Morgan Stanley

Asset Allocation Review

Presentation for:

PAPERs Case Study

March 2016

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EXECUTIVE SUMMARY

The investment process consists of three stages: strategic asset allocation, tactical asset allocation, and investment selection. Strategic asset allocation, which is the primary concern of this presentation, is the first and most critical step in the investment process. The professionals in the groups noted in the boxes below provide guidance on asset allocation.

This presentation has been prepared with a tool of Morgan Stanley Wealth Management's Global Investment Committee (hereafter, "Global Investment Committee" or "GIC"), known as the Asset Allocation Center, which utilizes a proprietary asset allocation framework. The presentation has been designed to illustrate and compare the risk and return characteristics of one or more strategic asset allocations optionally including your current strategic asset allocation and alternative strategic asset allocations that we would propose based on our asset allocation framework and your specific investment objectives and preferences.

Please note: the analyses presented here depend on assumptions of the future risk and return of asset classes (detailed on pages 4-6 of the Appendix) forecasted by the GIC as of December 31, 2014. There are inherent limitations for any analysis predicated on probabilistic forecasts of the future, as future potentialities are not guaranteed, often not well understood, and the models used to assess them are inherently fallible. There are also limitations that arise from any particular approach to creating advice. One that is relevant to this presentation is the use, in our asset allocation framework, of the GIC's model allocations as inputs in the portfolio construction process. To the extent that the GIC has unwittingly biased these allocations for or against individual asset classes due to flaws in the quantitative and qualitative research that accounts for them, those biases are likely to be 'passed through' to the proposals shown in this presentation. Please note that the GIC model allocations (Model Portfolios) are disclosed on page 3 of the Appendix.

All of which is to say that no single analysis can precisely and comprehensively describe the risk and return characteristics of a given investment portfolio. You should bear in mind the assumptions underlying any analysis, as well as the potential for error of the analysis, when evaluating its pertinence to any investment decisions you plan to make.

Morgan Stanley Wealth Management Global Investment Committee	Morgan Stanley Wealth Management Financial Advisor
• The Global Investment Committee is made up of senior professionals from Morgan Stanley & Co. Research, Morgan Stanley Smith Barney LLC and outside financial market experts. • The Global Investment Committee provides general guidance for investment decisions through its establishment of a proprietary asset allocation framework that supports the investment process. The framework incorporates risk and returns forecasting, portfolio construction and model portfolios, each of which have been applied to create the following analysis.	• The Financial Advisor and his or her supporting staff apply the Global Investment Committee's asset allocation framework in accordance with their client's investment circumstances using the Global Investment Committee's Asset Allocation Center analytical tool. • The Financial Advisor serves as the main point of contact between the client and other Morgan Stanley & Co. professionals. • Should the client have questions or particular needs, they should contact their Financial Advisor.

INVESTMENT PROFILE

Report Prepared for PAPERs Case Study

OVERVIEW

The following profile reflects our current understanding of your situation based upon information provided to us on March 21, 2016, as does your current portfolio allocation depicted on slide 4 and the fee assumptions most appropriate for your circumstances depicted on page 5 of the Appendix. The Current Portfolio is also depicted on page 1 of the Appendix, broken into more granular asset classes

Portfolio Value	$110,000,000
Investment Objectives[1]:	In order to meet its needs, the investment strategy is to emphasize total return. Total return is the aggregate return from capital appreciation and dividend and interest income. Specifically, the primary objectives in the investment management for the assets shall be to provide for the full funding of the Retirement System's short, intermediate, and long term liabilities.
Risk Tolerance:	The Retirement System is willing to accept a level of risk that is consistent with its stated investment objective.
Spending Policy:	The spending policy will be dictated by the level of cash flow required to satisfy the annual pension payments to retirees.

[1]This statement of Investment Objectives should not be construed as a guarantee of any specific investment outcomes.

Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - SUMMARY

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ASSET ALLOCATION SUMMARY				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Cash & Cash Equivalents	4.0%	10.7%	4.3%	1.7%
Total Cash	**4.0%**	**10.7%**	**4.3%**	**1.7%**
Investment Grade Bonds	33.0%	39.6%	24.0%	11.7%
High Yield Bonds	2.0%	3.2%	1.8%	1.7%
Total Bonds	**35.0%**	**42.8%**	**25.8%**	**13.4%**
US Equity	32.0%	16.6%	24.4%	30.4%
International Equity	23.0%	12.1%	14.9%	20.0%
Emerging Markets Equity	6.0%	2.8%	3.7%	5.7%
Total Equities	**61.0%**	**31.5%**	**43.0%**	**56.1%**
Real Assets			2.9%	3.8%
Absolute Return Assets		5.0%	5.0%	5.0%
Equity Hedge Assets		5.0%	5.0%	5.0%
Equity Return Assets		5.0%	5.0%	5.0%
Opportunistic Assets			9.0%	10.0%
Total Alternatives		**15.0%**	**26.9%**	**28.8%**
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

FORECASTED STATISTICS				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Return	6.8%	5.3%	6.8%	7.7%
Volatility	11.2%	6.7%	10.3%	12.7%
Sharpe Ratio	0.41	0.46	0.45	0.43
Probability < 0%	26.3%	21.0%	24.5%	26.2%
Yield	2.8%	2.6%	2.2%	2.1%

Please refer to page 1 of the Appendix for a breakdown of the above portfolios into more granular asset classes. The GIC Model Portfolios on page 3 of the Appendix are disclosed for comparison with the above and vary by risk profile from lowest (Model 1) to highest (Model 5). The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix. **Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - CURRENT PORTFOLIO

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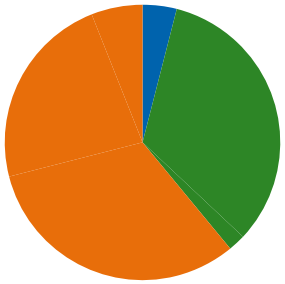
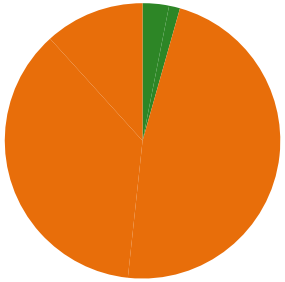
ASSET ALLOCATION



RISK ALLOCATION[1]



FORECASTED STATISTICS	
Return	6.8%
Volatility	11.2%
Sharpe Ratio	0.41
Probability < 0%	26.3%
Yield	2.8%

CURRENT PORTFOLIO	ASSET WEIGHT	RISK WEIGHT
Cash & Cash Equivalents	4.0%	0.0%
Total Cash	**4.0%**	**0.0%**
Investment Grade Bonds	33.0%	3.1%
High Yield Bonds	2.0%	1.3%
Total Bonds	**35.0%**	**4.4%**
US Equity	32.0%	47.3%
International Equity	23.0%	36.6%
Emerging Markets Equity	6.0%	11.7%
Total Equities	**61.0%**	**95.6%**
TOTAL	**100.0%**	**100.0%**

[1] The "Risk Allocation" is the forecasted *percentage* contribution of each asset class in the portfolio to the portfolio's forecasted volatility; more volatile asset classes typically contribute more volatility for each dollar invested. Where an investor allocates risk should correspond to where their conviction is greatest. The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix. **Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - PORTFOLIO 1

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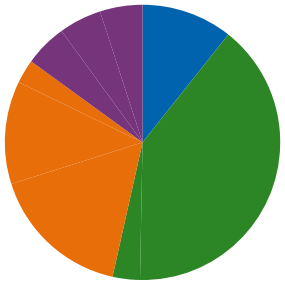
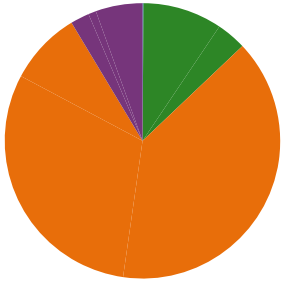
ASSET ALLOCATION



RISK ALLOCATION[1]



FORECASTED STATISTICS	
Return	5.3%
Volatility	6.7%
Sharpe Ratio	0.46
Probability < 0%	21.0%
Yield	2.6%

PORTFOLIO 1	ASSET WEIGHT	RISK WEIGHT
Cash & Cash Equivalents	10.7%	0.1%
Total Cash	**10.7%**	**0.1%**
Investment Grade Bonds	39.6%	9.3%
High Yield Bonds	3.2%	3.5%
Total Bonds	**42.8%**	**12.8%**
US Equity	16.6%	39.3%
International Equity	12.1%	30.5%
Emerging Markets Equity	2.8%	8.6%
Total Equities	**31.5%**	**78.4%**
Absolute Return Assets	5.0%	2.2%
Equity Hedge Assets	5.0%	0.9%
Equity Return Assets	5.0%	5.5%
Total Alternatives	**15.0%**	**8.7%**
TOTAL	**100.0%**	**100.0%**

[1] The "Risk Allocation" is the forecasted *percentage* contribution of each asset class in the portfolio to the portfolio's forecasted volatility; more volatile asset classes typically contribute more volatility for each dollar invested. Where an investor allocates risk should correspond to where their conviction is greatest. The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix. **Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - PORTFOLIO 2

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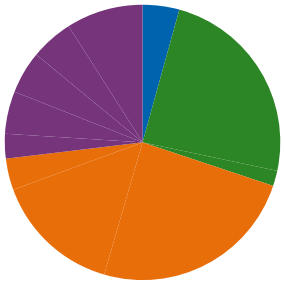
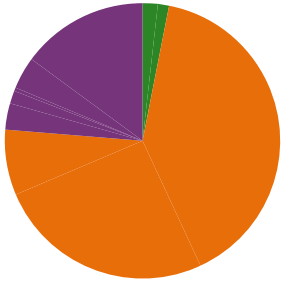
ASSET ALLOCATION



RISK ALLOCATION[1]



FORECASTED STATISTICS	
Return	6.8%
Volatility	10.3%
Sharpe Ratio	0.45
Probability < 0%	24.5%
Yield	2.2%

PORTFOLIO 2	ASSET WEIGHT	RISK WEIGHT
Cash & Cash Equivalents	4.3%	0.0%
Total Cash	**4.3%**	**0.0%**
Investment Grade Bonds	24.0%	1.8%
High Yield Bonds	1.8%	1.3%
Total Bonds	**25.8%**	**3.1%**
US Equity	24.4%	40.0%
International Equity	14.9%	25.5%
Emerging Markets Equity	3.7%	7.7%
Total Equities	**43.0%**	**73.2%**
Real Assets	2.9%	3.1%
Absolute Return Assets	5.0%	1.5%
Equity Hedge Assets	5.0%	0.4%
Equity Return Assets	5.0%	3.8%
Opportunistic Assets	9.0%	14.9%
Total Alternatives	**26.9%**	**23.7%**
TOTAL	**100.0%**	**100.0%**

[1] The "Risk Allocation" is the forecasted *percentage* contribution of each asset class in the portfolio to the portfolio's forecasted volatility; more volatile asset classes typically contribute more volatility for each dollar invested. Where an investor allocates risk should correspond to where their conviction is greatest. The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix. **Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - PORTFOLIO 3

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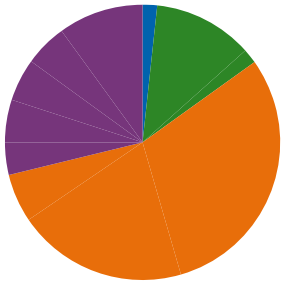
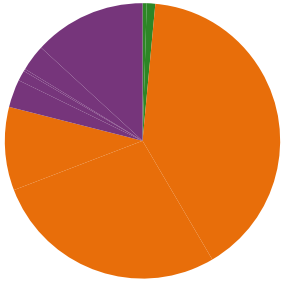
ASSET ALLOCATION



RISK ALLOCATION[1]



FORECASTED STATISTICS	
Return	7.7%
Volatility	12.7%
Sharpe Ratio	0.43
Probability < 0%	26.2%
Yield	2.1%

PORTFOLIO 3	ASSET WEIGHT	RISK WEIGHT
Cash & Cash Equivalents	1.7%	0.0%
Total Cash	**1.7%**	**0.0%**
Investment Grade Bonds	11.7%	0.5%
High Yield Bonds	1.7%	1.0%
Total Bonds	**13.4%**	**1.5%**
US Equity	30.4%	40.1%
International Equity	20.0%	27.7%
Emerging Markets Equity	5.7%	9.8%
Total Equities	**56.1%**	**77.5%**
Real Assets	3.8%	3.3%
Absolute Return Assets	5.0%	1.2%
Equity Hedge Assets	5.0%	0.3%
Equity Return Assets	5.0%	3.1%
Opportunistic Assets	10.0%	13.2%
Total Alternatives	**28.8%**	**21.0%**
TOTAL	**100.0%**	**100.0%**

[1] The "Risk Allocation" is the forecasted *percentage* contribution of each asset class in the portfolio to the portfolio's forecasted volatility; more volatile asset classes typically contribute more volatility for each dollar invested. Where an investor allocates risk should correspond to where their conviction is greatest. The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix. **Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STRATEGIC ASSET ALLOCATION - RISK ALLOCATION[1] SUMMARY

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RISK ALLOCATION[1] SUMMARY				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Cash & Cash Equivalents		0.1%		
Total Cash	**0.0%**	**0.1%**	**0.0%**	**0.0%**
Investment Grade Bonds	3.1%	9.3%	1.8%	0.5%
High Yield Bonds	1.3%	3.5%	1.3%	1.0%
Total Bonds	**4.4%**	**12.8%**	**3.1%**	**1.5%**
US Equity	47.3%	39.3%	40.0%	40.1%
International Equity	36.6%	30.5%	25.5%	27.7%
Emerging Markets Equity	11.7%	8.6%	7.7%	9.8%
Total Equities	**95.6%**	**78.4%**	**73.2%**	**77.5%**
Real Assets			3.1%	3.3%
Absolute Return Assets		2.2%	1.5%	1.2%
Equity Hedge Assets		0.9%	0.4%	0.3%
Equity Return Assets		5.5%	3.8%	3.1%
Opportunistic Assets			14.9%	13.2%
Total Alternatives	**0.0%**	**8.7%**	**23.7%**	**21.0%**
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

[1] "Risk Allocation" is the forecasted *percentage* contribution of each asset class in the portfolio to the portfolio's forecasted volatility; more volatile asset classes typically contribute more volatility for each dollar invested. Where an investor allocates risk should correspond to where their conviction is greatest. The forecasts of risk and return used in this analysis are detailed in pages 4-6 of the Appendix.**Please see the Glossary in the Appendix for definitions of the risk and return metrics depicted throughout this presentation.** Please see the Appendix for important disclosures about this presentation.

STATISTICAL COMPARISON - PURPOSE AND METHODOLOGY

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A 'Statistical Comparison' of two or more asset allocations[1] is a comparison of their relative 'riskiness' and potential for reward. The term ‘Statistical Comparison’ arises from the fact that future returns are uncertain, and statistics is the language in which information and evidence about things that are uncertain can be expressed, in particular using the language of relative likelihood, or probability.

The purpose of the following analysis is to gauge the appropriateness of each of the asset allocations presented on the Strategic Asset Allocation Summary slide from a risk tolerance and investment objective perspective, as well as their efficiency in achieving reward relative to the degree of risk they impart. ‘Risk’ and ‘Reward’, however, are abstract concepts that can mean different things to different investors. As to risk, some investors’ primary concern might be the eventuality of large, negative returns, also known as downside risk or event risk[2]. For others, ‘risk’ might mean aversion to losses in general or more simply the degree of projected volatility in the return streams. While these metrics tend to be related, they can also yield different pictures of risk for a given asset allocation comparison.

Likewise, regarding reward, many investors’ primary objective can be thought of simply as wealth maximization. Others, however, most commonly institutional investors, are more narrowly focused on a specific return target or a portfolio spending policy objective. For this reason, a range of risk and return metrics can be utilized in the following analysis. This report has been prepared using those metrics[3] that speak most directly to your objectives and preferences.

There are two reports in the Statistical Comparison:

- The first report, *Hypothetical Efficiency Analysis*, plots a portfolio along two dimensions, depicting the degree to which an investor's asset mix may reduce the chosen risk metric for a given level of reward, (expressed either as ‘annual return’, or expected return, or as probability of achieving a target return). Risk-adjusted, hypothetically more 'efficient' portfolios will appear above less efficient ones in these reports. As noted previously, however, ‘risk' is an abstract concept that can be measured in different ways, and different measures of risk can yield different accounts of portfolio efficiency.
- The second report, ‘*Hypothetical Range of Returns at 3 Horizons*’, depicts the hypothetically most-likely range of returns for each of the asset allocation portfolios in this analysis, for three separate investment horizons as listed on the horizontal axis. The bars in the ‘Hypothetical Range of Returns at Three Horizons’ chart represent the range of returns per portfolio, and are defined as ranging between the forecast 5th percentile return and the forecast 95th percentile return, annualized, for each horizon. The dash in the bars represent the median forecasted return per portfolio, per horizon. In certain cases, the probability of achieving a given return target will also be shown.

The forecasts of risk and return presented in the ‘Statistical Comparison’ are based on assumptions of risk and return detailedon pages 4-6of the Appendix.

[1] Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets. Return forecast figures are for illustration only; actual results will vary. Hypothetical performance is no guarantee of future results. [2] Event risk is measured in this presentation using Value-at-Risk or Conditional-Value-at-Risk, the latter of which can be thought of as the expected loss in the case of an extreme event (where extreme is defined as an event with 5% probability or less in any given year). [3] Each of these metrics are defined in the Glossary in the Appendix.

STATISTICAL COMPARISON - HYPOTHETICAL EFFICIENCY ANALYSIS*

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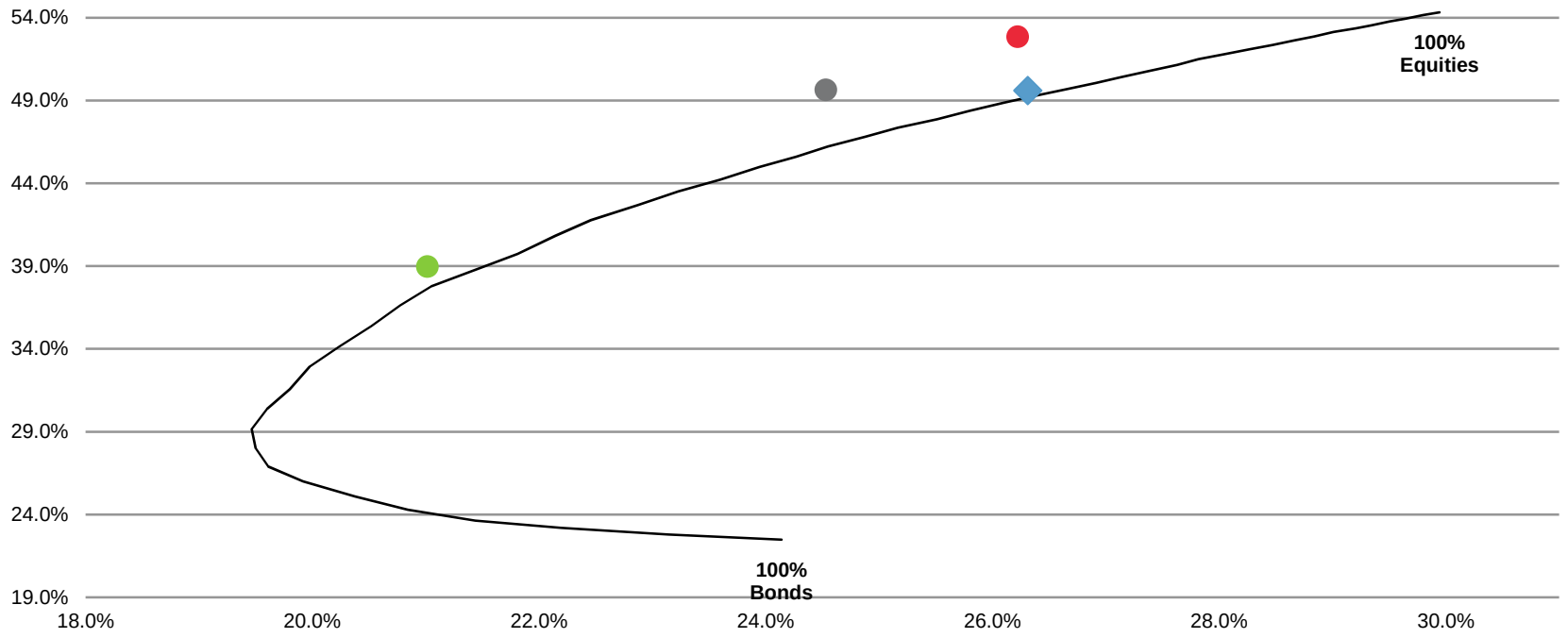
EFFICIENCY RELATIVE TO THE EQUITY-BOND FRONTIER

Current Portfolio Portfolio 1 Portfolio 2 Portfolio 3

Probability of Return > 7.3% Target



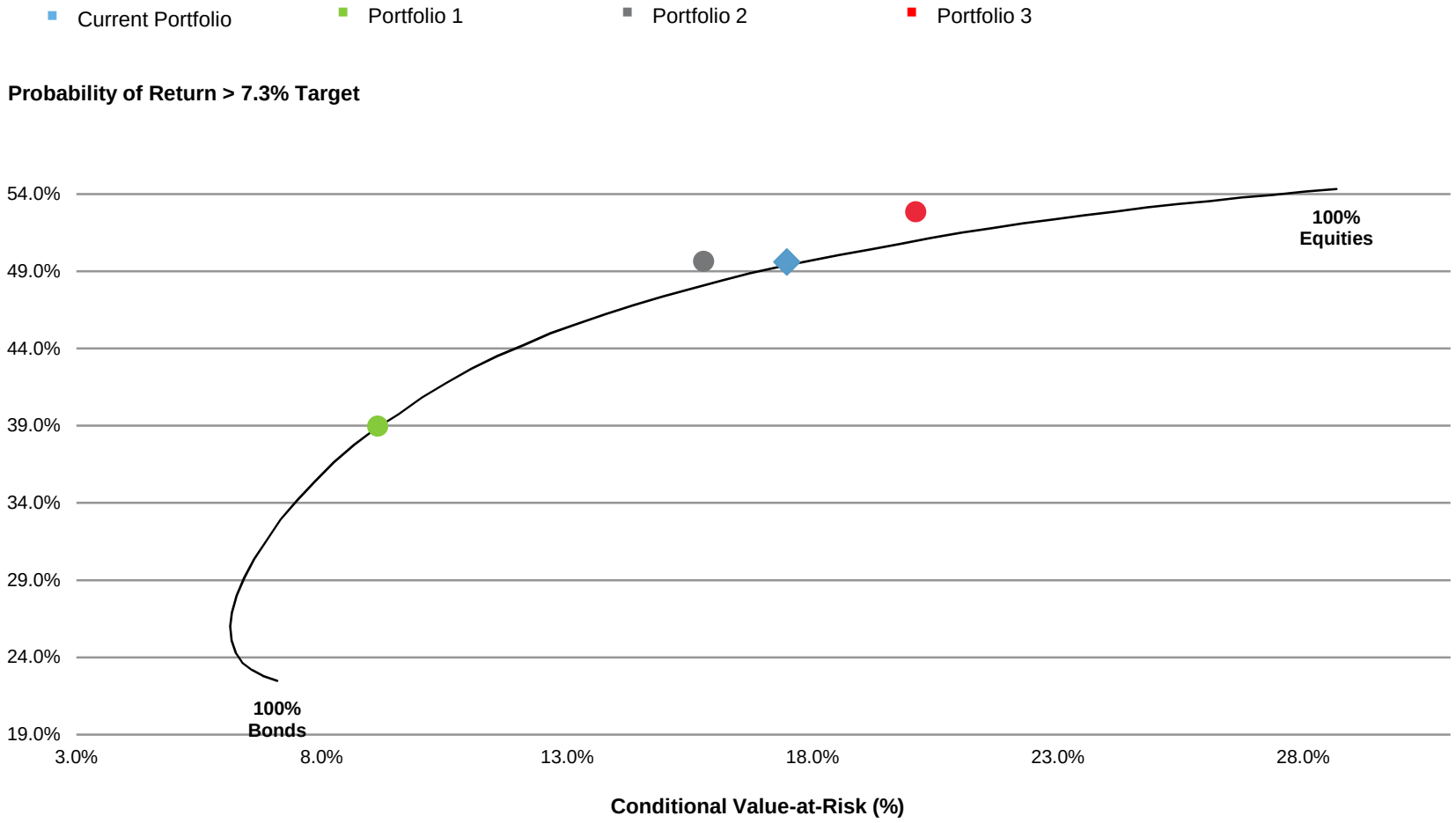
Notes: The 'Equity-Bond Frontier', plotted here for comparison, represents the efficiency of a full spectrum of bond and equity portfolios that vary by their proportion of each from 100% bonds to 100% equities. *All figures based on assumptions of risk and return detailed on pages 4-6 of the Appendix. Please see the Glossary in the Appendix for definitions of certain terms used above.

IMPORTANT: The projections or other information generated by the Asset Allocation Center, the investment analysis tool used to compile this report, regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect any actual investment results, and are not guarantees of future results. Results generated using this simulation analysis will vary with each use and over time. Please see the Appendix for important disclosures about this presentation.

STATISTICAL COMPARISON - HYPOTHETICAL EFFICIENCY ANALYSIS*

Report Prepared for PAPERs Case Study

EFFICIENCY RELATIVE TO THE EQUITY-BOND FRONTIER



Notes: The 'Equity-Bond Frontier', plotted here for comparison, represents the efficiency of a full spectrum of bond and equity portfolios that vary by their proportion of each from 100% bonds to 100% equities. *All figures based on assumptions of risk and return detailed on pages 4-6 of the Appendix. Please see the Glossary in the Appendix for definitions of certain terms used above.

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STATISTICAL COMPARISON - HYPOTHETICAL RANGE OF RETURNS AT 3 HORIZONS

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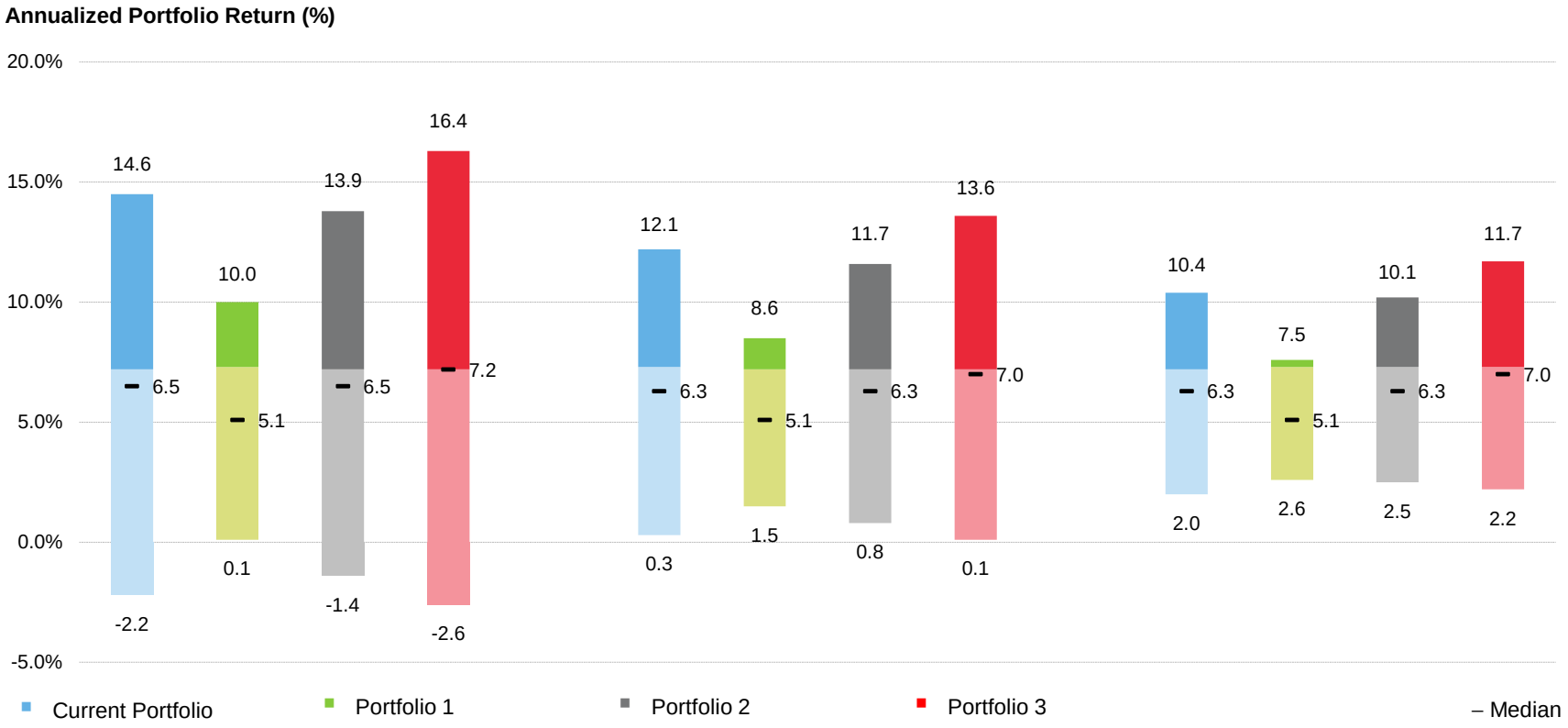
PROBABILITY OF RETURN > 7.3% TARGET

5 Year				10 Year				20 Year			
43.7%	23.9%	43.5%	49.8%	39.7%	15.4%	39.5%	47.9%	35.2%	7.2%	34.5%	46.4%



Source: Global Investment Committee

All figures above arebased on assumptions of risk and return detailed on pages 4-6 of the Appendix. Please see the Glossary in the Appendix for definitions of certain terms used above.

IMPORTANT: The projections or other information generated by the Asset Allocation Center, the investment analysis tool used to compile this report, regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect any actual investment results, and are not guarantees of future results. Results generated using this simulation analysis will vary with each use and over time. Please see the Appendix for important disclosures about this presentation.

SIMULATION ANALYSIS - PURPOSE AND METHODOLOGY

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The Global Investment Committee forecasts long-term asset class returns and volatilities, as well as the asymmetries and extreme events that characterize their return profiles[1]. Estimates of the risk and return of asset classes are not, however, sufficient to estimate the tradeoff between competing strategies. The purpose of Simulation Analysis is to provide such a basis for comparison. Simulation analysis generates thousands of potential evolutions of future capital market outcomes based on risk and return forecasts. These will tend *on average* to adhere to the forecasts of return, but will also depict divergences from the average both up and down with a frequency and to a degree consistent with the chosen model and forecasts of market risk.

Simulation analysis evaluates what happens to the portfolio across this projected range of future capital market scenarios taking into account planned withdrawals/contributions and rebalancing policy[2]. As cash flows and allocation drift can magnify the impact of market risk, (due to the former's tendency to reduce the effective length of the investment horizon, and the latter's tendency to increase the allocation to risk assets), this step is critical to a deeper understanding of how market risk can affect outcomes.

The results can be used to address[3] questions such as: What post-distribution, net-of-expenses outcomes am I *likely* to experience? What are the upside potential and downside risks to that outcome for a given level of confidence, (i.e. what are the most extreme up- and downside outcomes we would consider materially plausible)? How viable is a given spending policy (do the most frequently observed portfolio values arc downward over the horizon and, if so, how rapidly)? What is the portfolio's sensitivity to changes in the allocation or rebalancing approach?

NOTES ON THE TERMINOLOGY IN THIS SIMULATION ANALYSIS SECTION: **Portfolio Value** refers to the portfolio/trust value during the simulation. *Median End of Horizon Portfolio Value/Remainder Value* lies in the middle of the two halves of simulated values and thus represents the 'most likely' given the analysis assumptions. *95th Percentile End of Horizon Portfolio Value/Remainder Value* represents the 'upside' potential of a given proposal at 95% confidence (i.e., an end-horizon value better than 95% of outcomes), while *5th Percentile End of Horizon Portfolio Value/Remainder Value* represents the 'downside' risk to the proposal at 95% confidence (i.e., an end-horizon value better than 5% of outcomes). *Probability > Target* is the probability that the end-horizon portfolio value/remainder value will be greater than the investor's target portfolio/remainder value. Information about the trajectory of the portfolio over the course of the investment horizon is summarized on the final **Hypothetical Range of Portfolio Value** charts, with darkly shaded areas depicting the most likely path of portfolio value and lightly shaded areas less-likely extreme divergences to the up- and downside.

The following terms are associated with optional reports that may or may not apply to your case: The "Current Portfolio Value Overlay" depicts the range of Current Portfolio Values, and the median Current Portfolio value over the simulated range of the respective Proposed Portfolio Values. Its purpose is to provide a basis of comparison between the Current and Proposed Portfolios. **Distributions** depicts both the amount distributed from a portfolio over the horizon *on average* in the Median, 95th, and 5th percentile of simulated outcomes, as well as the *range* of distributions at the beginning, middle and end of the investment horizon, in the median, 95th, 75th, 25th and 5th percentiles of simulated outcomes. **Hypothetical Average Return** depicts the portfolio's time- or dollar-weighted return on average over the horizon in the Median, 95th, and 5th percentile of simulated outcomes. *Probability > Target/7520* is the probability that the portfolio return will exceed the investor's target value or the trust's 7520 rate.

[1]The methodology used in this analysis entails a more sophisticated modeling of downside or 'event' risk than is commonly applied to simulation analysis in the industry, including the specification of 'fat-tailed' non-normal return distributions. [2] Rebalancing does not assure a profit or protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy. [3] The pertinence of the foregoing analysis to these questions depends significantly on the accuracy of the risk, return, tax and other assumptions detailed on the next slide and on pages 4-6of the Appendix. It also depends on the degree to which the returns to selected securities are different from the returns to a portfolio of similarly allocated asset classes. This source of return differences can be very substantial and is not taken into account in either the preceding or the foregoing analysis.

SIMULATION ANALYSIS - ASSUMPTION

Report Prepared for PAPERs Case Study

SIMULATION SUMMARY

The following analysis of the four portfolios outlined on page 4, is based on 10,000 simulations and the following additional assumptions:

Initial Portfolio Value	▪ $110,000,000
Target Value/Return	▪ Target End of Horizon Value: $110,000,000. Target Time-Weighted Return: 7.3%.
Investment Horizon	▪ Twenty- (20) year horizon
Inflation Assumptions	▪ Results adjusted for assumed inflation. Assumed inflation rate: 2.0%
Assumed Rebalancing Policy[1]	▪ Annual Rebalancing to Target.
Planned Distributions & Contributions	▪ Time Varying Policy. See Page 7 in the Appendix for the Distribution & Contribution Schedule used in this Simulation.

[1] Rebalancing does not assure a profit or protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy. Morgan Stanley, its affiliates, and its Financial Advisors and Private Wealth Advisors do not provide legal or tax advice. Please see the Appendix for important disclosures about this presentation.

SIMULATION ANALYSIS - PORTFOLIO VALUE

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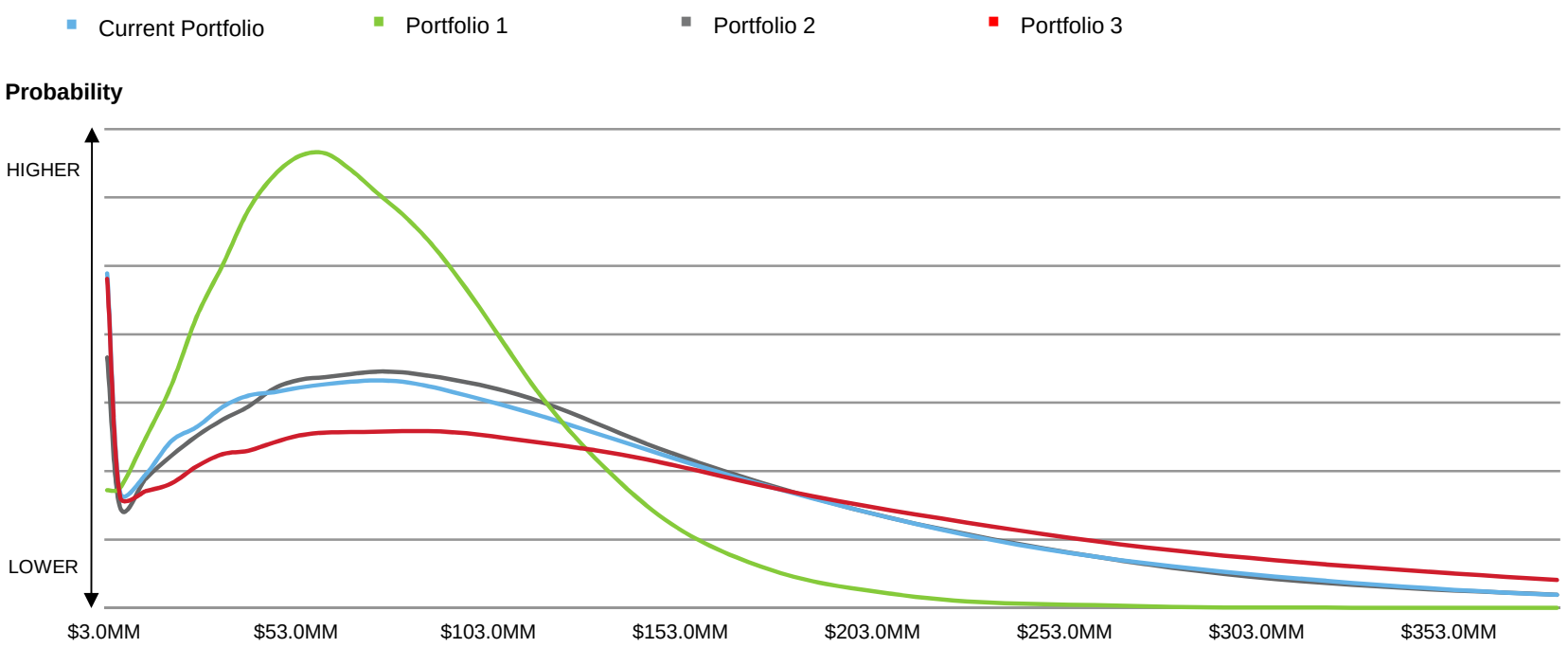
END OF HORIZON VALUE				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	$316,327,515	$153,617,558	$318,506,615	$436,528,536
Median	$107,422,410	$70,210,172	$109,158,020	$134,240,936
5th Percentile	$4,234,498	$14,407,486	$10,165,350	$4,555,066
Probability>Target*	48.8%	19.2%	49.6%	58.4%

* Target End of Horizon Value = $110,000,000

END OF HORIZON VALUE



Results adjusted for assumed inflation. For assumptions underlying these projections, please refer to the "Simulation Analysis; Purpose and Methodology" and "Simulation Analysis; Assumptions" slides, and pages 4-6 of the Appendix.

IMPORTANT: The projections or other information generated by the Asset Allocation Center, the investment analysis tool used to compile this report, regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect any actual investment results, and are not guarantees of future results. Results generated using this simulation analysis will vary with each use and over time. Please see the Appendix for important disclosures about this presentation.

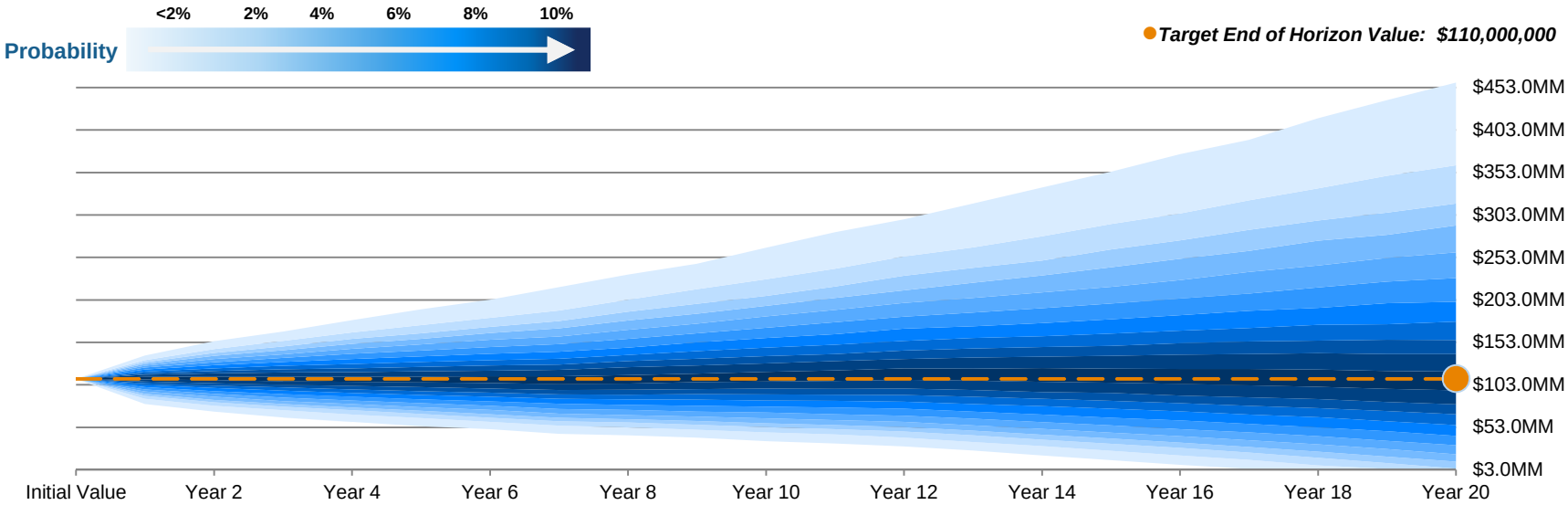
SIMULATION ANALYSIS - PORTFOLIO VALUE: CURRENT PORTFOLIO

Report Prepared for PAPERs Case Study

END OF HORIZON VALUE	
95th Percentile	$316,327,515
Median	$107,422,410
5th Percentile	$4,234,498
Probability>Target*	48.8%

REBALANCING & DISTRIBUTION POLICY	
Rebalancing Policy	▪ Annual Rebalancing to Target.
Planned Distributions & Contributions	▪ Time Varying Policy. See Page 7 in the Appendix for the Distribution & Contribution Schedule used in this Simulation.

HYPOTHETICAL RANGE OF PORTFOLIO VALUES BY YEAR ($MM)



Source: Global Investment Committee

Values Adjusted for assumed inflation

Graphic depicts the hypothetically plausible range of the Current Portfolio's value over the course of the investment horizon based on assumptions of risk and return detailed on pages 4-6 of the Appendix and assumptions as per the "Simulation Analysis; Assumptions" slide. More darkly shaded areas imply a greater likelihood that the portfolio's value will lie in that range at that point in the horizon than more lightly shaded ones. Please see the Glossary in the Appendix for definitions of certain terms used above.

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SIMULATION ANALYSIS - PORTFOLIO VALUE: PORTFOLIO 1

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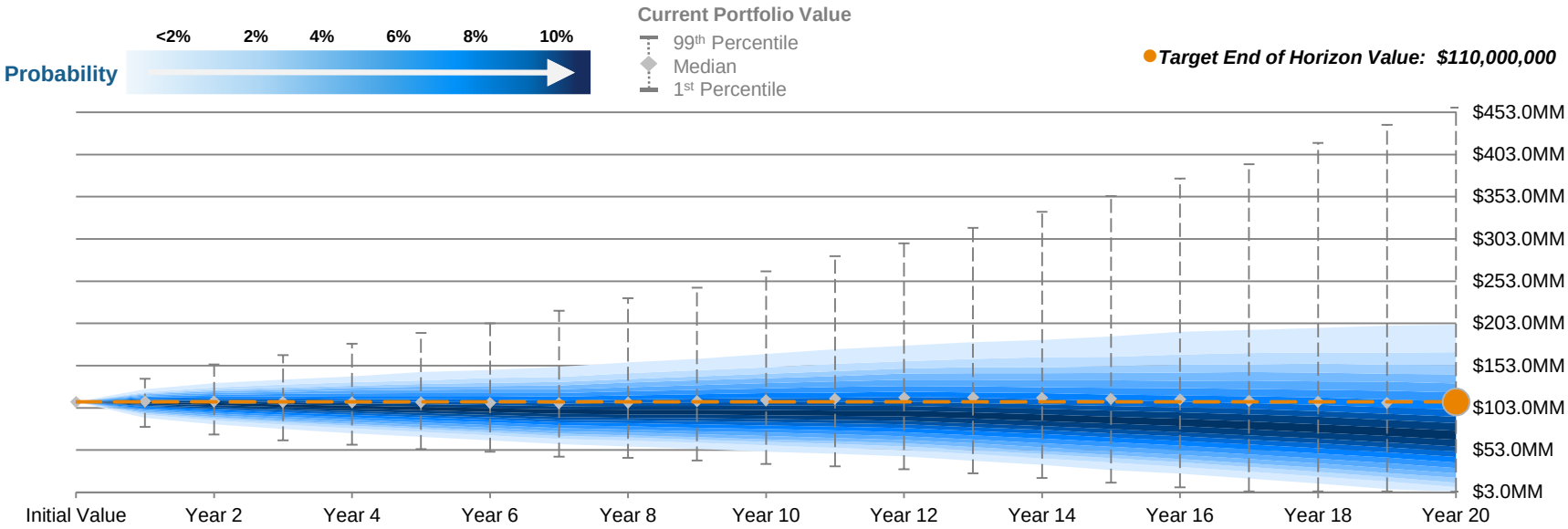
END OF HORIZON VALUE	
95th Percentile	$153,617,558
Median	$70,210,172
5th Percentile	$14,407,486
Probability>Target*	19.2%

REBALANCING & DISTRIBUTION POLICY	
Rebalancing Policy	▪ Annual Rebalancing to Target.
Planned Distributions & Contributions	▪ Time Varying Policy. See Page 7 in the Appendix for the Distribution & Contribution Schedule used in this Simulation.

HYPOTHETICAL RANGE OF PORTFOLIO VALUES BY YEAR ($MM)



Source: Global Investment Committee

Values Adjusted for assumed inflation

Graphic depicts the hypothetically plausible range of the Portfolio 1's value over the course of the investment horizon based on assumptions of risk and return detailed on pages 4-6 of the Appendix and assumptions as per the "Simulation Analysis; Assumptions" slide. More darkly shaded areas imply a greater likelihood that the portfolio's value will lie in that range at that point in the horizon than more lightly shaded ones. Please see the Glossary in the Appendix for definitions of certain terms used above.

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SIMULATION ANALYSIS - PORTFOLIO VALUE: PORTFOLIO 2

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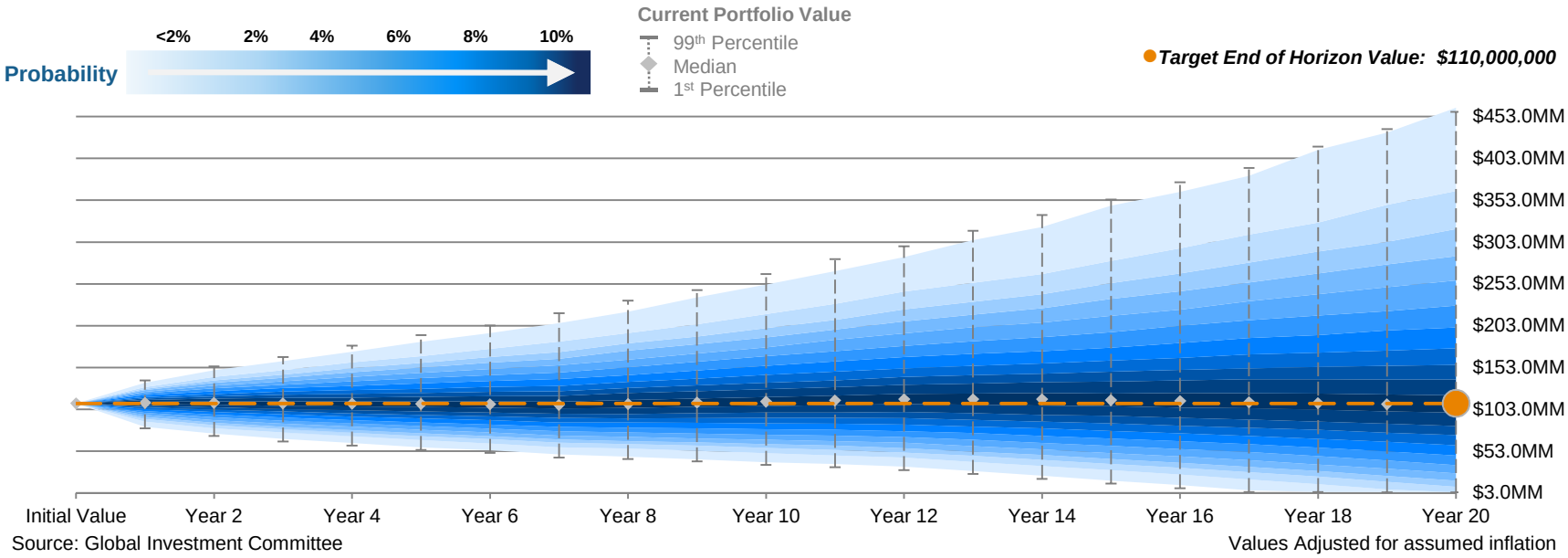
END OF HORIZON VALUE	
95th Percentile	$318,506,615
Median	$109,158,020
5th Percentile	$10,165,350
Probability>Target*	49.6%

REBALANCING & DISTRIBUTION POLICY	
Rebalancing Policy	▪ Annual Rebalancing to Target.
Planned Distributions & Contributions	▪ Time Varying Policy. See Page 7 in the Appendix for the Distribution & Contribution Schedule used in this Simulation.

HYPOTHETICAL RANGE OF PORTFOLIO VALUES BY YEAR ($MM)



Source: Global Investment Committee

Values Adjusted for assumed inflation

Graphic depicts the hypothetically plausible range of the Portfolio 2's value over the course of the investment horizon based on assumptions of risk and return detailed on pages 4-6 of the Appendix and assumptions as per the "Simulation Analysis; Assumptions" slide. More darkly shaded areas imply a greater likelihood that the portfolio's value will lie in that range at that point in the horizon than more lightly shaded ones. Please see the Glossary in the Appendix for definitions of certain terms used above.

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SIMULATION ANALYSIS - PORTFOLIO VALUE: PORTFOLIO 3

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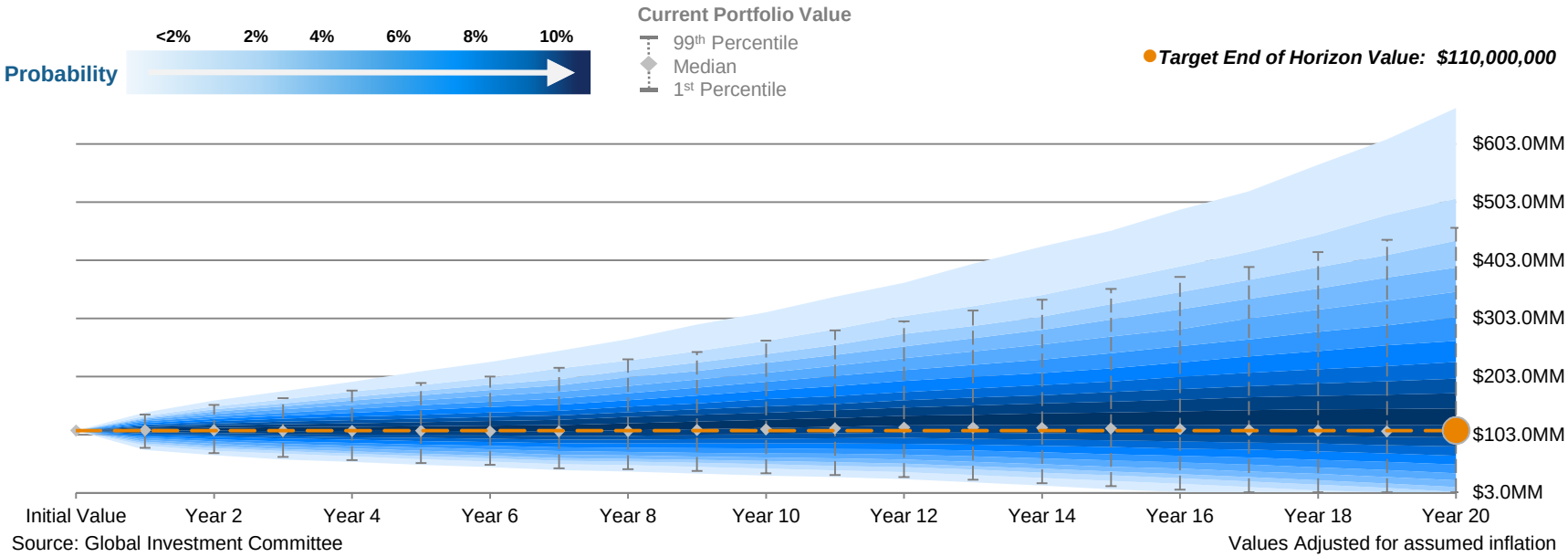
END OF HORIZON VALUE	
95th Percentile	$436,528,536
Median	$134,240,936
5th Percentile	$4,555,066
Probability>Target*	58.4%

REBALANCING & DISTRIBUTION POLICY	
Rebalancing Policy	▪ Annual Rebalancing to Target.
Planned Distributions & Contributions	▪ Time Varying Policy. See Page 7 in the Appendix for the Distribution & Contribution Schedule used in this Simulation.

HYPOTHETICAL RANGE OF PORTFOLIO VALUES BY YEAR ($MM)



Source: Global Investment Committee

Values Adjusted for assumed inflation

Graphic depicts the hypothetically plausible range of the Portfolio 3's value over the course of the investment horizon based on assumptions of risk and return detailed on pages 4-6 of the Appendix and assumptions as per the "Simulation Analysis; Assumptions" slide. More darkly shaded areas imply a greater likelihood that the portfolio's value will lie in that range at that point in the horizon than more lightly shaded ones. Please see the Glossary in the Appendix for definitions of certain terms used above.

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SIMULATION ANALYSIS - DISTRIBUTIONS

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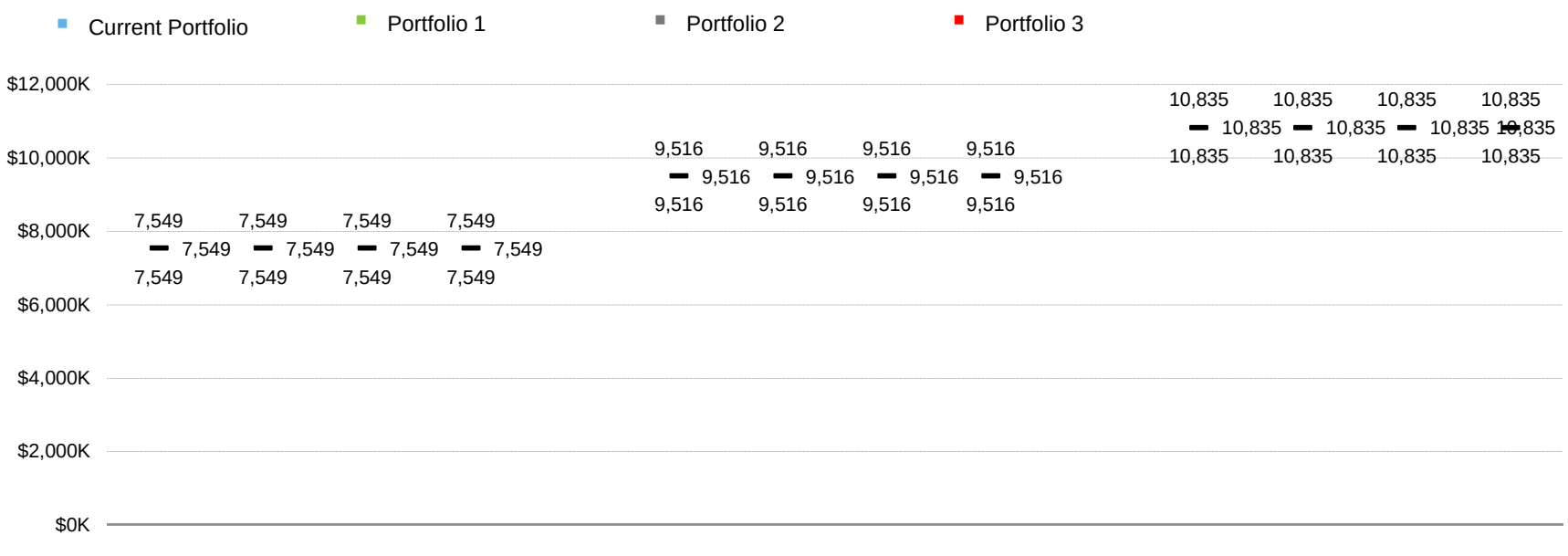
AVERAGE ANNUAL DISTRIBUTIONS				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	$9,363,221	$9,363,221	$9,363,221	$9,363,221
Median	$9,363,221	$9,363,221	$9,363,221	$9,363,221
5th Percentile	$9,363,221	$9,363,221	$9,363,221	$9,363,221

ANNUAL DISTRIBUTIONS (000S)



Source: Global Investment Committee

Values Adjusted for assumed inflation

This chart depicts the effect on planned distributions of the hypothetical range of portfolio performance, and in the 'median', or most likely, case. The solid bars correspond to the half of all outcomes between the 25th and 75th percentiles, while the median is represented by the dark hash marks in the bars. The high low lines depict a hypothetical broader range of upside and downside outcomes represented by the 95th and 5th percentiles respectively. Analysis is based on assumptions of risk and return detailed on pages 4-6 of the Appendix and on the assumptions as per the "Simulation Analysis; Assumptions" slide.

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SIMULATION ANALYSIS - HYPOTHETICAL AVERAGE RETURN

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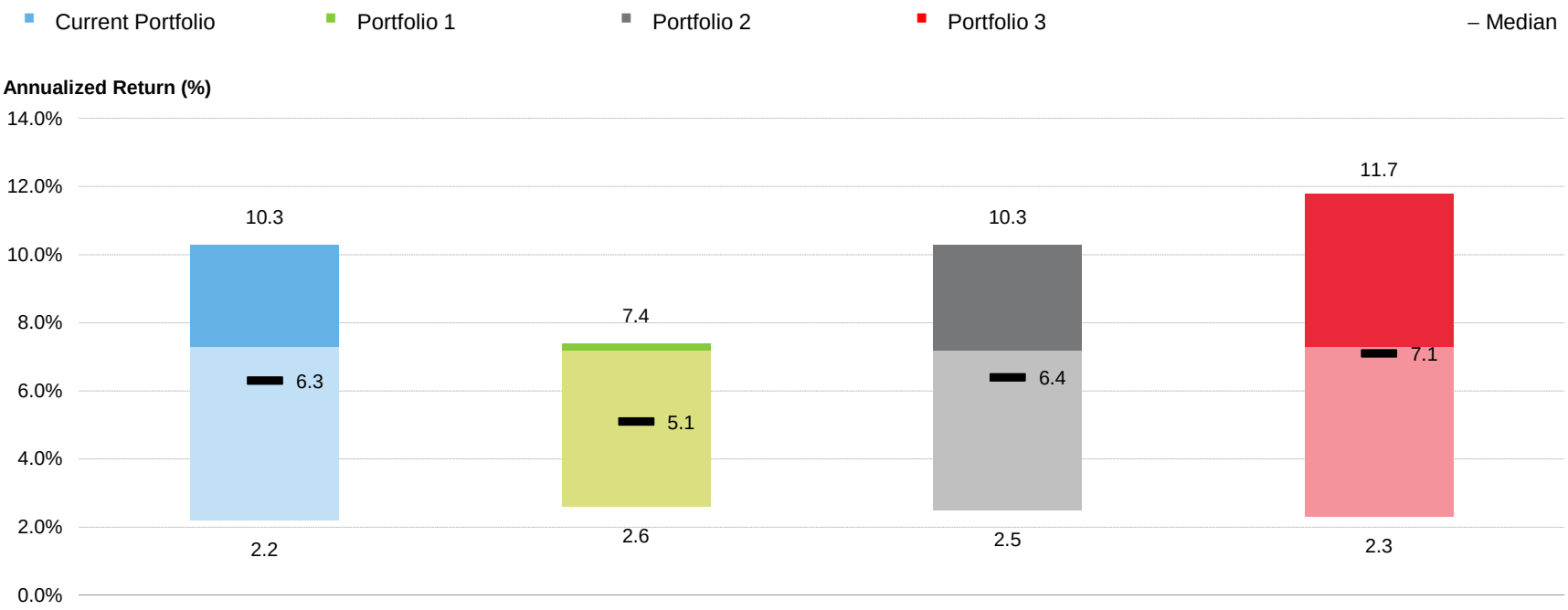
AVERAGE RETURN				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	10.3%	7.4%	10.3%	11.7%
Median	6.3%	5.1%	6.4%	7.1%
5th Percentile	2.2%	2.6%	2.5%	2.3%
Probability > Target*	35.4%	6.6%	35.6%	47.7%

* Target Return = 7.3 %. Return Calculated on a Time-Weighted basis.

AVERAGE RETURN



Source: Global Investment Committee

For assumptions underlying these projections, please refer to the “Simulation Analysis; Purpose and Methodology” and “Simulation Analysis; Assumptions” slides, and pages 4-6 of the Appendix.

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SIMULATION ANALYSIS - SUMMARY

Report Prepared for PAPERs Case Study

END OF HORIZON VALUE				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	$316,327,515	$153,617,558	$318,506,615	$436,528,536
Median	$107,422,410	$70,210,172	$109,158,020	$134,240,936
5th Percentile	$4,234,498	$14,407,486	$10,165,350	$4,555,066
Probability>Target*	48.8%	19.2%	49.6%	58.4%

* Target End of Horizon Value = $110,000,000

AVERAGE ANNUAL DISTRIBUTIONS				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	$9,363,221	$9,363,221	$9,363,221	$9,363,221
Median	$9,363,221	$9,363,221	$9,363,221	$9,363,221
5th Percentile	$9,363,221	$9,363,221	$9,363,221	$9,363,221

AVERAGE RETURN				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
95th Percentile	10.3%	7.4%	10.3%	11.7%
Median	6.3%	5.1%	6.4%	7.1%
5th Percentile	2.2%	2.6%	2.5%	2.3%
Probability > Target*	35.4%	6.6%	35.6%	47.7%

* Target Return = 7.3%.Return Calculated on a Time-Weighted basis.

* Targets reflect client stated goals, rather than GIC investment criteria

Results adjusted for assumed inflation. For assumptions underlying these projections, please refer to the “Simulation Analysis; Purpose and Methodology” and “Simulation Analysis; Assumptions” slides, and pages 4-6 of the Appendix.

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SCENARIO ANALYSIS - PURPOSE AND METHODOLOGY

Report Prepared for PAPERs Case Study

Scenario analysis is the practice of examining the potential effects on a portfolio of a reoccurrence of a historical event, or the eventuality of a hypothetical one. The Global Investment Committee advocates the use of scenario analysis to assess investment portfolios, including historical scenario analysis, hypothetical scenario analysis, and what we call conditional scenario analysis (sometimes called sensitivity or exposure analysis). We advocate it because, for example, as the collapse of the Long Term Capital Management hedge fund in the late 1990s made clear, stress-testing portfolios and assumptions using scenario analysis is integral to building an understanding of portfolio risks and of the blind spots in the basic assumptions and premises underlying investment decisions. What that crisis and others have graphically illustrated is that downside risk cannot be adequately surmised based on probabilistic models of markets alone. This is due to the fact that **'average' historical experience, which is the basis of models of asset returns, is an exceedingly poor predictor of what happens during downside extremes**.

The headline events of the past underscore something else as well; that the historical record neither circumscribes all potential future eventualities, nor is the length and breadth of it always pertinent to current circumstances. As to the latter point, it is important to note that economists, investment professionals and other experts have informed opinions both about which historical periods are relevant to the current environment, and about the ways in which the past is likely to differ from the future. For example, some have stated that the recent negative real interest rates and over-investment hangover make the 1970s a better model of likely future capital market behavior than the circumstances of the last 30 years. Others, for example, have noted the unprecedented nature of global demographic trends, amongst other unique macroeconomic and geopolitical circumstances, and have speculated as to what that could mean for markets.

Although there is a great deal of uncertainty associated with such forecasts, investigating their pertinence to investment portfolios holds out the promise that investors can leverage their judgment and foresight rather than subjugating them to the false authority of model based approaches. It furthermore increases investor cognizance of downside risks that lengthy histories tend to 'average out', as indicated. For these reasons, scenario analysis is considered an integral *complement*[1] to traditional probabilistic approaches to risk management. In that capacity, it can yield insights into the deficiencies of probabilistic measures of risk as a guide to managing downside risk and to suggest a more prudent positioning for a portfolio.

The asset class level return assumption applied to each of the foregoing scenarios are detailed on page8-10 of the Appendix.

[1]Scenario analysis is not a substitute for probabilistic approaches to risk management. The strength of the approach, its capacity to leverage an investor's investment judgment and to *isolate* stressful events that they deem material, is also its signal weakness; namely, the decisions that dominate its outcomes are ultimately highly subjective. This greatly enhances the potential for misspecification and other sources of error. Best practice entails using *both* approaches to gather information about the risk profile of an asset allocation, both independently and as a 'sanity check' of the other.

SCENARIO ANALYSIS - HISTORICAL SCENARIO ANALYSIS ASSUMPTIONS

Report Prepared for PAPERs Case Study

Historical scenario analysis is an attempt to investigate a counterfactual; 'what would have happened had I held this portfolio during this historical event?'. This answer is not possible to derive with precision given, for example, differences between asset classes and underlying investments, changes in the structure and nature of capital markets over time, etc. However, it can be estimated given certain assumptions, and those estimates can yield insight into the nature of the portfolio's risks, and of the assumptions underlying it. The principal strength of historical scenario analysis is two fold: firstly, since historical scenarios have indeed happened, they are inherently plausible events worth examining. Secondly, historical scenarios demonstrate the ways in which average relationships break down during extremes.

The principal drawback of historical scenario analysis, however, lies in the degree to which historical scenarios cannot be generalized to other circumstances. This is due to the significant extent to which historical scenarios arise from idiosyncrasies specific to those moments in time. For example, would the 1987 Black Monday stock market crash have happened if it weren't for the prominence of portfolio insurance amongst the institutional investment community at that time? Many have argued that it would have, but the uncertainty associated with this idiosyncratic circumstance, which may not be applicable to future events, is symptomatic of the weaknesses of historical scenario analysis.

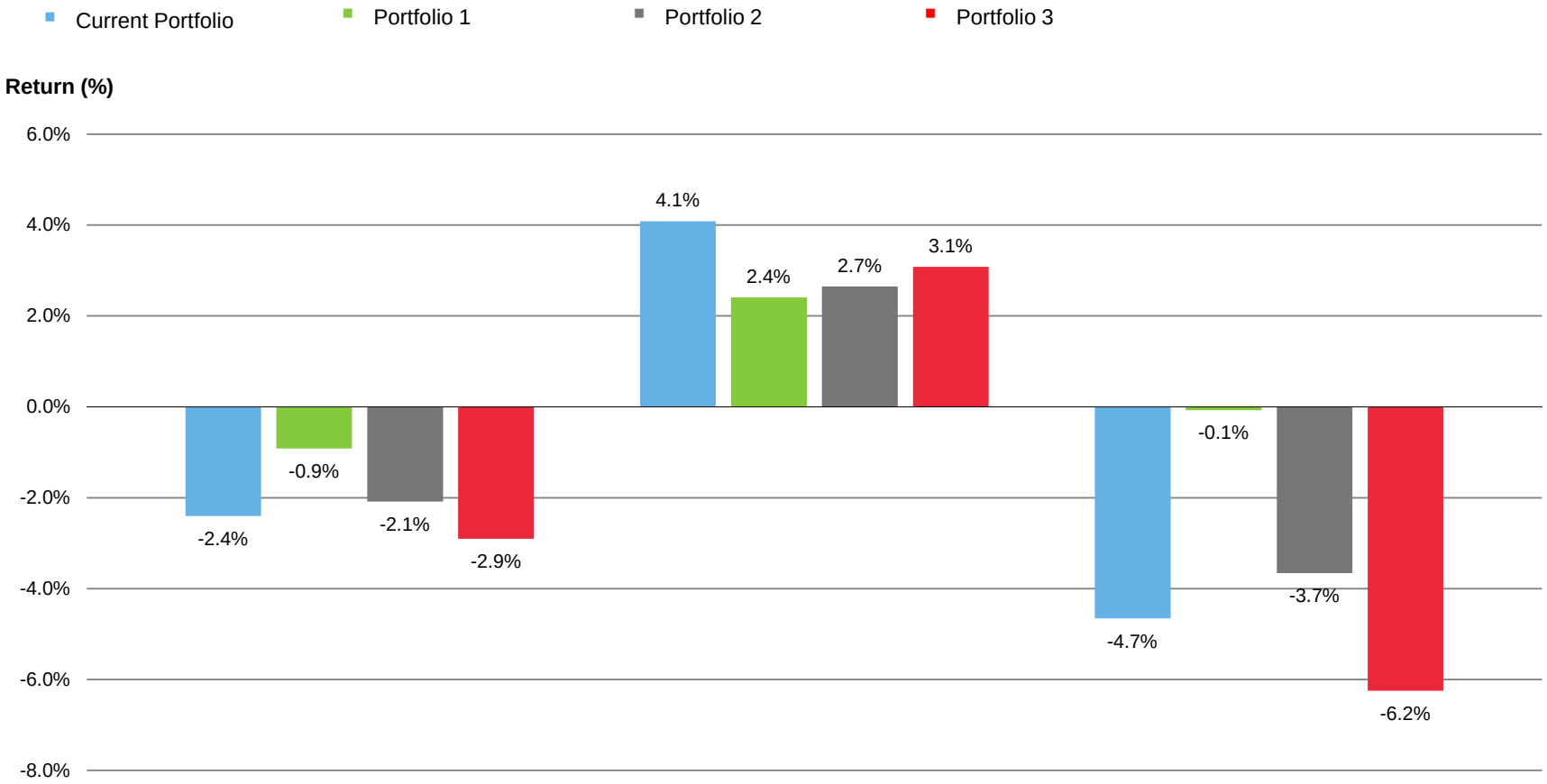
The historical events available to be used in this analysis are: *Black Monday*, the extreme decline in global and especially American stock prices that began on **10/14/1987**, and was short lived. *The Mexican Peso Crisis* of the early 1990s is assumed to have started on **12/20/1994**. The *Asian Financial Crisis* which began after a period of rapid growth and stock market gains, and caused wrenching losses most particularly in the emerging and developed markets of Asia, is assumed to have begun on **7/1/1997**. The *Russian Default/Long Term Capital Management (LTCM) Collapse*, which are grouped together given their proximal and causal linkage, is assumed to have begun on **8/17/1998**. The *Tech Bubble Bursts*, which is the significant decline in stocks that began after the peak of the prodigious 90's bull market in publicly traded stocks, is assumed to have begun on **4/7/2000**. The market fallout from the terrorist attacks of *September 11th*, is assumed to have begun immediately on **9/11/2001**, notwithstanding the forced closure of US capital markets for several days. The *Subprime Mortgage Meltdown* though it would ultimately lead to the global financial crisis of 2008/2009, began well before, assumed here to be the **6/7/2007** suspension of redemptions on two Bear Stearns hedge funds that were heavily invested in subprime mortgages: the High-Grade Structured Credit Fund and the Bear Stearns High-Grade Structured Credit Enhanced Leveraged Fund. The *Bear Stearns Collapse*, which was an important milestone in the financial crisis of 2008/2009, though not as precipitous as those that would follow, is assumed to have begun on **3/13/2008**. And finally, the penultimate event of the financial crisis of 2008/2009, the *Lehman Brothers Bankruptcy*, is assumed to have begun on the day of its filing, **9/15/2008**.

Notes: The returns over each event are evaluated starting the date listed above, to cover the horizon in question- 1 month, 3 months or 1 year. The asset class level return assumptions applied to each of the following historical scenarios are detailed on pages 8-9 of the Appendix.

SCENARIO ANALYSIS - HISTORICAL SCENARIOS

Report Prepared for PAPERs Case Study

9/11 Attack 09/11/2001 - 10/10/2001	9/11 Attack 09/11/2001 - 12/10/2001	9/11 Attack 09/11/2001 - 09/10/2002



Source: Global Investment Committee

The analysis assumes a hypothetical portfolio of representative indexes, rather than investment products or securities, and the returns shown are estimated gross of any applicable taxes or fees. Please see the appendix pages 8-9 for details of the assumed asset class returns in each historical scenario presented, and for the list of asset classes for which historical data was not available for a particular scenario, (e.g. hedge funds in 1987), and the index proxy used to estimate their return.

IMPORTANT: The projections or other information generated by the Asset Allocation Center, the investment analysis tool used to compile this report, regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect any actual investment results, and are not guarantees of future results. Results generated using this simulation analysis will vary with each use and over time. Please see the Appendix for important disclosures about this presentation.

SCENARIO ANALYSIS – HYPOTHETICAL SCENARIO ANALYSIS ASSUMPTIONS

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Hypothetical Scenarios are pure *'What if'* scenarios which, by design, require no continuity with the historical record. This feature of Hypothetical Scenarios accounts both for their principal benefits and their principal drawbacks. As to benefits, eschewing the historical record entirely maximizes an investor's ability to leverage her judgments about the risks that the future may hold. Hypothetical Scenarios can be used to examine stress in markets where there hasn't been any in the historical record, for example, prior to 2008 there had never been significant losses in money market securities. Investors can also Hypothetical Scenario Analysis it to assert correlative relationships for which there isn't any recent precedence, e.g. to postulate a severe retrenchment in the capital markets coinciding with a decline in the trade weighted dollar, or correlative relationships for which there isn't any precedence at all, e.g. to postulate an extreme divergence in investment grade and speculative grade credit markets.

Used judiciously, this near total degree of flexibility allows investors to reflect on the potential ramifications of their investment decisions. However, a hypothetical's complete lack of grounding in the experience of the past is also its principal drawback. Without hard data and models, a scenario is ultimately an entirely subjective exercise that can quite easily lead to inconsistency and even incoherence. The reality is that, whatever its biases or incompleteness, there is a tremendous amount of information about fundamental linkages and other dynamics in the historical record, and it is exceedingly difficult to fashion similarly plausible circumstances by speculation alone. All of which is to say Hypothetical Scenario Analysis can be a valuable tool if used properly, but it must be understood in the context of its significant limitations.

The Global Investment Committee has made six hypothetical events available for use in this analysis, which can have 1 year hypothetical investment horizons. Three of these scenarios are highly stressful, and three are characteristic of less stressful/more common market conditions. The most stressful scenarios are: *Significant Recession,* which describes the GIC's estimates of the capital market outcomes that are most likely to transpire should the economy enter a severe retrenchment, *External or Internal Shock*, which describes the GIC's estimates of the capital market outcomes that are most likely to transpire should there be a severe geopolitical or other shock to the global economy, such as a major terrorist attack, war, energy shock, etc., and *Robust Economic Growth*, which describes the GIC's estimates of the capital market outcomes that are most likely to transpire if economic growth were to accelerate rapidly, such as what might be associated with a massive technology/ productivity shock. The last would be a stressful event for those investors with heavy exposure to government or other high credit quality bonds with significant exposure to interest rates, which would most likely rise appreciably in such a scenario.

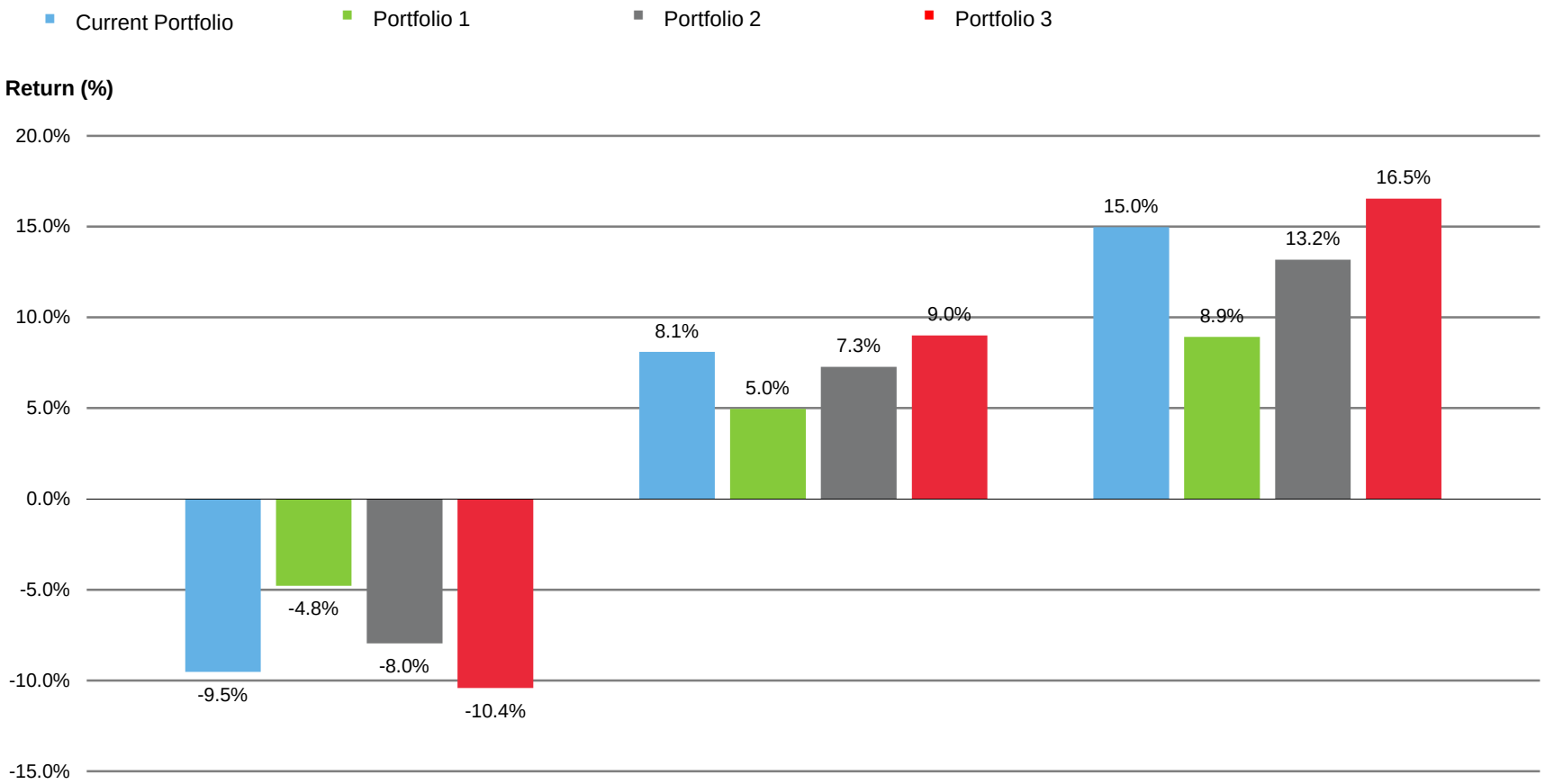
The less stressful scenarios are: *Better-Than-Expected-Economic-Growth*, which describes the GIC's estimates of the capital market outcomes most likely to transpire should the economy experience a mildly more optimistic version of the GIC's base case for economic growth, *Subpar, Sluggish Growth*, which describes the GIC's estimates of the capital market outcomes most likely to transpire should the economy experience a mildly more pessimistic version of the GIC's base case for economic growth, and finally *Stagnation, and/or Stagflation*, which describes the GIC's estimates of the capital market outcomes most likely to transpire in the event unfavorable economic and monetary conditions reminiscent of those that prevailed during the 1970's to take hold. This scenario, while not attractive from an investors standpoint, is nonetheless not as stressful as the events above.

Note: The asset class level return assumptions applied to each of the following hypothetical scenarios are detailed on page 10 of the Appendix

SCENARIO ANALYSIS – HYPOTHETICAL SCENARIOS

Report Prepared for PAPERs Case Study

External or Internal Shock 12 months	Improving, But Still Subpar Growth 12 months	Robust Economic Expansion 12 months



Source: Global Investment Committee

The analysis assumes a hypothetical portfolio of representative indexes, rather than investment products or securities, and the returns shown are estimated gross of any applicable taxes or fees. Please see page10 of the Appendix for details of the assumed returns for all positions in the portfolio in each hypothetical scenario presented.

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SCENARIO ANALYSIS – SUMMARY

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SCENARIO ANALYSIS RANK SUMMARY						
Type	**Event Name**	**Horizon**	**Current Portfolio**	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Historical	9/11 Attack	1 month	-2.4%	-0.9%	-2.1%	-2.9%
Historical	9/11 Attack	3 months	4.1%	2.4%	2.7%	3.1%
Historical	9/11 Attack	12 months	-4.7%	-0.1%	-3.7%	-6.2%
Rank Summary	**Historical Scenarios**		**2nd**	**1st**	**2nd**	**4th**
Hypothetical	External or Internal Shock	12 months	-9.5%	-4.8%	-8.0%	-10.4%
Hypothetical	Improving, But Still Subpar Growth	12 months	8.1%	5.0%	7.3%	9.0%
Hypothetical	Robust Economic Expansion	12 months	15.0%	8.9%	13.2%	16.5%
Rank Summary	**Hypothetical Scenarios**		**2nd**	**4th**	**3rd**	**1st**
Rank Summary	**All Scenarios**		**1st**	**2nd**	**2nd**	**4th**

Note: "Rank Summary" is the rank of the performance of each portfolio in each category of scenarios and overall. A portfolio's rank across a given category of scenarios or overall is the average of its performance *rank* in each scenario, not its performance. All figures are gross of any applicable taxes and fees. For details of the returns assumed per asset class for each of the above scenarios, please see page 8-10 of the Appendix. Please see the Glossary in the Appendix for definitions of certain terms used above. Please see the Appendix for important disclosures about this presentation.

IMPORTANT: The projections or other information generated by the Asset Allocation Center, the investment analysis tool used to compile this report, regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect any actual investment results, and are not guarantees of future results. Results generated using this simulation analysis will vary with each use and over time. Please see the Appendix for important disclosures about this presentation.

APPENDIX

GRANULAR PORTFOLIO ALLOCATIONS

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GRANULAR ALLOCATIONS				
	Current Portfolio	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Ultra-Short Fixed Income	4.0%	10.7%	4.3%	1.7%
Total Cash	**4.0%**	**10.7%**	**4.3%**	**1.7%**
Short Term Fixed Income	14.0%	17.1%	10.7%	5.0%
US Fixed Income	15.0%	18.2%	10.7%	5.0%
International Fixed Income	4.0%	4.3%	2.6%	1.7%
High Yield	2.0%	3.2%	1.8%	1.7%
Total Bonds	**35.0%**	**42.8%**	**25.8%**	**13.4%**
US Large Cap Growth Equity	12.0%	6.5%	8.4%	11.4%
US Large Cap Value Equity	12.0%	6.5%	8.4%	11.4%
US Mid Cap Growth Equity	2.0%	0.9%	1.9%	1.9%
US Mid Cap Value Equity	2.0%	0.9%	1.9%	1.9%
US Small Cap Growth Equity	2.0%	0.9%	1.9%	1.9%
US Small Cap Value Equity	2.0%	0.9%	1.9%	1.9%
Europe Equity	18.0%	8.4%	10.2%	13.3%
Japan Equity	3.0%	2.8%	2.8%	4.8%
Asia Pacific ex Japan Equity	2.0%	0.9%	1.9%	1.9%
Emerging Markets Equity	6.0%	2.8%	3.7%	5.7%
Total Equities	**61.0%**	**31.5%**	**43.0%**	**56.1%**
Real Estate Investment Trusts			1.5%	1.9%
Master Limited Partnerships			1.4%	1.9%
Absolute Return Assets		5.0%	5.0%	5.0%
Equity Hedge Assets		5.0%	5.0%	5.0%
Equity Return Assets		5.0%	5.0%	5.0%
Private Equity			9.0%	9.6%
Private Real Estate Funds				0.4%
Total Alternatives		**15.0%**	**26.9%**	**28.8%**
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table depicts assumed allocations to *granular asset classes* for the Current and Proposed Portfolios presented on page 4. The preceding analysis was based on the allocations listed above and the risk and return assumptions to follow on Pages 4-6 of the Appendix.

ASSET CLASS TO GRANULAR ASSET CLASS MAPPING

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ASSET CLASS MAPPING		
BROAD ASSET CLASSES	**ASSET CLASSES**	**GRANULAR ASSET CLASSES**
Cash	Cash & Cash Equivalents	*Ultra-Short Fixed Income*
Bonds	Investment Grade Bonds	*Short Term Fixed Income*
		US Fixed Income
		International Fixed Income
		Inflation-Linked Securities
	High Yield Bonds	*High Yield*
	Emerging Market Bonds	*Emerging Markets Fixed Income*
Equities	US Equity	*US Large Cap Growth Equity*
		US Large Cap Value Equity
		US Mid Cap Growth Equity
		US Mid Cap Value Equity
		US Small Cap Growth Equity
		US Small Cap Value Equity
	International Equity	*Europe Equity*
		Japan Equity
		Asia Pacific ex Japan Equity
	Emerging Markets Equity	*Emerging Markets Equity*
Alternatives	Real Assets	*Real Estate Investment Trusts*
		Commodities
		Master Limited Partnerships
	Absolute Return Assets	*Absolute Return Assets*
	Equity Hedge Assets	*Equity Hedge Assets*
	Equity Return Assets	*Equity Return Assets*
	Opportunistic Assets	*Private Equity*
		Private Real Estate Funds

GIC STRATEGIC MODEL ALLOCATIONS

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Level 2 Strategic Model Allocations	Model 1	Model 2	Model 3	Model 4	Model 5
Ultra-Short Fixed Income	15.0%	10.0%	5.0%	2.0%	
Total Cash	**15.0%**	**10.0%**	**5.0%**	**2.0%**	
Short Term Fixed Income	20.0%	16.0%	12.0%	6.0%	
US Fixed Income	21.0%	17.0%	12.0%	6.0%	
International Fixed Income	6.0%	4.0%	3.0%	2.0%	
High Yield	4.0%	3.0%	2.0%	2.0%	
Total Bonds	**51.0%**	**40.0%**	**29.0%**	**16.0%**	
US Large Cap Growth Equity	5.0%	7.0%	9.0%	12.0%	14.0%
US Large Cap Value Equity	5.0%	7.0%	9.0%	12.0%	14.0%
US Mid Cap Growth Equity	1.0%	1.0%	2.0%	2.0%	3.0%
US Mid Cap Value Equity	1.0%	1.0%	2.0%	2.0%	3.0%
US Small Cap Growth Equity	1.0%	1.0%	2.0%	2.0%	3.0%
US Small Cap Value Equity	1.0%	1.0%	2.0%	2.0%	3.0%
Europe Equity	5.0%	9.0%	11.0%	14.0%	19.0%
Japan Equity	2.0%	3.0%	3.0%	5.0%	6.0%
Asia Pacific ex Japan Equity	1.0%	1.0%	2.0%	2.0%	3.0%
Emerging Markets Equity	2.0%	3.0%	4.0%	6.0%	7.0%
Total Equities	**24.0%**	**34.0%**	**46.0%**	**59.0%**	**75.0%**
Real Estate Investment Trusts	1.0%	2.0%	2.0%	2.0%	2.0%
Master Limited Partnerships	1.0%	2.0%	2.0%	2.0%	2.0%
Absolute Return Assets	2.0%	4.0%	2.0%	1.0%	
Equity Hedge Assets			4.0%	4.0%	4.0%
Equity Return Assets				3.0%	6.0%
Private Equity		3.0%	5.0%	8.0%	8.0%
Private Real Estate Funds	6.0%	5.0%	5.0%	3.0%	3.0%
Total Alternatives	**10.0%**	**16.0%**	**20.0%**	**23.0%**	**25.0%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Model Portfolios are globally diversified balanced portfolios that reflect the best thinking of the Global Investment Committee for specific client circumstances, and range in market risk exposure from lowest (Model 1) to highest (Model 5). Level 1 Model Portfolios are recommended for clients with fewer than $25mm in investable assets. Level 2 Model Portfolios are recommended for clients with more than $25mm in investable assets. The difference between Level 1 and Level 2 is owed to the higher account minimums and lesser liquidity of Private Equity and Private Real Estate. The model allocations above are current as of the date of this Presentation, but are subject to change. Morgan Stanley has no obligation to notify you when they may change. Please refer to the end of this Appendix for important disclosures about this presentation.

GIC RISK AND RETURN ASSUMPTIONS

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	STRATEGIC FORECASTS (Year 1-7)				SECULAR FORECASTS (Year 8+)			
	Return	Volatility	Skewness	Kurtosis	Return	Volatility	Skewness	Kurtosis
Cash & Bonds								
Ultra-Short Fixed Income	1.4%	0.9%	0.78	3.48	3.0%	0.9%	0.78	3.48
Short Term Fixed Income	1.8%	2.7%	0.38	3.38	3.7%	2.7%	0.38	3.38
US Fixed Income	2.3%	5.5%	0.21	3.58	4.6%	5.5%	0.21	3.58
International Fixed Income	0.9%	4.2%	-0.05	3.02	5.1%	4.2%	-0.05	3.02
Inflation-Linked Securities	1.4%	7.8%	-0.30	3.45	4.6%	7.8%	-0.30	3.45
High Yield	5.1%	9.7%	-0.43	3.78	8.4%	9.7%	-0.43	3.78
Emerging Markets Fixed Income	6.9%	11.8%	-0.23	3.19	6.7%	11.8%	-0.23	3.19
Equities								
US Large Cap Growth Equity	7.2%	19.6%	-0.18	3.16	10.0%	17.3%	-0.18	3.16
US Large Cap Value Equity	6.7%	16.3%	-0.21	3.22	9.6%	14.7%	-0.21	3.22
US Mid Cap Growth Equity	8.5%	23.4%	-0.21	3.25	11.1%	20.7%	-0.21	3.25
US Mid Cap Value Equity	7.4%	17.0%	-0.29	3.34	10.4%	16.0%	-0.29	3.34
US Small Cap Growth Equity	9.3%	25.5%	-0.17	3.17	12.0%	22.9%	-0.17	3.17
US Small Cap Value Equity	7.9%	17.4%	-0.30	3.31	11.1%	17.4%	-0.30	3.31
Europe Equity	8.9%	17.6%	-0.11	3.17	10.1%	17.5%	-0.11	3.17
Japan Equity	8.1%	20.0%	0.06	3.06	9.6%	21.6%	0.06	3.06
Asia Pacific ex Japan Equity	9.0%	23.8%	-0.18	3.42	11.7%	23.4%	-0.18	3.42
Emerging Markets Equity	12.6%	27.3%	-0.16	3.14	11.9%	23.5%	-0.16	3.14
Non-Traditional Asset Classes*								
Real Estate Investment Trusts	7.5%	21.5%	-0.19	3.30	9.3%	18.5%	-0.19	3.30
Commodities	3.9%	15.7%	-0.10	3.23	5.4%	15.7%	-0.10	3.23
Master Limited Partnerships	8.0%	16.5%	-0.11	3.18	12.4%	15.5%	-0.11	3.18
Absolute Return Assets	3.1%	4.0%	-0.42	3.53	5.3%	4.0%	-0.42	3.53
Equity Hedge Assets	3.7%	8.3%	0.56	3.85	5.3%	8.3%	0.56	3.85
Equity Return Assets	4.7%	9.1%	-0.19	3.16	7.0%	8.9%	-0.19	3.16
Private Equity	10.3%	22.8%	-0.83	3.79	13.4%	21.1%	-0.83	3.79
Private Real Estate Funds	9.1%	19.2%	-0.54	3.66	10.0%	19.2%	-0.54	3.66

Source: Global Investment Committee as of Dec. 31, 2014. Annual return is the forecasted arithmetic average annual return. Annualized volatility, skewness and kurtosis estimates are based on the longest available data through December 2014. Strategic Forecasts are calibrated to a 7 year investment horizon. Secular Forecasts are calibrated to a 20+ year horizon.

Forecast estimates are for illustrative purposes only, are based on proprietary models and are not indicative of the future performance of any specific investment, index or asset class. Actual performance may be more or less than the estimates shown in this table. Estimates of future performance are based on assumptions that may not be realized.

* The GIC applies significant statistical adjustments to correct for distortions typically associated with hedge fund, private equity and private real estate index returns. For more information, see the 'Return Series Adjustments' section on Appendix page 22.

Investor Suitability: Morgan Stanley recommends that investors independently evaluate each asset class, investment style, issuer, security, instrument or strategy discussed. Legal, accounting and tax restrictions, transaction costs and changes to any assumptions may significantly affect the economics and results of any investment. Investors should consult their own tax, legal or other advisors to determine suitability for their specific circumstances. Investments in private funds (including hedge funds, managed-futures funds and private-equity funds) are speculative and include a high degree of risk.

All figures annualized. Asset class returns are assumed to be serially independent. In some cases, the asset classes in the forgoing presentation are aggregations of the asset classes listed above, as per the mapping detailed on page 2 of the Appendix. Assumptions for aggregated asset class are simply aggregates of the above assumptions with weights as per the Granular Portfolio Allocations on Page 1 of the Appendix and Model Allocations on page 3 of the Appendix respectively. Please refer to the end of this Appendix for important disclosures about this presentation.

CLIENT FEE ASSUMPTIONS

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FEE ASSUMPTIONS	Strategic Gross Return Forecast	Secular Gross Return Forecast	Annual Fees*	Strategic Yield	Secular Yield	After-Fee Strategic Return	After-Fee Secular Return
Ultra-Short Fixed Income	1.4%	3.0%	0.1%	1.4%	3.0%	1.3%	2.9%
Short Term Fixed Income	1.8%	3.7%	0.2%	1.3%	3.6%	1.6%	3.5%
US Fixed Income	2.3%	4.6%	0.1%	2.3%	4.6%	2.2%	4.6%
International Fixed Income	0.9%	5.1%	0.2%	1.1%	5.1%	0.7%	4.9%
Inflation-Linked Securities	1.4%	4.6%	0.2%	1.2%	2.7%	1.2%	4.4%
High Yield	5.1%	8.4%	0.5%	5.9%	8.4%	4.6%	7.9%
Emerging Markets Fixed Income	7.0%	6.7%	0.4%	6.0%	6.7%	6.5%	6.3%
US Large Cap Growth Equity	7.3%	10.0%	0.2%	1.7%	1.7%	7.0%	9.8%
US Large Cap Value Equity	6.7%	9.6%	0.2%	2.7%	2.7%	6.5%	9.4%
US Mid Cap Growth Equity	8.5%	11.1%	0.3%	1.5%	1.5%	8.3%	10.8%
US Mid Cap Value Equity	7.4%	10.4%	0.3%	2.9%	2.9%	7.2%	10.1%
US Small Cap Growth Equity	9.4%	12.0%	0.3%	1.7%	1.7%	9.1%	11.7%
US Small Cap Value Equity	7.9%	11.1%	0.3%	3.5%	3.5%	7.6%	10.8%
Europe Equity	8.9%	10.1%	0.6%	2.5%	2.5%	8.2%	9.4%
Japan Equity	8.1%	9.6%	0.5%	1.5%	1.5%	7.6%	9.0%
Asia Pacific ex Japan Equity	9.0%	11.7%	0.5%	2.8%	2.8%	8.5%	11.2%
Emerging Markets Equity	12.6%	11.9%	0.2%	2.8%	2.8%	12.4%	11.7%
Real Estate Investment Trusts	7.5%	9.3%	0.4%	4.0%	4.0%	7.1%	9.0%
Commodities	3.9%	5.5%	0.5%	1.4%	3.0%	3.4%	4.9%
Master Limited Partnerships	8.0%	12.4%	0.9%	6.1%	6.1%	7.1%	11.4%
Absolute Return Assets	3.2%	5.3%	0.2%	0.0%	0.0%	2.9%	5.1%
Equity Hedge Assets	3.8%	5.3%	0.2%	0.0%	0.0%	3.5%	5.1%
Equity Return Assets	4.7%	7.0%	0.2%	0.0%	0.0%	4.5%	6.8%
Private Equity	10.3%	13.4%	2.0%	0.0%	0.0%	8.1%	11.1%
Private Real Estate Funds	9.1%	10.0%	2.0%	0.0%	0.0%	6.9%	7.8%
PORTFOLIO LEVEL FEES			0.15%				

Gross Return Forecasts Source: Global Investment Committee. Strategic Forecasts are calibrated to a 7year investment horizon. Secular Forecasts are calibrated to a 20+ year horizon.

NOTE: The foregoing hypothetical analysis has been prepared on a 'before-tax basis', i.e. it assumes that no tax liability is applicable to any dividends, income or capital gains generated by the investment portfolio. Morgan Stanley, its affiliates, and its Financial Advisors or Private Wealth Advisors do not provide legal or tax advice.

* If included in this analysis, Portfolio and Asset Class Level fees are hypothetical in nature, and do not reflect any specific expenses or fees that might actually be incurred in your portfolio. We include them here to reflect our cognizance of the capacity for expenses and fees to reduce the returns investors ultimately realize, not by way of forecasting their potential magnitude at the portfolio or asset class level.

Please note that return forecasts for alternative asset classes, with the exception of Commodities, TIPS, REITS, MLPs, Infrastructure and Natural Resources, already incorporate an estimate of the fund-level fees. Fee inputs here are used either to control for higher than average fees, or to add the layer of fees associated with fund-of-fund products or other vehicles that carry additional fees.

Please refer to the end of this Appendix for important disclosures about this presentation.

GIC CORRELATION ASSUMPTIONS

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CORRELATION MATRIX	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1 Ultra-Short Fixed Income	1.00																								
2 Short Term Fixed Income	0.27	1.00																							
3 US Fixed Income	0.05	0.90	1.00																						
4 International Fixed Income	0.15	0.58	0.70	1.00																					
5 Inflation-Linked Securities	0.01	0.46	0.61	0.39	1.00																				
6 High Yield	0.03	0.12	0.25	0.15	0.45	1.00																			
7 Emerging Markets Fixed Income	0.09	0.34	0.40	0.21	0.80	0.70	1.00																		
8 US Large Cap Growth Equity	0.01	0.11	0.18	0.04	0.26	0.61	0.61	1.00																	
9 US Large Cap Value Equity	0.02	0.15	0.22	0.10	0.32	0.63	0.65	0.92	1.00																
10 US Mid Cap Growth Equity	0.02	0.03	0.06	0.01	0.26	0.62	0.61	0.97	0.90	1.00															
11 US Mid Cap Value Equity	0.00	0.02	0.14	0.08	0.37	0.67	0.65	0.93	0.97	0.95	1.00														
12 US Small Cap Growth Equity	0.01	0.03	0.08	0.03	0.23	0.62	0.57	0.92	0.88	0.95	0.93	1.00													
13 US Small Cap Value Equity	0.00	0.09	0.15	0.02	0.30	0.65	0.60	0.87	0.93	0.89	0.95	0.95	1.00												
14 Europe Equity	0.02	0.14	0.18	0.07	0.48	0.62	0.75	0.87	0.87	0.86	0.86	0.79	0.77	1.00											
15 Japan Equity	0.01	0.09	0.11	0.03	0.29	0.32	0.50	0.59	0.58	0.60	0.59	0.55	0.52	0.68	1.00										
16 Asia Pacific ex Japan Equity	0.05	0.03	0.07	0.11	0.49	0.69	0.83	0.82	0.80	0.82	0.80	0.75	0.71	0.89	0.65	1.00									
17 Emerging Markets Equity	0.02	0.03	0.02	0.01	0.39	0.71	0.79	0.80	0.76	0.82	0.77	0.76	0.69	0.87	0.68	0.94	1.00								
18 Real Estate Investment Trusts	0.05	0.08	0.21	0.20	0.54	0.65	0.78	0.58	0.71	0.59	0.75	0.58	0.70	0.75	0.54	0.84	0.72	1.00							
19 Commodities	0.09	0.02	0.05	0.14	0.52	0.28	0.55	0.18	0.21	0.23	0.22	0.21	0.19	0.34	0.22	0.37	0.36	0.34	1.00						
20 Master Limited Partnerships	0.02	0.09	0.04	0.03	0.25	0.52	0.38	0.34	0.41	0.36	0.43	0.35	0.39	0.39	0.16	0.41	0.39	0.42	0.33	1.00					
21 Absolute Return Assets	0.16	0.14	0.19	0.10	0.45	0.80	0.63	0.60	0.62	0.62	0.67	0.63	0.66	0.63	0.32	0.62	0.62	0.57	0.35	0.55	1.00				
22 Equity Hedge Assets	0.15	0.07	0.05	0.22	0.33	0.08	0.31	0.04	0.08	0.09	0.10	0.02	0.05	0.04	0.01	0.09	0.04	0.08	0.12	0.10	0.12	1.00			
23 Equity Return Assets	0.17	0.06	0.08	0.06	0.38	0.71	0.67	0.78	0.71	0.85	0.73	0.86	0.76	0.75	0.43	0.73	0.74	0.61	0.40	0.45	0.80	0.15	1.00		
24 Private Equity	0.08	0.17	0.15	0.03	0.18	0.51	0.47	0.75	0.68	0.72	0.63	0.70	0.57	0.64	0.39	0.55	0.53	0.52	0.15	0.25	0.51	0.03	0.66	1.00	
25 Private Real Estate Funds	0.20	0.11	0.10	0.07	0.22	0.29	0.36	0.33	0.49	0.31	0.49	0.34	0.48	0.40	0.21	0.35	0.28	0.46	0.29	0.30	0.40	0.07	0.40	0.42	1.00

Source: Global Investment Committee as of Dec. 31, 2014. Based on the longest available data through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the strategic and intermediate-term horizons. All figures expressed annually. Asset class returns are assumed to be serially independent. Note that while the asset classes in the foregoing presentation are in certain cases aggregations of the asset classes listed above, their assumptions are aggregations of the above.

SIMULATION ANALYSIS ASSUMPTIONS - PORTFOLIO DISTRIBUTION SCHEDULE

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Nominal Distribution Policy																				
Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Nominal Distribution ($)	7,700,000	8,050,000	8,450,000	8,800,000	9,250,000	9,650,000	10,150,000	10,600,000	11,100,000	11,600,000	12,000,000	12,400,000	12,800,000	13,250,000	13,650,000	14,100,000	14,600,000	15,050,000	15,550,000	16,100,000
Minimum Distribution (%)																				
Maximum Distribution (%)																				
Inflows/Gifts (%)																				
Inflows/Gifts ($)	4,200,000	4,550,000	4,850,000	5,150,000	5,450,000	5,700,000	5,950,000	6,150,000	6,400,000	6,600,000	6,800,000	7,000,000	4,950,000	5,150,000	5,050,000	5,750,000	5,650,000	5,600,000	5,550,000	5,600,000

Distribution Timing	**End of Year**

Simulation analysis allows investors to examine the impact of real world considerations, such as withdrawing funds from an investment portfolio, on overall investment outcomes. The Portfolio Distribution Schedule above details the contributions to and distributions from the investment portfolio that were assumed in the simulation analysis in the foregoing presentation for this portfolio and strategy. Note that, until exhausted, available funds will be applied to distributions. The following are definitions of each of the terms in the schedule above. Note that some terms may not apply to this specific schedule.

"*Year*" is the year or range of years in the simulation for which that column in the schedule applies. A "*Nominal Distribution*" is the nominal (not inflation or time value adjusted) dollar amount to be withdrawn from the portfolio in any given year. A "*Pro-Rata Distribution*" is the fraction of portfolio value to be withdrawn from the portfolio in any given year. A "*Minimum Distribution*" or "*Maximum Distribution*" is the minimum and maximum distribution permitted from the portfolio in any given year respectively (either expressed as a fraction of portfolio value , "%", or as an absolute amount, "$"). *Inflows/Gifts* are assumed contributions to the portfolio in any given year (either expressed as a fraction of portfolio value , "%", or as an absolute amount, "$"). *Moving Average Window* refers to the basis by which portfolio value is calculated for the purpose of determining a "Pro-Rata Distribution", e.g. a 5% Pro-Rata Distribution based on a 3 year moving average window will schedule a payment of 5% of the average of the then previous three year's portfolio value to be paid. "*Prior Year Portfolio Value ($)*" are the assumed historical portfolio values for the purposes of calculating the initial payments in any scenario. Distribution timing refers to when contributions and distributions are assumed to take place within a simulated year (either at its beginning or its end). "*Current Distribution*" is the most recent distribution amount. "*Nominal Distribution Weight*" is the percentage of the Yale-Stanford Rule determined distribution based on the prior period distribution. "*Distribution Growth Rate*" is the growth rate applied to the most recent distribution amount for the purpose of calculating a Yale-Stanford Rule based distribution.

HISTORICAL SCENARIO ANALYSIS ASSUMPTIONS

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HISTORICAL SCENARIO ANALYSIS ASSUMPTIONS			
	9/11 Attack	9/11 Attack	9/11 Attack
Horizon months:	1	3	12
Ultra-Short Fixed Income	0.2%	0.4%	1.3%
Short Term Fixed Income	1.7%	1.2%	7.3%
US Fixed Income	1.8%	1.3%	8.6%
International Fixed Income	0.9%	1.4%	5.5%
Inflation-Linked Securities	-0.2%	-0.4%	10.3%
High Yield	-6.3%	-2.3%	-5.7%
Emerging Markets Fixed Income	-3.5%	-4.2%	-0.1%
US Large Cap Growth Equity	-2.5%	11.1%	-18.8%
US Large Cap Value Equity	-3.5%	2.9%	-11.6%
US Mid Cap Growth Equity	-7.4%	13.2%	-18.6%
US Mid Cap Value Equity	-6.2%	3.1%	-2.7%
US Small Cap Growth Equity	-8.1%	11.9%	-20.7%
US Small Cap Value Equity	-8.0%	5.5%	-1.5%
Europe Equity	-3.3%	4.6%	-13.2%
Japan Equity	-2.7%	-6.8%	-13.7%
Asia Pacific ex Japan Equity	-5.5%	6.6%	1.6%
Emerging Markets Equity	-12.2%	9.8%	2.3%
Real Estate Investment Trusts	-6.3%	-1.3%	2.4%
Commodities	-7.8%	-12.2%	6.9%
Master Limited Partnerships	1.2%	0.3%	-2.7%
Absolute Return Assets	0.4%	1.7%	5.2%
Equity Hedge Assets	2.5%	0.9%	12.1%
Equity Return Assets	-2.7%	1.3%	-3.4%
Private Equity	-3.0%	-4.3%	-12.9%
Private Real Estate Funds	0.2%	0.5%	5.2%

Source: Global Investment Committee. Note that the assumed return of any concentrated stocks incorporated in any historical scenario analysis in the foregoing presentation could potentially diverge substantially from the return they actually experienced during the historical event the analysis is intending to capture. This is due to the fact that concentrated stocks in the system are not modeled using the actual performance or other fundamental information about those stocks. They are modeled instead according to their proxy equity index and their assumed beta to the proxy. Please see important disclosures to this analysis further in the appendix.

INDEX PROXIES FOR HISTORICAL SCENARIO ANALYSIS

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Asset Class return in Historical Scenarios is estimated based on the actual return to the respective representative indexes, as disclosed on the Asset Class Definitions section of the Appendix, starting on page 13. Please note that several of these indices do not have the requisite data history to cover all historical scenarios we are interested in examining. For any such asset classes, the GIC has created a proxy index consisting of a blend of indices to derive their returns *solely for the historical scenarios where it is necessary to do so.* Nowhere else in this analysis is this data relevant. The following is a comprehensive list of those instances where additional data was required:

Short Duration: Representative Index- Barclays Capital Global Aggregate 1~3 Year Index (hedged) (2001-2014), BC Global Treasury 1~3 Year Index (hedged) (1990-2001), Barclays Capital US Aggregate Index (1987-1989) **Government/Government-Related**: Representative Index- Barclays Capital Global Aggregate Government/Government Related Bond Index (hedged) (2004-2014), Citi World Broad Investment Grade Government/Government Sponsored Bond Index (2000-2004), Barclays Capital Global Government/Government Related Bond Index (hedged) (1990-2000), Barclays Capital US Aggregate Index (1987-1989) **Corporate/Securitized**: Representative Index- Barclays Capital Global Aggregate Corporate and Securitized Index (hedged) (2001-2014), Citi World Broad Investment Grade Corporate/Collateralized Bond Index (2000-2001), Barclays Capital US Aggregate Index (1987-2000) **High Yield**: Representative Index- Barclays Capital Global High Yield Index (hedged) (1999-2014), Barclays Capital US High Yield (1987-1999) **High Yield Municipal Bonds**: Representative Index- Barclays Capital Municipal High Yield Index (2010-2014), Representative Index- Barclays Capital Municipal Bond Index (1987-2010) **Emerging Market Bonds:** Representative Index- JP Morgan Government Bond Index, Emerging Markets Global Diversified Composite (local currency, unhedged) (2003-2010), JP Morgan Emerging Market Bond Index (1994-2002), Barclays Capital US High Yield (1987-1993) **Emerging Market Corporate Bonds**: Representative Index- JP Morgan Corporate Emerging Markets Bond Index, US dollar (2007-2014), JP Morgan Emerging Market Bond Index, US Dollar (1993-2007), Barclays Capital US High Yield (1987-1993) **Inflation-Linked Securities**: Representative Index- Barclays Capital Universal Government Inflation-Linked Bond Index (1997-2014), Barclays Capital US Aggregate Index (1987-1997) **Preferred Stock**: Representative Index- The BofA Merrill Lynch Fixed Rate Preferred Securities Total Return Index (1993-2014), S&P 500 Index (1987-1993) **Convertible Bonds:** Representative Index- Merrill Lynch Convertible Bond Index (1990-2014), S&P 500 Index and Barclays Capital US Aggregate Index (1987-1990) **US Large-Cap Growth Equities**: Representative Index- Russell 1000 Growth Index (1991-2014), S&P 500 Index (1987-1990) **US Large-Cap Value Equities**: Representative Index- Russell 1000 Value Index (1991-2014), S&P 500 Index (1987-1990) **US Mid-Cap Growth Equities**: Representative Index- Russell Midcap Growth Index (1995-2014), S&P 400 Index (1991-1995), S&P 500 Index (1987-1990) **US Mid-Cap Value Equities**: Representative Index- Russell Midcap Value Index (1995-2014), S&P 400 Index (1991-1995), S&P 500 Index (1987-1990) **US Small-Cap Growth Equities**: Representative Index- Russell 2000 Growth Index (1993-2014), S&P 600 Index (1989-1993), S&P 500 Index (1987-1989) **US Small-Cap Value Equities**: Representative Index- Russell 2000 Value Index (1993-2014), S&P 600 Index (1989-1993), S&P 500 (1987-1989) **International Developed Market Equities:** Representative Index- MSCI Europe Asia Far East IMI Index (1987-2014) **Canada Equities:** Representative Index- MSCI Canada IMI Index (Gross) (1999-2014), MSCI Canada IMI Index (Price) (1987-1998) **Europe ex UK Equities**: Representative Index- MSCI Europe ex UK IMI Index (Gross) (1999-2014), MSCI Europe ex UK IMI Index (Price) (1988-1998), MSCI Europe Asia Far East IMI Index (1987-1987) **UK Equities:** Representative Index- MSCI UK IMI Index (Gross) (1999-2014), MSCI UK IMI Index (Price) (1987-1998) **Japan Equities:** Representative Index- MSCI Japan IMI Index (Gross) (1999-2014), MSCI Japan IMI Index (Price) (1987-1998) **Pacific ex Japan Equities**: Representative Index- MSCI Pacific ex Japan IMI Index (Gross) (1999-2014), MSCI Pacific ex Japan IMI Index (Price) (1988-1998), MSCI Pacific Index (1987-1987) **World ex US Small-Cap Equities**: Representative Index- MSCI World ex US Small Cap IMI Index (1999-2014), MSCI Europe Asia Far East IMI (1987-1998) **Emerging Market Equities**: Representative Index- MSCI Emerging Markets IMI Index (Gross) (1999-2014), MSCI Emerging Markets IMI Index (Price) (1988-1998), MSCI World Index (1987-1987) **Frontier Emerging Market Equities**: Representative Index- MSCI Frontier Markets Index (2002–2014), MSCI Emerging Markets IMI Index (Gross) (1999-2002), MSCI Emerging Markets IMI Index (Price) (1988-1998), MSCI World Index (1987-1987) **Real Estate Investment Trusts (REITS)**:Representative Index- FTSE EPRA NAREIT Global Total Return Index (2005-2014), FTSE EPRA NAREIT Developed Total Return Index (1990-2005), S&P 500 (1987-1989) **Master Limited Partnerships (MLPs)**: Representative Index- Alerian Energy MLP Total Return Index (2006-2014), S&P 500 Index (1987-2005) **Commodities**: Representative Index- Dow Jones / UBS Commodity Total Return Index (1991-2014), S&P GSCI Total Return Index (1987-1991), **Precious Metals**: Representative Index- Dow Jones / UBS Precious Metals Total Return Index (1991-2014), S&P GSCI Precious Metals Total Return Index (1987-1991), **Hedged Strategies and Hedged Strategy Sectors**: Representative Index- HFRI Fund of Funds Composite Index (1990-2014), S&P 500 Index (1987-1989) **Natural Resources**: Representative Index- MSCI All Country World Infrastructure Utility Total Return Index (1999-2014), S&P 500 Index (1987-1998) **Leveraged Loans**: Representative Index- S&P/LSTA Leveraged Loan Index (1997-2014), Barclays Capital US High Yield (1987-1997)

HYPOTHETICAL SCENARIO ANALYSIS ASSUMPTIONS

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HYPOTHETICAL SCENARIO ANALYSIS ASSUMPTIONS				
		External or Internal Shock	Improving, But Still Subpar Growth	Robust Economic Expansion
Horizon	months:	12	12	12
Ultra-Short Fixed Income		0.4%	0.4%	0.6%
Short Term Fixed Income		1.5%	0.0%	-0.3%
US Fixed Income		2.8%	-0.2%	-1.8%
International Fixed Income		1.8%	0.4%	-0.5%
Inflation-Linked Securities		0.5%	2.4%	4.4%
High Yield		-6.2%	7.1%	12.3%
Emerging Markets Fixed Income		-6.0%	6.5%	10.4%
US Large Cap Growth Equity		-18.0%	14.0%	31.1%
US Large Cap Value Equity		-13.9%	12.1%	20.1%
US Mid Cap Growth Equity		-21.7%	16.3%	35.8%
US Mid Cap Value Equity		-13.9%	12.8%	20.4%
US Small Cap Growth Equity		-23.5%	16.6%	35.0%
US Small Cap Value Equity		-14.9%	13.0%	19.6%
Europe Equity		-16.4%	12.3%	22.5%
Japan Equity		-11.6%	7.3%	15.5%
Asia Pacific ex Japan Equity		-16.5%	13.7%	25.0%
Emerging Markets Equity		-19.7%	15.6%	27.6%
Real Estate Investment Trusts		-12.4%	10.3%	13.3%
Commodities		-2.7%	0.8%	1.6%
Master Limited Partnerships		-1.6%	7.1%	8.5%
Absolute Return Assets		-3.0%	3.3%	5.3%
Equity Hedge Assets		3.0%	2.6%	6.1%
Equity Return Assets		-6.5%	7.5%	13.0%
Private Equity		-7.8%	6.7%	11.2%
Private Real Estate Funds		-2.2%	1.4%	0.7%

Source: Global Investment Committee. Please see important disclosures to this analysis further in the appendix.

GLOSSARY

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- **Beta:** A measure of the linear relationship between an asset or asset class and the asset or asset class it is being compared to, most typically that between an individual stock and a market index. In the context of a stock to a market index, a stock's beta dictates the average degree to which its historical returns coincided with the returns to the index. A beta of 2, for example, implies that a stock has, on average, moved in the same direction as the index, (given that the beta is positive), but with double its magnitude (i.e. a market increase of 5% would, on average, portend a stock increase of 10%, while a market decrease of 5% would, on average, portend a stock decrease of 10%). In this presentation, beta is used to model the relationship between a stock and a proxy index, in conjunction with the stock's overall volatility (defined subsequently here).
- **Conditional Value-at-Risk (Annual):** A measure of the downside risk of an investment portfolio, Conditional Value-at-Risk is the *expected (*annual) loss in the event the portfolio experiences a 'one year in twenty' downside event, i.e. a downside returns event so severe one might probabilistically expect it to occur, on average, once every 20 years. In other words, Conditional Value-at-Risk is the average portfolio loss *conditional* on the portfolio experiencing particularly adverse circumstances. As contrasts with Value-at-Risk, (defined subsequently), the metric is affected not just by the dispersion across all downside extremes, but by the dispersion within downside extremes.
- **Correlation**: Correlation, or correlation coefficient, is a mathematical representation of the relationship between two asset classes and ranges between -1 and +1. Perfect positive correlation (a correlation co-efficient of 1) implies that as a security moves, either up or down, the correlated security moves in lockstep. Perfect negative correlation, alternatively, means that if one security moves in either direction the security that is perfectly negatively correlated will move by an equal degree in the opposite direction. If the correlation is 0, the movements of the securities or asset classes are independent, meaning one's moving does not increase or decrease the likelihood of the other's moving.
- **Efficiency Analysis**: Efficiency analysis plots portfolios along two dimensions, one corresponding to an investment objective, most typically forecasted return, and the second to risk, most typically forecasted volatility, so as to evaluate the *efficiency* by which one is achieved at the expense of the other. Graphically speaking, more 'efficient' portfolios appear in an efficiency analysis chart above less efficient ones controlled for forecasted risk, i.e. at the same point along the horizontal axis. Research suggests that skillful blending of asset classes can maximize the tradeoff between objective and risk, and thus 'efficiency' is relevant to the determination of an appropriate strategic asset allocation.
- **Fat-Tailed Return Distribution**: A probability distribution implying that large deviations from the average are materially more probable than what so-called 'normal' probability distributions imply is commonly referred to as being 'fat tailed'. For further on this property of distributions, please see the '**Skewness'** and '**Kurtosis**' entries further in this Glossary.
- **Kurtosis**: A statistical measure of the "peakedness" of a distribution. In a return series that is leptokurtic, i.e. one that exhibits higher kurtosis than the normal distribution, risk is manifested through low frequency high impact 'events', both positive and negative, measured as returns several standard deviations away from the average. These distributions are called 'fat tailed' because their extremes are *thick* with probability (the normal distribution is 'thin tailed' such that returns 3 or more standard deviations away from the average are exceedingly rare). In 'low kurtosis' return series, i.e. kurtosis less than or equal to normal, risk is manifested through high frequency deviations close to the average. The vast majority of financial return series are leptokurtic, however some investments, e.g. hedge funds, are significantly more so than other investments, which is an unfavorable attribute of their profile.
- **Percentile Return**: a measure of uncertainty based upon the forecast likelihood of events. For example, 5th percentile return is defined as the portfolio return that only 5% of potential returns are less than (and by implication 95% of returns are greater than), a number which will vary greatly with the forecast frequency of adverse return events.
- **Probability of Return**: In simple terms, the likelihood of a given return threshold being passed. Specifically, in the context of a model of capital market dynamics, risk and return forecasts can be used to infer the likelihood that a given portfolio's return will be above or below any nominal threshold at any specific future point in time.
  - **Probability < 0% or Probability of Loss** is the probability that portfolio return will be *less than or equal to* zero.
  - **Probability > Target Return or Probability > 7520 Rate** is the probability that portfolio return will be *greater than or equal to* the supplied target or 7520 rate. As with other such figures, the accuracy of those predictions are based on the accuracy of the risk, return and distributional assumptions applied to the calculation.

GLOSSARY (CONT'D)

- **Probability Density:**one way to express the likelihood of a particular event is to display its probability density. The more a given event is 'dense with probability' the more likely it is. In this analysis, probability density is used to elaborate the relative likelihood of a portfolio's achieving a specified value at a specified time in the investment horizon.
- **Probability of Return**:In the context of an internally consistent model, risk and return forecasts can be used to infer the likelihood that a given portfolio's return will be above or below any nominal threshold.
  - **Probability < 0% or Probability of Loss** is the probability that portfolio return will be *less than or equal to* zero.
  - **Probability of Target Return** is the probability that portfolio return will be *greater than or equal to* the supplied target. As with the other figures in this analysis, the accuracy of those predictions are based on the accuracy of the risk, return and distributional assumptions applied to the calculation.
- **Return Forecast**: Projected annual rate of change in the price of an asset class or portfolio. In the foregoing analysis, Portfolio Return Forecasts are based on a weighted average of the return assumptions for granular asset classes, detailed Appendix 4, where the weights are equal to the portfolio itself.
- **Scenario Analysis**: An examination of the effect of a specified event- historical, hypothetical or some combination of the two (here conditional)- on a portfolio's return. Another name for 'what if' analysis.
- **Sharpe Ratio**: Developed by William F. Sharpe, this calculation measures the risk-adjusted return, or 'efficiency', of a portfolio. The Sharpe Ratio is calculated as the *excess* expected return an investment or portfolio delivers divided by its expected volatility, i.e. standard deviation, where excess means expected return minus the risk free rate of return. One criticism of Sharpe ratios is that the measure of risk, portfolio standard deviation, penalizes all forms of dispersion equally, upside and downside, and does not sufficiently control for downside event risk.
- **Skewness**: A statistical measure of asymmetry of an asset class or portfolio return distribution. Negative skew is an undesirable characteristic of some investments, e.g. private real estate, indicating that left hand tail of a return distribution (representing the likelihood of downside deviation from average) is 'longer' than the right hand, i.e. that downside events are bigger than their reciprocally plausible upside ones. By corollary, the bulk of the values of negatively skewed distributions lie above the average. Positive skewed distributions, such as private equity and managed futures, exhibit the opposite behavior, and distributions with zero skew are balanced about the average.
- **Standard Deviation**: A statistical measure of the dispersion of data (in the context of this report, return data). Standard deviation can be thought of as the *average* difference between an individual data point and the average value of all data points under consideration. All else equal, more broadly distributed returns will have a higher standard deviation than more narrowly distributed returns.
- **Turnover**: A measure of the average holding period of an investment in a client's portfolio. Portfolio turnover is calculated by taking either the total value of securities bought or sold – whichever is less – over a 12-month time period, divided by net asset value. The GIC's assumptions of asset class turnover are based on the average turnover values of managers in that category.
- **Value-at-Risk (Annual)**: A measure of the downside risk of an investment portfolio, it is defined in this presentation as the portfolio loss that is less than 95% of projected one year returns. One way to interpret the statistic is that drawdowns of this magnitude or greater would be, on average, anticipated in one out of every twenty years, subject to the accuracy of the risk, return and distributional assumptions applied to the calculation.
- **Volatility**: A measure of the magnitude of variability of the returns of an asset class or security, measured statistically as the forecasted standard deviation of those returns (see above). It is generally the case that a larger dispersion of return implies greater risk, as this implies more substantially adverse outcomes for a given level of likelihood of their occurrence.

ASSET CLASS DEFINITIONS

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- **Cash**: Representative Index- Bloomberg US Generic Government 3M Yield (1954 – 2014)
  - Treasury bills and other money markets debt securities with very short-term maturities are called cash or cash equivalents. They earn interest based on agreed upon rates that are in practice heavily influenced Federal Reserve overnight policy interest rates.
- **Short Duration**: Representative Index- Barclays U.S. Government/Credit 1-3 Year Bond Index (1976 – 2014)
  - Fixed-rate, short-term debt of developed-market countries. Currency exposure is hedged to the US dollar.
- **US Investment Grade Fixed Income**: Representative Index- Barclays Capital US Aggregate Bond Index (hedged) (1976 – 2014)
  - US investment grade (treasury, government agency, investment grade corporate, agency mortgage-backed security, etc.) debt securities with a maturity of 1 year or greater.
- **International Investment Grade Fixed Income**: Representative Index- Barclays Capital Non-USD Aggregate Bond Index (hedged) (1990 – 2014)
  - Global investment-grade, fixed-rate corporate debt securities as well as the securitized component that includes mortgage-backed securities, asset-backed securities, and commercial mortgage-backed securities. Currency exposure is hedged to the US dollar.
- **Municipal Bonds**: Representative Index- Barclays Capital Municipal Bond Index, (1980 - 2014)
  - Bonds issued by US state and local governments or their agencies which are tax advantaged for investors subject to federal (and sometimes state) US income tax liability.
- **Floating Rate Notes**: Representative Index- Barclays Capital US Floating Rate Note Index (2003 – 2014)
  - Bonds whose coupon payments are reset periodically based on a reference index, most commonly a money market interest rate such as LIBOR, plus an explicit spread to the reference rate contractually specified at issuance. Floating Rate Notes have low interest rate risk due to the fact that their baseline interest rate 'floats' on prevailing interest rates, however, they have the same exposure to credit and credit spread risk as other corporate bonds with similar risk factors and spread duration.
- **High Yield**: Representative Index- Barclays Capital Global High Yield Index (hedged) (1990 – 2014)
  - Globally issued speculative grade corporate and securitized bonds, typically without a long track record of sales or of questionable credit quality, and generally rated BB+ (S&P/Fitch) or Ba+ (Moody's) or lower. High yield bonds trade at a premium yield to investment grade bonds to compensate investors for their higher risk (which accounts for their name). Currency exposure is hedged to the US dollar.
- **High Yield Municipal Bonds**: Representative Index- Barclays Capital Municipal High Yield Index, (2003-2014)
  - Bonds issued by financially distressed US state and local governments or their agencies which, like investment grade Municipal Bonds, are tax advantaged for investors subject to federal (and sometimes state) US income tax liability. High Yield Municipal Bonds, like the corporate variety, are typically rated speculative grade by the credit rating agencies- BB+ (S&P/Fitch) or Ba+ (Moody's) or lower. They also trade at a premium yield to investment grade bonds to compensate investors for their higher risk.
- **Emerging Market Bonds**: Representative Index- JP Morgan Government Bond Index, Emerging Markets Global Diversified Composite (local currency, unhedged) (2003 – 2014)
  - Debt instruments issued by emerging market sovereigns and corporations and denominated in the currency of their domicile. Securities issued by foreign corporations or governments may be subject to market, economic, political or other conditions affecting the respective government, company, industry or country.
- **Emerging Market Corporate Bonds**: Representative Indices- JP Morgan Corporate Emerging Markets Bond Index, US dollar (2007 – 2014), JP Morgan Emerging Market Bond Index, US Dollar (1994 – 2007)
  - Debt instruments issued by emerging market corporations and quasi-sovereign corporations (more than 50% government ownership) domiciled in the emerging markets of Latin American, Eastern Europe, the Middle East/Africa, and Asia and denominated in US dollars. Securities issued by foreign corporations may be subject to market, economic, political or other conditions affecting the respective government, company, industry or country.

Representative indexes are subject to change at any time based on the Global Investment Committee's judgments as to their appropriateness for the asset class. **Please see Page 21 of the Appendix, under the section "What else is important to know?", for important disclosures about representative indexes.**

ASSET CLASS DEFINITIONS (CONT'D)

Report Prepared for PAPERs Case Study

- **Inflation-Linked Securities**: Representative Index- Barclays Capital Universal Government Inflation-Linked Bond Index (1997 – 2014)
  - A special type of government bond whose principal and coupon payments are reset based on changes in a reference measure of retail inflation, (e.g. the Bureau of Economic Analysis's Consumer Price Index in the US), thereby attempting to reduce its exposure to the potentially deleterious effects of inflation on bond investments.
- **Preferred Stock** : Representative Index- The BofA Merrill Lynch Fixed Rate Preferred Securities Total Return Index (1989 – 2014)
  - Ownership in a corporation with a higher claim on the assets and earnings than common stock, but no residual claim on earnings beyond the contractually specified dividends, and usually no voting rights. Preferred stock is generally junior to the secured, unsecured and subordinated debt of an issuing company in the corporation's capital structure, which implies greater credit and cash flow risks than traditional debt and debentures. As a result, preferred stocks tend to trade at higher yields than similar cash flow/issuer credit quality bonds to compensate investors (preferred stock pays a contractually formalized dividend that in practice functions like a coupon).
- **Convertible Bonds :** Representative Index- Merrill Lynch Convertible Bond Index (2003 – 2014)
  - Convertible bonds are corporate bonds embedded with equity warrants that give the owner the right to 'convert' the bond security into common stock, ADRs, or a cash equivalent at a contractually specified conversion ratio. Depending on the ratio and the performance of the reference equity security, convertible bonds can trade like equities, like bonds, or as a hybrid of the two. Convertible bonds are also considered to be exposed to equity volatility via the embedded warrant, and the spread on the baseline bond security.
- **US Large-Cap Growth Equities**: Representative Index- Russell 1000 Growth Index (1979 – 2014)
  - US traded stocks with higher price-to-book ratios and higher forecasted growth values in the approximately 1000 largest securities on a combination of market and current index membership in the US equity universe.
- **US Large-Cap Value Equities**: Representative Index- Russell 1000 Value Index (1979 – 2014)
  - US traded stocks with lower price-to-book ratios and lower forecasted growth values in the approximately 1000 largest securities on a combination of market and current index membership in the US equity universe.
- **US Mid-Cap Growth Equities**: Representative Index- Russell Midcap Growth Index (1986 – 2014)
  - US traded stocks with higher price-to-book ratios and higher forecasted growth values in medium capitalization companies in the US equity universe.
- **US Mid-Cap Value Equities**: Representative Index- Russell Midcap Value Index (1986 – 2014)
  - US traded stocks with lower price-to-book ratios and lower forecasted growth values in medium capitalization companies in the US equity universe.
- **US Small-Cap Growth Equities**: Representative Index- Russell 2000 Growth Index (1979 – 2014)
  - US traded stocks with higher price-to-book ratios and higher forecasted growth values in the approximately 2000 smallest securities on a combination of market and current index membership in the US equity universe.
- **US Small-Cap Value Equities**: Representative Index- Russell 2000 Value Index (1979 – 2014)
  - US traded stocks with lower price-to-book ratios and lower forecasted growth values in the approximately 2000 smallest securities on a combination of market and current index membership in the US equity universe.

Representative indexes are subject to change at any time based on the Global Investment Committee's judgments as to their appropriateness for the asset class. **Please see Page 21 of the Appendix, under the section "What else is important to know?", for important disclosures about representative indexes.**

ASSET CLASS DEFINITIONS (CONT'D)

Report Prepared for PAPERs Case Study

- **International Developed Market Equities:** Representative Index- MSCI Europe Asia Far East IMI Index (1970 – 2014).
  - Stocks traded in developed markets outside the United States. Investing in the securities of such companies and countries adds foreign exchange rate risk for US based investors, however can also provide diversification.
    - **Canada Equities:** Representative Index- MSCI Canada IMI Index (1970 – 2014)
      - Stocks traded in Canada.
    - **Europe Equities:** Representative Index- MSCI Europe IMI Index (1970 – 2014)
      - Stocks traded in Developed Europe.
    - **UK Equities**: Representative Index- MSCI UK IMI Index (1970 – 2014)
      - Stocks traded in the United Kingdom.
    - **Japan Equities**: Representative Index- MSCI Japan IMI Index (1970 – 2014)
      - Stocks traded in Japan.
    - **Pacific ex Japan Equities**: Representative Index- MSCI Pacific ex Japan IMI Index (1970 – 2014)
      - Stocks traded in the developed markets of the Pacific region excluding Japan (i.e., primarily Australia, Hong Kong, New Zealand and Singapore).
    - **World ex US Small-Cap Equities**: Representative Index- MSCI World ex US Small Cap IMI Index (1995 – 2014)
      - Small capitalization stocks traded throughout the developed markets outside the US.
- **Emerging Market Equities**: Representative Index- MSCI Emerging Markets IMI Index (1988 – 2014)
  - Stock issued by companies domiciled in emerging markets. Investing in the securities of such companies and countries involves certain consideration not usually associated with investing in developed countries, including political and economic situations and instability, adverse diplomatic developments, price volatility, lack of liquidity and fluctuations in the currency exchange.
- **Frontier Emerging Market Equities**: Representative Index- MSCI Frontier Markets Index (2002 – 2014)
  - Stock issued by companies domiciled in frontier emerging markets, which are the least developed emerging market countries. Investing in the securities of such companies and countries exacerbates the considerations associated with investing in emerging market countries, including political and economic situations and instability, adverse diplomatic developments, price volatility, lack of liquidity and fluctuations in the currency exchange.
- **US & Global Equity Market Sector, Style and Capitalization Segments**: Representative Indices as per the relevant component of the MSCI World IMI Index (1988 – 2014)
  - Under certain circumstances, it may be necessary to capture the sector and/or capitalization specifics of an underlying client holding. In these cases, the GIC will model the exposure according to the component of the MSCI All Country World IMI Index which it best matches. For example, a position in a global energy sector fund would be modeled as the MSCI World Energy Sector Index.
- **Real Estate Investment Trusts (REITS)**: Representative Index- FTSE EPRA NAREIT Global Total Return Index (1990 – 2014)
  - A security that is usually traded like a stock on the major exchanges and invests in real estate directly, either through properties or mortgage loans and securities and 'pas through' the income generated by its investments to shareholders.
- **Master Limited Partnerships (MLPs)**: Representative Index- Alerian MLP Total Return Index (1996 – 2014)
  - MLPs are limited partnerships that are publicly traded on a securities exchange. MLPs invest in the cash flow generating assets of qualifying commercial enterprises, commonly energy infrastructure (e.g. pipelines). Similarly to REITs, MLPs pass through the vast majority of its earnings to investors as dividend distributions.

Representative indexes are subject to change at any time based on the Global Investment Committee's judgments as to their appropriateness for the asset class. **Please see Page 21 of the Appendix, under the section "What else is important to know?", for important disclosures about representative indexes.**

ASSET CLASS DEFINITIONS (CONT'D)

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- **Commodities:** Representative Index- Dow Jones / UBS Commodity Total Return Index (1970 – 2014)
  - Commodities are distinguished from financial investments in that they are tangible or 'real' assets, such Precious Metals, Cereals, Oil, Copper, Timber, etc. The prices of real assets tend to fluctuate widely and to a large extent unpredictably, due to their high exposure to idiosyncratic factors (e.g. weather). Moreover, commodity prices are affected by a broad range factors including global supply and demand, investors' expectations with respect to the rate of inflation, currency exchange rates, interest rates, investment and trading activities of hedge funds and commodity funds, and global or regional political, economic or financial events and situations.
- **Precious Metals:** Representative Index- Dow Jones / UBS Precious Metals Total Return Index (1973 – 2014)
  - Subset of the larger commodity asset class consisting only of precious metals, including gold, silver, platinum, and palladium, whose low storage costs yield them substantial demand as a monetary store of value/inflation hedge. Precious metals demand is derived largely from jewelry and investors/central banks, with lesser industrial applications compared with base metals and other commodities. Precious metals have high historical volatility and attendant risks, and low historical returns relative to other risk assets, however their reputation for maintaining value in highly adverse geopolitical circumstances ensures a substantial and dedicated investor base. **Note**: The representative index for Precious Metals, S&P GSCI Precious Metals Total Return Index, includes only gold and silver, and assumes they are an effective proxy for precious metals as a whole. Precious metals are more appropriate for the risk capital portion of your portfolio and for investors who have speculative investment objectives.
- **Managed Futures and Managed Futures Sectors**: Representative Indices- Barclay BTop50 Index, Barclay Currency Traders Index, Barclay Agricultural Traders Index, Barclay Discretionary Traders Index, Barclay Diversified Traders Index, Barclay Financial & Metals Traders Index, Barclay Systematic Traders Index, (1980 – 2014)
  - Managed Futures are alternative investment vehicles that trade financial and commodity futures, forwards and options on such futures and forwards. Assets in managed futures are managed by professional trading managers called Commodity Trading Advisors or CTAs. The BTOP50 Index seeks to replicate the overall composition of the managed futures industry with regard to trading style and overall market exposure and includes the largest investable trading advisor programs, as measured by assets under management, provided the program is open for investment, willing to furnish daily returns, has at least two years of trading activity and its advisor has at least three years of operating history. The BTOP50's portfolio is equally weighted among the selected programs at the beginning of each calendar year and is rebalanced annually. Barclay CTA Sub-Indices group specific managers within the Barclay estimation universe according to their investment strategy (e.g. which markets they invest in, whether they generate their signals through quantitative or qualitative means, etc.).
- **Hedged Strategies and Hedged Strategy Sectors**: Representative Indices- HFRI Fund of Funds Composite Index, HFRI Relative Value Index , HFRI Event-Driven Index, HFRI Equity Hedge Index, HFRI Macro Index, (1990 – 2014)
  - A private and unregistered investment pool that may employ sophisticated hedging and arbitrage techniques, using long and short positions, leverage and derivatives and investments in many markets. The HFRI Monthly Indices (HFRI) are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. Fund of Funds invest with multiple managers, creating a diversified portfolio of managers with the intent to lower the risk of investing with individual managers. Hedge Fund Research, Inc. ("HFRI"), Funds of Funds Indices are based on information self-reported by hedge fund managers that decide on their own, at any time, whether or not they want to provide, or continue to provide, information to HFR Asset Management, L.L.C. Results for funds that go out of business are included in the index until the date that they cease operations. Therefore, these indices may not be complete or accurate representations of the hedge fund universe, and may be biased in several ways.
- **Natural Resources**: Representative Index- MSCI All Country World Infrastructure Utility Total Return Index (1999 – 2014)
  - Natural resource investments are investment in private and publicly listed enterprises that procure basic resources like timber, water and energy. Private natural energy investments are illiquid and often bear both substantial risks and opportunities for their investors.
- **Leveraged Loans**: Representative Index- S&P/LSTA Leveraged Loan Index (1997 – 2014)
  - A leveraged loan is a loan, most commonly of low credit quality (often to relatively highly leveraged/speculative entities) that is underwritten, securitized and administered by a financial intermediary, most typically an investment bank, and then syndicated/sold on to ultimate investors. Leveraged loans are often though not always illiquid, concentrated and high risk/return securities.

Representative indexes are subject to change at any time based on the Global Investment Committee's judgments as to their appropriateness for the asset class. **Please see Page 21 of the Appendix, under the section "What else is important to know?", for important disclosures about representative indexes.**

ASSET CLASS DEFINITIONS (CONT'D)

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- **Private Equity:** Representative Indexes- Venture Economics Private Equity Index/Venture Economics LBO Index/Venture Economics Venture Capital Index/Venture Economics Mezzanine Funds Index (1988 – 2014), Venture Economics European LBO Index (1988 – 2014) , MSCI World Infrastructure Total Return Index (1999 – 2014)
  - Private equity firms that provide equity, debt and debt equity hybrid capital (mezzanine debt) to a wide variety of firms, from start-ups to small, medium and, in certain cases, large capitalization firms, both public and private. Private equity interests are typically highly illiquid, involve a high degree of risk and leverage on the underlying portfolio of companies and can be subject to transfer restrictions. Venture Economics collects quarterly information on individual private equity funds across the private equity sub-strategies listed below. The Venture Economics data set is based on voluntary reporting of fund returns by private equity firms and their limited partners.
    - **Leveraged Buyouts**: Ownership, equity or interest in funds that primarily conduct leveraged buyouts of public and private firms for the purposes of enhancing their efficiency and most typically, resale onto the public market or private entities after several years.
    - **Venture Capital**: Venture Capital funds provide equity capital and other services to enterprises in the early stages of their development for the primary objective of ushering the company through its preliminary development and ultimately selling the company, most commonly through initial public offerings.
    - **Mezzanine Debt**: Private equity transactions often create hybrid capital instruments with both debt and equity features, whether through their speculative nature, their optionality, etc. Mezzanine Debt funds invest in these securities and pass their typically high yield, illiquidity and risk onto their ultimate investors.
    - **European Leveraged Buyouts**: Ownership, equity or interest in funds that primarily conduct leveraged buyouts of public and private firms in Europe for the purposes of enhancing their efficiency and most typically, resale onto the public market or private entities after several years.
    - **Infrastructure**: Ownership interest in infrastructure projects that typically generate reliable cash flows with lesser volatility and upside than other private equity types.
    - **Partnership Interests**: Ownership interests in professional partnerships (e.g. law firms, etc.). There are no indices nor financial returns series that directly measure returns to partnership stakes, but they are often a highly significant component of their owner's net worth. As such, the GIC proxies Partnership Interests with Private Equity, (as per the above), with adjustments to take account of their unique risks, (i.e. lesser leverage and greater exposure to the specific risks of a single enterprise).

- **Private Real Estate**: Representative Indexes- NCREIF Property Index (1980 – 2014), Investment Property Databank Global Property Index (1980 – 2014), NCREIF Townsend Fund Index (1988 – 2014)
  - Commercial real estate properties or funds from all market sectors, unleveraged in the case of property exposure, and varying in the case of real estate funds in their degree of leverage and speculative nature, acquired and held in the private market for investment purpose. Real estate investments are subject to special risks, including interest rate and property value fluctuations, as well as risk related to general and economic conditions.
    - **US Real Estate**: Private Real Estate domiciled within the United States.
    - **Canada Real Estate**: Private Real Estate domiciled within Canada.
    - **UK Real Estate**: Private Real Estate domiciled within the United Kingdom.
    - **Europe ex UK Real Estate**: Private Real Estate domiciled within the developed markets of Europe excluding the United Kingdom.
    - **Japan Real Estate**: Private Real Estate domiciled within Japan.
    - **Dev AP ex Japan Real Estate**: Private Real Estate domiciled within the Pacific Region's developed markets excluding Japan.
    - **Latin America Real Estate**: Private Real Estate domiciled within Latin America.
    - **Emerging Asia Real Estate**: Private Real Estate domiciled within the emerging markets of Asia
    - **Real Estate Funds**: Private Equity Real Estate funds domiciled in the United States, including Core, Value-Added and Opportunistic investments/funds.
    - **Core Real Estate Funds**: Core Private Equity Real Estate funds domiciled in the United States.
    - **Value-Added Real Estate Funds**: Value-Added Private Equity Real Estate funds domiciled in the United States.
    - **Opportunistic Real Estate Funds**: Opportunistic Private Equity Real Estate funds domiciled in the United States.

Representative indexes are subject to change at any time based on the Global Investment Committee's judgments as to their appropriateness for the asset class. **Please see Page 21 of the Appendix, under the section "What else is important to know?", for important disclosures about representative indexes.**

ASSET CLASS RISK CONSIDERATIONS

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There are risks associated with different investment options. For example, **Bonds** are subject to interest rate risk. When interest rates rise, bond prices fall; generally the longer a bond's maturity, the more sensitive it is to this risk. Bonds may also be subject to call risk, which is the risk that the issuer will redeem the debt at its option, fully or partially, before the scheduled maturity date. The market value of debt instruments may fluctuate, and proceeds from sales prior to maturity may be more or less than the amount originally invested or the maturity value due to changes in market conditions or the credit quality of the issuer. Bonds are subject to the credit risk of the issuer. This is the risk that the issuer might be unable to make interest and/or principal payments on a timely basis. Bonds are subject to reinvestment risk, which is the risk that principal and/or interest payments from a given investment may be reinvested at a lower interest rate. Bonds are also subject to secondary market risk, as there is no guarantee that a secondary market will exist for a particular fixed income security.

Asset-backed Securities generally decrease in value as a result of interest rate increases, but may benefit less than other fixed-income securities from declining interest rates, principally because of prepayments

Interest on **Municipal Bonds** and is generally exempt from federal income tax; however, some bonds may be subject to the alternative minimum tax (AMT). Typically, state tax-exemption applies if securities are issued within one's state of residence and, if applicable, local tax-exemption applies if securities are issued within one's city of residence The tax-exempt status of municipal securities may be changed by legislative process, which could affect their value and marketability. Insurance does not pertain to market values which will fluctuate over the life of the bonds; it covers only the timely payment of interest and principal. Credit quality varies depending on the specific issuer and insurer. Credit ratings shown may be the higher of the 'underlying' rating of the issuer or the rating of any insurer providing credit enhancement to the bonds.

High Yield Municipal Bonds are often but not always exempt from federal tax, and are subject to many of the same risks as Municipal Bonds. In addition, High Yield Municipals, which often do not have recourse to the credit of the governmental issuer, have a substantial risk of default relative to investment grade Municipal Bonds. In this, they are analogous to **Corporate and Securitized High Yield Bonds**, which have speculative characteristics and present significant risks beyond those of other securities, including substantially greater credit risk, price volatility, call option risk and limited liquidity in the secondary market, the latter of which can be substantially exacerbated during periods of market duress. High Yield debt across all sectors should comprise only a limited portion of a balanced portfolio.

Investing in the bonds of foreign **Emerging Markets** entail greater risks than those normally associated with domestic markets, such as political, currency, economic and market risks. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance. Emerging market debt should comprise only a limited portion of a balanced portfolio.

Convertible Bonds and **Preferred Stocks** are subject to market risk including interest risk, credit (default) risk, liquidity risk, and equity risk of the underlying common stocks. They are also subject to dividend risk that the underlying company increases its common stock dividend without similarly adjusting the convertible bond's yield or preferred stock's dividend. This may reduce or even negate the yield advantage over the common stock. The majority of convertible bonds and preferred stocks are 'callable' meaning that the issuer may retire the securities at specific prices and dates prior to maturity, and/or at a lower price than the purchase price. Interest/dividend payments on certain preferred issues maybe deferred by the issuer for periods of up to 5 to 10 years, depending on the particular issue. The investor would still have income tax liability even though payments would not have been received.

Treasury Inflation Protected Securities (TIPS) coupon payments and underlying principal are automatically increased, or if above par, decreased, to compensate for inflation as measured by the consumer price index (CPI). While the real rate of return is guaranteed, TIPS tend to offer a low initial interest. Because the return of TIPS is linked to inflation, TIPS may significantly underperform versus conventional US Treasuries in times of low inflation or deflation. Some inflation-linked securities may be subject to call risk.

Floating Rate Notes may have lower initial rate than fixed-rate securities of the same maturity because investors expect to receive additional income due to future increases in the floating/linked index. However, there can be no assurance that these increases will occur. Furthermore, floating rate notes expose their issuers to substantial interest rate risk, which can lead to financial duress and potential credit events.

ASSET CLASS RISK CONSIDERATIONS (CONT'D)

Publicly traded **Equity** securities may fluctuate in response to news on companies, industries, market conditions and the general economic environment. There are additional risks associated with **international investing**, including foreign economic, political, monetary, and/or legal factors, changing currency exchange rates, foreign taxes and differences in financial and accounting standards. In addition, the securities markets of many of the **emerging markets** are substantially smaller, less liquid and more volatile than the securities of the US and other developed market countries, and historically have been subject to a greater degree of geopolitical and other specific 'country' risk than have developed market securities. All of these risks are even more acute in the context of investing in equity securities traded in **Frontier Emerging Markets**.

Equity portfolios concentrated in specific **Styles** or **Sectors** of the market tend to have greater risks than more diversified portfolios. **Growth** investing does not guarantee a profit or eliminate risk. The stocks of 'growth' companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations. **Value** investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected.

Investing in smaller companies involves greater risks not associated with investing in more established companies, such as business risk, significant stock price fluctuations and illiquidity.

Stocks of medium-sized companies entail special risks, such as limited product lines, markets, and financial resources, and greater market volatility than securities of larger, more-established companies.

Investing in **Commodities**, including commodity futures contracts, and physical **Precious Metals**, entails significant risks. Commodity and Precious Metal prices may be affected by a variety of factors at any time, including but not limited to, (i) changes in supply and demand relationships, (ii) governmental programs and policies, (iii) national and international political and economic events, war and terrorist events, (iv) changes in interest and exchange rates, (v) trading activities in commodities and related contracts, (vi) pestilence, technological change and weather, (vii) the price volatility of a commodity and (viii) changes in inflationary and other monetary conditions. In addition, the commodities markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity, participation of speculators and government intervention. Commodities and Precious Metals are more appropriate for the risk capital portion of your portfolio and for investors who have speculative investment objectives.

Real Estate Investment Trusts, (REITs) investing risks include property value fluctuations, lack of liquidity, limited diversification and sensitivity to several economic and financial factors including but not limited to interest rate changes, equity market drawdowns and economic recessions.

Master Limited Partnerships (MLPs) investing risks include financial leverage, energy demand destruction, lack of liquidity, limited diversification, and sensitivity to several economic and financial factors including but not limited to interest rate changes, equity market drawdowns, credit freezes and economic recessions. MLPs are also exposed to changes in tax and regulatory policy and are subject to complex tax reporting requirements.

Individual MLPs are publicly traded partnerships that have unique risks related to their structure. These include, but are not limited to, their reliance on the capital markets to fund growth, adverse ruling on the current tax treatment of distributions (typically mostly tax deferred), and commodity volume risk.

The potential tax benefits from investing in **MLPs** depend on their being treated as partnerships for federal income tax purposes and, if the MLP is deemed to be a corporation, then its income would be subject to federal taxation at the entity level, reducing the amount of cash available for distribution to the fund which could result in a reduction of the fund's value.

MLPs carry interest rate risk and may underperform in a rising interest rate environment. MLP funds accrue deferred income taxes for future tax liabilities associated with the portion of MLP distributions considered to be a tax-deferred return of capital and for any net operating gains as well as capital appreciation of its investments; this deferred tax liability is reflected in the daily NAV; and, as a result, the MLP fund's after-tax performance could differ significantly from the underlying assets even if the pre-tax performance is closely tracked.

ASSET CLASS RISK CONSIDERATIONS (CONT'D)

Alternative Investments which may be referenced in this report, including Private Equity funds (including Venture Capital, Leveraged Buyouts and Mezzanine Debt funds), Private Real Estate funds, Hedged Strategies, Managed Futures funds, Funds of Hedge Funds, Infrastructure funds, Leveraged Loan funds and Natural Resource funds, are speculative and entail significant risks that can include losses due to leveraging or other speculative investment practices, lack of liquidity, volatility of returns, restrictions on transferring interests in a fund, potential lack of diversification, absence and/or delay of information regarding valuations and pricing, complex tax structures and delays in tax reporting, less regulation and higher fees than mutual funds and risks associated with the operations, personnel and processes of the advisor.

Managed futures investments are speculative, involve a high degree of risk, use significant leverage, have limited liquidity and/or may be generally illiquid, may incur substantial charges, may subject investors to conflicts of interest, and are usually suitable only for the risk capital portion of an investor's portfolio. Before investing in any partnership and in order to make an informed decision, investors should read the applicable prospectus and/or offering documents carefully for additional information, including charges, expenses, and risks. Managed futures investments are not intended to replace equities or fixed income securities but rather may act as a complement to these asset categories in a diversified portfolio.

Private Real Estate investing risks include those applicable to publicly traded real estate, like REITs, including exposure to economic developments, however in practice private real estate entails substantially greater concentrations (less diversification) and far less liquidity than public real estate (the secondary market for private real estate is limited and transaction and market impact costs can be prohibitive, especially during market dislocations). As a consequence, Private Real Estate investments are exposed to high levels of asymmetric downside risk. The risk of Private Real Estate increases on an increasing basis (i.e. non-linearly) with the degree to which the underlying properties are leveraged.

Private Equity investing risks includes those applicable to publically traded equities, however in practice private equity entails substantially greater concentrations and risk, and far less liquidity than public real estate (the secondary market for private equity is limited and transaction and market impact costs can be prohibitive, especially during market dislocations). In addition, Private Equity investing often exposes investors to high levels of leverage and strategy specific risk, both of which can contribute to adverse events. Though Private Equity Infrastructure generates high yields, it is not a bond substitute tends to be highly illiquid and carries a host of specific risks relating to the inherent concentrations of any given investment.

Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

Asset Allocation and diversification do not assure a profit or protect against loss in declining financial markets.

ASSET ALLOCATION METHODOLOGY

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Morgan Stanley Wealth Management Global Investment Committee Expected Return Estimates Methodology

This tool incorporates a methodology for making hypothetical financial projections approved by the Global Investment Committee. Opinions expressed in this presentation may differ materially from those expressed by other departments or divisions or affiliates of Morgan Stanley Wealth Management.

About Expected Return Estimates, Rate of Return, Standard Deviation, and Asset Class Indices

Expected Return Estimates (EREs)

What are EREs?

Expected Return Estimates (EREs) represent one set of assumptions regarding rates of return for specific asset classes approved by the Global Investment Committee.

How are EREs derived?

EREs are derived using a proprietary methodology using a building block approach. Our EREs reflect expectations for a number of long-term economic and market-related factors we expect to influence capital market returns, such as population growth, productivity, earnings expectations, etc.

Index returns are used for calculation of volatility and correlations. For most indices, we use data since 1994. Regarding several types of alternative investments such as hedged strategies, private equity and real estate, we apply significant statistical adjustments to historical returns in order to correct for distortions such as survivorship biases, selection biases, and returns measurement error (e.g. by consequence of stale prices in the illiquid asset classes).

What else is important to know?

It is important to remember that future rates of return can't be predicted with certainty and that investments that may provide higher rates of return are generally subject to higher risk and volatility. The actual rate of return on investments can vary widely over time. This includes the potential loss of principal on your investment.

Investors should carefully consider several important factors when making asset allocation decisions using projected investment performance data based on assumed rates of return on indices:

Indices illustrate the investment performance of instruments that have certain similar characteristics and are intended to reflect broad segments of an asset class. Indices do not represent the actual or hypothetical performance of any specific investment, including any individual security within an index. Although some indices can be replicated, it is not possible to directly invest in an index. It is important to remember the investment performance of an index does not reflect deductions for investment charges, expenses, or fees that may apply when investing in securities and financial instruments such as commissions, sales loads, or other applicable fees. Also, the stated investment performance assumes the reinvestment of interest and dividends at net asset value without taxes, and also assumes that the portfolio is consistently "rebalanced" to the initial target weightings. Asset allocations which deviate significantly from the initial weightings can significantly affect the likelihood of achieving the projected investment performance.

Another important factor to keep in mind when considering the historical and projected returns of indices is that the risk of loss in value of a specific asset, such as a stock, a bond or a share of a mutual fund, is not the same as, and does not match, the risk of loss in a broad asset class index. As a result, the investment performance of an index will not be the same as the investment performance of a specific instrument, including one that is contained in the index. Such a possible lack of "investment performance correlation" may also apply to the future of a specific instrument relative to an index.

For these reasons, the ultimate decision to invest in specific instruments should not be premised on expectations that the historical or projected returns of indices will be the same as those for specific investments made.

ASSET ALLOCATION METHODOLOGY (CONT'D)

Rates of Return, Standard Deviation and Asset Class Indices

Standard deviation is a common risk measurement that estimates how much an investment's return will vary from its predicted average. Generally, the higher an investment's standard deviation, the more widely its returns will fluctuate, implying greater volatility. In the past, asset classes that have typically provided the highest returns have also carried greater risk. For purposes of this Presentation, the standard deviation for the asset classes shown below are calculated using data going back to 1994.

It is important to note that the rates of return of the listed indices may be significantly different than the ERE or your own assumptions about the rates of return used in the Presentation. As always, keep in mind that past performance is no guarantee of future results. EREs are for illustrative purposes only and are not indicative of the future performance of any specific investment.

Performance of an asset class within a portfolio is dependent upon the allocation of securities within the asset class and the weighting or the percentage of the asset class within that portfolio. Potential for a portfolio's loss is exacerbated in a downward trending market. A well-diversified portfolio is less vulnerable in a falling market. Asset allocation and diversification, however, do not assure a profit or protect against loss in a declining market.

Asset class returns and standard deviations of returns projections are based on reasoned estimates of drivers of capital market returns and historical relationships. As with any return estimation discipline, the assumptions and inputs underlying the GIC's EREs may or may not reconcile with, or reflect, each investor's individual investment horizon, risk tolerance, capital markets outlook, and world view. For these reasons, and because return estimation methods are complicated, investors are encouraged to discuss returns estimation with a Morgan Stanley Financial Advisor/Private Wealth Advisor.

As described, financial returns estimation involves developing a methodology for extracting expected returns and standard deviations of returns from historical data. Each returns estimation methodology is developed by selecting objective and subjective factors that vary among those developing the returns estimation model. The GIC has formulated several different methodologies and makes its return estimates available to Morgan Stanley customers. Differences exist between the various methodologies because different objective and subjective factors are incorporated into each methodology. These differences can include: the indices used as proxies for various asset categories and classes, the length of time historical index data is input into the calculations, and the resulting expected returns and volatility for each asset class. Each model may cover a greater or lesser number of asset classes than other models, the indices used to represent asset classes may be different for certain classes of assets in the models, and the GIC has more asset classes in the Alternative Investments asset category than are available in other models. Additionally, other differences may develop in the future as these methodologies are dynamic in nature and are likely to change over time.

While Morgan Stanley Smith Barney LLC has not designed its returns estimation methodologies to match or address its inventory as a broker-dealer of financial products, an appearance of a conflict of interest could exist in which the GIC's EREs, if followed, guide investors in directions that support Morgan Stanley Smith Barney LLC's inventory. To the extent this is a concern to customers, they should request that a return estimation be prepared using a different third party methodology, either alone or in conjunction with a GIC model for comparison purposes. Your Financial Advisor/Private Wealth Advisor is available to explain the different returns estimation methodologies and can compare and contrast different models upon request.

Return Series Adjustments

A common way to forecast standard deviation, correlation and other risk metrics is to observe their average magnitude in historical return series data. We agree this is appropriate for traditional asset classes- cash, bonds and equities- and for 'alternative or absolute return' asset classes that are priced in liquid public markets and have consistent, transparent reporting requirements. However, we believe this approach dramatically understates the risk of hedged strategies and private investments, such as private equity and private real estate, while overstating their potential to diversify other risks in the portfolio. These asset classes have several pronounced biases due to voluntary reporting of performance to index providers and lack of liquidity in the underlying investments. The biases that arise include return smoothing, survivorship bias, selection bias, stale pricing and appraisal bias each of which has implications for reported risk, return and correlation of the investments (foremost amongst which is the artificial reduction of their actual risks).

To address these challenges, the Global Investment Committee use econometric models to estimate the impact of each of these biases to create synthetic 'true' return series, based on the reported returns, from which we glean forecasts of the risk, return and correlation of these investments. The adjustments made are on balance conservative. They substantially increase forecasted risk, reduce forecasted return and decrease the diversification properties compared to what the historical averages of reported index returns suggest. Your Financial Advisor/Private Wealth Advisor is available to explain these methodological choices in greater detail upon request.

DISCLOSURES

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IMPORTANT INFORMATION

The Global Investment Committee (GIC) Asset Allocation Models represent asset allocation recommendations made by the GIC based on general client characteristics such as investable assets and risk tolerance. The GIC Asset Allocation Models are not representations of actual trading or any type of account, or any type of investment strategies and none of the fees or other expenses (e.g., commissions, mark-ups, mark-downs, advisory fees) associated with actual trading or accounts are reflected in the GIC Asset Allocation Models. The GIC Asset Allocation Models are not intended to represent a client-specific suitability analysis or recommendation. The suitability of an asset allocation for a particular client must be based on the client's existing portfolio, investment objectives, risk profile and liquidity needs. Any such suitability determination could lead to asset allocation results that may differ materially from those presented herein. Each client should consult with his or her Financial Advisor/Private Wealth Advisor to determine whether the GIC Asset Allocation Models are relevant to the client's investment objectives.

Every client's financial circumstances, needs and risk tolerances are different. This Presentation ("Asset Allocation Review") is based on the information you provided to us, the assumptions you have asked us to make and the other assumptions indicated herein as of the date of the Presentation. This Presentation should be considered a working document that can assist you in achieving your investment objectives. You should carefully review the information and suggestions found in this Presentation and then decide on future steps.

This Presentation does not constitute an offer to buy, sell, or recommend any particular investment or asset, nor does it recommend that you engage in any particular investment, manager or trading strategy. It reflects only allocations among broad asset classes. All investments have risks. The decisions as to when and how to invest are solely your responsibility.

This Presentation does not purport to recommend or implement an investment strategy. Financial forecasts, rates of return, risk, inflation, and other assumptions may be used as the basis for illustrations in this Presentation. They should not be considered a guarantee of future performance or a guarantee of achieving overall financial objectives. No investment analysis has the ability to accurately predict the future, eliminate risk or guarantee investment results. As investment returns, inflation, taxes, and other economic conditions vary from the assumptions used in this Presentation, your actual results will vary (perhaps significantly) from those presented in this Presentation.

The assumed return rates in this Presentation are not reflective of any specific investment and do not include any transaction costs, management fees or expenses that may be incurred by investing in specific products. Such fees would reduce a client's returns. The actual returns of a specific investment may be more or less than the returns used in this Presentation. The return assumptions are based on historic rates of return of securities indices, which serve as proxies for the asset classes. Moreover, different forecasts may choose different indices as a proxy for the same asset class, thus influencing the return of the asset class.

The return assumptions used in this are estimates based on models that employ fundamental macroeconomic and econometric data together with average annual returns for the index used as a proxy for each asset class to forecast returns prospectively. The portfolio returns are calculated by weighting the individual return assumptions disclosed herein for each asset class according to your portfolio allocation. During the preparation of this Presentation, your Financial Advisor/Private Wealth Advisor may have refined the asset allocation strategy to develop a strategy that optimizes the potential returns that could be achieved with the appropriate level of risk that you would be willing to assume.

Morgan Stanley cannot give any assurances that any estimates, assumptions or other aspects of the Presentation will prove correct. It is subject to actual known and unknown risks, uncertainties and other factors that could cause actual results to differ materially from those shown.

This Presentation speaks only as of the date of this Presentation. Morgan Stanley Smith Barney expressly disclaims any obligation or undertaking to update or revise any statement or other information contained herein to reflect any change in past results, future expectations or circumstances upon which that statement or other information is based.

DISCLOSURES (CONT'D)

Hypothetical Portfolio Returns

The proposed asset allocations (also referred to herein as Hypothetical Portfolios) in this report are hypothetical and do not reflect actual portfolios but simply reflect selected indices that are representative for asset classes in the GIC's current strategic allocations. Hypothetical performance results have inherent limitations. The past performance shown here is simulated performance based on benchmark indices, not investment results from an actual portfolio or actual trading. There can be large differences between hypothetical and actual performance results achieved by a particular asset allocation. Actual performance results of accounts vary due to, for example, market factors (such as liquidity) and client-specific factors (such as investment vehicle selection, timing of contributions and withdrawals, restrictions and rebalancing schedules). Clients would not necessarily have obtained the performance results shown here if they had invested in accordance with any GIC asset allocation, idea or strategy for the periods indicated.

Despite the limitations of hypothetical performance, these hypothetical performance results may allow clients and Financial Advisors to obtain a sense of the risk / return trade-off of different asset allocation constructs. The hypothetical returns are not intended to forecast potential returns but rather to help identify relative patterns of behavior among asset classes which, when put in different combinations, assume various levels of risk. Each analysis in this report contains simulations of performance. The calculation of the performance of these Hypothetical Portfolios begins with the applicable GIC Asset Allocation Model for a particular risk profile. The GIC has established eight model portfolios conforming to various risk tolerance levels. The least risky model corresponds to risk profile 1 with the most risky being risk profile 8. Thus, as the risk profile increases, so does the level of risk.

Once the appropriate risk profile levels have been determined, your Financial Advisor/Private Wealth Advisor then customizes the GIC model based on each client's circumstances. The GIC models reflect historical performance of the indices used as proxies.

The calculation of the Hypothetical Portfolio returns assumes reinvestment of dividends, capital gains and interest but do not reflect any transaction costs, such as taxes, fees or charges, that would apply to actual investments. Such fees and charges would reduce performance.

Hypothetical performance is shown for illustration purposes only, has inherent limitations and does not reflect actual performance, trading or decision making. The results may vary and reflect economic or market factors such as liquidity constraints or volatility, which have an important impact on decision making and actual performance. This hypothetical performance is likely to differ from actual practice in client accounts.

Fees reduce the performance of actual accounts: Unless specified in the Client Fee Assumptions portion of this Appendix, none of the fees or other expenses (e.g. commissions, mark-ups, mark-downs, advisory fees) associated with actual trading or accounts are reflected in the GIC asset allocation strategy or ideas. Fees and/or expenses would apply to clients who invest in investments in an account based on these asset allocations, and would reduce clients' returns. The impact of fees and/or expenses can be material.

Investing in the market entails the risk of market volatility. The value of all types of securities may increase or decrease over varying time periods.

Indices are unmanaged and an investor cannot invest directly in an index. They are shown for illustration purposes only and do not show the performance of any specific investment. Reference to an index does not imply that the portfolio will achieve return, volatility or other results similar to the index. The composition of an index may not reflect the manner in which a portfolio is constructed in relation to expected or achieved returns, portfolio guidelines, restrictions, sectors, correlations, concentrations, volatility, or tracking error target, all of which are subject to change over time.

This report is not a financial plan and does not, in and of itself, create an investment advisory relationship between you and your Financial Advisor/Private Wealth Advisor to the extent that one did not exist. In providing you with this report, we are not providing services as a fiduciary either under the Employee Retirement Income Security Act of 1974 (ERISA) or the Internal Revenue Code of 1986, and any information contained in this report is not intended to form the primary basis for any investment decision by you, or investment advice or a recommendation relating to the purchase or sale of any securities for either ERISA or Internal Revenue Code purposes.

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