



Incorporating Non-traditional Reserve Assets Into a Central Bank Portfolio

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BOI Investment Policy Guidelines



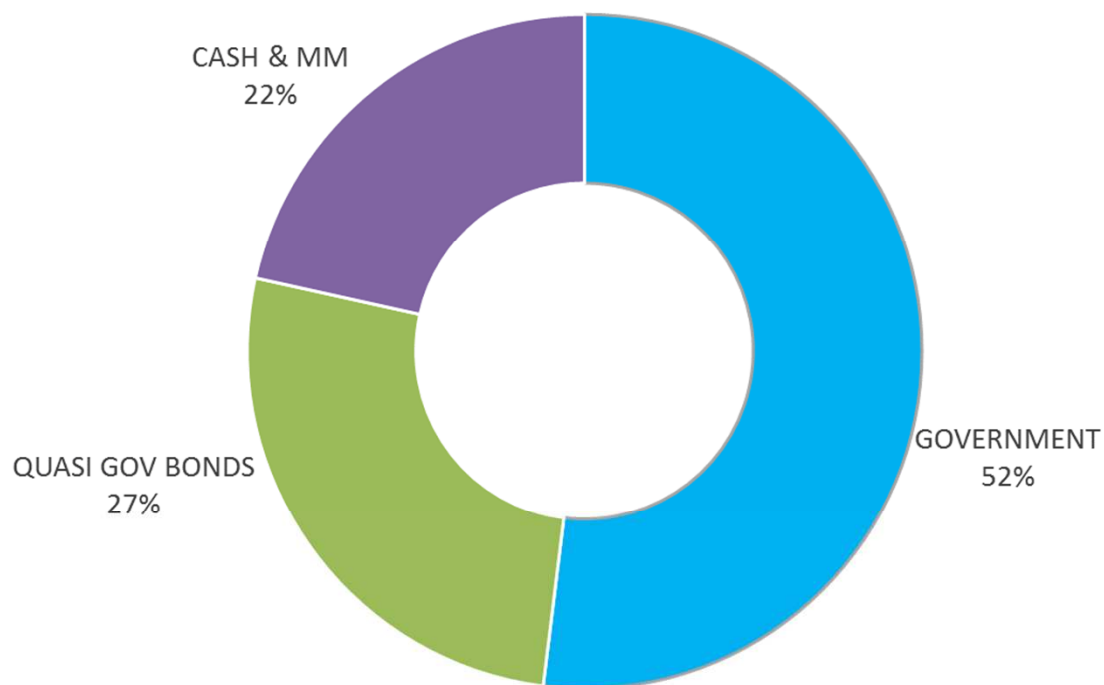
Basic Goals:

1. Maintaining the reserves' purchasing power in numeraire terms
2. Managing the reserves with high liquidity
3. Achieving an appropriate return on the reserves at an acceptable level of risk without having a negative impact on 1 and 2.

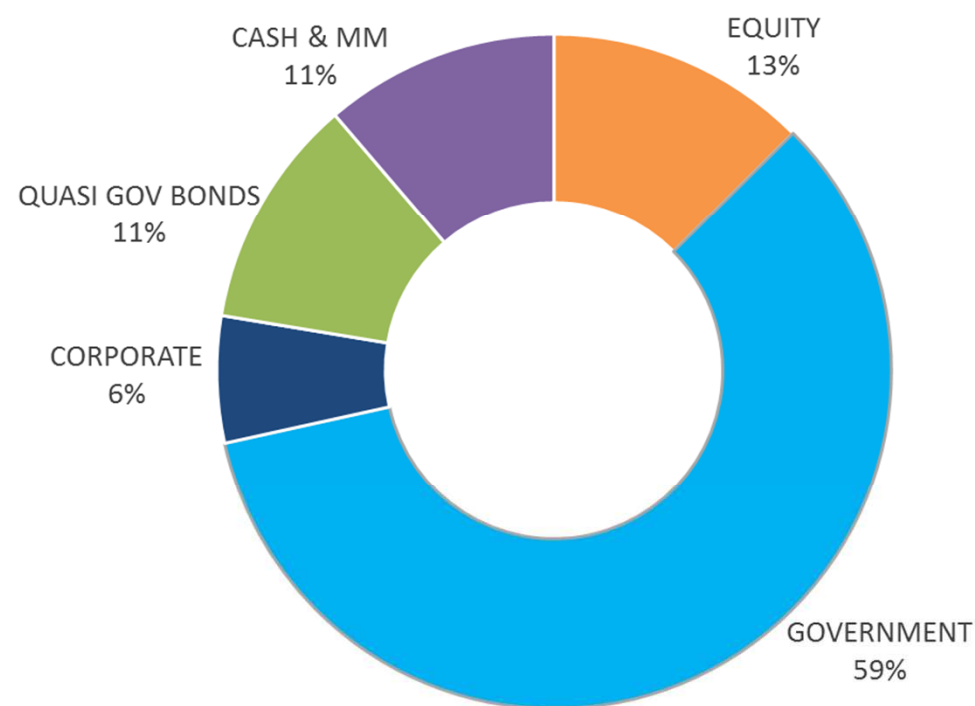
BOI Reserves Portfolio in 2011 vs Today



2011



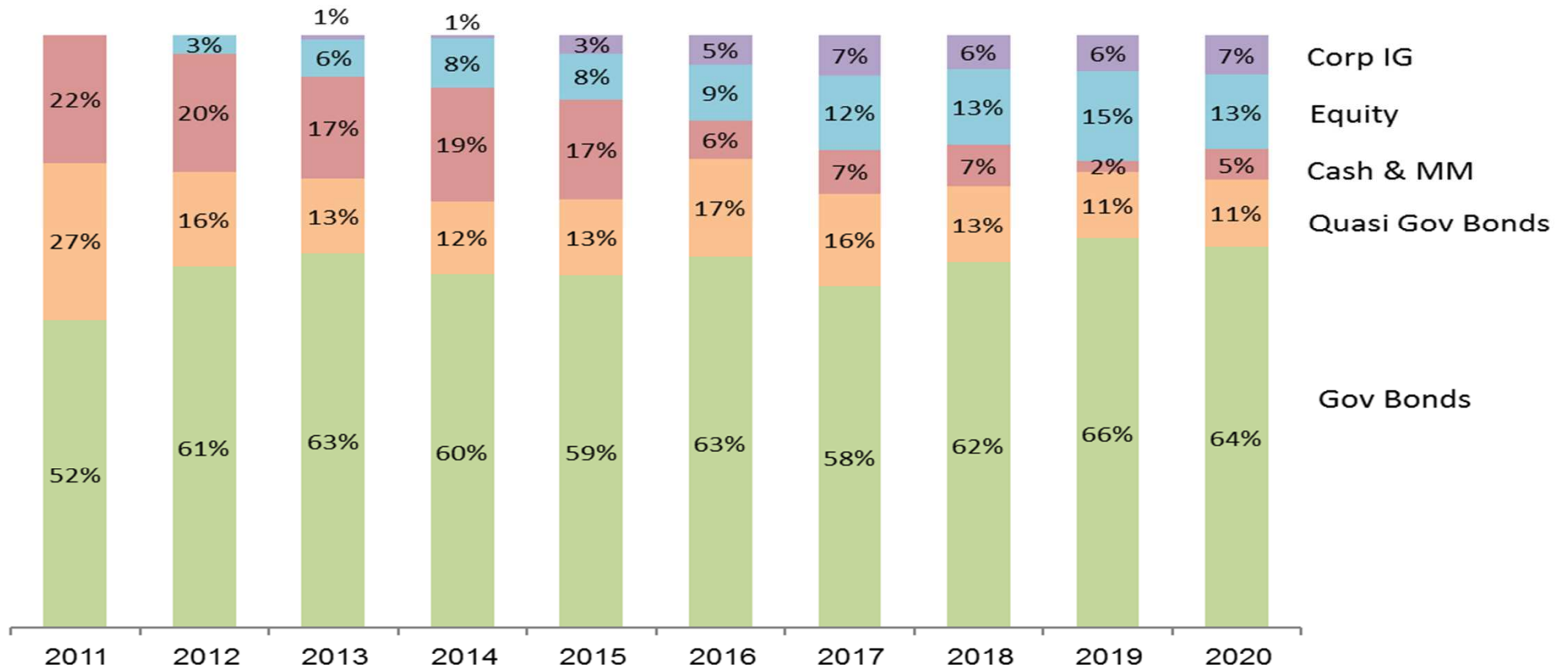
2020



Level of the Reserves



Investment in Less Traditional Assets



Moving into Equities in BOI portfolio

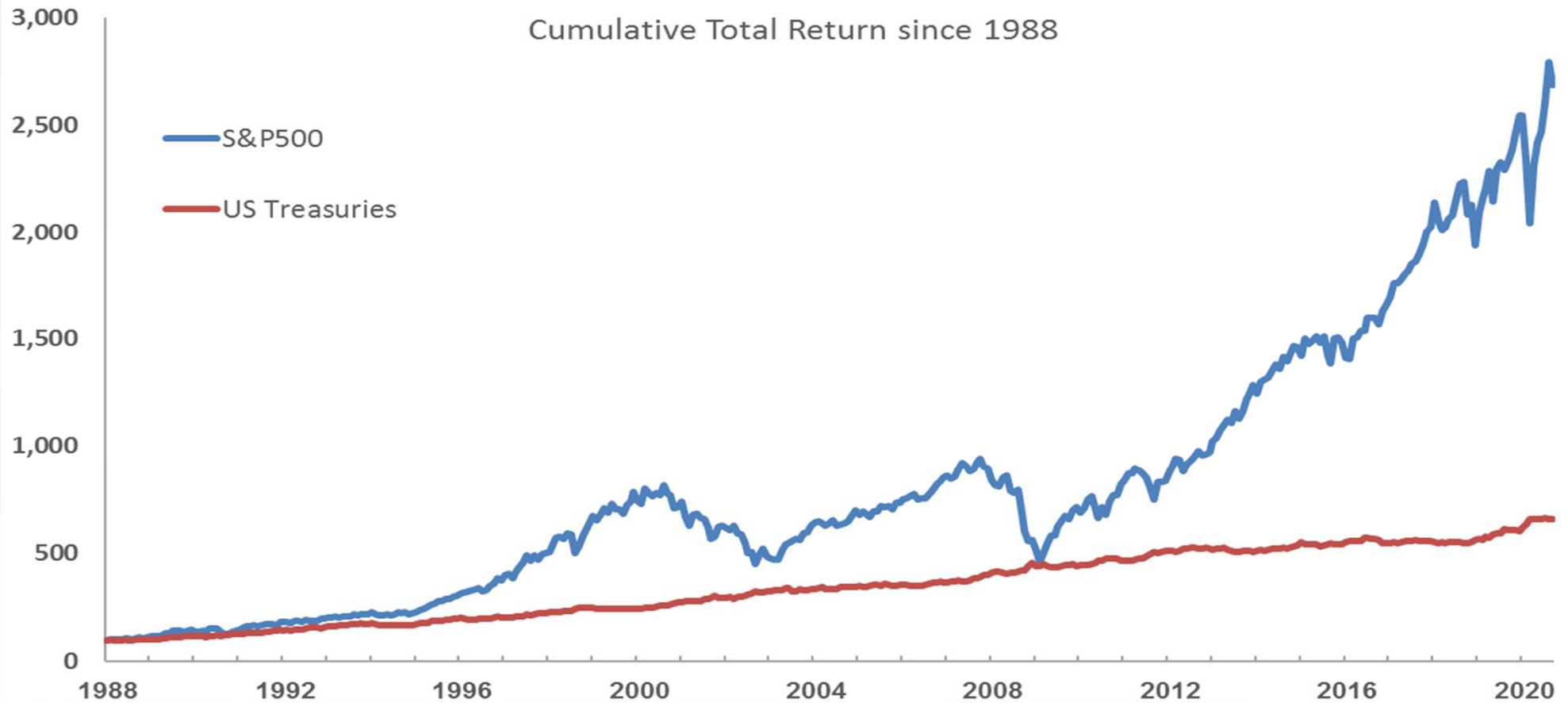


	2020	2019	2018	2017	2016	2015	2014	2013	2012
% of Equity	15.0%	15.0%	12.5%	12.5%	10.0%	8.5%	8.0%	6.0%	3.0%
US	9.2%	9.3%	7.7%	7.2%	4.3%	6.1%	5.4%	4.6%	3.0%
DE	1.4%	0.9%	0.8%	1.5%	3.0%	1.1%	1.2%	0.8%	
FR	1.2%	1.0%	0.8%	0.8%	0.5%	0.0%	0.3%	0.3%	
UK	0.6%	0.9%	0.8%	0.8%	0.5%	0.5%	1.0%	0.6%	
JP	1.2%	1.3%	1.1%	1.1%	0.7%	0.3%			
HK	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%			
KR	0.0%	0.0%	0.0%	0.1%	0.3%	0.3%			
CH	0.4%	0.5%	0.4%	0.4%	0.5%				
CA	0.5%	0.5%	0.4%	0.5%					
AU	0.3%	0.4%	0.3%	0.3%					

Why Equities? The Long Term Equity Premium



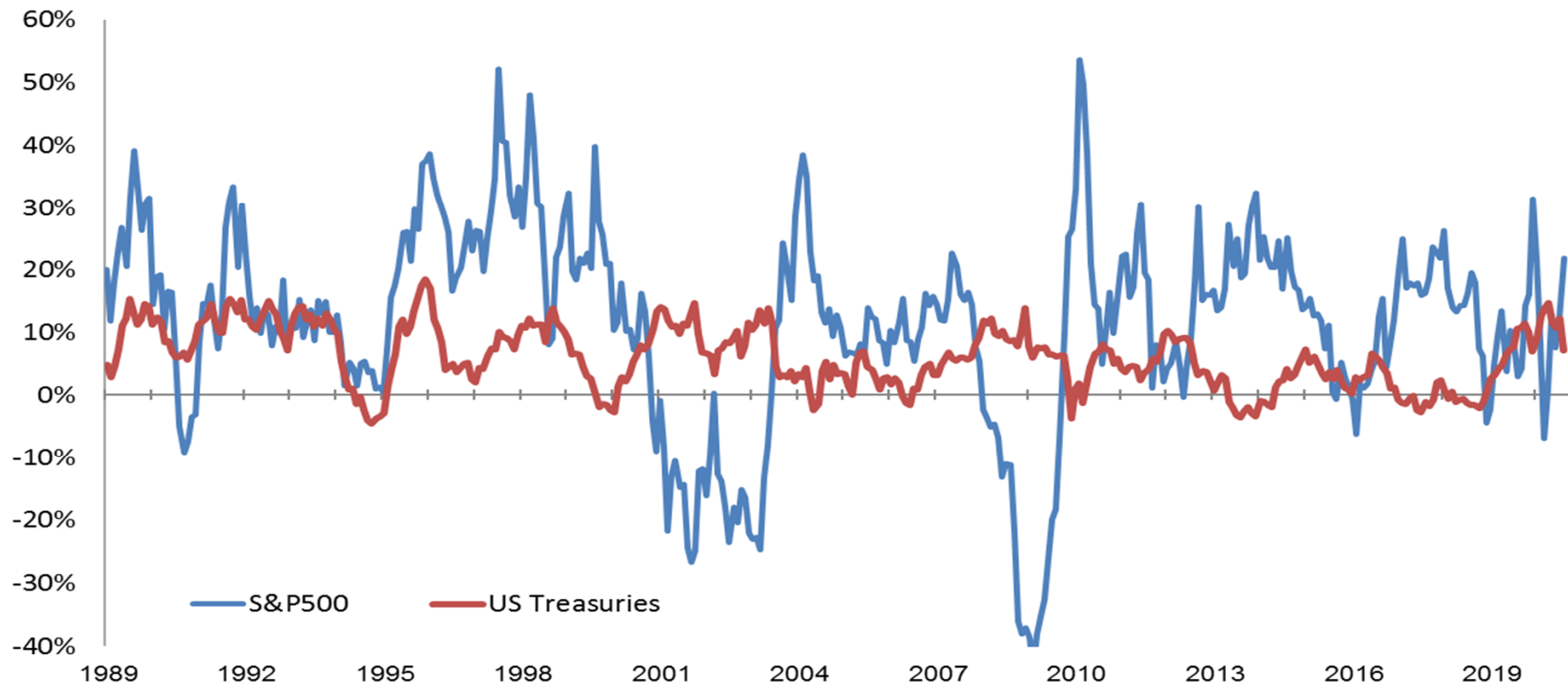
Cumulative Total Return since 1988



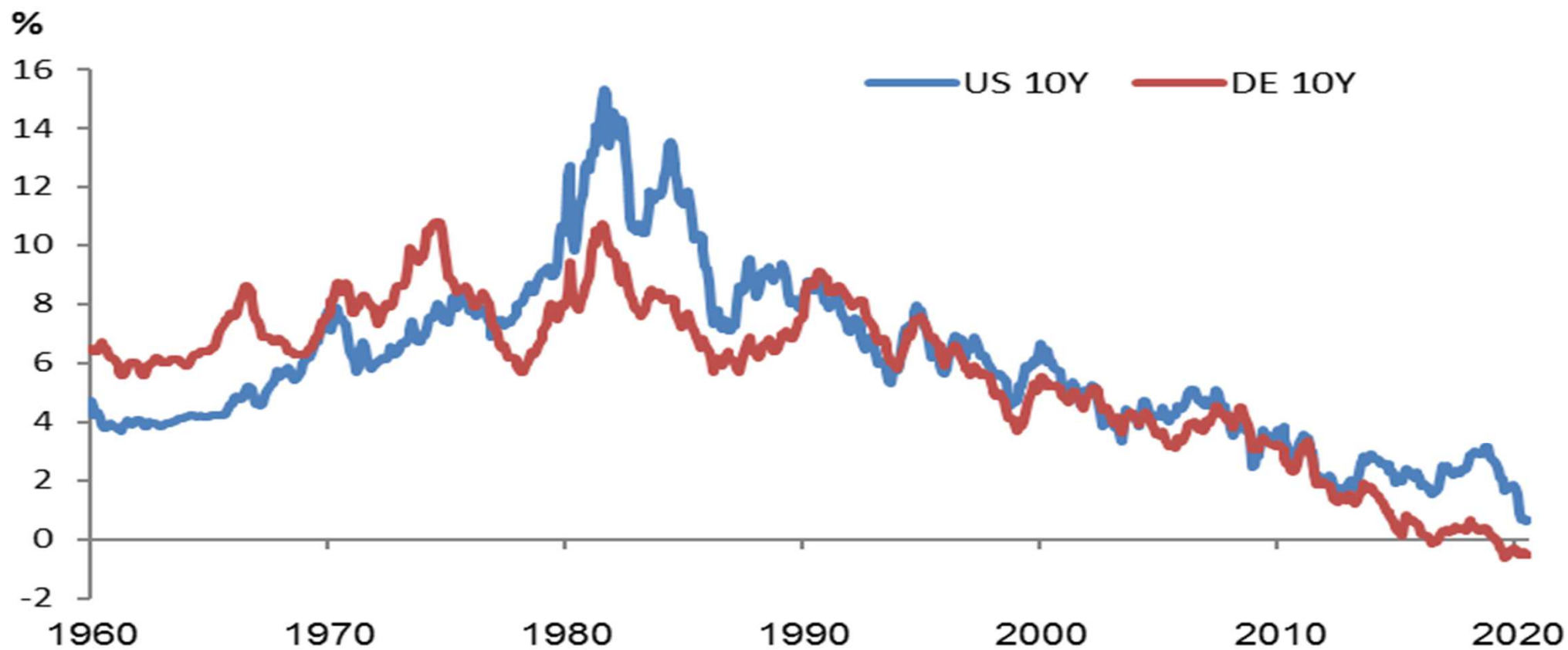
In Short Term Equities Are More Volatile than Bonds



Yearly Rolling 1Y Holding Period Returns



Historical Low Interest Rates Environment

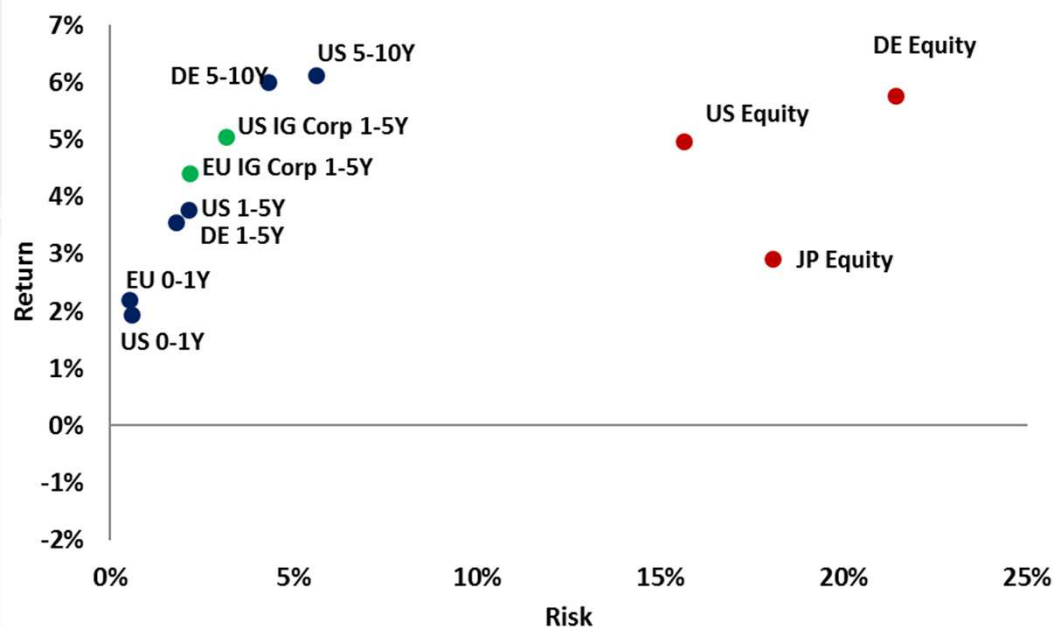


Risk-Return Space has Changed

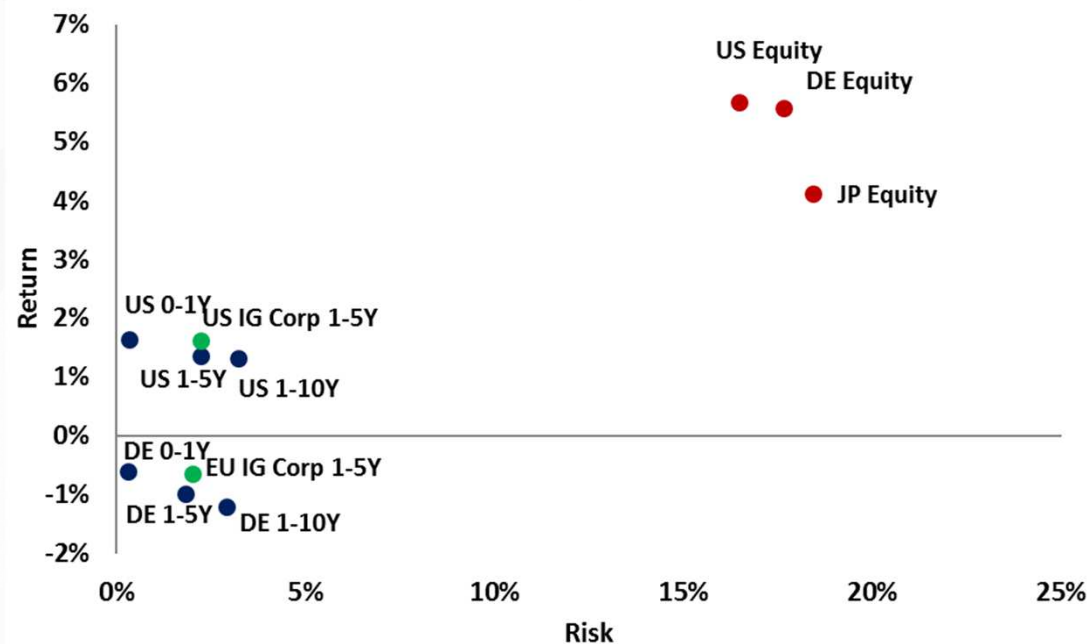


Fixed income was the best risk/return asset – not anymore

Market Risk and Returns 2000- 2015



Blackrock 5 Year Projection (from Q3 2019)

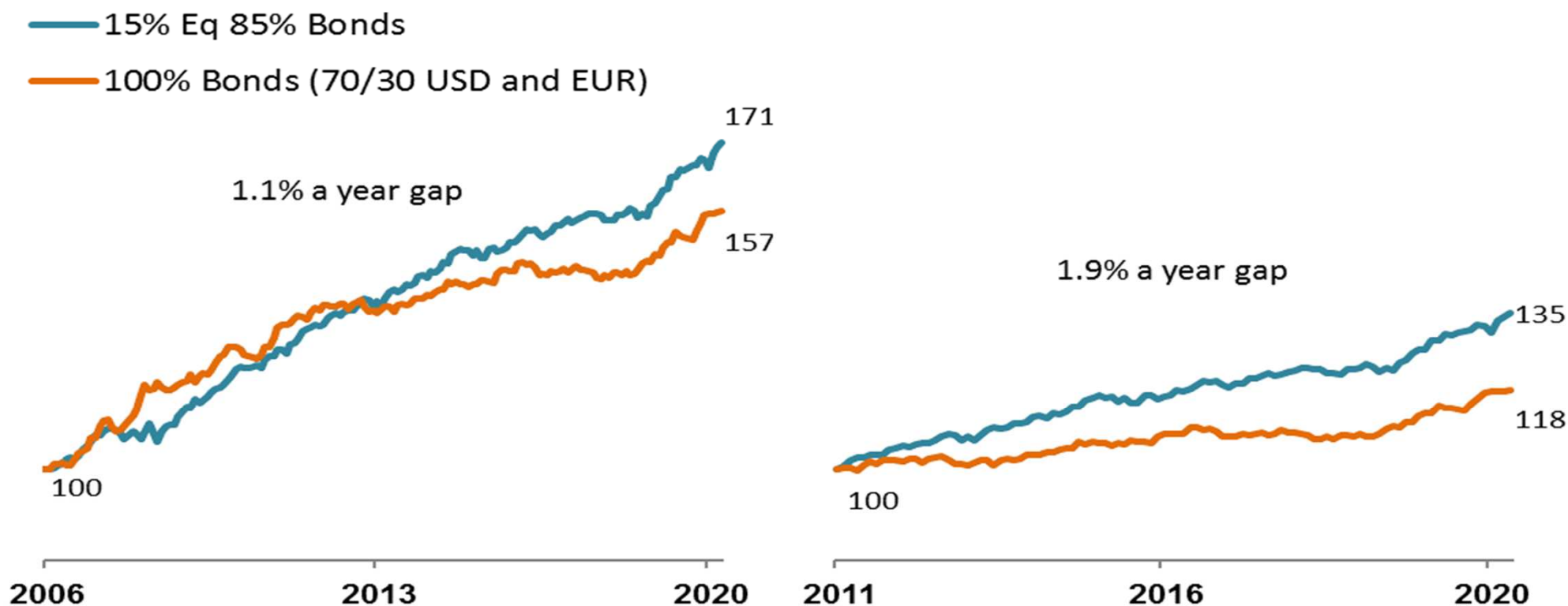


Cumulative Return of Conservative Portfolio vs 15% Equity Portfolio



2006-2020

2011-2020



Distribution of Returns for Different Portfolios and Horizons

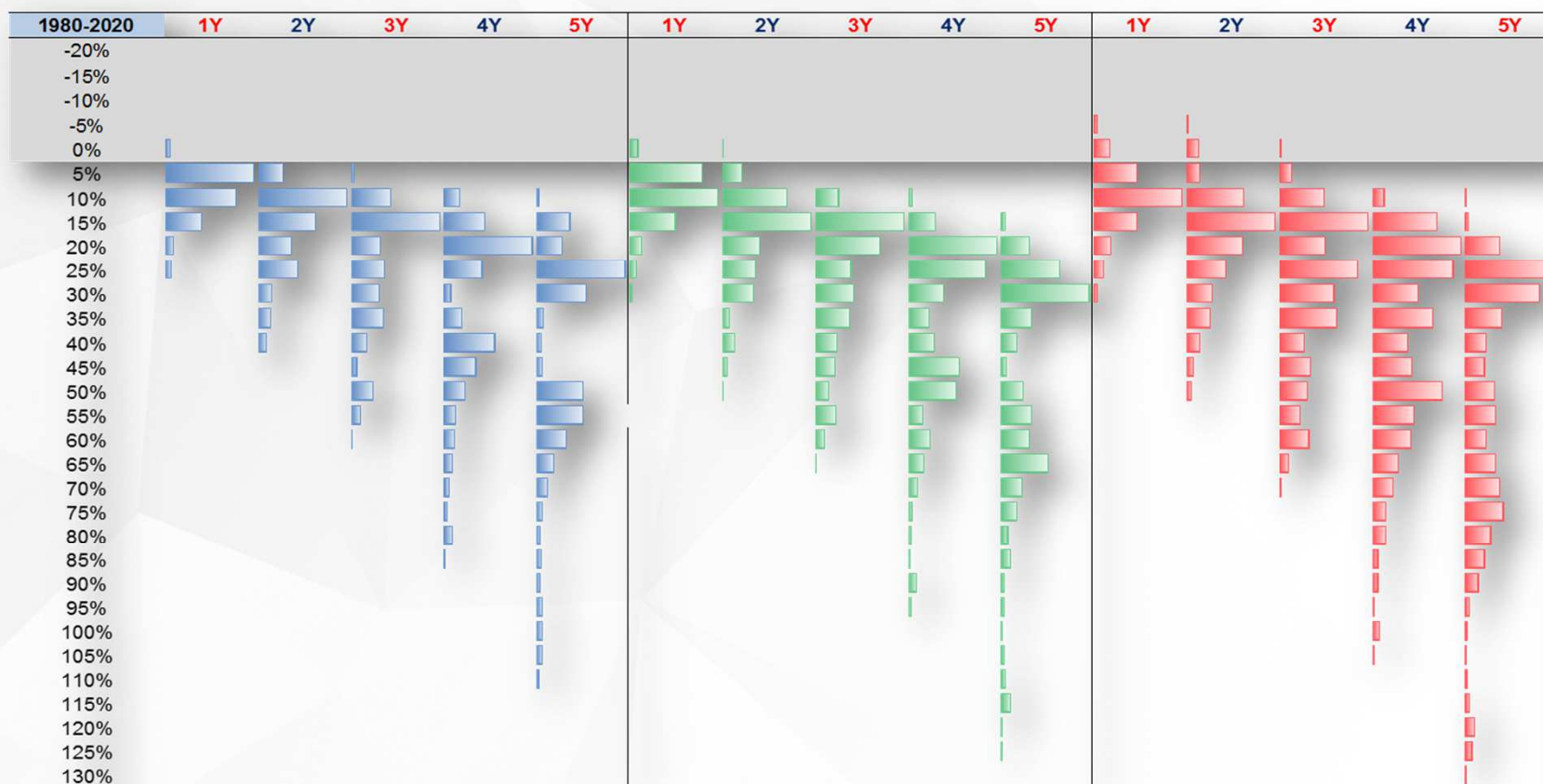
Sample: 1980-2020



Portfolio A: G1-5, E15%, C6%

Portfolio B: G1-10, E20%, C6%

Portfolio C: G1-10, E30%, C6%



Returns and Correlations



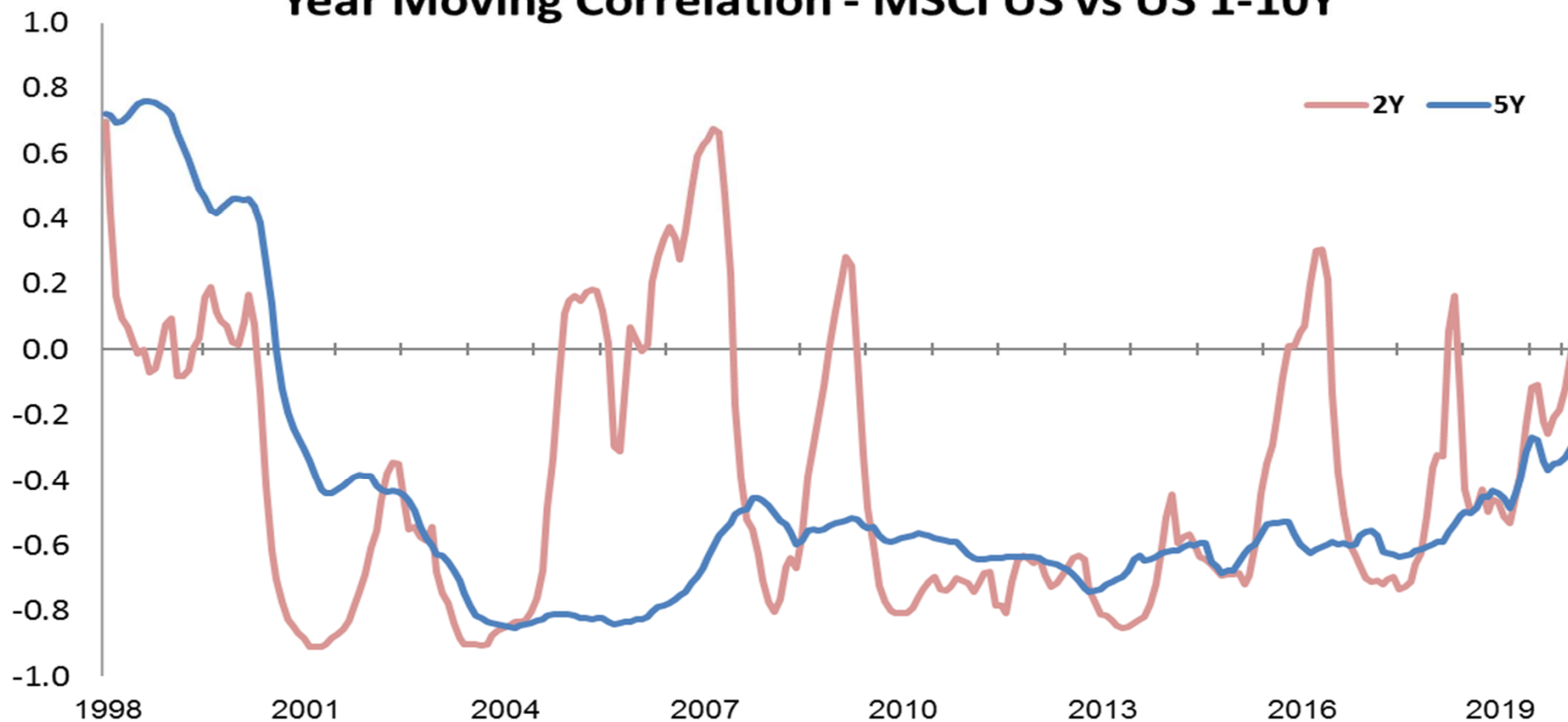
Correlations, Volatility and Returns - Yearly Rolling Since 1993

	US BILLS	US 1-10	US IG 1-5	US HY	MSCI US
US BILLS	1	0.55	0.32	-0.18	0.06
US 1-10		1	0.58	-0.16	-0.27
US IG 1-5			1	0.61	0.21
US HY				1	0.63
MSCI US					1
AVG Return	2.6%	4.6%	5.1%	7.9%	11.2%
STDEV	2.1%	3.7%	3.8%	11.1%	16.8%

Long Term Negative Correlation for Equity vs Bonds Seems to Weaken



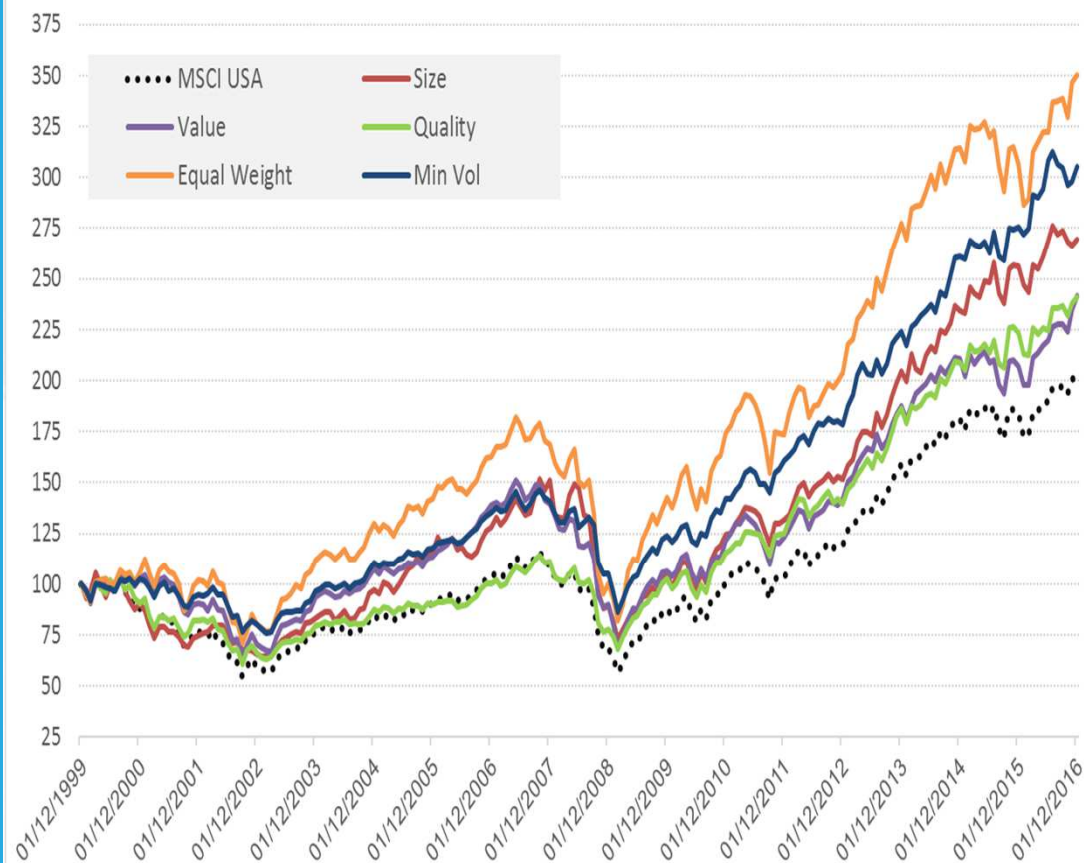
Year Moving Correlation - MSCI US vs US 1-10Y



Smart Beta?



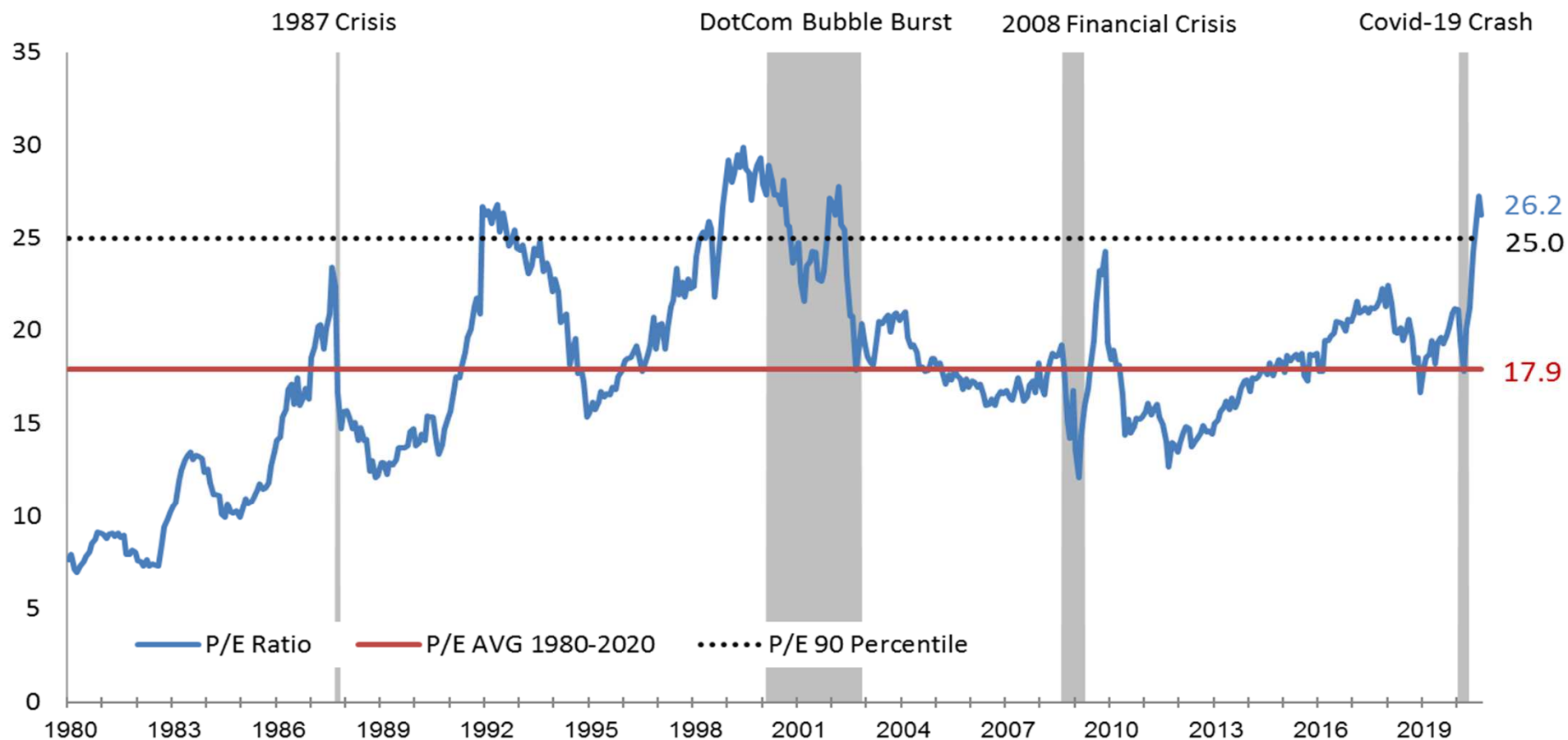
Total Return, US Indices 2000-2016



Total Return, US Indices 2017-2020



S&P500 P/E Ratio – Are Equities Becoming More Expensive?



Do Equity Fit The Culture of a Central Bank?

