



RETIREMENT BOARD CALENDAR SHEET
Board Meeting of May 8th, 2019

To: Retirement Board

Through: Jay Huish *JH*
Executive Director

From: Anna Langs, CFA, FRM *AL*
Managing Director, Asset Allocation,
Risk Management, Innovative Solutions

William J. Coaker, Jr. – CFA, MBA *WJC*
Chief Investment Officer

Date: May 8th, 2019

Agenda Item:

Risk Review for SFERS Total Plan: Stress Testing and Scenario Analysis

Background:

We present a Risk Review for SFERS Total Plan using risk aggregation and analytics from Caissa platform. SFERS collaborates with Caissa to measure, monitor, and manage Total Plan risks.

This report covers 1) Stress Testing results for SFERS Total Plan using multiple market factor sensitivities and 2) Scenario Analysis and Attribution for SFERS Total Plan.

Recommendation

This is a discussion only item.

Attachments

Risk Review for SFERS Total Plan: Stress Testing and Scenario Analysis

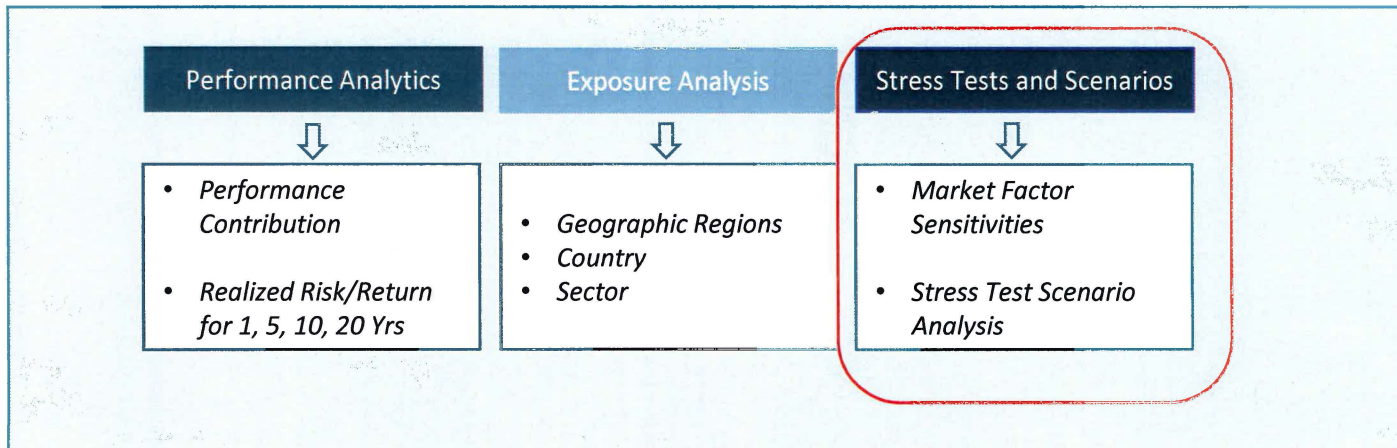
San Francisco Employee's Retirement System

Risk Review for SFERS Total Plan
Stress Testing and Scenario Analysis

Board Meeting, May 8th 2019

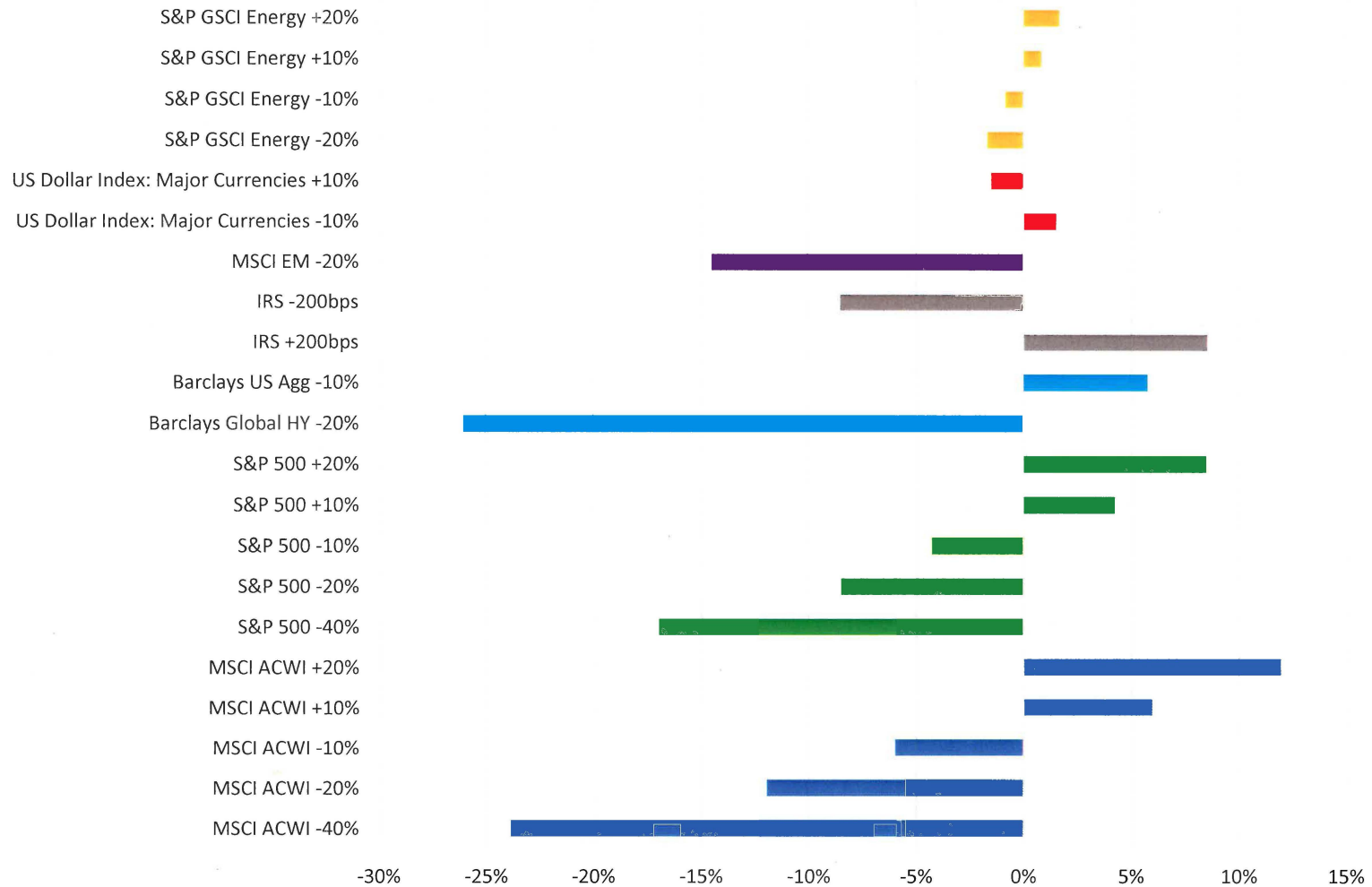
SFERS Risk Review | Overview

- Comprehensive risk management framework includes Strategic Asset Allocation, Liquidity Management, and measurement, monitoring, and management of key risk drivers for SFERS Total Fund and each asset class
- SFERS Staff continues to invest in and build best-in-class risk management practices
- SFERS uses risk analytics and reporting from multiple sources and vendors
- SFERS collaborates with Caissa to measure, monitor, and manage Total Plan risk



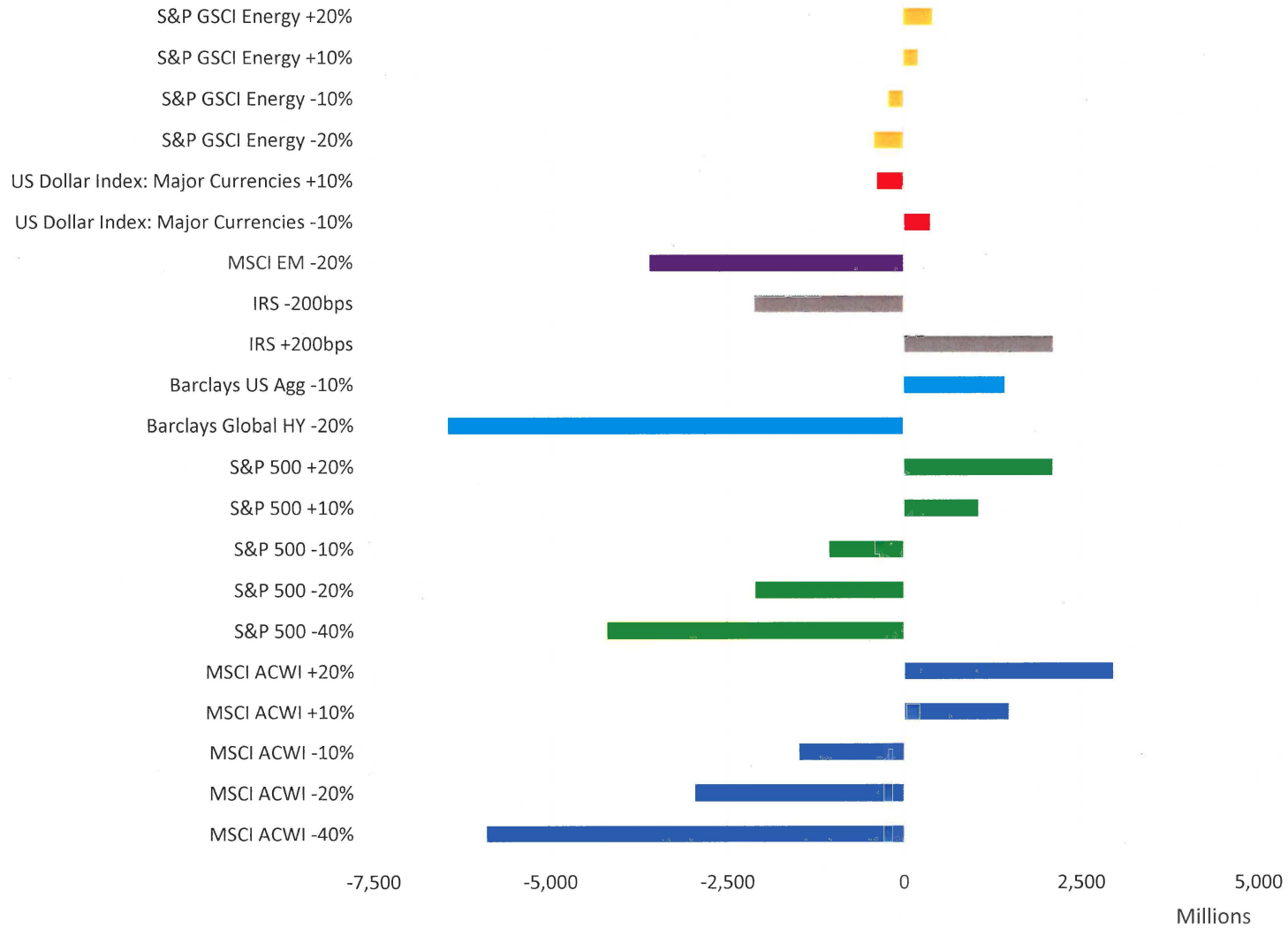
SFERS Stress Test | Single Factor Sensitivity Summary - % P&L

Single Factor Stress Events - % P&L



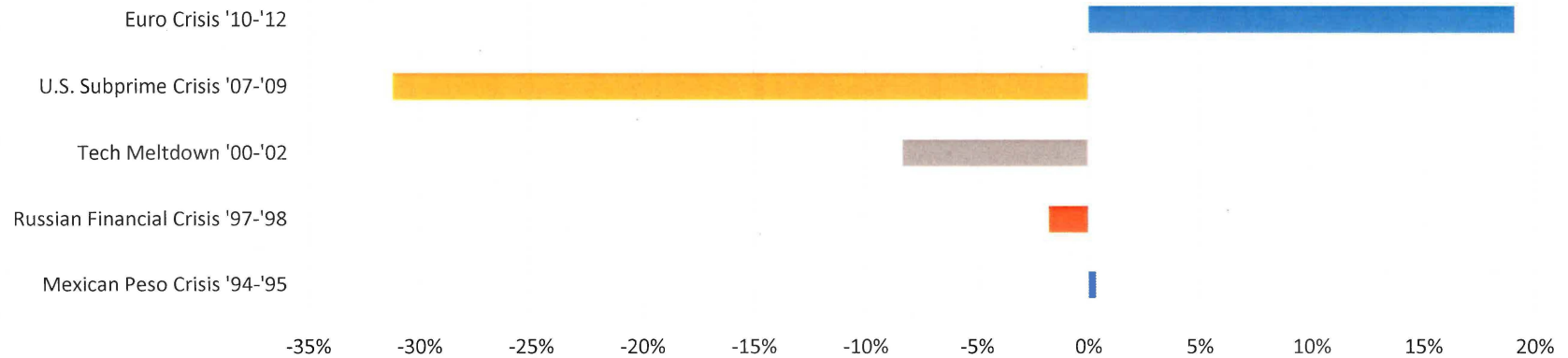
SFERS Stress Test | Single Factor Sensitivity Summary - \$ P&L

Single Factor Stress Events - \$ P&L

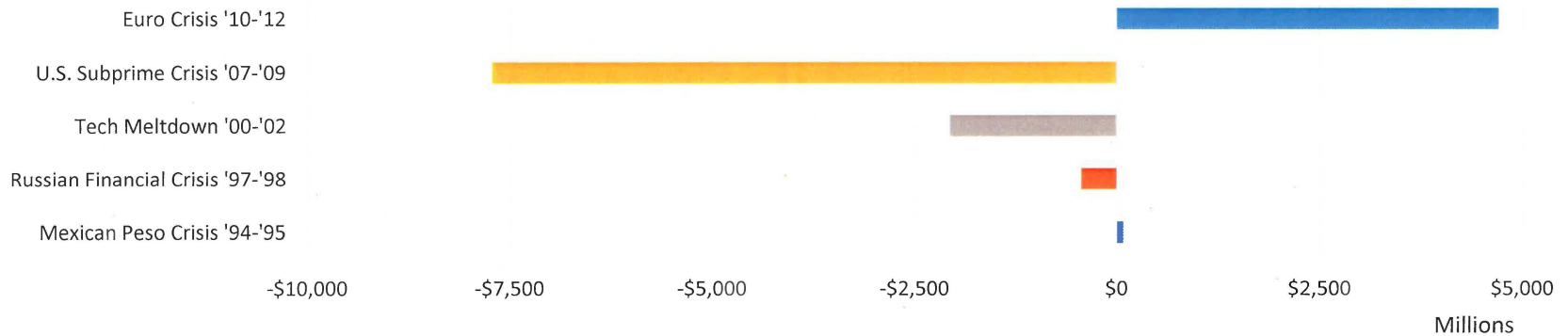


SFERS Stress Test | Historical Stress Test Summary

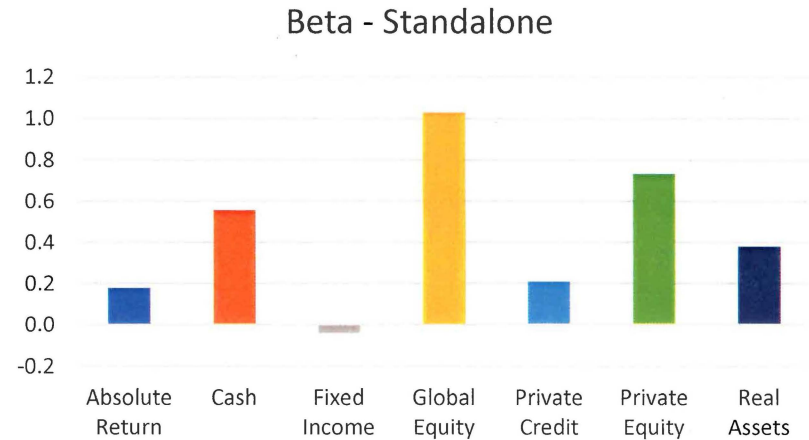
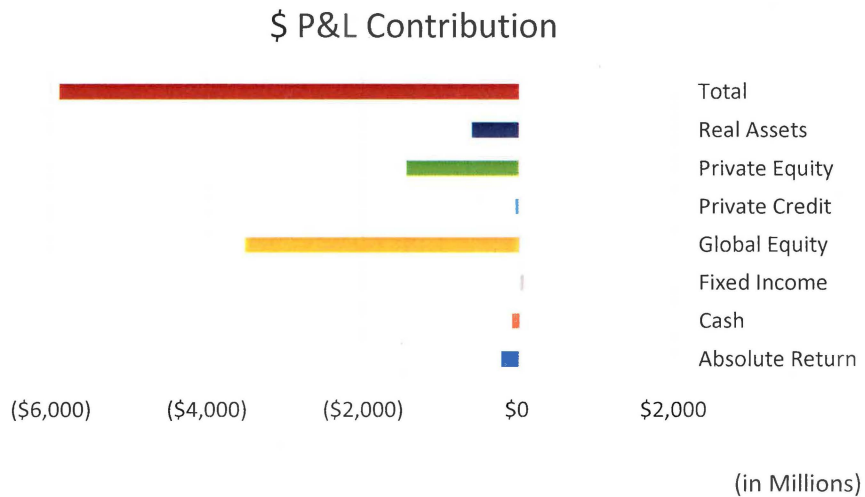
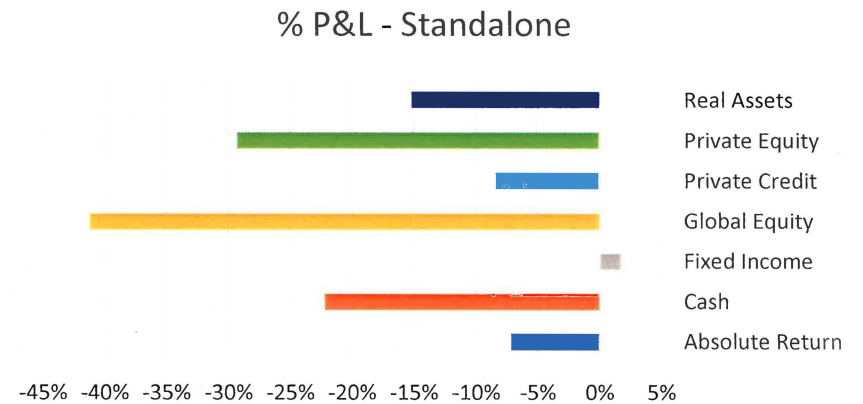
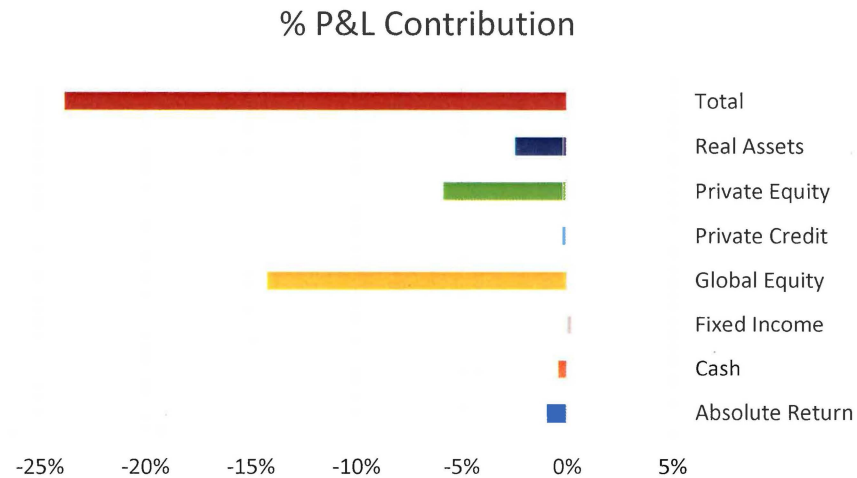
Historical Stress Events - % P&L



Historical Events - \$ P&L

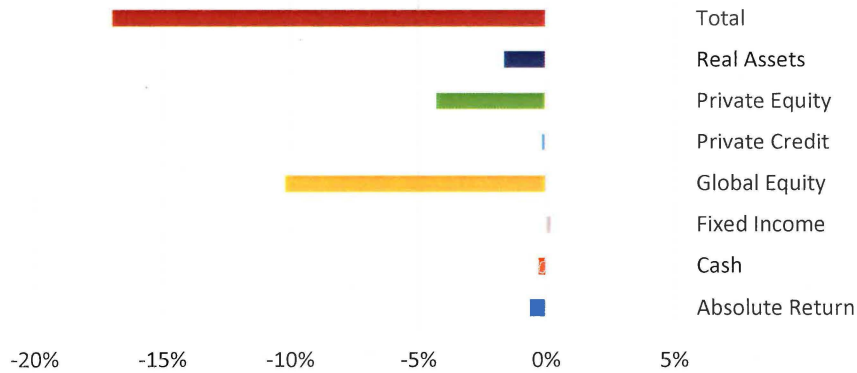


SFERS Factor Sensitivity Analysis | MSCI ACWI -40%

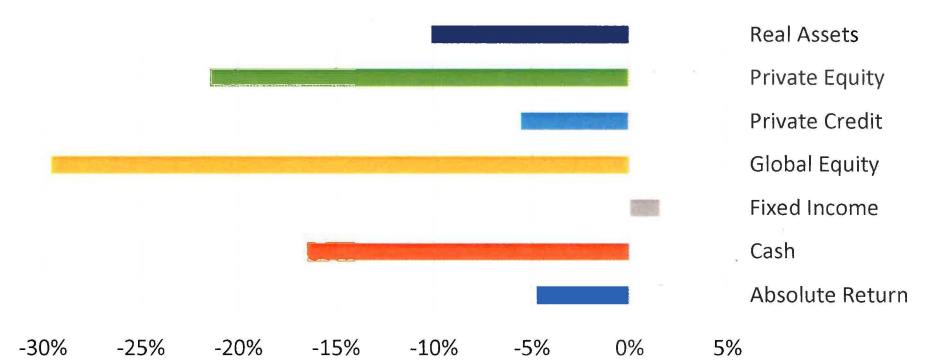


SFERS Factor Sensitivity Analysis | S&P 500 -40%

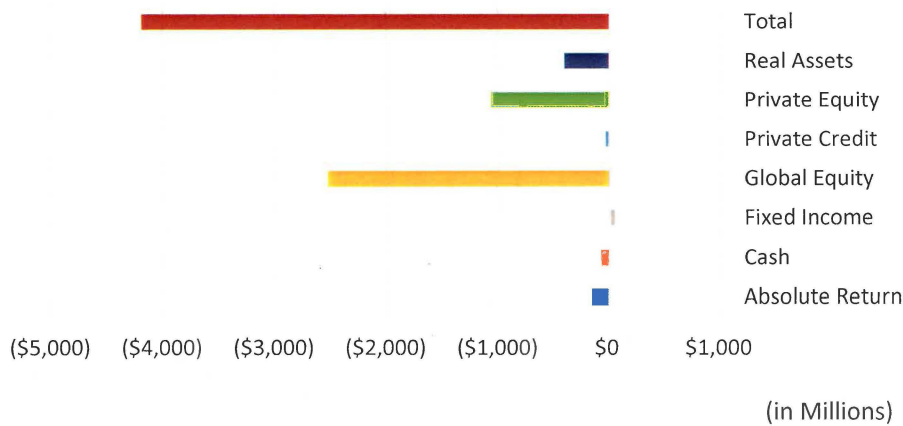
% P&L Contribution



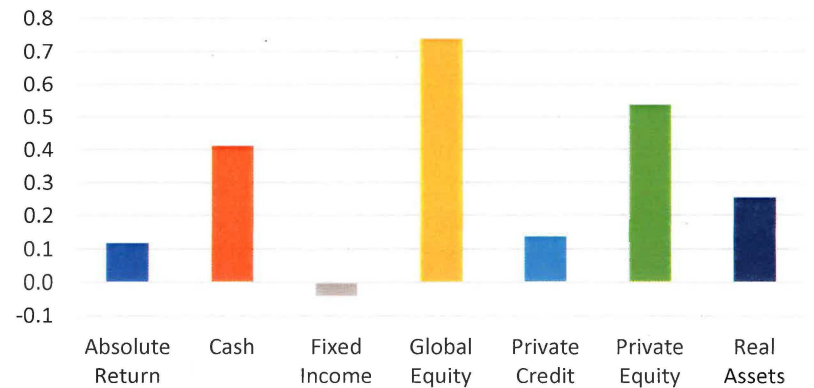
% P&L - Standalone



\$ P&L Contribution

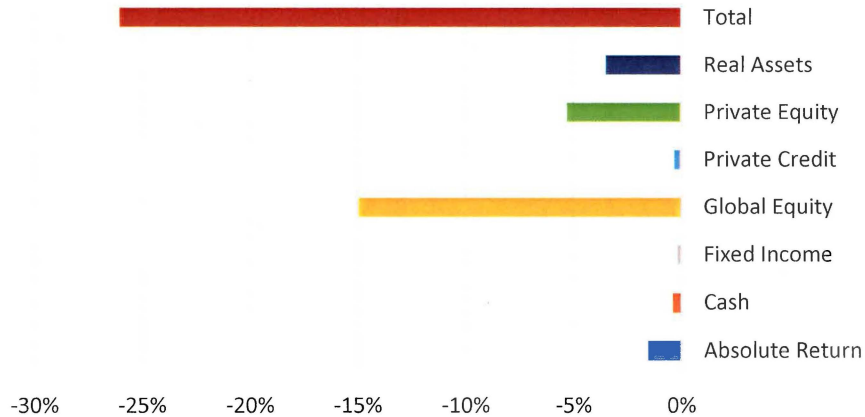


Beta - Standalone

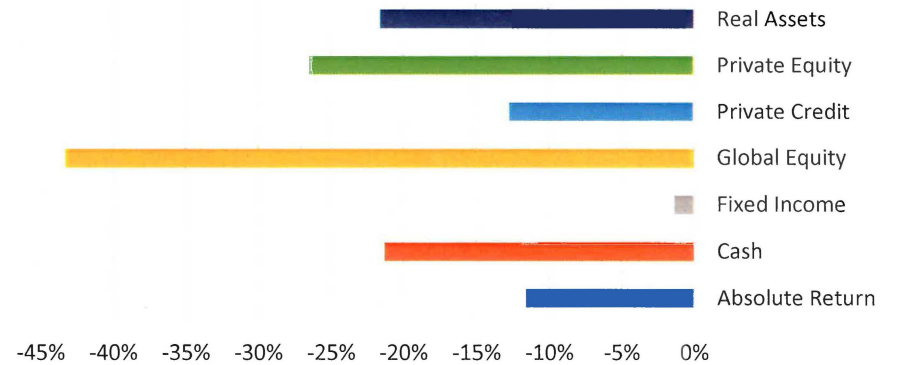


SFERS Factor Sensitivity Analysis | Barclays Global HY -20%

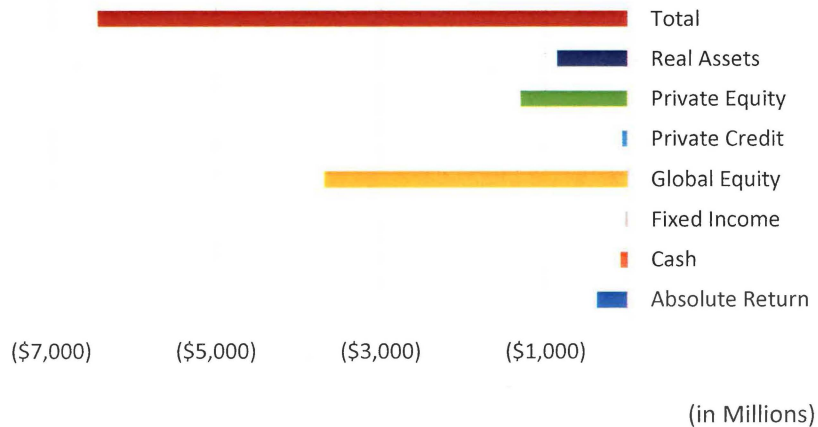
% P&L Contribution



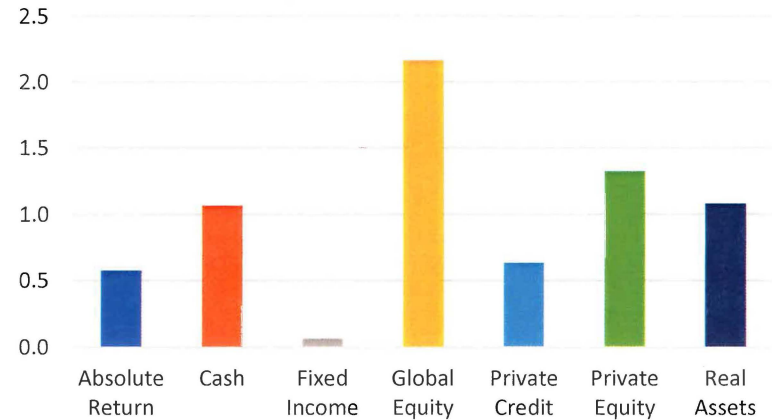
% P&L - Standalone



\$ P&L Contribution

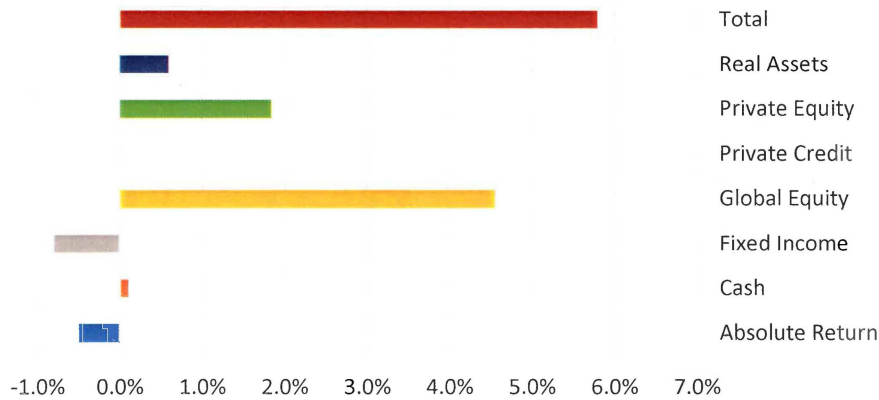


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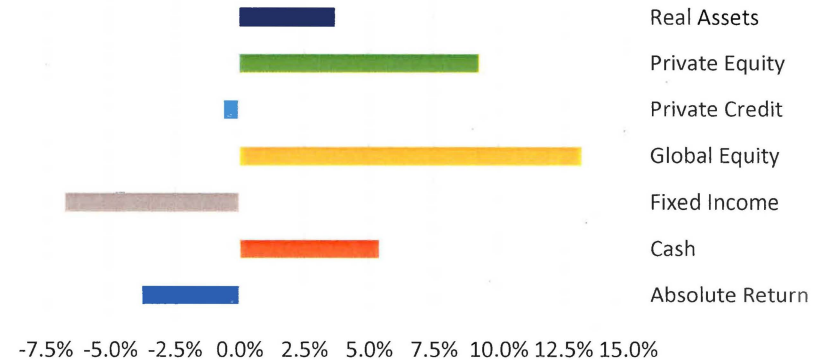


SFERS Factor Sensitivity Analysis | Barclays US Aggregate -10%

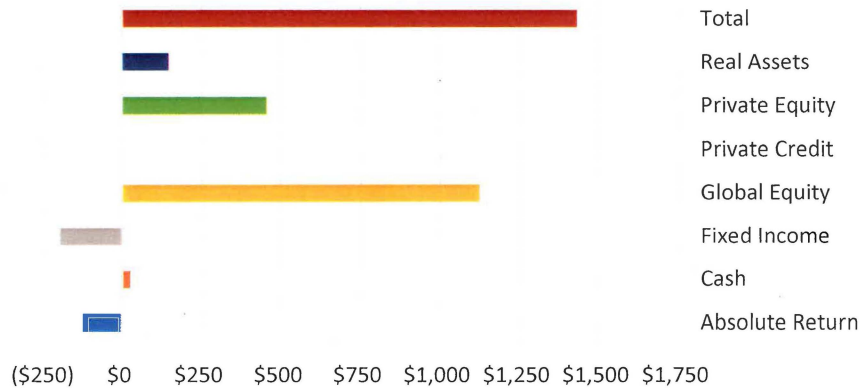
% P&L Contribution



% P&L - Standalone

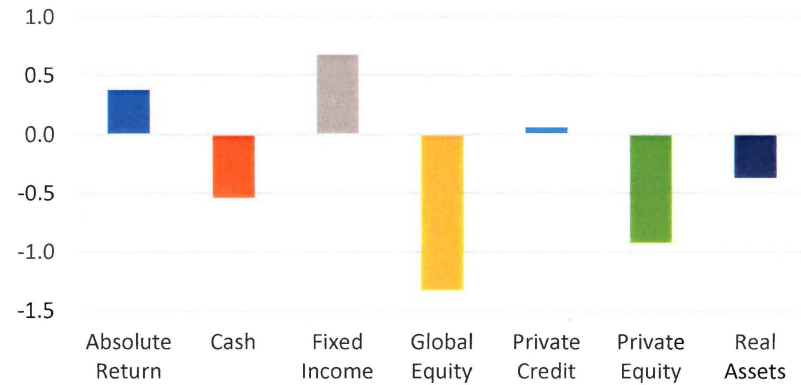


\$ P&L Contribution



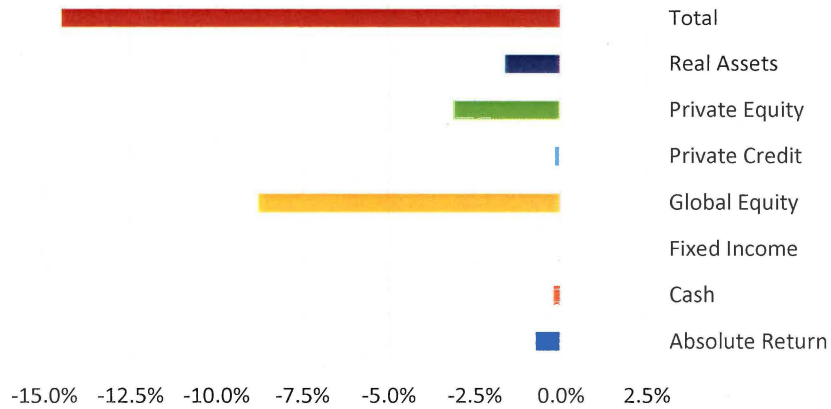
(in Millions)

Beta

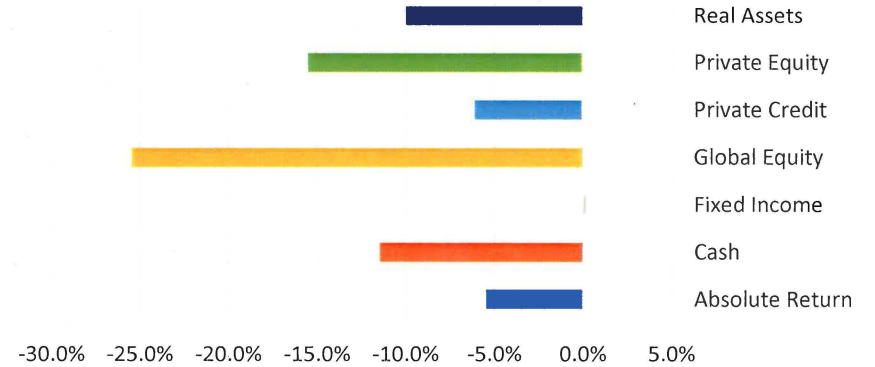


SFERS Factor Sensitivity Analysis | MSCI EM Currency Index -20%

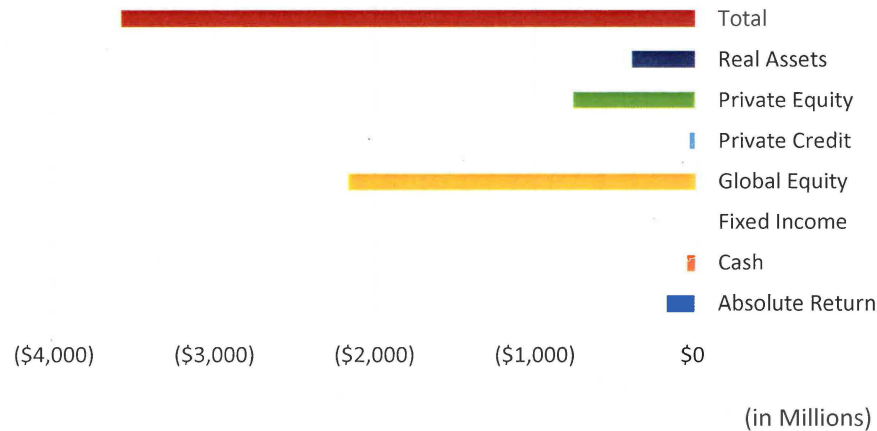
% P&L Contribution



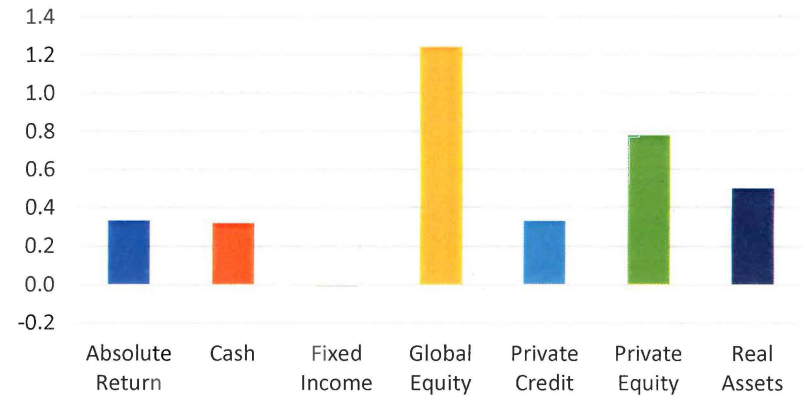
% P&L - Standalone



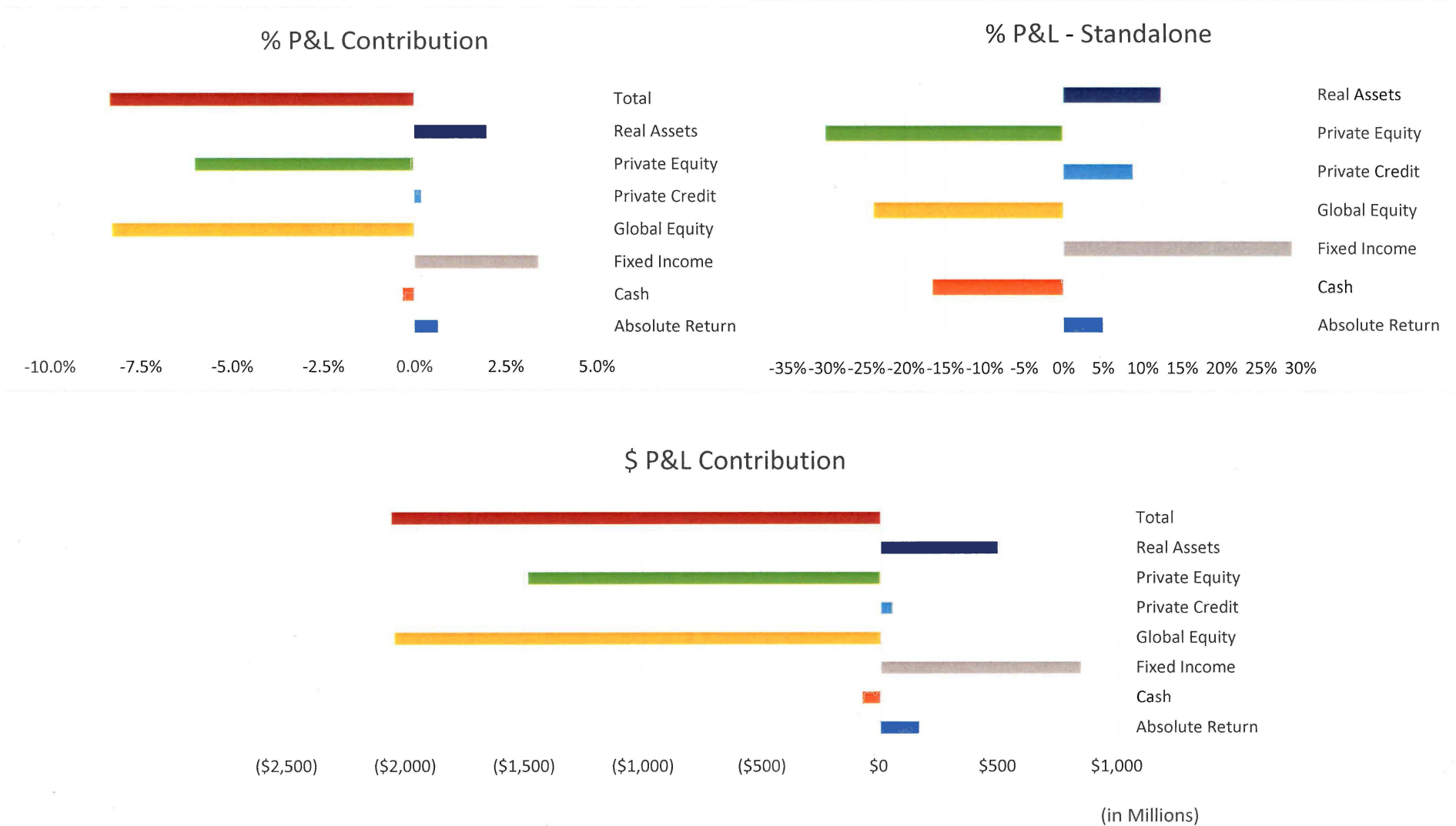
\$ P&L Contribution



Beta

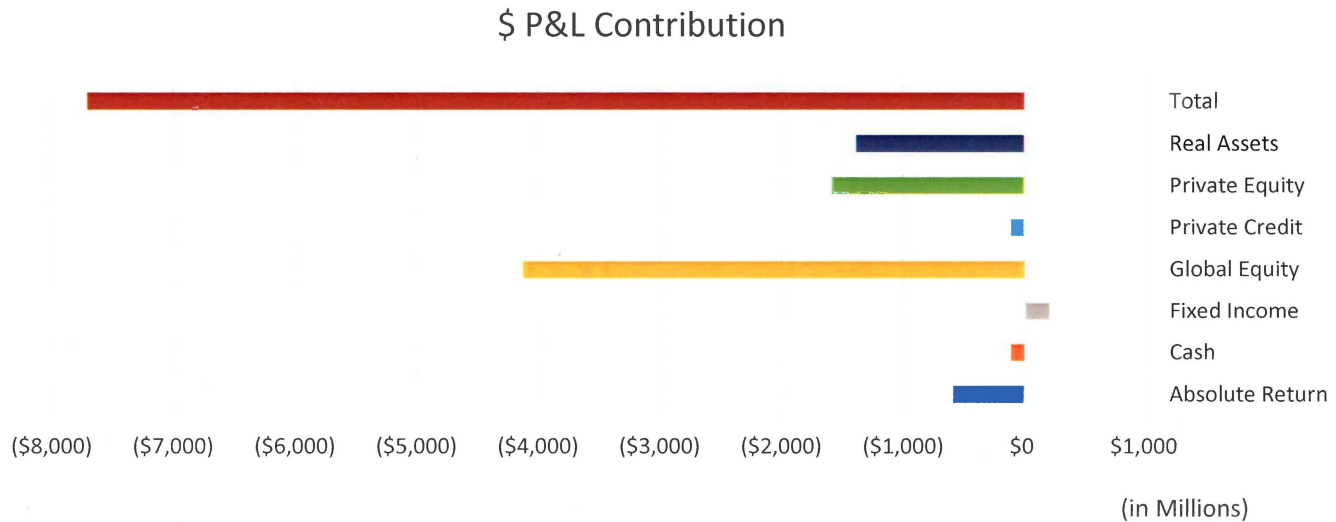
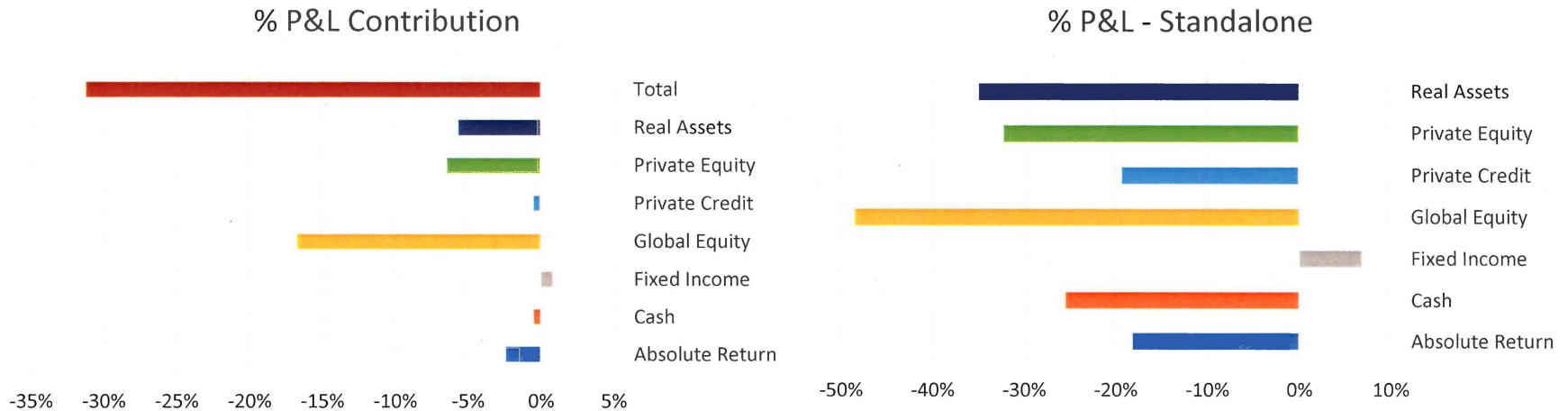


SFERS Historical Stress Test | Tech Meltdown 00-02 Scenario

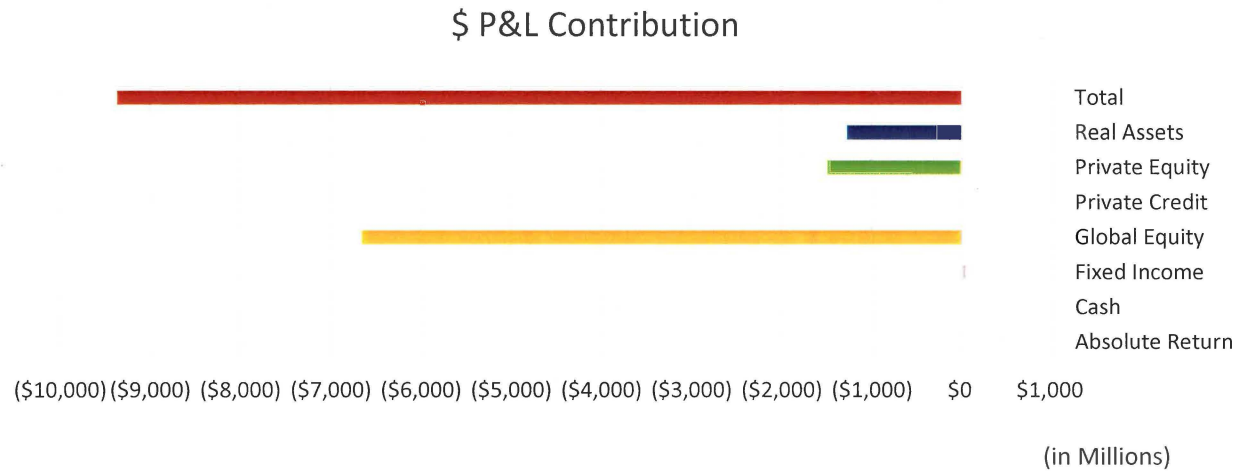


Source: Caissa. Data as of 03/31/2019. Position and risk exposure data for Private Investments is as of 12/31/2018 and for Absolute Return is as of 02/28/2019. Tech Meltdown 2000-2002 scenario is based on asset price movements from 03/10/2000 to 10/09/2002.

SFERS Stress Test | U.S. Subprime Crisis 07-09 Scenario



SFERS Stress Test | U.S. Subprime Crisis 07-09 Scenario Hypothetical Portfolio



- **Hypothetical Portfolio** composition:
55% Global Equity
18% Private Equity
15% Real Assets
12% Fixed Income
- Hypothetical portfolio assuming SFERS did not diversify into Absolute Returns and Private Credit
- Forecasted loss is -37.1% or \$9.4B

