



***Global Equity & Global Fixed Income Program
Consultant Review***

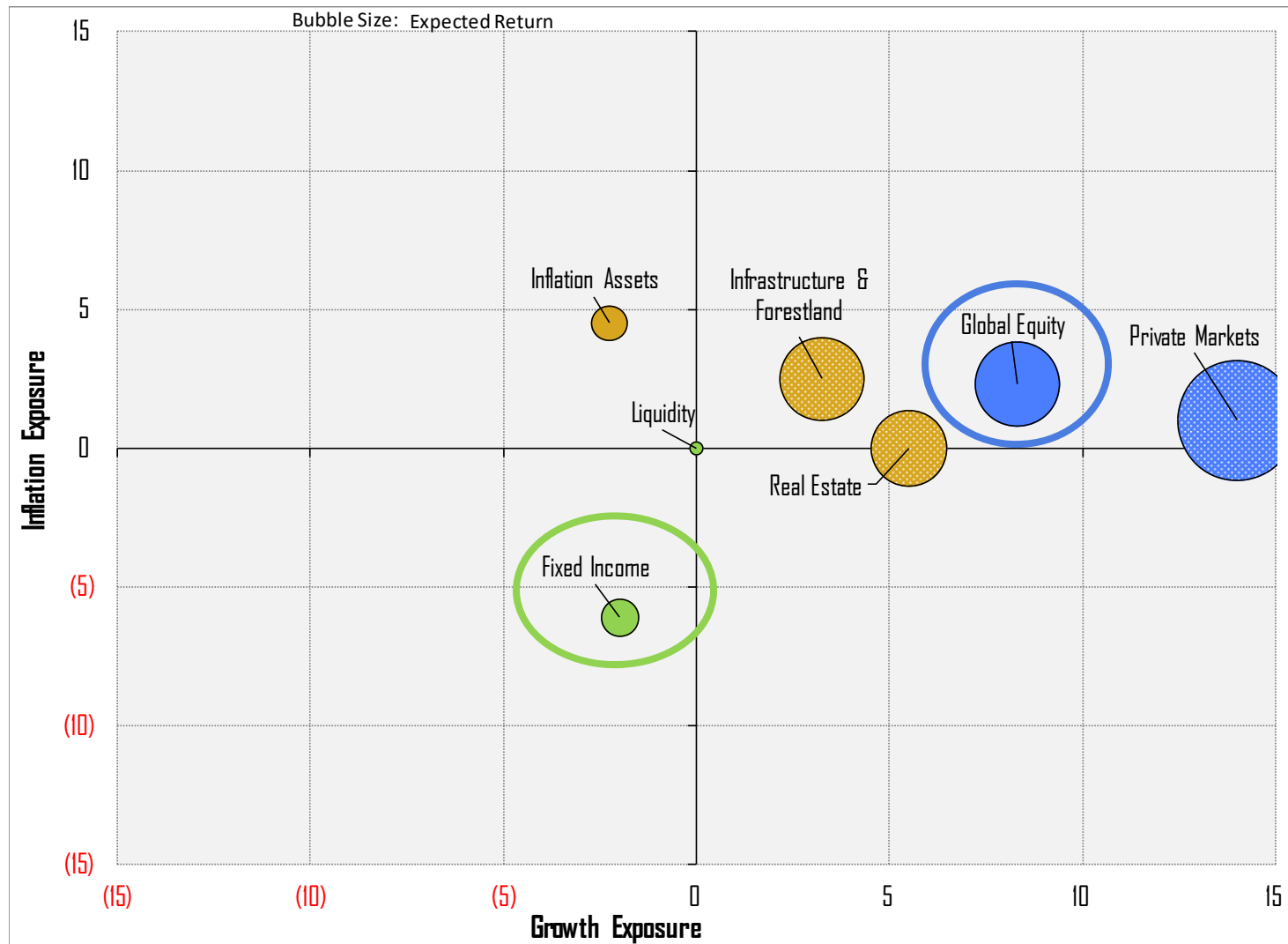
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September 18, 2017

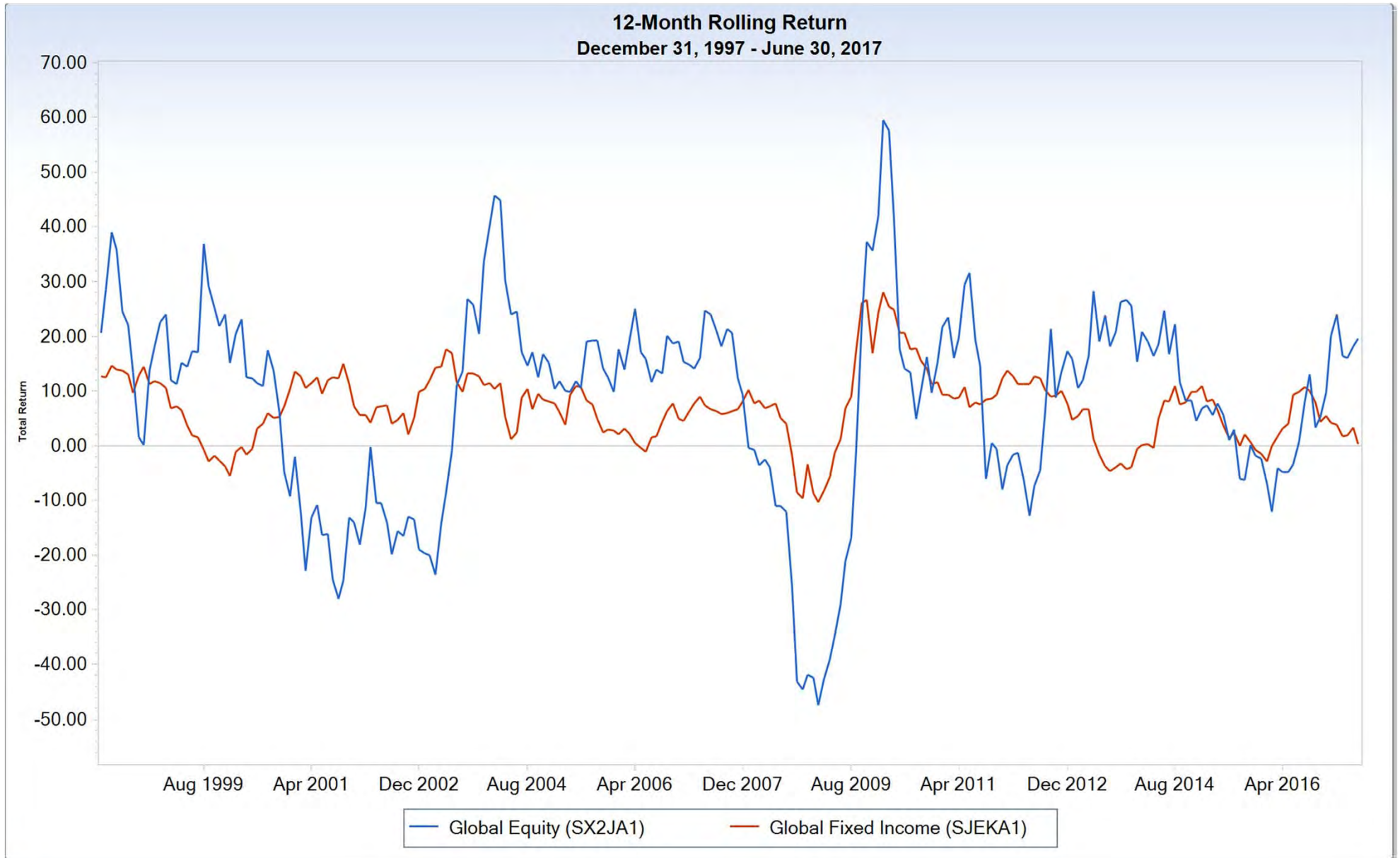
Program Roles in Asset Allocation

Role of Programs in Total Fund

- Global Equity: provides growth exposure and return potential
- Fixed Income: provides stability and income



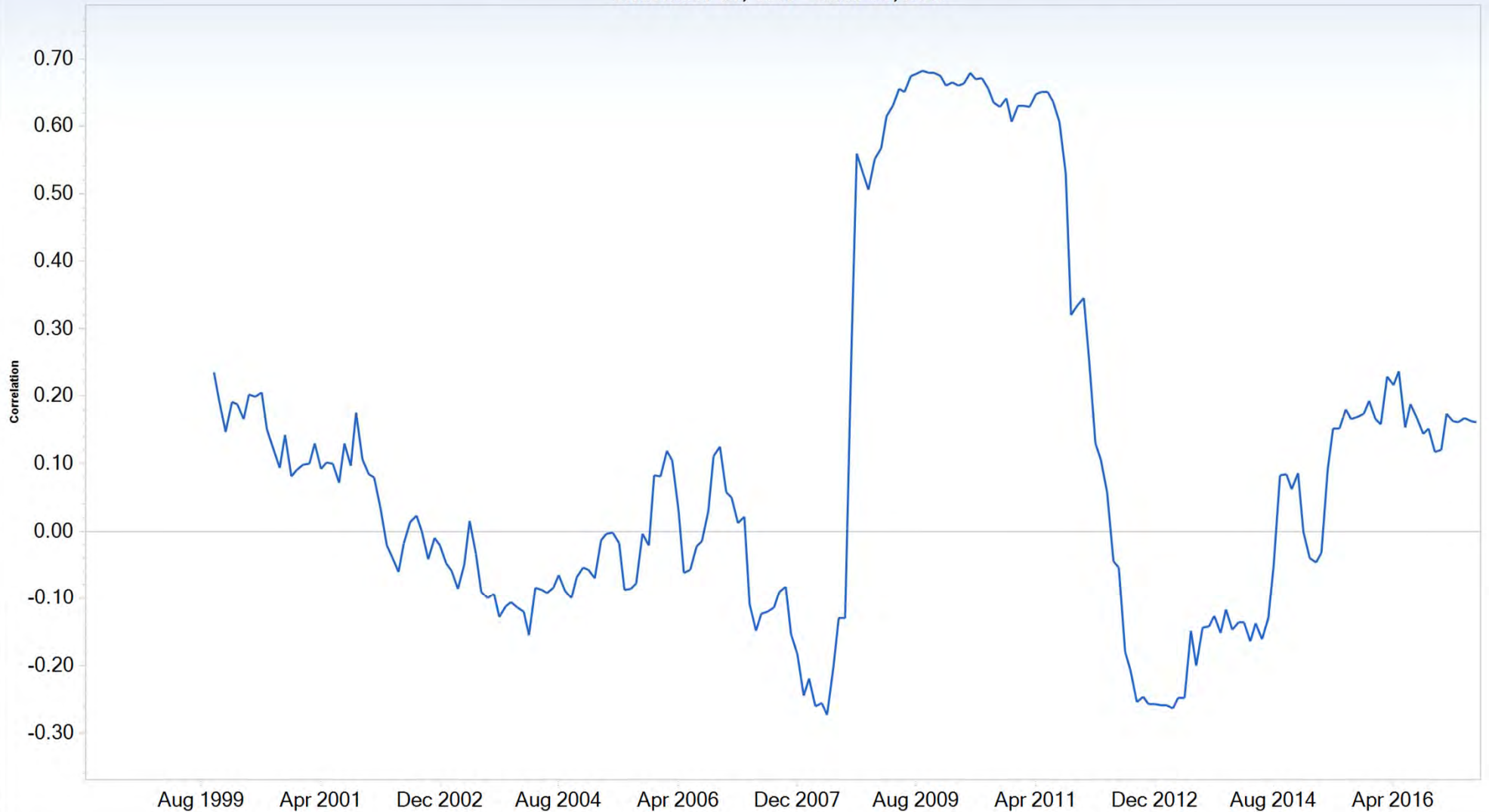
Global Fixed Income and Global Equity Diversifiers for CalPERS



Global Fixed Income and Global Equity Significant Diversification Benefits



Global Equity (SX2JA1)
36-Month Rolling Correlation with Global Fixed Income (SJEKA1)
 December 31, 1997 - June 30, 2017





Adherence to Investment Beliefs

- As part of its review process, Wilshire gathers examples of Staff's investment behavior and practices to ensure they are consistent with CalPERS' Investment Beliefs

Investment Belief	Example
#8 "Costs matter and need to be effectively managed"	GE's combination of cost-effective internal implementation and external strategy rationalization
#2 "A long time investment horizon is a responsibility and an advantage"	GFI's consistency in diversifying equity returns over different market cycles throughout the past 20 years
#7 "CalPERS will take risk only where we have a strong belief we will be rewarded for it"	GFI's tactical management of interest rate risk in the portfolio
#4 "Long-term value creation requires effective management of three forms of capital: financial, physical and human"	GE's working group set up to search for positive ESG-tilted strategies with either reduced downside risk or incremental return relative to benchmark



Progress on ESG Integration

- ESG factors are integrated into the investment decision-making process within GE and GFI because CalPERS believes ESG factors are a critical component of robust investment analysis
- At the staff-level, ESG integration practices are overseen by the Governance and Sustainability Sub-Committee that reports directly to the Investment Strategy Group
- Since this is a newly implemented structure it will be important to monitor through time evidence this process is working effectively
- Both Programs signal to their external partners the importance of considering the impact of ESG risks and opportunities and evaluate their partners' progress through a detailed ESG questionnaire
- With access to ESG data and analysis from external vendors, Staff have put in place robust processes to monitor and manage ESG risks across individual strategies and the aggregate portfolio

Global Fixed Income Review



Global Fixed Income Program

- Active Investment Process
 - 93% managed internally
 - 7% allocation to external managers
 - Performs well across a full market cycle
 - Some aspects may emphasize sensitivity to “economic growth” factor across the total portfolio
- Manage across the credit spectrum – along with inflation sensitive assets
 - US Treasuries
 - Corporate Credit
 - Mortgages
 - Asset-backed
 - CLOs
- Strong Experienced Team
 - MID most tenured INVO team leader
 - Senior Staff have long-track records
 - Short-term
 - Inflation-linked
 - Currency
 - Commodities
 - TIPs



SWOT Analysis – Global Fixed Income Program

Strengths

- Experienced MID
- Experienced Team
- Time-Tested investment process
- Strong performance and proven diversification benefits relative to Global Equity
- Consolidated cash management

Weaknesses

- Organizational structure
- Compensation constraints
- Promotion restrictions

Global Fixed Income Program

Opportunities

- Risk management
- Expansion of expertise to other areas of Total Fund such as the Opportunistic program

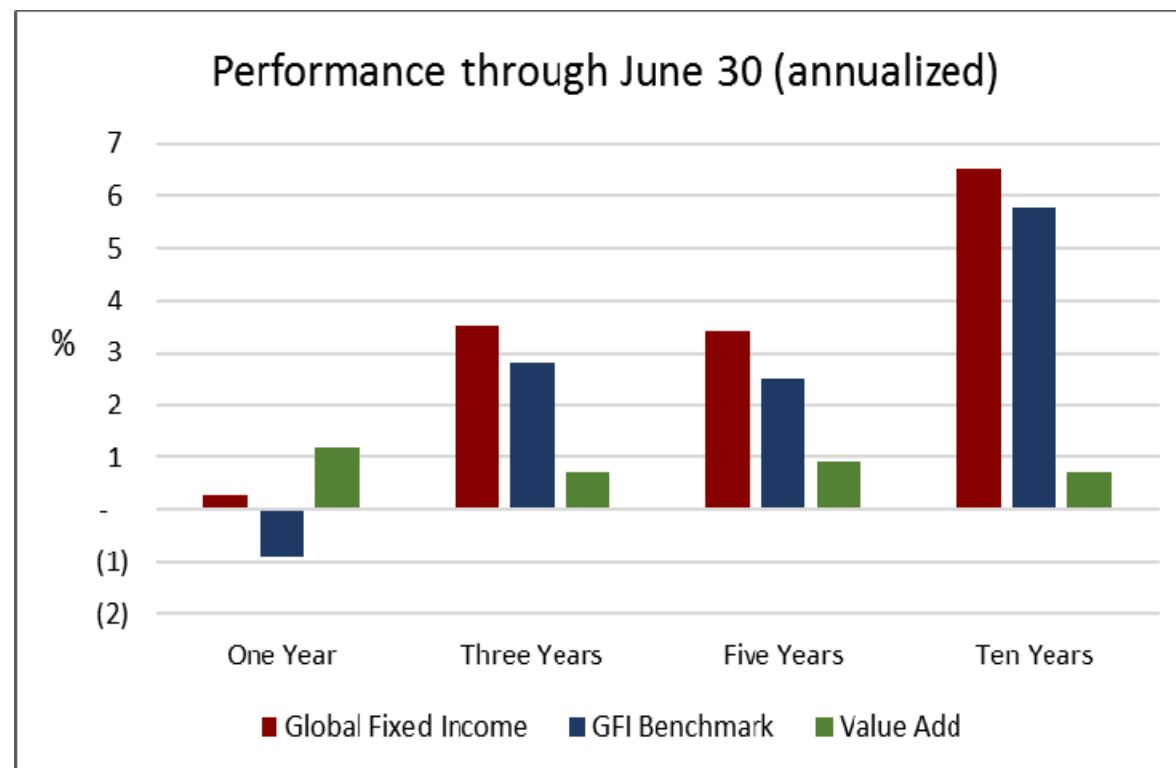
Threats

- MID succession
- Senior turnover and recruiting
- Growing complexity of internal management functions
- Additional INVO committee responsibilities



Global Fixed Income Performance

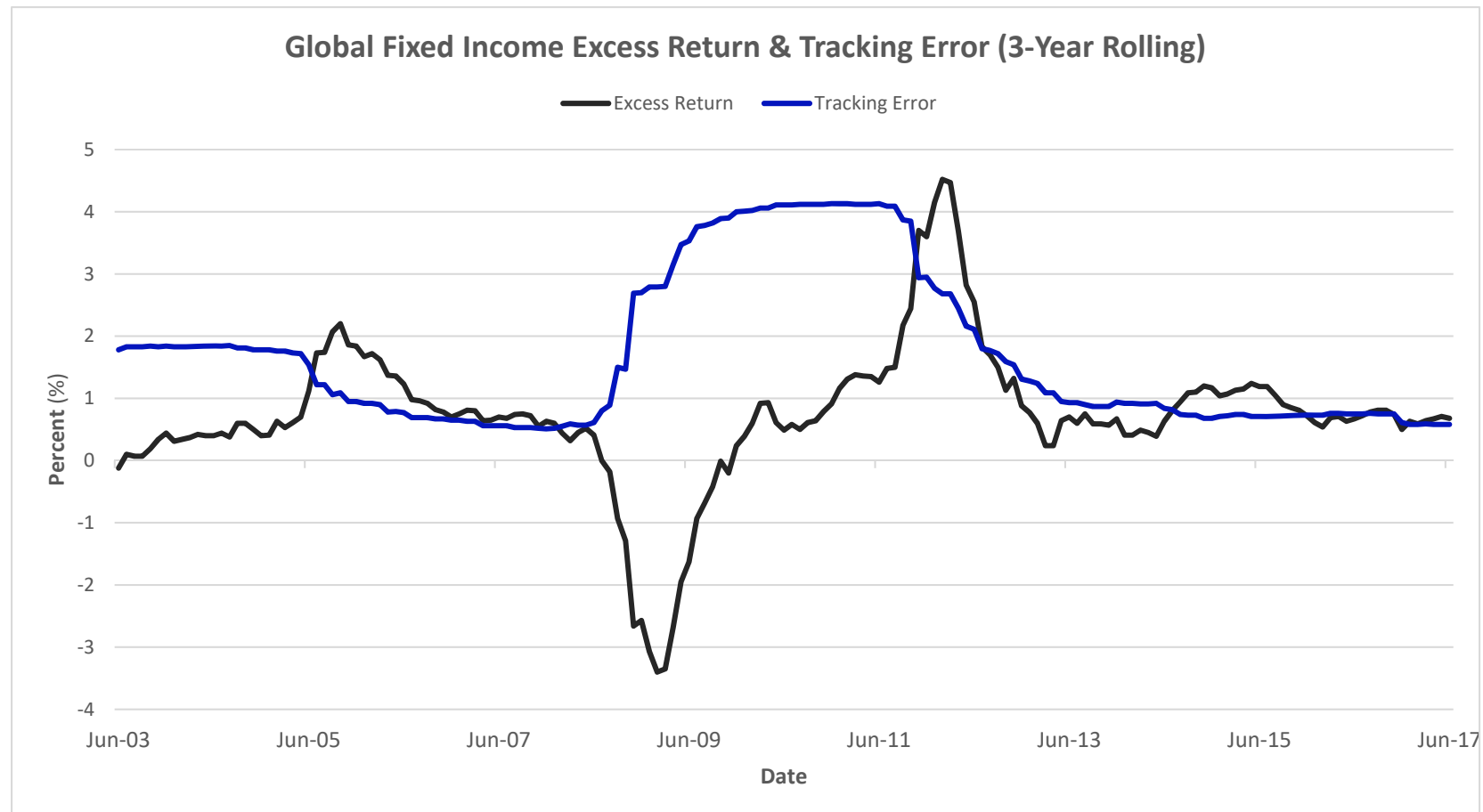
- Recent Performance
 - More challenging market environment for the Global Fixed Income asset class in past year (index down -0.9%)
 - Strong relative results for the GFI Program over the all time periods (> 60 bps excess return target)
- Longer-term performance of 6.5% provides strong contribution to Total Fund return and outperformed benchmark by 0.7%



Global Fixed Income Relative Return and Risk as of June 2017



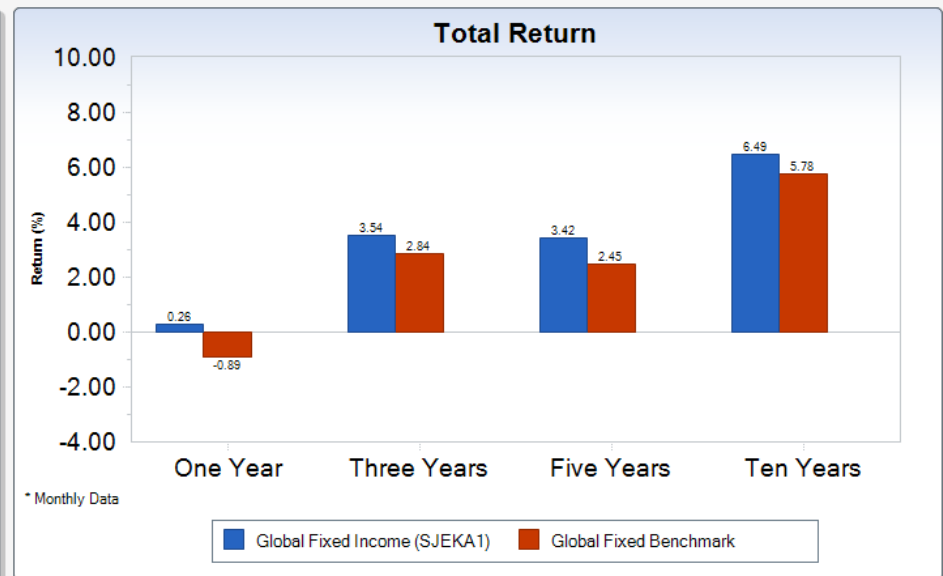
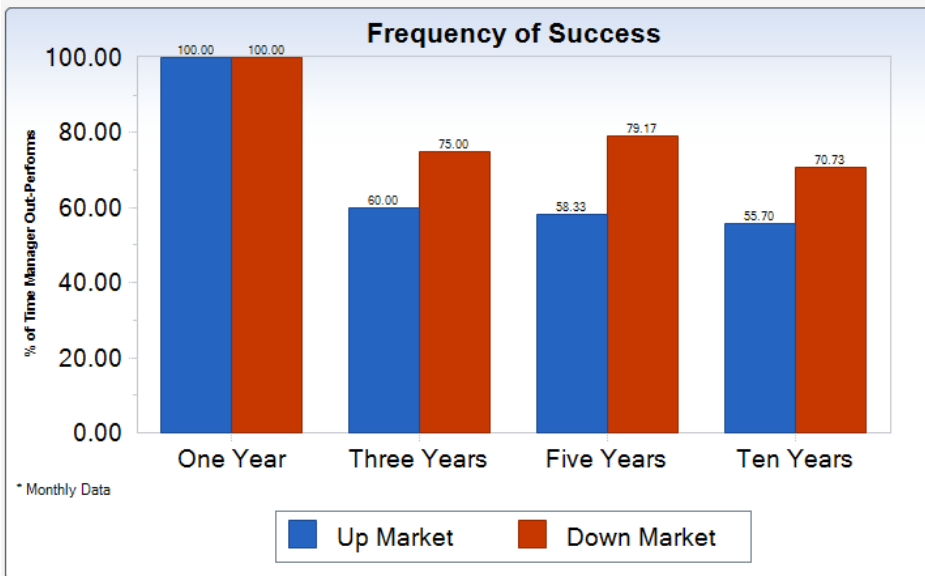
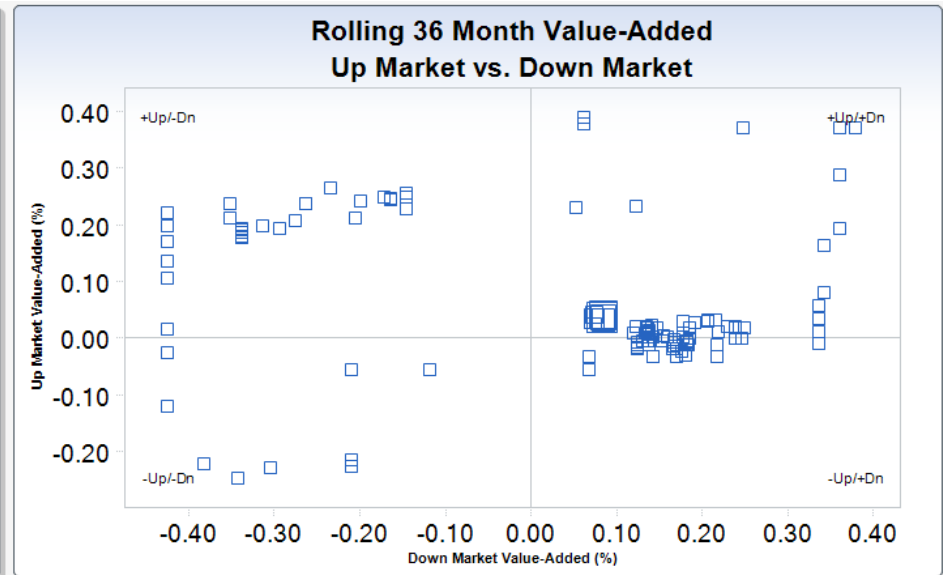
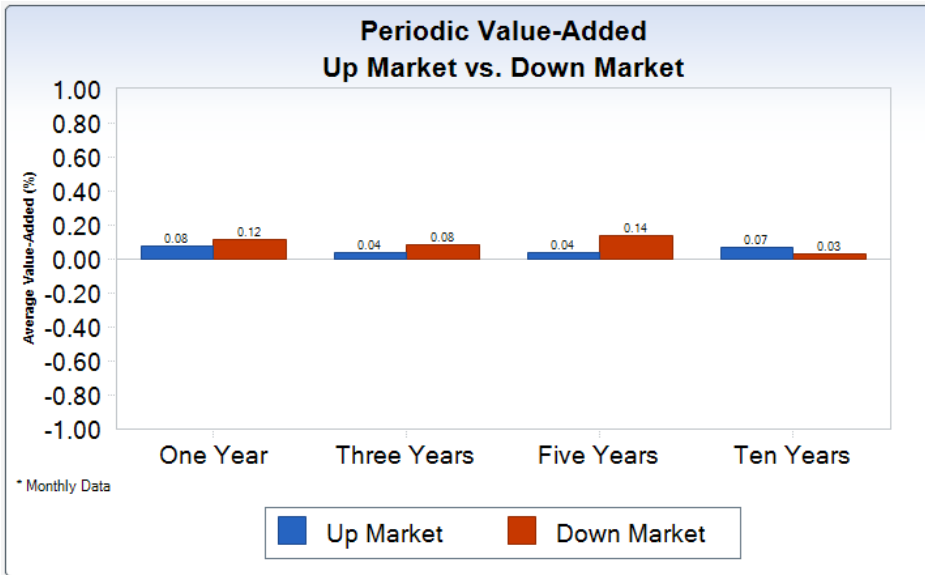
- 3-year rolling excess return and tracking error
 - Excess return consistently positive following financial crisis ranging from 0.4% to 1.2%
 - Tracking error stable and ranging between 0.6% and 1.0% following the recovery from the financial crisis





Up/Down Market Performance

Positive Relative Performance in both up and down markets





Global Fixed Income Program Scores

Total Qualitative Score		2nd
	Wt.	Tier
Organization	20%	4th
FIRM	50%	6th
Quality and Stability of Senior Management		
Quality of Organization		
Ownership/Incentives		
TEAM	50%	3rd
Stability of Investment Professionals		
Quality of Team		
Commitment to Improvement		
Information Gathering	20%	1st
Information Resources		
Depth of Information		
Breadth of Information		
Forecasting	20%	1st
Clear & Intuitive Forecasting Approach		
Repeatable Process		
Strength, Clarity, and Intuitiveness of Valuation Methodology		
Forecasting Success-Atlas		
Unique Forecasting Approach		
Portfolio Construction	20%	1st
Risk Budgeting/Control		
Defined Buy/Sell Discipline		
Consistency of Portfolio Characteristics		
Implementation	10%	2nd
Resources		
Liquidity		
Compliance/Trading/Monitoring		
Attribution	10%	3rd
Depth of Attribution		
Integration of Attribution		

Strong total score ranking in the 2nd decile utilizing Wilshire's manager research scoring framework

- Particularly strong in Information Gathering, Forecasting, and Portfolio Construction
- Broader organizational constraints around long term retention incentives reduces "Firm" score

Global Equity Review



Global Equity Program

- Structured, cost-conscious approach
 - Index-oriented strategies (~60%)
 - Alternative beta (~15%)
 - Internally managed (~80%)

Managed	Index Oriented	Active			Total
		Traditional	Alt Beta	Emerging Managers	
Internally	58.0%	7.6%	13.6%	0.0%	79.3%
Externally	0.0%	18.0%	0.7%	2.1%	20.7%
Total	58.0%	25.7%	14.3%	2.1%	100.0%

- Reduction in number of accounts over time
 - Exited Activist strategies
 - Reduction in external traditional strategies from 49 in FY 2009 to 15 today (a ~70% reduction in < 10 years)



SWOT Analysis – Global Equity Program

Strengths

- Experienced MID
- Experienced Team
- Risk-controlled investment approach
- Strong performance following GFC and proven diversification benefits relative to Global Fixed Income
- Centralized execution platform

Weaknesses

- Organization structure
- Compensation constraints
- Promotion restrictions

Global Equity Program

Opportunities

- Enhancement of Global Equity characteristics related to role in asset allocation
- Providing support and expertise in asset allocation related activities such as “Portfolio Priorities” project and Asset Allocation
- Committee and subcommittee governance structure enhancements

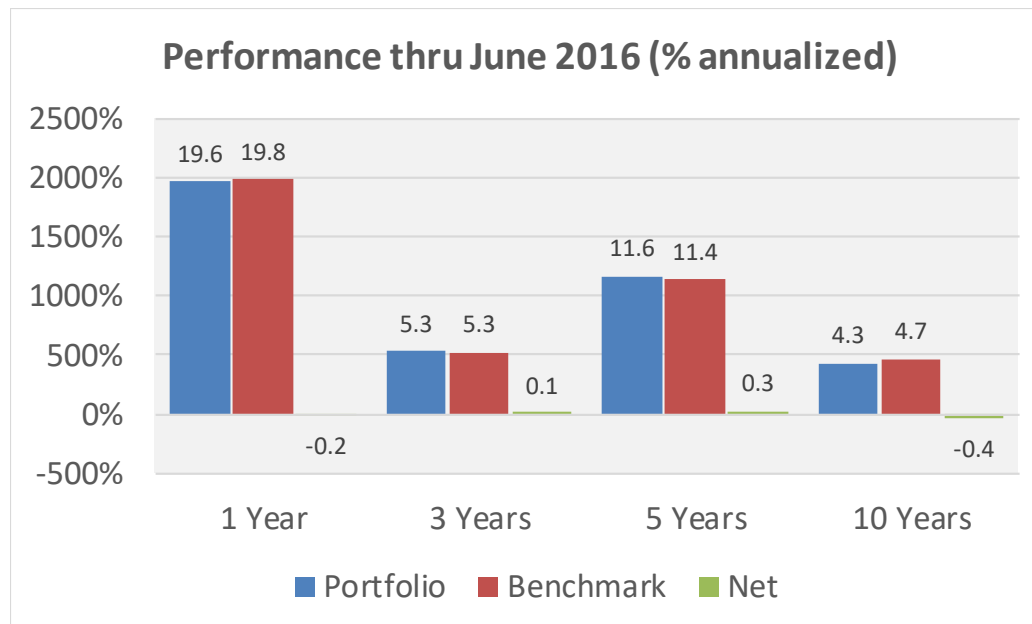
Threats

- Senior turnover and recruiting
- Growing complexity of portfolio concepts such as smart beta and enhancements of Global Equity characteristics
- Additional INVO committee responsibilities



Global Equity Performance

- Recent Performance
 - Positive environment for the Global Equity asset class in past year (index up nearly 20%)
 - Despite negative relative results for the GE Program over the past year, excess returns have exceeded their 15 bps target since the Global Financial Crisis (GFC)
- Longer-term (10 year) relative underperformance continues to reflect significant underperformance during the GFC

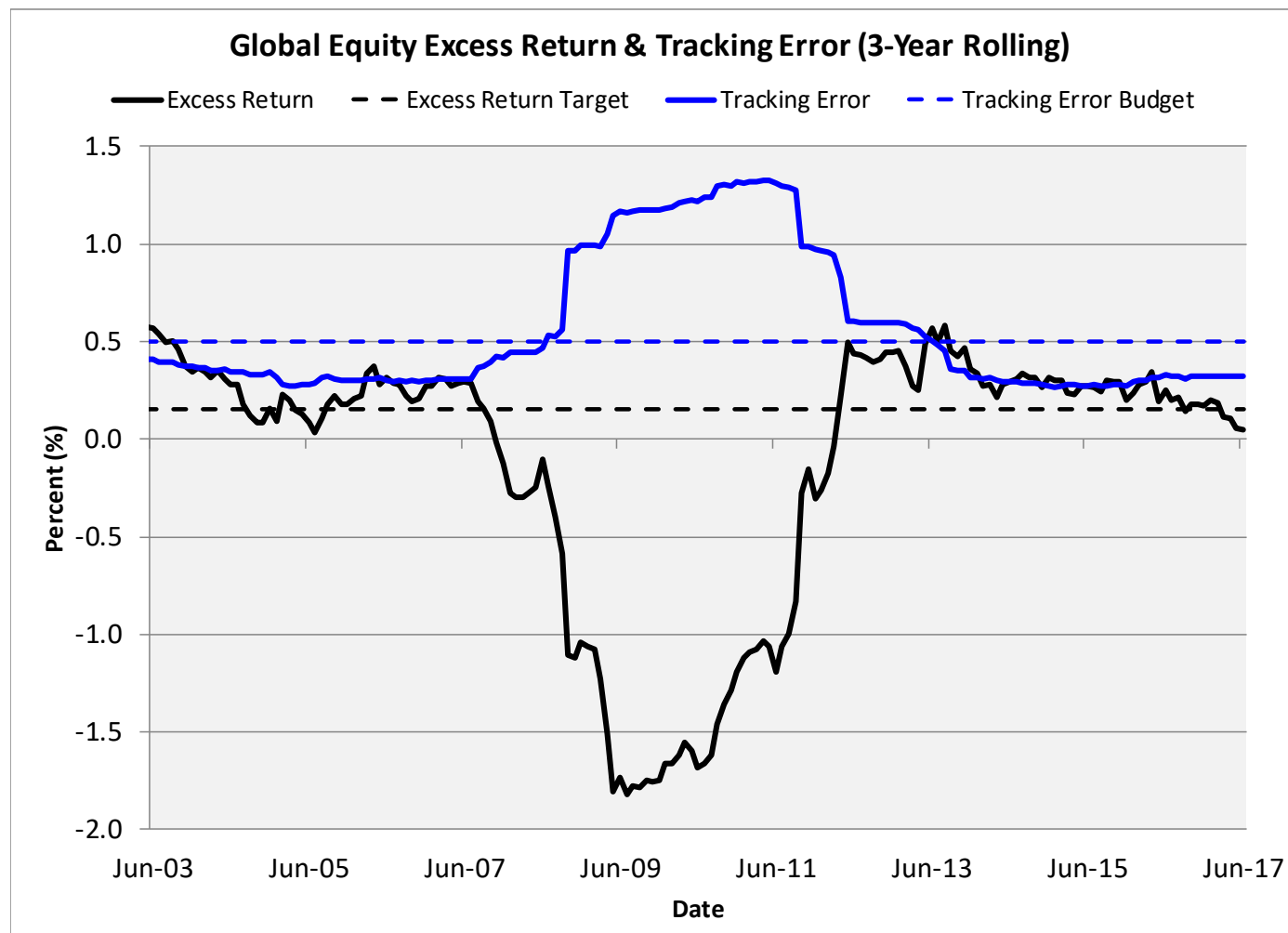


Note that, due to rounding, "Net" figures are not uniformly consistent with the differences in displayed "Portfolio" and "Benchmark" returns.



Global Equity Relative Return and Risk

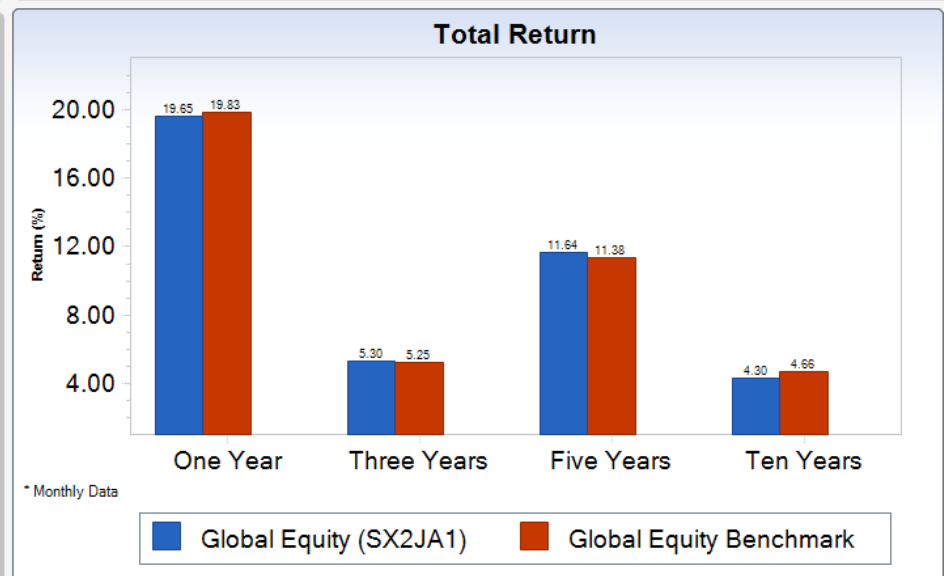
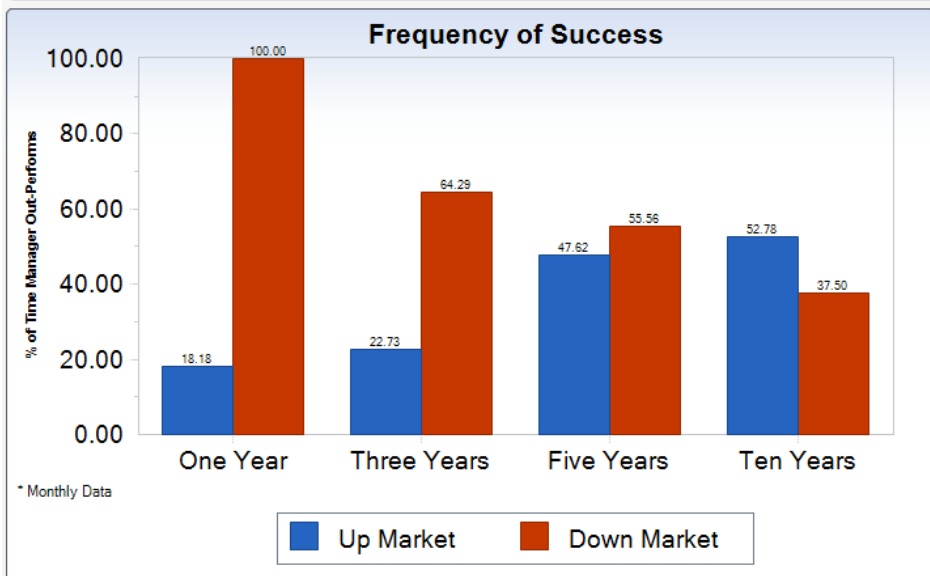
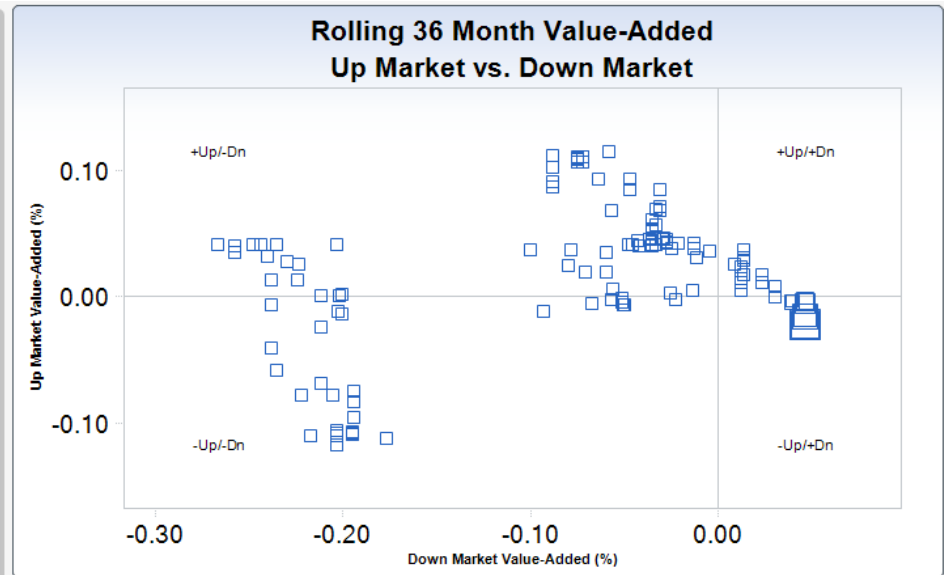
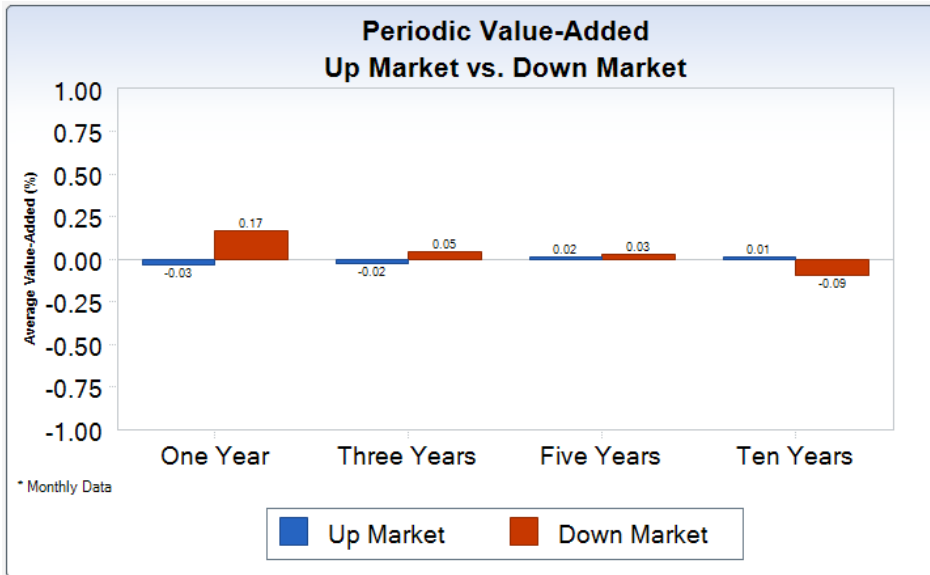
- 3-year rolling excess return and tracking error vs. targets
 - Target excess return = 15 bps (black line)
 - Target tracking error range = 0 to 50 bps (blue line)





Up/Down Market Performance

Enhancements improved return profile during down markets





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Compliance/Trading/Monitoring		
Attribution	10%	1st
Depth of Attribution		
Integration of Attribution		

Strong total score ranking in the 2nd decile utilizing Wilshire’s manager research scoring framework

- Particularly strong in Portfolio Construction, Implementation and Attribution. The Program also scores highly in Information due to its access and use of wide breadth of Information and external partners.
- Broader organizational constraints around long-term retention incentives reduces “Firm” score



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