January 31, 2020



San Jose Police and Fire

Portfolio Risk Report

1 Portfolio risk



Portfolio: 9.2%



Policy: 9.0%



Peer Group: 9.7%



Liability: 11.6%

2 Portfolio equity beta



Portfolio: 0.61



Policy: 0.60



Peer Group: 0.65

3 Portfolio interest rate risk - Duration



Portfolio: 0.9



Policy: 0.8



Peer Group: 1.3



Liability: 14.7

4 Portfolio credit risk - Spread duration



Portfolio: 0.4



Policy: 0.3

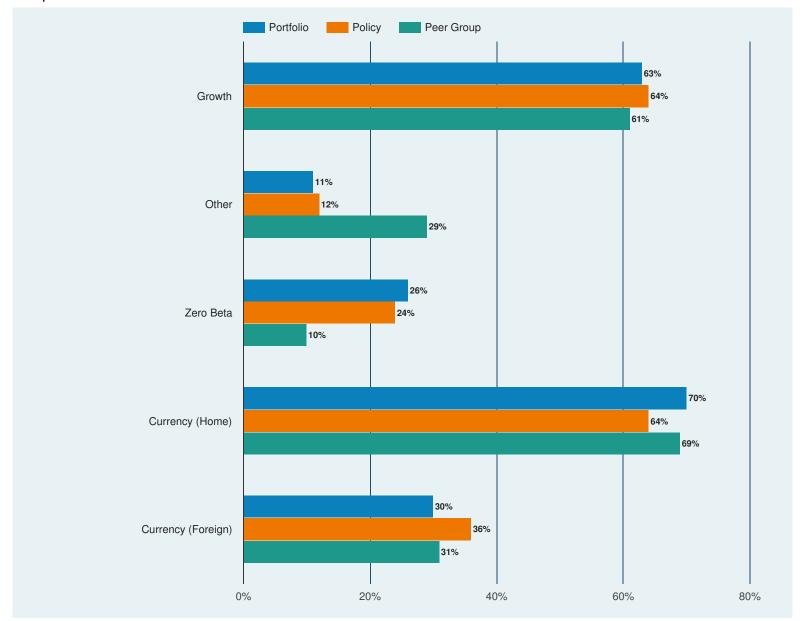


Peer Group: 0.9

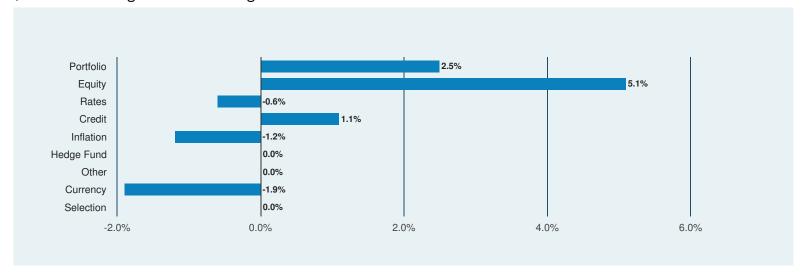
5 Exposure allocation by asset class

		Portfolio	Policy	Peer Group
Growth	Emerging Markets Debt	3.0%	3.0%	2.2%
	Private Markets	21.9%	22.0%	10.1%
	Public Equity	38.5%	39.0%	49.0%
Growth Total		63.4%	64.0%	61.3%
Other	Core Bonds	0.0%		19.4%
	Commodities	1.9%	2.0%	1.0%
	TIPS	2.0%	2.0%	
	Sovereign Bonds ex US	2.9%	3.0%	
	Core Real Estate	3.9%	5.0%	8.4%
Other Total		10.7%	12.0%	28.8%
Zero Beta	Cash	1.9%		2.9%
	Immunized Cash Flows	4.6%	5.0%	
	Absolute Return	5.1%	5.0%	7.0%
	Short-Term IG Bonds	13.9%	14.0%	
Zero Beta Total		25.6%	24.0%	9.9%
Total Portfolio		100%	100%	100%

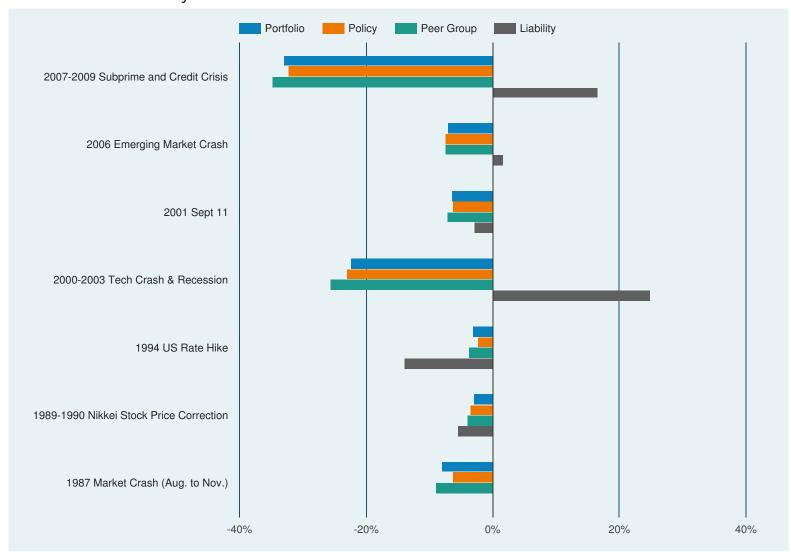
6 Exposure allocation



7 Risk factor weight relative to target



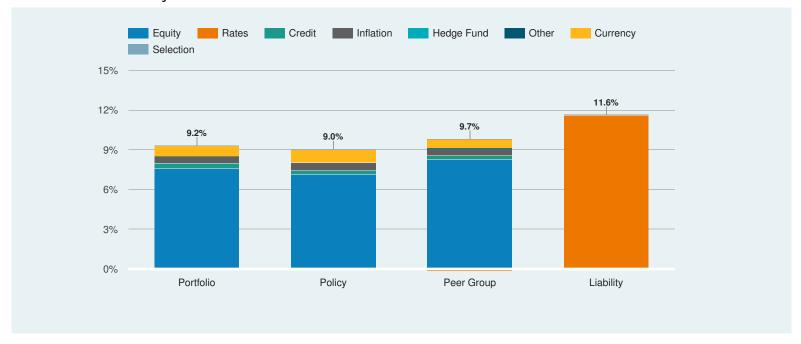
8 Tail risk - Scenario analysis



9 Tail risk - Stress tests

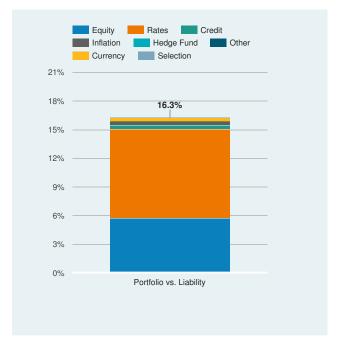


10 Risk contribution by risk factor



11 Active risk contribution by risk factor

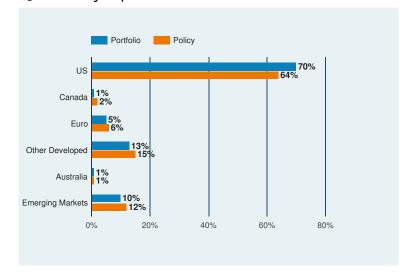




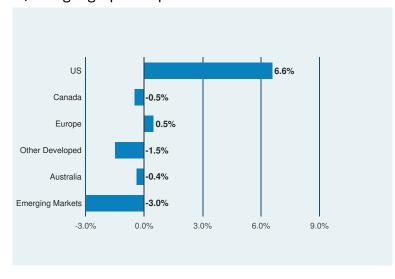
12 Geographic exposure

Portfolio Policy US Canada 2% 2% 2% Europe 12% 12% Other Developed 6% Australia 1% Emerging Markets 13% Emerging Markets 16% 0% 20% 40% 60% 80%

13 Currency exposure



14 Net geographic exposure



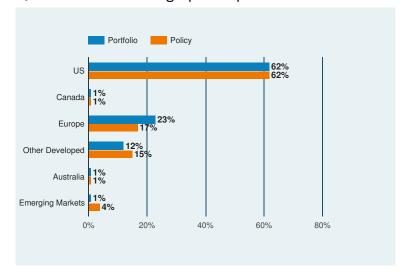
15 Net currency exposure



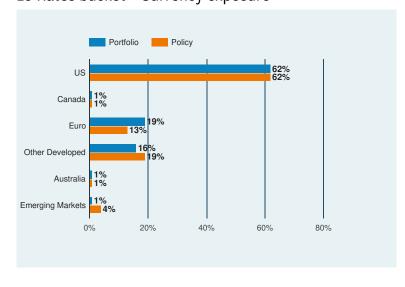
16 Interest rate bucket

	Portfolio	Policy	Difference
Duration	5.0	4.8	0.3
Yield to Maturity	0.7%	0.8%	-0.1%
Wt. Avg. Rating	Aa1 / Aa2	Aa1 / Aa2	

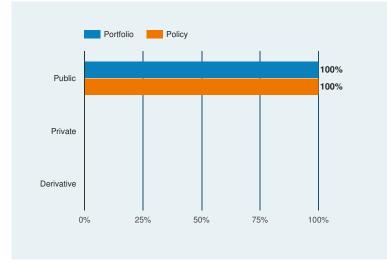
17 Rates bucket - Geographic exposure



18 Rates bucket - Currency exposure



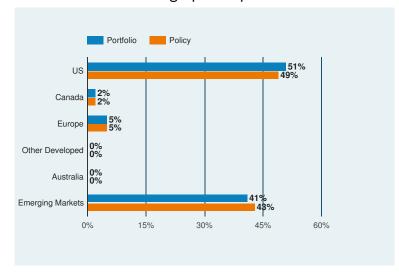
19 Rates bucket - Security type



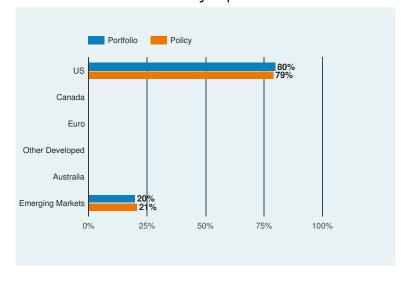
20 Credit bucket

	Portfolio	Policy	Difference
Duration	3.0	3.1	-0.1
Coupon	5.0%	5.0%	0.0%
Yield to Maturity	4.7%	4.7%	0.0%
Wt. Avg. Rating	Ba2 / Ba3	Ba2 / Ba3	

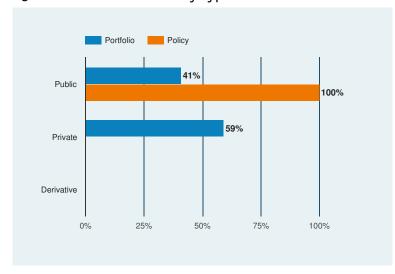
21 Credit bucket - Geographic exposure



22 Credit bucket - Currency exposure



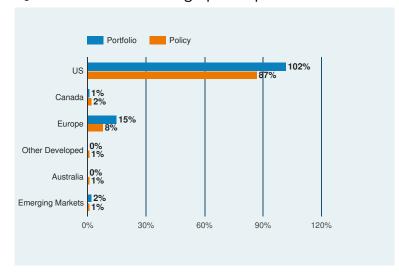
23 Credit bucket - Security type



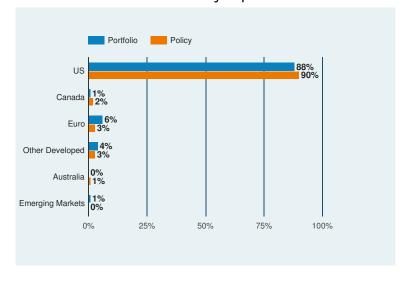
24 Inflation bucket

	Portfolio	Policy	Difference
Global Infrastructure	1.0%	3.0%	-2.0%
Other Real Assets	3.9%	4.0%	-0.1%
Real Estate Allocation	6.7%	8.0%	-1.3%

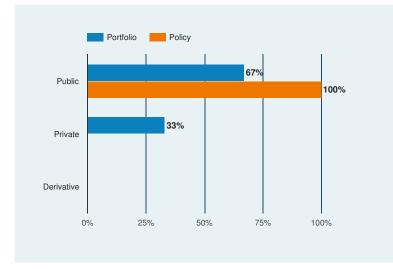
25 Inflation bucket - Geographic exposure



26 Inflation bucket - Currency exposure



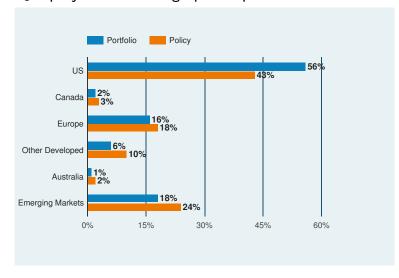
27 Inflation bucket - Security type



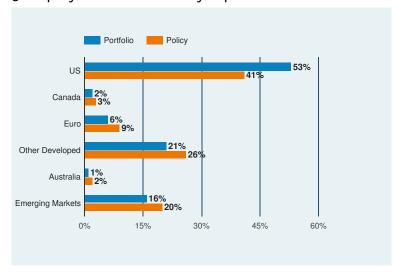
28 Equity bucket

	Portfolio	Policy	Difference
Beta	1.0	1.0	0.0
Dividend Yield	2.2%	2.5%	-0.3%

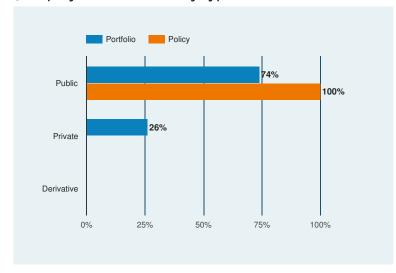
29 Equity bucket - Geographic exposure



30 Equity bucket - Currency exposure



31 Equity bucket - Security type



32 Market value summary per BarraOne

Bucket	Asset Class	Account Name	Account	Market Value (millions)
Cash	Cash	BLACKROCK 1-3 YEAR GOV CREDIT	o53O	527.8
		CASH ACCOUNT	o5VB	66.8
		RUSSELL OVERLAY ACCOUNT - CASH	o5Vo_CASH	6.4
		TERMINATED MANAGER ASSETS	o ₅ XF	0.1
Cash Total				601.1
Credit	EMD	IGUAZU PARTNERS LP FUND	o5BY	77.9
		BLUEBAY EM SELECT BOND	o5BQ	35.7
	Opportunistic Credit	CROSS OCEAN USD ESS FUND II LP	o5YN	42.1
		PARK SQUARE CREDIT OPP II LP	o5CV	37.9
		MEDLEY OPPORTUNITY FUND II LP	o5WX	17.5
		OCTAGON CLO OPP FUND III	052N	15.6
		WHITE OAK DIRECT LENDING	o5WY	13.1
		SHORELINE CHINA VALUE III LP	o5XZ	9.5
		CROSS OCEAN USD ESS FUND I LP	o5CW	8.4
		BLACKSTONE GSO CAP PARTNERS	o5WZ	7.8
		MARATHON EURO CREDIT OPP FUND	o5AQ	1.4
	Private Credit	CROSS OCEAN USD ESS FUND III	o ₅₃ F	10.9
		RUSSELL OVERLAY PRIVATE DEBT	052l	0.0
Credit Total				277.6
Equity	EAFE Equity	NORTHERN TRUST MSCI WORLD EX US	о5ҮВ	241.6
		OBERWEIS INTL OPPORTUNITIES	05B0	66.4
		RUSSELL OVERLAY ACCOUNT - INTERNATIONAL EQUITY	o5Vo_INTL_EQ	0.0
	EM Equity	NORTHERN TRUST MSCI EM IMI	052U	170.0
		WELLINGTON EM SYSTEMATIC	o53H	85.8
		GQG GLOBAL EMERGING MARKETS	o5YZ	68.5
		DIMENSIONAL FUND ADV EM VALUE	o5B9	65.0

	RWC EMERGING MARKETS	o53I	43.1
Global Equity	ARTISAN GLOBAL VALUE	o ₅ XP	223.6
	ARTISAN GLOBAL OPPORTUNITIES	o ₅ XQ	210.2
Private Equity	NORTHERN TRUST RUSSELL 3000	o5CQ	243.7
	PE STRATEGIC PARTNERSHIP LP	052A	94.9
	57 STARS GLOBAL OPPORTUNITY	o5B4	30.8
	INDUSTRY VENTURES PARTNERSHIP	o5B6	27.3
	HARBOURVEST DOVER STREET IX	o5YI	22.4
	FRANCISCO PARTNERS	o5B7	18.5
	CCMP CAPITAL INVESTORS III LP	o5B5	17.8
	WARBURG PINCUS (EUROPA) XI	o5BI	12.6
	CRESTLINE PORTFOLIO FINANCING	052P	10.2
	HARBOURVEST PARTNERS VIII	o5W4	8.8
	TPG OPPORTUNITIES PARTNERS III	05B2	7.3
	PANTHEON USA FUND VI LP	o5V8	7.3
	CRESCENT MEZZANINE PARTNERS VI	o ₅ XJ	6.2
	SIGULER GUFF DISTRESSED	o5W9	4.8
	PORTFOLIO ADVISORS PRIVATE EQ	o5V9	3.6
	INNOVATION ENDEAVORS III	052Q	1.5
	TPG OPPORTUNITIES PARTNERS II	o5AP	1.4
	KIMMERIDGE ENERGY FUND V	o53L	1.1
	TCW CRESCENT MEZZANINE	o5WA	0.6
	HARBOURVEST PARTNERS VII	05W1	0.3
US Equity	NORTHERN TRUST RUSSELL 1000	o5CO	244.1
	COVE STREET SMALL CAP VALUE	052L	24.6
	NORTHERN TR RUSSELL 2000 VALUE	052J	20.1
	RUSSELL OVERLAY ACCOUNT - US EQUITY	o5Vo_US_EQ	0.0

Equity Total				1,983.8
Hedge Fund	Hedge Fund	DE SHAW COMPOSITE FUND LLC	o5XW	47.5
		HUDSON BAY	052D	44.4
		PHARO MANAGEMENT LTD	o5YL	37.5
		AHL PARTNERS LLP	o5YP	17.9
		KEYNES LEV QUANT STRAT LTD	o5YG	17.6
		KEPOS ALPHA FUND LTD	o5XV	14.3
		JD CAPITAL	o5YV	13.7
		PINE RIVER FUND LTD	o5XI	0.6
Hedge Fund Tot	al			193.4
Inflation	Commodities	CREDIT SUISSE RISK PARITY	o5WV	71.7
	Global Infrastructure	BROOKFIELD INFRASTRUCTURE III	o5YM	16.4
		GLOBAL INFRA PART III A B LP	o5YS	16.4
		LIME ROCK PARTNERS VIII	052Z	4.1
		GLOBAL INFRA PART IV	053E	0.1
	Real Estate	CLARION LION PROPERTIES FUND	053D	78.0
		BLACKROCK CORE PROPERTY FUND	053B	68.2
		TRISTAN - EPISO IV	o ₅ YF	18.2
		BROOKFIELD SREP II	o5YJ	18.2
		DRA GROWTH & INCOME FUND IX	o5YW	17.5
		KSL CAPITAL PARTNERS IV LP	o5XY	15.8
		TORCHLIGHT DEBT OPPORTUNITY VI	0520	11.8
		OCH ZIFF REAL ESTATE FUND III	o5CY	7.7
		BROOKFIELD SREP I	05BJ	5.5
		GEM REALTY FUND VI	o5YQ	4.1
		ORION EURO REAL ESTATE IV LP	o5BW	3.1
		TRISTAN - EPISO III	o5BX	2.6

		TA REALTY ASSOCIATES FUND X	o5A4	1.2
		BLACKSTONE REAL ESTATE DEBT	o5BN	0.4
		TRISTAN EPISO V	052\$	0.3
		RUSSELL OVERLAY REAL ESTATE	05A2	0.0
	TIPS	NORTHER TRUST 0-5 YEAR TIPS	o52X	75.8
Inflation Total				437.1
Rates	Global Bonds	NORTHERN TRUST FTSE WGBI EX US	052W	109.4
	US Bonds	INSIGHT IMMUNIZED CASH FLOWS	o53G	175.6
Rates Total				285.0
Total Portfolio ((millions)			3,777.9

Chart Definitions

1 Portfolio risk

Total risk comparison of Portfolio, Polciy, Peer Group. Policy consists of: 1.5% JPM EMBID GD, 1.5% GBI EM GD, 3% Dow Jones Brookfield GLobal Infrastructure Index, 3% NCREIF Property Index, 12% Private Equity Benchmark, 4% S&P/LSTA Leveraged Loan Index, 13% MSCI EM IMI, 14% MSCI USA IMI, 11% MSCI World ex USA IMI, 2% Bloomberg Barclays U.S. TIPS, 2% Bloomberg Commodity Index - Spot, 3% Bloomberg Barclays Global Governments (ex US), 5% NCREIF Property Index, 5% Portfolio composite, 5% Bloomberg Barclays U.S. Treasury Bills: 1-3 Months, 15% Bloomberg Barclays U.S. Treasury Bills: 1-3 Months. Peer Group (InvestorForce All Public DB > \$1B Gross as of 2018-06-30) consists of: 7.6% HFRI FOF, 1.3% Bloomberg Barclays U.S. Treasury Bills: 1-3 Months, 26% Russell 1000, 2.6% MSCI EAFE, 3.5% MSCI EM (Emerging Markets), 16.6% MSCI ACWI ex USA IMI, 4.0% MSCI World ex USA IMI, 17.1% Bloomberg Barclays U.S. Aggregate, 2.0% Bloomberg Barclays Global Aggregate EX TSY USD, 1.5% Bloomberg Barclays Global Aggregate, 1.3% Bloomberg Barclays Emerging Markets, 8.3% MSCI ACWI IMI as Private Equity, 2% Bloomberg Commodity, 6.2% NCREIF Property. Liability is discounted at 6.875%.

2 Portfolio equity beta

Equity risk presented by equity beta to market. Equity beta is a measure describing the sensitivity of portfolio returns with returns of the equity market (MSCI ACWI).

2 Portfolio interest rate risk - Duration

Interest rate risk presented by duration and dollar movement of portfolios. Duration of a financial asset that consists of fixed cash flows is the weighted average of the times until those fixed cash flows are received (measured in years). It also measures the percentage change in price for a given change in yields (the price sensitivity to yield). DVo1 \$ (dollar duration) is the change in price in dollars of a financial instrument resulting from a one basis point change in yield.

4 Portfolio credit risk - Spread duration

Credit risk presented by spread duration and dollar movement of portfolios. Spread duration measures the percentage change in price for a one percentage point change in spreads.

5 Exposure allocation by asset class

Exposure allocation among various asset classes. Overlay exposures are reflected in their respective asset class. Cash overlay reflected in cash.

6 Exposure allocation

Exposure allocation among major risk buckets (rates, credit, equity, inflation, currency) and net currency exposure (domestic vs. foreign). Full Cash collateral is assumed for all derivatives.

7 Risk factor weight relative to target

Contribution by factor to total relative risk of the Portfolio vs the Policy: For example, Equity is equity risk contribution to Portfolio minus equity risk contribution to the Policy, divided by total risk of the Policy. The factor overweights are additive to the total relative risk at the top line. "Other" includes Country factors and World factors.

8 Tail risk - Scenario analysis

Tail risk is a form of risk measurement that considers the possibility that a market will experience losses greater than what the normal distribution would suggest. This graph shows the expected performance under various historical scenarios (described in the appendix at the end of this report). For each historical scenario, the current market value is recalculated to determine return under identical market conditions, assuming an instantaneous shock.

9 Tail risk - Stress tests

This display shows expected performance when individual risk factors are subjected to instantaneous shocks. Directly affected assets are revalued at factor level.

10 Risk contribution by risk factor

 $Risk\ contribution\ by\ risk\ factor.\ Volatility\ measures\ the\ price\ variation\ of\ a\ portfolio\ or\ financial\ instrument\ over\ time.$

11 Active risk contribution by risk factor

Active risk in terms of annual tracking error: Tracking Error (TE) measures how closely a portfolio follows its benchmark. It is the standard deviation of the difference between the portfolio and benchmark returns.

12 Geographic exposure

Geographic exposures are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

13 Currency exposure

Currency portfolio allocation. Currency exposures from both the underlying securities and the purchasing currency of the futures contract are included.

14 Net geographic exposure

Difference between portfolio and policy allocation among major geographic areas.

15 Net currency exposure

Difference between portfolio and policy allocation among major currencies.

16 Interest rate bucket

Coupon yield (nominal yield) of a fixed income security is a fixed percentage of the par value that does not vary with the market price of the security. Yield to Maturity (YTM) is the interest rate of return earned by an investor who buys a fixed-interest security today at the market price and holds it until maturity. Ratings indicate credit quality of a security and the issuer's ability to make payments of interest and principal.

17 Rates bucket - Geographic exposure

Geographic exposures specific to the Rates bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

18 Rates bucket - Currency exposure

Currency allocation of interest rate instruments.

19 Rates bucket - Security type

Allocation of interest rate instruments among different security types.

20 Credit bucket

Various characteristics of credit instruments.

21 Credit bucket - Geographic exposure

Geographic exposures specific to the Credit bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

22 Credit bucket - Currency exposure

Currency allocation of credit instruments.

23 Credit bucket - Security type

Allocation of credit instruments among different security types.

24 Inflation bucket

Composition of inflation hedging instruments in portfolio and benchmark. The calculation of duration includes Global Fixed Income ILB asset class only and is measured as effective duration.

25 Inflation bucket - Geographic exposure

Geographic exposures specific to the Inflation bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

26 Inflation bucket - Currency exposure

Currency allocation of inflation instruments.

27 Inflation bucket - Security type

Allocation of inflation instruments among different security types.

28 Equity bucket

P/E ratio is a valuation ratio of a company's current share price compared to its per-share earnings. Beta measures sensitivity to Global Equities.

29 Equity bucket - Geographic exposure

Geographic exposures specific to the Equity bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

30 Equity bucket - Currency exposure

Currency allocation of equity assets.

31 Equity bucket - Security type

Allocation of equity assets among different security types.

32 Market value summary per BarraOne

Market Value is presented by account and risk bucket in dollars as reported by BarraOne. Some differences may exist due to timing, pricing sources and availability of information on new investments

Tail Risk Scenario Definitions

1 2007-2009 Subprime and Credit Crisis

(9/30/2007 - 3/4/2009) The burst of the housing bubble in mid-2007 marked the beginning of the years-long subprime mortgage crisis, rooted from the easy credit, low interest rates, and loose regulatory environment in the early 2000s, which made low quality (subprime) mortgaging extremely easy. The contagious meltdown quickly led to plunging asset prices in the financial markets, rising bankruptcies, delinquencies, and foreclosures, and central bank monetary rescues and fiscal interventions by governments around the globe.

2 2006 Emerging Market Crash

(5/10/2006 - 6/14/2006) A number of emerging markets, including Brazil, India, and Argentina, plunged rapidly in May 2006.

3 2001 Sept 11

(9/7/2001 - 9/21/2001) The U.S. stock market was closed for a week upon a series of coordinated suicide attacks upon the United States on September 11, 2001. It plunged sharply over the week upon reopening.

4 2000-2003 Tech Crash & Recession

(1/19/2000 - 3/12/2003) Period of crisis and slowdown for technological firms due to a rapid jump in stock prices when a speculative technology bubble began to burst, triggering a sell-off of companies. The period includes a slowdown for internet companies that went out of business as the stock market plummeted further.

5 1994 US Rate Hike

(1/31/1994 - 12/13/1994) In combating inflation, the U.S. Federal Reserve raised its interest rate from 3.25% in February to 5.5% in November 1994.

6 1989-1990 Nikkei Stock Price Correction

(12/29/1989 - 3/30/1990) After hitting the Nikkei stock index's all-time high on December 29, 1989, the Japan financial market crashed and plunged to a low in March 1990.

7 1987 Market Crash (Aug. to Nov.)

(8/3/1987 - 11/30/1987) The U.S. stock market began to topple on October 14, 1987 after reaching a record high. It was triggered by reports of a larger trade deficit and the elimination of the tax benefits of financing mergers. The aggravating selling pressure in October 19 from confused and fearful investors and the failing portfolio insurers' models led to a substantial global market sell-off.

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