage if markets decline and the System needs to raise cash for operations or capital expenditures.



Investments Sold	Debt Service Coverage Ratio						
	Equity Return						
	25%	15%	5%	0%	-5%	-15%	-25%
5%	1.48	1.45	1.42	1.40	1.38	1.35	1.32
10%	1.56	1.49	1.43	1.40	1.37	1.31	1.25
15%	1.63	1.54	1.45	1.40	1.35	1.26	1.17
20%	1.71	1.59	1.46	1.40	1.34	1.21	1.09
25%	1.79	1.63	1.48	1.40	1.32	1.17	1.01
30%	1.87	1.68	1.49	1.40	1.31	1.12	0.94

Please see footnote 2 in the appendix.

In this example, if equity markets decline 25% and the System must sell 10% of its investments, assuming losses are pro rata across the portfolio, debt service coverage could drop to 1.25x, a violation of debt covenants. This is certainly a risk that the System should try to mitigate.

### *Step 3: Developing Solutions*

The financial modeling in this example indicates that System finances are linked to volatility in markets, and that equity market fluctuations have a greater effect than changes in interest rates. The System may want to adjust its portfolio to mitigate the risk of realizing losses and maintain return potential, especially because market swings could have a direct effect on days cash on hand and debt service coverage.

To mitigate the risk of realizing losses, the System could establish a cash and short-term fixed income reserve, reduce public equity exposure, communicate institutional cash requirements clearly, and plan ahead. Another strategy might be to realize gains purposefully to offset operating short falls. The System could pre-emptively take gains without necessarily adjusting the strategy and use those gains to boost days cash on hand.

To maintain return potential, one strategy could be to invest in defensive private strategies that generate high cash flow. Specifically, evergreen direct lending, real estate, or infrastructure funds might be appropriate. A System that could withstand modest illiquidity may introduce these strategies to support expected return.

These are two of many options the System could consider. The chart below compares various options that include risk-reducing and return-enhancing strategies.

Asset Class	Current Target	Option 1	Option 2
<b>Total Equity</b>	50%	40%	35%
Private Strategies	0%	5%	5%
<b>Total Alternative Investments</b>	25%	30%	25%
Cash / ST Fixed Income	0%	5%	5%
<b>Total Fixed Income and Cash</b>	25%	30%	40%
<b>Expected Return</b>	6.8%	6.5%	5.9%
<b>Expected Volatility</b>	10.0%	8.9%	7.9%
<b>Historical Max Drawdown</b>	-30.9%	-26.6%	-22.7%
<b>Estimated Portfolio Yield</b>	2.2%	2.5%	2.8%
<b>Estimated % Daily/Weekly Liquid</b>	90%	85%	88%

Please see footnote 3 in the appendix.

In Option 1, the System could reduce its investments in equities, increase investments in more illiquid and higher yielding alternatives, while also increasing fixed income by establishing a cash and short-term bond allocation for unexpected spending needs. While the expected return to the portfolio may decline slightly, debt service coverage ratio could be in a stronger position to withstand equity losses without violating bond covenants.

Investments Sold 1.7	Debt Service Coverage Ratio							Failed previously	
	Equity Return								
	25%	15%	5%	0%	-5%	-15%	-25%		
5%	1.47	1.44	1.41	1.40	1.39	1.36	1.33		
10%	1.53	1.48	1.43	1.40	1.37	1.32	1.27		
15%	1.60	1.52	1.44	1.40	1.36	1.28	1.20		
20%	1.67	1.56	1.45	1.40	1.35	1.24	1.14		
25%	1.73	1.60	1.47	1.40	1.33	1.20	1.07		
30%	1.80	1.64	1.48	1.40	1.32	1.16	1.00		

Please see footnote 4 in the appendix.

## CONCLUSION

Though the example presented is simplistic, it does illustrate how important it is to link investment management with financial objectives. Specifically:

1. Investment strategy should be based on financial objectives, and consider financial constraints such as debt covenants
2. Investments influence the financial condition of an organization
3. Designing an investment strategy is a multi-step process that must include financial modeling
4. Investment advisors must work closely with the financial staff and investment committee to understand financial constraints and make sure they are considered in portfolio strategy

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*returns representing allocations to various asset categories from the inception of the indices (earliest was 1/1/1970 to 4/1/1997) to the most recent date the index returns were available (9/30/18 to 3/31/19).*

## APPENDIX – FOOTNOTES

- 1) Past performance is not indicative of future results. The intent of this example is to demonstrate how the historical returns of equity returns and changes in interest rates could hypothetically affect a client's portfolio return and balance sheet assets. The hypothetical returns are based on the actual historical performance of the following indices: Domestic Large/Mid Cap – Russell 1000 Index; Domestic Small Cap – Russell 1000 Index; International – Developed – MSCI EAFE Index; International - Em Mkt – MSCI Emerging Markets Index; Hi Yld –Barclays US Corporate HY; US Bonds – Barclays Capital U.S. Aggregate; Glb Bond – Barclays Global Aggregate; Real Estate – NCREIF Property Index; Absolute Return – HFRI Relative Value, HFRI Equity Hedged and HFRI Event Driven; Private Equity – Cambridge PE; Cash – Merrill Lynch 91-day T-bill (rebalanced quarterly); Real Assets – Alerian MLP Index. Source: Zephyr
- 2) Past performance is not indicative of future results. The intent of this example is to demonstrate how the historical returns of equity returns and amount of investments sold in a portfolio could hypothetically affect a client's debt service coverage ratio. The hypothetical returns are based on the actual historical performance of the following indices: Domestic Large/Mid Cap – Russell 1000 Index; Domestic Small Cap – Russell 1000 Index; International – Developed – MSCI EAFE Index; International - Em Mkt – MSCI Emerging Markets Index; Hi Yld –Barclays US Corporate HY; US Bonds – Barclays Capital U.S. Aggregate; Glb Bond – Barclays Global Aggregate; Real Estate – NCREIF Property Index; Absolute Return – HFRI Relative Value, HFRI Equity Hedged and HFRI Event Driven; Private Equity – Cambridge PE; Cash – Merrill Lynch 91-day T-bill (rebalanced quarterly); Real Assets – Alerian MLP Index. Source: Zephyr
- 3) Past performance is not indicative of future results. The intent of this hypothetical example is to demonstrate how different allocations to asset categories which have historically higher volatility (such as equities) could affect the expected return, volatility and yield. All expected returns and volatility data for informational purposes only. The expected returns and volatility are hypothetical returns based on the historical performance of the following indices: Domestic Large/Mid Cap – Russell 1000 Index; Domestic Small Cap – Russell 1000 Index; International – Developed – MSCI EAFE Index; International - Em Mkt – MSCI Emerging Markets Index; Hi Yld –Barclays US Corporate HY; US Bonds – Barclays Capital U.S. Aggregate; Glb Bond – Barclays Global Aggregate; Real Estate – NCREIF Property Index; Absolute Return – HFRI Relative Value, HFRI Equity Hedged and HFRI Event Driven; Private Equity – Cambridge PE; Cash – Merrill Lynch 91-day T-bill (rebalanced quarterly); Real Assets – Alerian MLP Index. Source: Zephyr
- 4) Past performance is not indicative of future results. The intent of this example is to demonstrate how a change in the allocation to the portfolio's equity indices and their corresponding historical returns and amount of investments sold in a portfolio could hypothetically affect a client's debt service coverage ratio. The hypothetical returns are based on the actual historical performance of the following indices: Domestic Large/Mid Cap – Russell 1000 Index; Domestic Small Cap – Russell 1000 Index; International – Developed – MSCI EAFE Index; International - Em Mkt – MSCI Emerging Markets Index; Hi Yld –Barclays US Corporate HY; US Bonds – Barclays Capital U.S. Aggregate; Glb Bond – Barclays Global Aggregate; Real Estate – NCREIF Property Index; Absolute Return – HFRI Relative Value, HFRI Equity Hedged and HFRI Event Driven; Private Equity – Cambridge PE; Cash – Merrill Lynch 91-day T-bill (rebalanced quarterly); Real Assets – Alerian MLP Index. Source: Zephyr