



Portfolio Diversification: An Ongoing Objective

ANALYSIS

Portfolio diversification, when properly executed, can improve performance by smoothing out the bumps that occur during difficult investment environments.

Given recession in Europe and slower US growth, it's an investment principle worth revisiting. For the Global Investment Committee (GIC), portfolio diversification is an ongoing objective—not a reaction to specific events. Though the GIC may change tactical allocations as economic, valuation or market conditions dictate, its portfolios are always diversified by asset class and geography.

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DIVERSIFICATION STILL WORKS. The effectiveness of portfolio diversification largely comes from blending asset classes that have a low or negative correlation with each other over time. Although challenging financial market conditions in the past decade raised questions about the value of portfolio diversification, Chart 1 illustrates that, at the basic level, the correlation between investment grade bonds and global equities is low—and often negative. This reinforces the wisdom of maintaining a diversified approach to portfolio construction.

CHANGING CORRELATIONS. It is a fact that certain correlations have significantly increased during the past two decades. A prime example is the high correlations between US stocks, developed-market non-US stocks and emerging market stocks. While these asset classes move in the same direction, the magnitude and degree to which they move can still offer the benefits of diversification (see Chart 2, right, and Chart 3, page 4). To diversify further, investors should carefully consider alternative and absolute return investments when constructing long-term portfolios. Correlations between these alternative/absolute return and traditional asset classes have tended to be low over time.

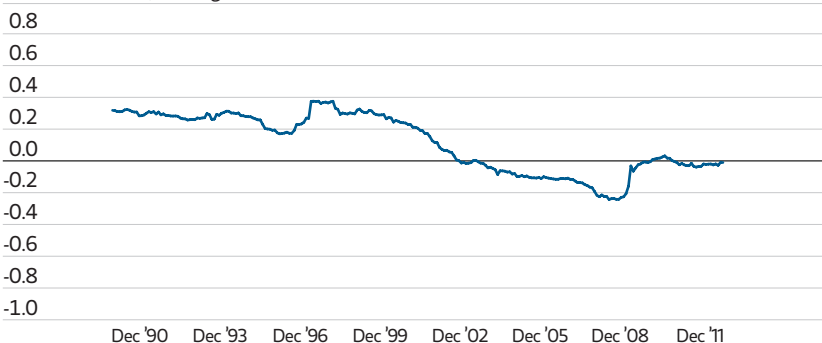
In the last 10 years, 18 of the 26 asset classes we include in our models were among the top-three performers at least once and 17 were among the bottom three at least once, while 13 at some point occupied the bottom three and the top three (see Table 1, page 3). This demonstrates that, in order to capture the benefits of diversification, a portfolio must be invested in multiple asset classes in varying degrees dependent on market conditions and risk tolerance.

Chart 1: Bonds and Stocks Show Low Correlation

At the basic level, the correlation between investment grade bonds and equities is low—and often negative—reinforcing the wisdom of maintaining a balanced approach to investing.

Barclays Capital US Aggregate Bond Index vs. MSCI World Index

1.0 Correlation, Rolling 10-Year Periods



Note: All indexes are unhedged.

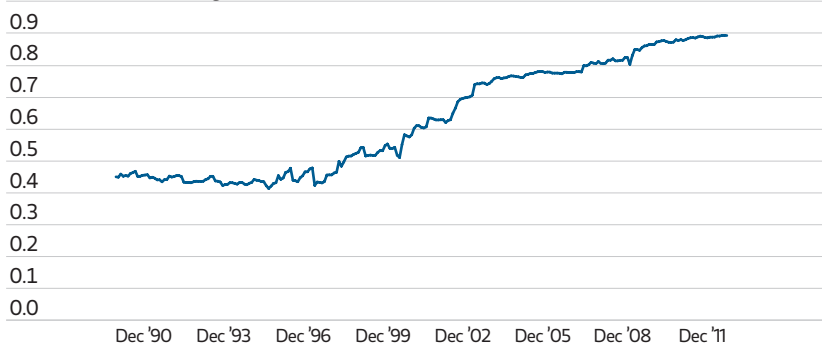
Source: FactSet as of Dec. 30, 2011

Chart 2: US and Non-US Developed Markets Become More Correlated

During the past two decades, the correlation between US equities and developed-market non-US equities has increased significantly.

MSCI USA Index vs. MSCI EAFE Index

1.0 Correlation, Rolling 10-Year Periods



Note: All indexes are unhedged.

Source: FactSet as of Dec. 30, 2011

**Table 1: GIC Asset-Class Returns**

Ranked in Order of Performance (%)

In the last 10 years, 18 of the 26 asset classes we include in our models were among the top-three performers at least once and 17 were among the bottom three at least once, while 13 at some point occupied the bottom three and the top three. This demonstrates that, in order to capture the benefits of diversification, a portfolio must be invested in multiple asset classes in varying degrees dependent on market conditions and risk tolerance.

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
25.9 Commodities	58.1 World ex US Small-Cap Eq.	38.0 REITs	34.0 Emerging Market Eq.	43.7 REITs	40.2 Emerging Market Eq.	13.6 Managed Futures Funds	82.9 Emerging Market Eq.	30.8 US Small-Cap Growth	14.3 Private Real Estate
20.5 Inflation-Linked Securities	55.4 Canadian Equities	30.0 World ex US Small-Cap Eq.	28.9 Canadian Equities	36.4 Europe ex UK Equities	31.7 Asia Pacific ex Japan Equities	7.9 Govt./Govt.-Related Bonds	73.0 Asia Pacific ex Japan Equities	28.7 US Mid-Cap Growth	7.8 Inflation-Linked Securities
13.7 Managed Futures Funds	54.4 Emerging Market Eq.	29.6 Asia Pacific ex Japan Equities	25.6 Japan Equities	33.2 Asia Pacific ex Japan Equities	30.2 Canadian Equities	4.8 Short-Duration Bonds	57.7 High Yield Bonds	25.2 US Small-Cap Value	6.6 Private Equity
12.2 Emerging Market Bonds	47.5 US Small-Cap Growth	27.2 US Mid-Cap Value	24.6 Private Equity	32.1 Emerging Market Eq.	20.8 Private Equity	1.8 Cash	57.4 Canadian Equities	24.9 World ex US Small-Cap Eq.	5.4 Govt./Govt.-Related Bonds
8.4 Short-Duration Bonds	47.0 Asia Pacific ex Japan Equities	27.0 Emerging Market Eq.	21.9 World ex US Small-Cap Eq.	30.7 UK Equities	18.1 Emerging Market Bonds	0.2 Corp. & Secur. Bonds	43.4 US Mid-Cap Growth	22.5 US Mid-Cap Value	5.2 Corp. & Secur. Bonds
8.4 Corp. & Secur. Bonds	43.6 Europe ex UK Equities	23.0 Emerging Market Bonds	21.4 Commodities	27.8 Private Equity	17.5 Europe ex UK Equities	-5.2 Emerging Market Bonds	43.4 UK Equities	21.2 Canadian Equities	3.6 High Yield Bonds
8.4 Govt./Govt.-Related Bonds	43.5 US Small-Cap Value	22.8 Canadian Equities	20.1 Private Real Estate	25.9 World ex US Small-Cap Eq.	16.2 Commodities	-6.5 Private Real Estate	42.7 US Small-Cap Growth	20.2 Emerging Market Eq.	1.4 Short-Duration Bonds
6.7 Private Real Estate	42.6 US Mid-Cap Growth	22.4 Europe ex UK Equities	15.4 REITs	23.6 US Large-Cap Value	15.8 Private Real Estate	-8.7 Inflation-Linked Securities	41.3 REITs	20.0 REITs	1.3 US Large-Cap Value
4.1 High Yield Bonds	40.7 REITs	21.1 US Small-Cap Value	14.8 Asia Pacific ex Japan Equities	20.5 US Mid-Cap Value	13.0 Inflation-Linked Securities	-21.4 Hedge Funds	36.6 US Small-Cap Value	17.1 Asia Pacific ex Japan Equities	0.7 US Large-Cap Growth
2.8 REITs	36.2 Japan Equities	19.6 Private Equity	14.6 US Mid-Cap Value	18.6 US Small-Cap Value	12.6 US Large-Cap Growth	-22.9 Private Equity	35.5 US Large-Cap Growth	16.8 Commodities	0.1 Cash
1.7 Cash	34.0 US Mid-Cap Value	19.6 UK Equities	12.7 US Mid-Cap Growth	18.4 Canadian Equities	12.4 US Small-Cap Growth	-25.3 High Yield Bonds	33.9 Europe ex UK Equities	16.0 Private Equity	-1.3 US Mid-Cap Value
1.0 Hedge Funds	32.4 High Yield Bonds	17.7 US Small-Cap Growth	11.3 Europe ex UK Equities	16.6 Private Real Estate	11.2 US Mid-Cap Growth	-29.1 Japan Equities	33.5 US Mid-Cap Value	15.7 Emerging Market Bonds	-1.8 Emerging Market Bonds
-5.8 Asia Pacific ex Japan Equities	32.1 UK Equities	16.0 Japan Equities	11.1 US Small-Cap Growth	15.2 Emerging Market Bonds	10.3 Hedge Funds	-31.4 US Small-Cap Value	32.9 World ex US Small-Cap Eq.	15.6 Japan Equities	-3.4 US Small-Cap Value
-5.8 World ex US Small-Cap Eq.	26.9 US Large-Cap Growth	15.3 US Mid-Cap Growth	7.5 Hedge Funds	13.8 High Yield Bonds	8.4 UK Equities	-35.2 US Large-Cap Value	22.0 Emerging Market Bonds	15.1 High Yield Bonds	-3.5 US Mid-Cap Growth
-6.3 Emerging Market Eq.	26.3 US Large-Cap Value	15.0 Inflation-Linked Securities	7.4 UK Equities	11.9 US Small-Cap Growth	7.6 Managed Futures Funds	-35.6 Commodities	18.9 Commodities	13.8 US Large-Cap Growth	-4.2 Managed Futures Funds
-9.9 US Small-Cap Value	23.9 Commodities	14.5 Private Real Estate	7.3 US Small-Cap Value	10.6 US Mid-Cap Growth	5.8 Govt./Govt.-Related Bonds	-36.7 US Mid-Cap Value	17.6 Inflation-Linked Securities	13.1 US Large-Cap Value	-4.7 US Small-Cap Growth
-10.1 Japan Equities	19.3 Private Equity	13.2 High Yield Bonds	6.3 Emerging Market Bonds	10.4 Hedge Funds	5.4 Corp. & Secur. Bonds	-37.0 US Large-Cap Growth	15.9 US Large-Cap Value	13.1 Private Real Estate	-5.6 Hedge Funds
-10.7 US Mid-Cap Value	16.9 Emerging Market Bonds	11.9 US Large-Cap Value	6.0 US Large-Cap Value	8.2 Inflation-Linked Securities	5.0 Short-Duration Bonds	-39.9 US Small-Cap Growth	13.4 Private Equity	8.8 UK Equities	-5.7 UK Equities
-11.3 Private Equity	16.9 Inflation-Linked Securities	9.1 Commodities	5.0 Short-Duration Bonds	8.1 US Large-Cap Growth	4.9 World ex US Small-Cap Eq.	-45.0 Europe ex UK Equities	11.9 Corp. & Secur. Bonds	6.5 Inflation-Linked Securities	-7.8 Commodities
-12.8 Canadian Equities	15.5 Managed Futures Funds	6.9 Hedge Funds	5.0 Govt./Govt.-Related Bonds	6.3 Japan Equities	4.7 Cash	-45.2 Canadian Equities	11.5 Hedge Funds	6.4 Managed Futures Funds	-9.0 Canadian Equities
-15.2 UK Equities	11.6 Hedge Funds	6.2 US Large-Cap Growth	5.0 Corp. & Secur. Bonds	5.6 Managed Futures Funds	2.0 High Yield Bonds	-47.0 US Mid-Cap Growth	6.4 Japan Equities	5.7 Hedge Funds	-12.1 REITs
-15.8 US Large-Cap Value	9.0 Private Real Estate	4.9 Govt./Govt.-Related Bonds	3.6 High Yield Bonds	4.8 Cash	1.3 US Large-Cap Value	-47.8 World ex US Small-Cap Eq.	4.2 Short-Duration Bonds	4.0 Govt./Govt.-Related Bonds	-12.6 Asia Pacific ex Japan Equities
-19.9 Europe ex UK Equities	2.1 Govt./Govt.-Related Bonds	4.9 Short-Duration Bonds	3.0 Cash	3.1 Govt./Govt.-Related Bonds	-4.1 Japan Equities	-48.3 UK Equities	2.7 Govt./Govt.-Related Bonds	2.5 Corp. & Secur. Bonds	-15.7 Japan Equities
-25.0 US Small-Cap Growth	2.1 Short-Duration Bonds	4.9 Corp. & Secur. Bonds	2.5 US Large-Cap Growth	3.1 Short-Duration Bonds	-4.7 REITs	-48.9 REITs	0.2 Cash	2.4 Europe ex UK Equities	-16.7 World ex US Small-Cap Eq.
-27.0 US Mid-Cap Growth	2.1 Corp. & Secur. Bonds	1.2 Cash	2.4 Managed Futures Funds	3.1 Corp. & Secur. Bonds	-5.7 US Small-Cap Value	-50.0 Asia Pacific ex Japan Equities	-4.8 Managed Futures Funds	0.1 Cash	-17.6 Europe ex UK Equities
-29.7 US Large-Cap Growth	1.1 Cash	0.9 Managed Futures Funds	-0.5 Inflation-Linked Securities	2.1 Commodities	-6.7 US Mid-Cap Value	-53.6 Emerging Market Eq.	-16.9 Private Real Estate	-1.3 Short-Duration Bonds	-19.0 Emerging Market Eq.

Note: Private equity returns are based on annualized figures as of the third quarter of 2011. For a list of the benchmarks used in this table, please see page 13.

Source: FactSet, Bloomberg, National Council of Real Estate Investment Fiduciaries as of Dec. 30, 2011

Please refer to important information, disclosures and qualifications at the end of this material.

THOROUGH DIVERSIFICATION. Can diversification add value for investors in unsettled economic environments? The last market cycle reminds us that this is indeed the case. During the October-2007-to-February-2009 downturn, most equity asset classes were near the bottom of the performance ranking (see Table 2, page 5). By contrast, most of the fixed income and alternative/absolute return asset classes performed significantly better. Those relative asset-class rankings were largely reversed during the February-2009-to-April-2011 bull cycle.

The relative performance in recent bull and bear cycles shows that equity returns can vary considerably even when correlations are elevated. Equity returns in different regions or styles may exhibit a strong tendency to move up and down at similar times, but they also may do so by very different magnitudes. For example, in the recent bear period, Japanese stocks returned -45% versus -62% for emerging market stocks; in the subsequent bull period the returns were hugely different at 41% and 160%, respectively.

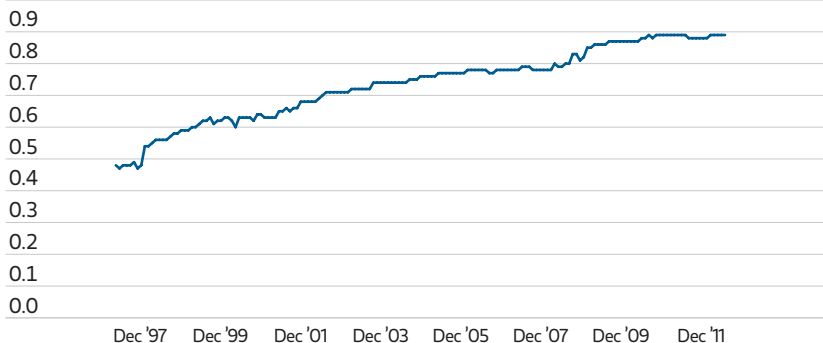
GIC MODEL RETURNS. It stands to reason that the performances of our recommended diversified portfolios cluster near the center of the return rankings in the two radically different periods. They do so because they are blends of most of the major asset classes. The GIC

Chart 3: Correlation Between Developed and Emerging Markets Increases

While during the last 15 years developed-market equities and emerging market equities have become increasingly correlated, the degree and magnitude by which they move up or down can significantly vary.

MSCI World Index vs. MSCI Emerging Markets Index

1.0 Correlation, Rolling 10-Year Periods



Note: All indexes are unhedged.

Source: FactSet as of Dec. 30, 2011

maintains three sets of model portfolios: Level 1 (L1) for portfolios under \$1 million, Level 2 (L2) for portfolios between \$1 million and \$20 million and Level 3 (L3) for portfolios in excess of \$20 million. There are eight models in each level, with Model 1 (M1) being the least risky, having no equity exposure, and Model 8 (M8) being the most risky, and consists of equities and alternative/absolute return investments. The strategic weights

used in our hypothetical exercises are presented on pages 10 through 12.

For illustrative purposes, we will use the Model 5 (M5) portfolios because, at the \$20 million-plus level, they represent the lowest-risk portfolio that includes every one of the global asset classes in our models. Therefore, for similar levels of risk, we can compare the benefits of diversification derived by adding different degrees of liquid and illiquid alternative/absolute return investments to portfolios



Table 2: Measuring the Benefits of Portfolio Diversification

This table shows the hypothetical returns of three of the Global Investment Committee's moderate risk portfolios using strategic asset allocations as well as the actual monthly returns of individual asset classes.

Bear Market October 2007 to February 2009		Bull Market February 2009 to April 2011		Cumulative October 2007 to April 2011	
Managed Futures Funds	14.5%	Emerging Market Equities	160.0%	Emerging Market Debt	42.5%
Global Govt./Govt.-Related	8.7%	Asia ex Japan Equities	154.0%	Global High Yield Bonds	40.1%
Short-Duration Bonds	6.6%	US Small-Cap Growth	147.3%	Inflation-Linked Securities	24.9%
Cash	2.5%	Canada Equities	144.3%	US Small-Cap Value	18.3%
Global Corporate/Securitized	0.6%	US Small-Cap Value	144.1%	Global Corporate/Securitized	18.0%
Private Real Estate	-9.2%	Real Estate Investment Trusts	136.4%	Global Govt./Govt.-Related	17.6%
Inflation-Linked Securities	-12.1%	US Mid-Cap Value	131.4%	US Small-Cap Growth	17.5%
Emerging Market Debt	-16.5%	US Mid-Cap Growth	124.2%	GIC Level 2 Model 5	17.0%
Hedge Funds	-21.9%	World ex US Small-Cap Equities	107.6%	GIC Level 3 Model 5	16.6%
Global High Yield Bonds	-24.4%	Europe ex UK Equities	100.6%	GIC Level 1 Model 5	16.3%
Private Equity	-24.8%	UK Equities	94.8%	Managed Futures Funds	16.0%
GIC Level 3 Model 5	-27.8%	US Large-Cap Value	88.8%	Private Equity	11.2%
GIC Level 2 Model 5	-30.2%	Global High Yield Bonds	85.4%	Short-Duration Bonds	9.1%
GIC Level 1 Model 5	-34.1%	US Large-Cap Growth	82.1%	Canada Equities	8.1%
Commodities	-41.0%	Commodities	76.6%	US Mid-Cap Value	5.4%
Japan Equities	-45.4%	GIC Level 1 Model 5	76.4%	Commodities	4.1%
US Large-Cap Growth	-46.3%	Emerging Market Debt	70.7%	Cash	2.8%
US Small-Cap Value	-51.5%	GIC Level 2 Model 5	67.8%	US Mid-Cap Growth	2.7%
US Small-Cap Growth	-52.5%	GIC Level 3 Model 5	61.6%	Asia ex Japan Equities	0.0%
US Large-Cap Value	-53.4%	Private Equity	47.9%	Emerging Market Equities	-0.4%
US Mid-Cap Growth	-54.2%	Inflation-Linked Securities	42.0%	US Large-Cap Growth	-2.2%
US Mid-Cap Value	-54.5%	Japan Equities	41.3%	Private Real Estate	-2.3%
Canada Equities	-55.8%	Hedge Funds	19.9%	Hedge Funds	-6.4%
Europe ex UK Equities	-58.9%	Global Corporate/Securitized	17.3%	US Large-Cap Value	-12.0%
UK Equities	-59.0%	Global Govt./Govt.-Related	8.2%	World ex US Small-Cap Equities	-16.4%
World ex US Small-Cap Equities	-59.7%	Private Real Estate	7.6%	Europe ex UK Equities	-17.7%
Asia ex Japan Equities	-60.6%	Short-Duration Bonds	2.4%	UK Equities	-20.2%
Emerging Market Equities	-61.7%	Managed Futures Funds	1.3%	Real Estate Investment Trusts	-21.8%
Real Estate Investment Trusts	-66.9%	Cash	0.3%	Japan Equities	-22.9%

Equities **Alternative Investments** **Bonds** **GIC Model Portfolios** **Cash**

Source: Bloomberg, FactSet, Thomson Reuters, National Council of Real Estate Investment Fiduciaries, Morgan Stanley Smith Barney as of Feb. 9, 2012

also comprising traditional asset classes. The strategic allocations to alternative investments in the M5 portfolios run from 9% in L1—which comprises real estate investment trusts, commodities and inflation-linked bonds—to 24% in L2 and 28% in L3. The L2 model has the L1 alternative investments plus managed funds and hedge funds, while the L3 has all the L2 components plus private equity and private real estate.

In the 2007-to-2009 equity bear market, the L3 M5 portfolio, which contains the most alternatives and the lowest allocation to global equities, performed best among the three M5 GIC portfolios. In the 2009-to-2011 bull market, the L1 M5 portfolio, which includes the largest allocation to equities and the least to alternatives, performed best. Over the combined 2007-to-2011 period, the three portfolios produced similar returns.

Returns represent just one dimension of investing. Another is risk. Taking this hypothetical performance exercise back to 1997, the three GIC strategic M5 portfolios each produced annualized returns a bit above 6%—a result that beats a traditional 60%/40% blend of stocks and bonds (see Chart 4). On the downside, the L3 M5 portfolio's worst one-year period, at -23.0%, outperformed the worst one-year returns of the L1 or L2 portfolios, which have lesser allocations to alternative/absolute return investments (see Table

Chart 4: Hypothetical Cumulative Performance of GIC Model Portfolios Using Strategic Asset Allocation

In a hypothetical exercise spanning 14 years and using the Global Investment Committee's (GIC's) strategic asset allocations, three model multiasset portfolios each returned about 7% per annum—topping the return of a blended portfolio of 60% stocks and 40% bonds.

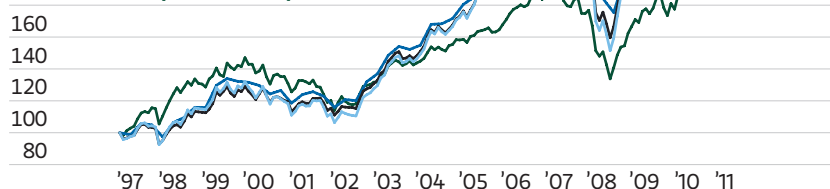
260 Oct. 1, 1997 = 100

240 **Level 1 Model 5**

220 **Level 2 Model 5**

200 **Level 3 Model 5**

180 **60%/40% Stock/Bond Blend**



Note: Note: For the 60%/40% stock/bond blend, we use the S&P 500 for stocks and the Barclays Capital Global Aggregate Bond Index for bonds. Hypothetical performance should not be considered a guarantee of future performance or a guarantee of achieving overall financial objectives. Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets. 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.

Source: Bloomberg, FactSet, Morgan Stanley Smith Barney Global Investment Committee as of Dec. 30, 2011

3). Considering all eight models, the worst one-year period generally improved as the allocation to alternative/absolute return asset classes increased from L1 to L2 to L3.

SUCCESS OF SIMULATED WITHDRAWALS.

To more fully analyze the range of possible outcomes in utilizing a higher portion of alternative/absolute return investments, we ran Monte Carlo simulations for each

of the three M5 portfolios as well as the traditional 60%/40% blend of stocks and bonds, assuming a 30-year investment horizon and incorporating the GIC's strategic capital market assumptions (see Chart 5, page 7).

The analysis also includes the following assumptions and decision rules:

1) The GIC's strategic assumptions represent reasonably accurate and

Table 3: GIC Model Portfolios' Worst One-Year Returns

Hypothetical Model Returns for Current Strategic Allocations, October 1997 to December 2011

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Level 1 (less than \$1 million in investable assets)	0.3%	-12.2%	-20.3%	-26.2%	-31.7%	-39.7%	-48.4%	-48.8%
Level 2 (\$1 million to \$20 million in investable assets)	0.3%	-10.6%	-17.7%	-22.9%	-28.6%	-35.7%	-43.1%	-43.6%
Level 3 (\$20 million or more in investable assets)	0.9%	-8.4%	-14.5%	-19.0%	-23.0%	-29.8%	-36.3%	-36.6%

Note: The hypothetical model returns do not reflect an actual portfolio or actual trading but simply demonstrate the historical performance of selected indexes representing the Global Investment Committee's strategic asset allocations as of the date of this report. Level 3 performance data are through September 2011.

Source: Bloomberg, FactSet, Thomson Reuters, NCREIF, Morgan Stanley Smith Barney as of Feb. 9, 2012

unbiased estimates of future returns, volatility and correlations over the entire investment horizon (see Table 4, page 8).[†]

2) Transaction costs and taxes are not considered.

3) The composition of the Model 5 portfolios remains constant.

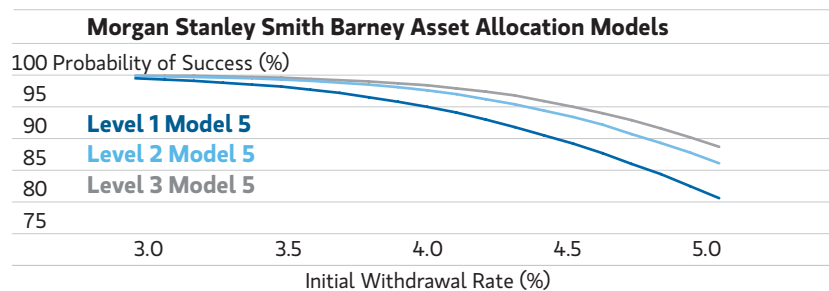
The outcomes from the simulations reveal the “success rate” of each portfolio for different withdrawal schedules, which is simply defined as the percentage of simulations for which the portfolio was not fully depleted by the end of the 30-year investment horizon. Of course, higher success rates correspond to lower withdrawal rates, and vice-versa.

Several important observations emerge from the analysis. For any given initial withdrawal rate, the corresponding success rate was highest in the L3 portfolio and lowest in the L1 portfolio. For example, at a 4.0% withdrawal rate, success was achieved in 95.0% of the L1 M5 simulations, 97.6% of the L2 M5 portfolio simulations and 98.4% of the L3 M5 simulations. Likewise, for any given success rate, the L3 portfolio afforded the highest initial withdrawal rates while the L1 portfolio afforded the lowest. For example, with a 95% estimated rate of success, the L3 portfolio could accommodate a 4.5% withdrawal rate versus 4.3% for L2 and 3.9% for L1.

Why do the L3 portfolios perform best in the simulations? It is because they have the greatest degree of diversification, which mitigates the bumps arising during difficult markets. Such investments temper losses during bearish periods, which means there is less ground that portfolios have to recover in bullish periods; the typically lower

Chart 5: Probability of Portfolio Lasting 30 Years

In general, higher withdrawal rates lower the “success rate,” which is simply defined as the percentage of simulations for which the portfolio was not fully depleted by the end of the 30-year investment horizon. The simulations also suggest that the models with the most diversification, the Level 3 models, have the highest success rate.



Note: Strategic allocations are based on the Morgan Stanley Smith Barney Global Investment Committee model portfolios effective Jan. 20, 2012. The underlying assumptions are: (1) Strategic model portfolios are rebalanced at the end of each year; (2) The withdrawal horizon is 30 years; (3) Annual distributions are made at the beginning of each year and get a 2%-a-year cost-of-living adjustment; (4) Portfolio returns are assumed to be normally distributed from year to year. Results are calculated based on 20,000 simulations and do not take transaction costs or taxes into consideration.

Source: Morgan Stanley Smith Barney

correlations of alternative/absolute return investments generally have a beneficial impact on compounded annual returns.

In setting our volatility and correlation estimates for alternative investments, we apply significant statistical adjustments to correct for distortions typically associated with the indexes of returns for hedge funds, private equity and private real estate. For example, a private equity fund may invest in infrequently priced securities and rely on book value, appraisals or other estimates to value them and measure performance. Consequently, price estimates tend to understate the true volatility of funds, as well as overestimate the diversification benefits in combining them with traditional asset

classes. Our adjustments to offset the effect of price staleness while correcting for outliers typically lead to higher volatility and correlation estimates.

CONCLUSION. History is not necessarily a reliable predictor of future outcomes. In addition, the GIC’s asset-class return, volatility and correlation estimates reflect our best thinking but may not reflect actual results. A well-thought-out portfolio solution might also involve considerations not covered in this analysis. Nonetheless, we believe that meaningful benefits stem from thorough portfolio diversification. ■

[†] For more information please see the Global Investment Committee’s special report, *Annual Update of Return, Risk and Correlation Estimates* (February 2012).

Table 4: Strategic Return and Volatility Estimates, 20+ Years*

	Annualized Return Estimate (%)*	Average Return Estimate (%)**	Annualized Volatility Estimate (%)†
Cash (US\$ 90-day Treasury bill)	3.0	3.0	0.6
Cash (US\$ three-month LIBOR)	3.6	3.6	0.6
Global Investment Grade Bonds (hedged to US\$)	5.3	5.3	3.1
Global Government/Government-Related Bonds (hedged to US\$)	5.2	5.2	3.1
Global Corporate/Securitized Bonds (hedged to US\$)	5.6	5.7	3.3
Global Short-Term Government Bonds (hedged to US\$)	4.0	4.0	1.3
US Short-Term Government Bonds	4.0	4.0	1.7
US Investment Grade Bonds	5.3	5.4	3.8
US Municipal Bonds	3.9	4.0	4.4
Non-US Government Bonds (hedged to US\$)	5.2	5.2	3.0
Global High Yield Bonds (hedged to US\$)	8.4	8.9	10.2
US High Yield Bonds	8.4	8.9	9.5
Global Emerging Market Debt (US\$)	6.2	6.6	9.1
Global Emerging Market Local Debt (unhedged)	6.7	7.4	11.9
Global Equities (unhedged)	9.5	10.7	16.1
Developed-Market Large-/Mid-Cap Stocks (unhedged)	9.1	10.2	15.7
US All-Cap Stocks	9.5	10.6	15.5
US Large-Cap Core Stocks	9.3	10.4	15.4
US Large-Cap Value Stocks	9.3	10.3	15.0
US Large-Cap Growth Stocks	9.3	10.7	17.5
US Mid-Cap Core Stocks	9.9	11.2	17.1
US Mid-Cap Value Stocks	9.9	11.1	16.3
US Mid-Cap Growth Stocks	9.9	11.9	21.3
US Small-Cap Core Stocks	10.3	12.0	19.9
US Small-Cap Value Stocks	10.3	11.7	17.7
US Small-Cap Growth Stocks	10.3	12.7	23.5
Developed-Market ex US Large-/Mid-Cap Stocks (unhedged)	8.9	10.3	17.7
Developed-Market ex US Small-Cap Stocks (unhedged)	9.7	11.2	18.6
Europe Large-/Mid-Cap Stocks (unhedged)	8.8	10.2	18.0
Europe ex UK Large-/Mid-Cap Stocks (unhedged)	8.8	10.5	19.4
UK Large-/Mid-Cap Stocks (unhedged)	8.8	10.1	16.8
Japan Large-/Mid-Cap Stocks (unhedged)	8.2	10.3	21.9
Canada Large-/Mid-Cap Stocks (unhedged)	8.8	10.6	20.1
Developed Asia Pacific ex Japan Large-/Mid-Cap Stocks (unhedged)	9.9	11.9	21.7
Global Emerging Market Stocks (unhedged)	11.1	13.6	24.3

Source: Morgan Stanley Smith Barney Investment Strategy as of Dec. 30, 2011

Annualized return, average return and annualized volatility estimates are long-term estimates with a 20-year-plus time horizon. Annualized volatility estimates are based on data from January 1990 through December 2011.

*Strategic 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 figures in this column represent the approximate arithmetic average equivalent of our annualized (geometric) return estimates. Certain optimization tools assume that the return inputs represent arithmetic averages.

†We apply significant statistical adjustments to correct for distortions typically associated with indexes of returns for hedge funds, private equity and private real estate.

Investor Suitability: Morgan Stanley Smith Barney 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.

**Table 4: Strategic Return and Volatility Estimates, 20+ Years* (continued)**

	Annualized Return Estimate (%)	Average Return Estimate (%)**	Annualized Volatility Estimate (%)†
Global REITs (unhedged)	8.8	10.4	19.2
US REITs	8.6	10.2	18.8
World ex US REITs (unhedged)	8.9	10.7	20.3
Commodities	8.2	9.2	15.0
Global Inflation-Linked Securities (unhedged)	4.6	4.9	8.0
US Inflation-Linked Securities	5.0	5.1	5.1
Non-US Inflation-Linked Securities (unhedged)	4.4	4.9	10.2
Broad Fund of Hedge Funds	9.0	9.3	8.4
Hedge Funds—Relative Value	7.1	7.3	5.9
Hedge Funds—Event Driven	9.3	9.7	9.2
Hedge Funds—Global Macro	10.2	10.6	9.3
Hedge Funds—Equity Long-Short	10.9	11.4	11.0
Managed Futures	8.4	9.3	14.2
US Private Equity	13.3	15.4	22.5
US Private Equity—Leveraged Buyout	12.8	15.0	22.7
US Private Equity—Venture Capital	15.5	19.7	32.5
Global Private Real Estate	7.6	8.2	11.3
US Private Real Estate	6.4	7.3	13.8
US Private Real Estate Funds	9.8	10.9	16.0
US Private Real Estate Funds—Core	8.3	9.5	16.5
US Private Real Estate Funds—Value-Added	9.6	11.0	17.6
US Private Real Estate Funds—Opportunistic	11.4	13.8	24.0

Source: Morgan Stanley Smith Barney Investment Strategy as of Dec. 30, 2011.

Annualized return, average return and annualized volatility estimates are long-term estimates with a 20-year-plus time horizon. Annualized volatility estimates are based on data from January 1990 through December 2011.

*Strategic 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 figures in this column represent the approximate arithmetic average equivalent of our annualized (geometric) return estimates. Certain optimization tools assume that the return inputs represent arithmetic averages.

†We apply significant statistical adjustments to correct for distortions typically associated with indexes of returns for hedge funds, private equity and private real estate.

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Global Investment Committee

Asset Allocation Models for Investors

With Less Than \$1 Million in Investable Assets (Level 1)

Effective Jan. 20, 2012

Model Portfolios	Global Bonds and Inflation-Linked Securities		Global Bonds, Global Equities and Alternative/Absolute Return Investments										Global Equities and Alternative/Absolute Return Investments			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical
Global Cash	30%	32%	15%	17%	10%	12%	8%	10%	5%	7%	3%	5%	-	5%	-	5%
Global Bonds																
Investment Grade	60	59	55	59	42	46	30	34	21	25	6	10	-	-	-	-
Short Duration	15	18	15	18	10	13	7	10	5	8	2	2	-	-	-	-
Government/ Government-Related	32	24	28	20	22	16	16	10	11	5	3	0	-	-	-	-
Corporate & Securitized	13	17	12	21	10	17	7	14	5	12	1	8	-	-	-	-
High Yield	-	-	2	1	3	2	5	4	6	5	8	7	-	-	-	-
Emerging Markets	-	-	-	-	2	2	4	4	5	5	6	6	-	-	-	-
Total Bonds	60	59	57	60	47	50	39	42	32	35	20	23	-	-	-	-
Total Cash & Short Duration Bonds	45	50	30	35	20	25	15	20	10	15	5	7	-	5	-	5
Global Equities																
US Large	-	-	6	8	12	14	16	18	18	21	22	26	30	34	26	30
Growth	-	-	3	5	6	8	8	11	9	13	11	16	15	20	13	18
Value	-	-	3	3	6	6	8	7	9	8	11	10	15	14	13	12
US Mid	-	-	2	2	2	2	2	2	4	4	4	4	6	6	6	6
Growth	-	-	1	1	1	1	1	1	2	2	2	2	3	4	3	4
Value	-	-	1	1	1	1	1	1	2	2	2	2	3	2	3	2
Canada	-	-	1	1	1	1	2	2	2	2	3	3	4	4	3	3
Europe	-	-	4	1	8	2	9	2	11	3	14	5	18	8	15	5
Europe ex UK	-	-	3	0	5	0	6	0	7	0	9	2	12	4	10	2
UK	-	-	1	1	3	2	3	2	4	3	5	3	6	4	5	3
Developed Asia	-	-	2	1	5	2	5	2	6	2	8	3	10	3	9	2
Japan	-	-	1	0	3	0	3	0	4	0	5	0	6	0	6	0
Asia Pacific ex Japan	-	-	1	1	2	2	2	2	2	2	3	3	4	3	3	2
US Small	-	-	2	2	2	2	4	4	4	4	4	4	6	6	8	8
Growth	-	-	1	1	1	1	2	2	2	2	2	2	3	4	4	5
Value	-	-	1	1	1	1	2	2	2	2	2	2	3	2	4	3
World ex US Small	-	-	1	1	2	2	2	2	3	3	4	4	5	5	7	7
Emerging Markets	-	-	3	3	4	9	5	11	6	13	9	17	11	20	16	25
Total Equity	-	-	21	19	36	34	45	43	54	52	68	66	90	86	90	86
Total US Equity	-	-	10	12	16	18	22	24	26	29	30	34	42	46	40	44
Total Developed ex US Equity	-	-	8	4	16	7	18	8	22	10	29	15	37	20	34	17
Total Developed Market Equity	-	-	18	16	32	25	40	32	48	39	59	49	79	66	74	61
Total Emerging Market Equity	-	-	3	3	4	9	5	11	6	13	9	17	11	20	16	25
Global Alternative/Absolute Return Investments																
REITs	-	-	2	1	2	1	3	2	4	3	4	3	5	5	5	5
Commodities	-	-	2	1	2	1	2	1	2	1	3	2	5	4	5	4
Inflation-Linked Securities	10	9	3	2	3	2	3	2	3	2	2	1	-	-	-	-
Managed Futures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hedge Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Real Estate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Equity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Alternative/ Absolute Return Investments	10	9	7	4	7	4	8	5	9	6	9	6	10	9	10	9



Global Investment Committee

Asset Allocation Models for Investors

With \$1 Million to \$20 Million in Investable Assets (Level 2)

Effective Jan. 20, 2012

Model Portfolios	Global Bonds and Inflation-Linked Securities		Global Bonds, Global Equities and Alternative/Absolute Return Investments										Global Equities and Alternative/Absolute Return Investments			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical
Global Cash	25%	27%	13%	15%	8%	10%	5%	7%	3%	5%	2%	4%	-	-	-	-
Global Bonds																
Investment Grade	65	64	55	56	40	41	30	31	20	21	6	7	-	-	-	-
Short Duration	15	17	12	14	7	9	5	7	2	4	3	1	-	-	-	-
Government/ Government-Related	35	26	30	22	23	15	18	10	13	6	2	0	-	-	-	-
Corporate & Securitized	15	21	13	20	10	17	7	14	5	11	1	6	-	-	-	-
High Yield	-	-	2	1	3	2	4	3	5	4	6	5	-	-	-	-
Emerging Markets	-	-	-	-	2	2	3	3	4	4	4	4	-	-	-	-
Total Bonds	65	64	57	57	45	45	37	37	29	29	16	16	-	-	-	-
Total Cash & Short Duration Bonds	40	44	25	29	15	19	10	14	5	9	5	5	-	-	-	-
Global Equities																
US Large	-	-	6	7	10	11	12	15	14	16	20	24	26	29	22	25
Growth	-	-	3	4	5	6	6	9	7	10	10	14	13	17	11	15
Value	-	-	3	3	5	5	6	6	7	6	10	10	13	12	11	10
US Mid	-	-	-	-	2	2	2	2	2	2	4	4	4	4	4	4
Growth	-	-	-	-	1	1	1	1	1	1	2	2	2	2	2	2
Value	-	-	-	-	1	1	1	1	1	1	2	2	2	2	2	2
Canada	-	-	1	1	1	1	1	1	2	2	2	2	3	3	3	3
Europe	-	-	4	1	5	1	7	1	9	2	12	4	15	6	12	2
Europe ex UK	-	-	3	0	3	0	4	0	6	0	8	1	10	4	8	0
UK	-	-	1	1	2	1	3	1	3	2	4	3	5	2	4	2
Developed Asia	-	-	2	1	3	1	4	1	5	2	6	2	8	2	7	2
Japan	-	-	1	0	2	0	3	0	3	0	4	0	5	0	4	0
Asia Pacific ex Japan	-	-	1	1	1	1	1	1	2	2	2	2	3	2	3	2
US Small	-	-	-	-	2	2	2	2	4	4	4	4	6	6	8	8
Growth	-	-	-	-	1	1	1	1	2	2	2	2	3	4	4	5
Value	-	-	-	-	1	1	1	1	2	2	2	2	3	2	4	3
World ex US Small	-	-	1	1	2	1	2	1	2	2	3	2	4	4	5	5
Emerging Markets	-	-	2	3	3	7	5	10	6	12	7	14	9	17	14	22
Total Equity	-	-	16	14	28	26	35	33	44	42	58	56	75	71	75	71
Total US Equity	-	-	6	7	14	15	16	19	20	22	28	32	36	39	34	37
Total Developed ex US Equity	-	-	8	4	11	4	14	4	18	8	23	10	30	15	27	12
Total Developed Market Equity	-	-	14	11	25	19	30	23	38	30	51	42	66	54	61	49
Total Emerging Market Equity	-	-	2	3	3	7	5	10	6	12	7	14	9	17	14	22
Global Alternative/Absolute Return Investments																
REITs	-	-	2	1	2	1	3	2	4	3	4	3	5	5	5	5
Commodities	-	-	2	1	2	1	2	1	2	1	3	2	5	4	5	4
Inflation-Linked Securities	10	9	3	2	3	2	3	2	3	2	2	1	-	-	-	-
Managed Futures	-	-	2	5	4	7	4	7	4	7	5	8	5	10	5	10
Hedge Funds	-	-	5	5	8	8	11	11	11	11	10	10	10	10	10	10
Private Real Estate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Equity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Alternative/ Absolute Return Investments	10	9	14	14	19	19	23	23	24	24	24	24	25	29	25	29



Global Investment Committee

Asset Allocation Models for Investors

With \$20 Million or More in Investable Assets (Level 3)

Effective Jan. 20, 2012

Model Portfolios	Global Bonds and Inflation-Linked Securities		Global Bonds, Global Equities and Alternative/Absolute Return Investments										Global Equities and Alternative/Absolute Return Investments			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical	Strategic	Tactical
Global Cash	25%	27%	13%	15%	8%	10%	5%	7%	3%	5%	2%	4%	-	-	-	-
Global Bonds																
Investment Grade	65	64	55	56	40	41	30	31	20	21	6	7	-	-	-	-
Short Duration	10	12	7	9	7	9	5	7	2	4	3	1	-	-	-	-
Government/ Government-Related	39	27	34	24	23	15	18	10	13	6	2	0	-	-	-	-
Corporate & Securitized	16	25	14	23	10	17	7	14	5	11	1	6	-	-	-	-
High Yield	-	-	2	1	3	2	4	3	5	4	6	5	-	-	-	-
Emerging Markets	-	-	-	-	2	2	3	3	4	4	4	4	-	-	-	-
Total Bonds	65	64	57	57	45	45	37	37	29	29	16	16	-	-	-	-
Total Cash & Short Duration Bonds	35	39	20	24	15	19	10	14	5	9	5	5	-	-	-	-
Global Equities																
US Large	-	-	6	7	8	10	12	14	14	16	18	22	24	27	20	23
Growth	-	-	3	4	4	6	6	8	7	10	9	13	12	16	10	14
Value	-	-	3	3	4	4	6	6	7	6	9	9	12	11	10	9
US Mid	-	-	-	-	2	2	2	2	2	2	4	4	4	4	4	4
Growth	-	-	-	-	1	1	1	1	1	1	2	2	2	2	2	2
Value	-	-	-	-	1	1	1	1	1	1	2	2	2	2	2	2
Canada	-	-	1	1	1	1	1	1	2	2	2	2	3	3	3	3
Europe	-	-	4	1	6	2	6	2	8	2	11	3	14	4	12	2
Europe ex UK	-	-	3	0	4	0	4	0	5	0	7	0	9	1	8	0
UK	-	-	1	1	2	2	2	2	3	2	4	3	5	3	4	2
Developed Asia	-	-	2	1	3	1	3	1	5	2	6	2	8	3	7	2
Japan	-	-	1	0	2	0	2	0	3	0	4	0	5	0	4	0
Asia Pacific ex Japan	-	-	1	1	1	1	1	1	2	2	2	2	3	3	3	2
US Small	-	-	-	-	2	2	2	2	2	2	4	4	4	4	6	6
Growth	-	-	-	-	1	1	1	1	1	1	2	2	2	2	3	4
Value	-	-	-	-	1	1	1	1	1	1	2	2	2	2	3	2
World ex US Small	-	-	1	1	1	1	2	2	2	2	3	3	4	4	5	5
Emerging Markets	-	-	2	3	3	5	4	6	5	10	6	12	9	17	13	21
Total Equity	-	-	16	14	26	24	32	30	40	38	54	52	70	66	70	66
Total US Equity	-	-	6	7	12	14	16	18	18	20	26	30	32	35	30	33
Total Developed ex US Equity	-	-	8	4	11	5	12	6	17	8	22	10	29	14	27	12
Total Developed Market Equity	-	-	14	11	23	19	28	24	35	28	48	40	61	49	57	45
Total Emerging Market Equity	-	-	2	3	3	5	4	6	5	10	6	12	9	17	13	21
Global Alternative/Absolute Return Investments																
REITs	-	-	2	1	2	1	3	2	2	1	2	1	2	2	2	2
Commodities	-	-	2	1	2	1	2	1	2	1	3	2	5	4	5	4
Inflation-Linked Securities	10	9	3	2	3	2	3	2	3	2	2	1	-	-	-	-
Managed Futures	-	-	2	5	4	7	4	7	4	7	5	8	5	10	5	10
Hedge Funds	-	-	5	5	8	8	11	11	11	11	10	10	10	10	10	10
Private Real Estate	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3
Private Equity	-	-	-	-	2	2	3	3	4	4	4	4	5	5	5	5
Total Alternative/ Absolute Return Investments	10	9	14	14	21	21	26	26	28	28	28	28	30	34	30	34



Indexes and Definitions for Table 1

Asset Class	Index	Description
Cash	90-Day Treasury Bills	These are short-term obligations issued by the United States government.
Short-Duration Bonds	Barclays Capital Global Aggregate 1-3 Years (hedged)	This index tracks the fixed-rate, short-term debt of investment grade countries. Currency exposure is hedged to the US dollar.
Government & Govt.-Related Bonds	Barclays Capital Global Aggregate Govt. & Govt.-Related Bond	This index provides a broad-based measure of the global sovereign debt markets. Currency exposure is hedged to the US dollar.
Corporate & Securitized Bonds	Barclays Capital Global Aggregate Corporate & Securitized (hedged)	This index is a broad-based measure of the global investment grade, fixed-rate corporate debt markets 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.
High Yield Bonds	Barclays Capital Global High Yield	This index provides a broad-based measure of the global high yield fixed income markets. Currency exposure is hedged to the US dollar.
Emerging Market Bonds	JP Morgan Emerging Markets (local currency, unhedged)	This index tracks debt issued in local currencies by emerging market governments.
US Large-Cap Growth	MSCI US Large Cap Growth	This free-float-adjusted, capitalization-weighted index is a subset of the MSCI US Large Cap 300 Index, which represents the universe of large-capitalization companies in the US equity market. MSCI uses the following five variables to define growth characteristics: the long-term forward EPS growth rate; the short-term forward EPS growth rate; the current internal growth rate; the long-term historical EPS growth trend; and the long-term historical sales-per-share growth trend.
US Large-Cap Value	MSCI US Large Cap Value	This free-float-adjusted, capitalization-weighted index is a subset of the MSCI US Large Cap 300 Index, which represents the universe of large-capitalization companies in the US equity market. MSCI uses the following three variables to define value characteristics: the price/book value ratio; the 12-month forward price/earnings ratio; and the dividend yield.
US Mid-Cap Growth	MSCI US Mid Cap Growth	This free-float adjusted capitalization-weighted index is a subset of the MSCI US Mid Cap 450 Index, which represents the universe of medium-capitalization companies in the US equity market. MSCI uses the following five variables to define growth characteristics: the long-term forward earnings-per-share EPS growth rate; the short-term forward EPS growth rate; the current internal growth rate; the long-term historical EPS growth trend; and the long-term historical sales-per-share growth trend.
US Mid-Cap Value	MSCI US Mid Cap Value	This free-float-adjusted, capitalization-weighted index is a subset of the MSCI US Mid Cap 450 Index, which represents the universe of medium-capitalization companies in the US equity market. MSCI uses the following three variables to define value characteristics: the price/book value ratio; the 12-month forward price/earnings ratio; and the dividend yield.
Canadian Equities	MSCI Canada	This free-float-adjusted, capitalization-weighted index measures the equity market performance of companies domiciled in Canada.
Europe ex UK Equities	MSCI Europe ex UK	This free-float-adjusted, capitalization-weighted index measures the equity market performance of the developed markets in Europe except the United Kingdom.
UK Equities	MSCI UK	This free-float-adjusted, capitalization-weighted index measures the equity market performance of companies domiciled in the United Kingdom.
Japan Equities	MSCI Japan	This free-float-adjusted, capitalization-weighted index measures the equity market performance of companies domiciled in Japan.
Asia Pacific ex Japan Equities	MSCI Pacific ex Japan	This free-float-adjusted, capitalization-weighted measures the equity market performance of the developed markets in the Pacific region excluding Japan. They are Australia, Hong Kong, New Zealand and Singapore.
US Small-Cap Growth	MSCI Small Cap Growth	This free-float-adjusted, capitalization-weighted index is a subset of the MSCI US Small Cap 1750 Index, which represents the universe of small-capitalization companies in the US equity market. MSCI uses the following five variables to define growth characteristics: the long-term forward EPS growth rate; the short-term forward EPS growth rate; the current internal growth rate; the long-term historical EPS growth trend; and the long-term historical sales-per-share growth trend.



Indexes and Definitions for Table 1 (continued)

Asset Class	Index	Description
US Small-Cap Value	MSCI Small Cap Value	This free-float-adjusted, capitalization-weighted index is a subset of the MSCI US Small Cap 1750 Index, which represents the universe of small-capitalization companies in the US equity market. MSCI uses the following three variables to define value characteristics: the price/book value ratio; the 12-month forward price/earnings ratio; and the dividend yield.
World ex US Small-Cap Equities	MSCI World ex US Small Cap	This free-float-adjusted, capitalization-weighted index measures the performance of equities issued by small-capitalization companies throughout the world, excluding the US.
Emerging Market Equities	MSCI Emerging Markets	This index measures the performance of equities issued by companies domiciled in emerging markets.
REITs	FTSE EPRA/NAREIT Global	This index reflects general trends in real estate equities worldwide. Relevant real estate activities are defined as the ownership, disposure and development of income-producing real estate.
Commodities	Dow Jones-UBS Commodity	This is a broad-based index of commodities futures contracts. They include energy, industrial metals, precious metals and agricultural commodities.
Inflation-Linked Securities	Barclays Capital Universal Government Inflation-Linked (unhedged)	This index combines the Barclays Capital World, Euro and Emerging Market government indexes to measure the performance of the major developed and emerging government inflation-linked bond markets.
Managed Futures Funds	Barclay Hedge BTOP 50	This index seeks to replicate the composition of the managed futures industry with regard to trading style and overall market exposure. The largest investable trading-advisor programs, as measured by assets under management, are selected for inclusion in the index.
Hedge Funds	HFRI Fund of Funds Composite	This is an equal-weighted index of 650 hedge funds with at least \$50 million in assets and 12 months of returns. Returns are in US dollars and net of fees.
Private Real Estate	NCREIF Property	This index measures the performance of a very large pool of commercial real estate properties acquired in the private market for investment purposes. The data are updated quarterly with a lag of several months.
Private Equity	Thomson One Venture Economics Global Private Equity Survey	This survey provides a time-weighted average of internal rates of return on a sample of US private equity funds. The data are updated quarterly with a lag of several months.

Index Definitions

MSCI WORLD INDEX This free-float-adjusted market-capitalization index is designed to measure equity market performance in the developed markets.

MSCI EMERGING MARKETS INDEX

This is a free-float-adjusted, market-capitalization-weighted index designed to measure equity market performance in the global emerging markets.

BARCLAYS CAPITAL US AGGREGATE INDEX

This is a broad-based benchmark that measures the investment grade, US-dollar-denominated, fixed-rate taxable bond market, including Treasuries, government-related and corporate securities and various mortgage-backed and asset-backed securities.

MSCI USA INDEX This is a free-float-adjusted, market-capitalization-weighted index that is designed to measure large- and mid-cap US equity market performance.

MSCI EAFE INDEX The MSCI EAFE Index (Europe, Australasia, Far East) is a free-float-adjusted, market-capitalization index that is designed to measure developed-market equity performance, excluding the US and Canada.

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Standard deviation is a measure of an investment's volatility. For example, a volatile portfolio will have a high standard deviation while the deviation of a stable portfolio will be lower. The standard deviation value can indicate a degree to which the return on a portfolio is deviating from the expected returns of that portfolio.

International investing entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include political and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may have relatively unstable governments and less established markets and economies.

Alternative investments which may be referenced in this report, including private equity funds, real estate funds, hedge funds, managed futures funds, and funds of hedge funds, private equity, and managed futures 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.

Investing in commodities entails significant risks. Commodity 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, and (vii) the price volatility of a commodity. 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.

REITs investing risks are similar to those associated with direct investments in real estate: property value fluctuations, lack of liquidity, limited diversification and sensitivity to economic factors such as interest rate changes and market recessions.

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 changes in 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 also 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 rated below investment grade may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk and price volatility in the secondary market. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance before investing in high-yield bonds. High yield bonds should comprise only a limited portion of a balanced portfolio.

Investing in foreign emerging markets entails greater risks than those normally associated with domestic markets, such as political, currency, economic and market risks.

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

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.

Growth investing does not guarantee a profit or eliminate risk. The stocks of these 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.

Interest on municipal bonds 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.

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.

Treasury Inflation Protection Securities' (TIPS) coupon payments and underlying principal are automatically increased to compensate for inflation by tracking the con-

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