Callan

May 2021

Colorado Public School Permanent Fund

First Quarter 2021 Performance Review

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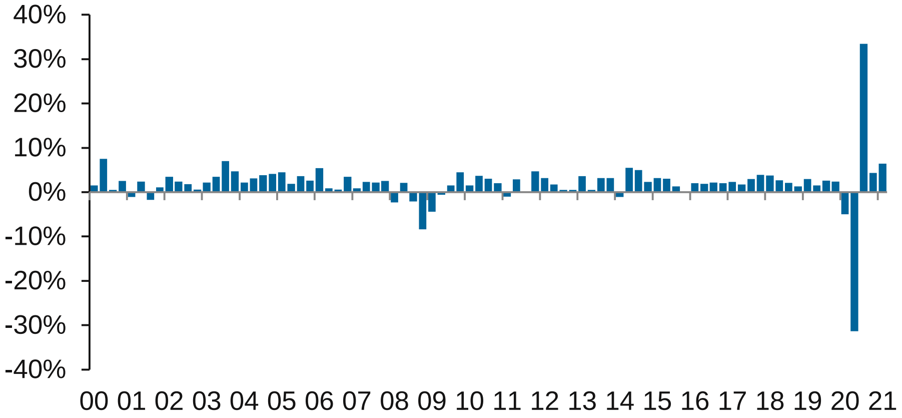
Callan

Market Overview

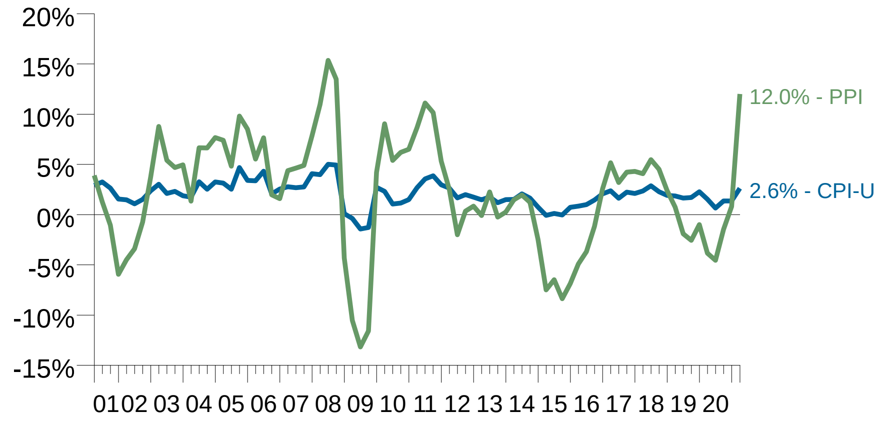
U.S. Economy—Summary

For periods ended March 31, 2021

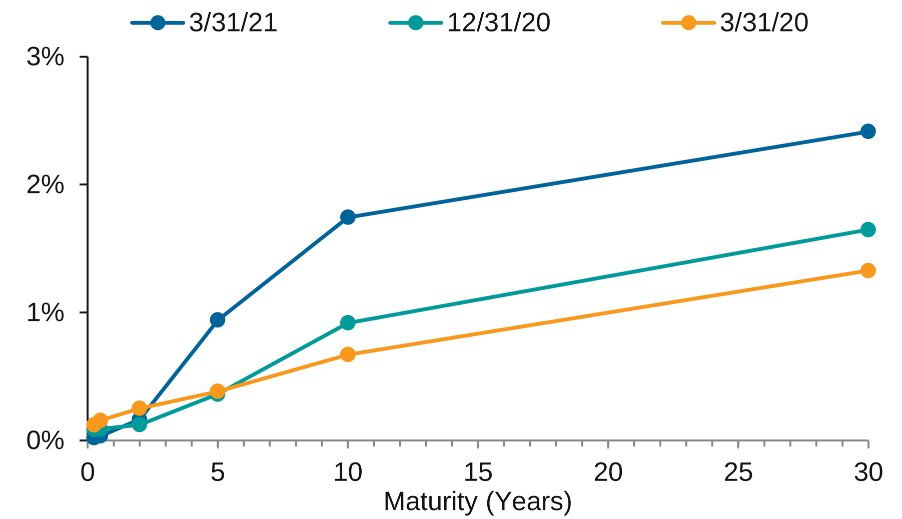
Quarterly Real GDP Growth*



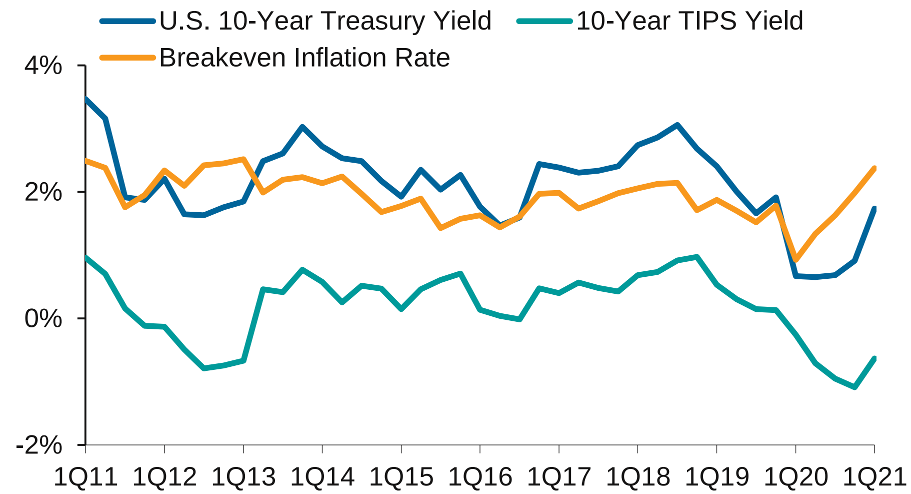
Inflation Year-Over-Year



U.S. Treasury Yield Curves



Historical 10-Year Yields



*Advanced estimate for 1Q21. Sources: Bloomberg, Bureau of Labor Statistics, Callan, IHS Markit

Market Environment: 1Q21

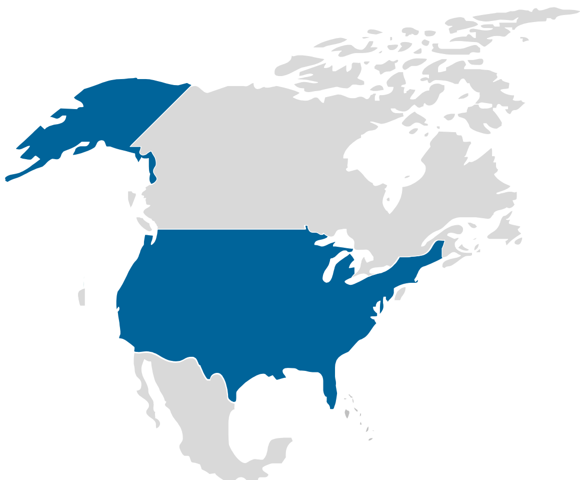
Growth worldwide with uncertainty coming from uneven vaccine rollout

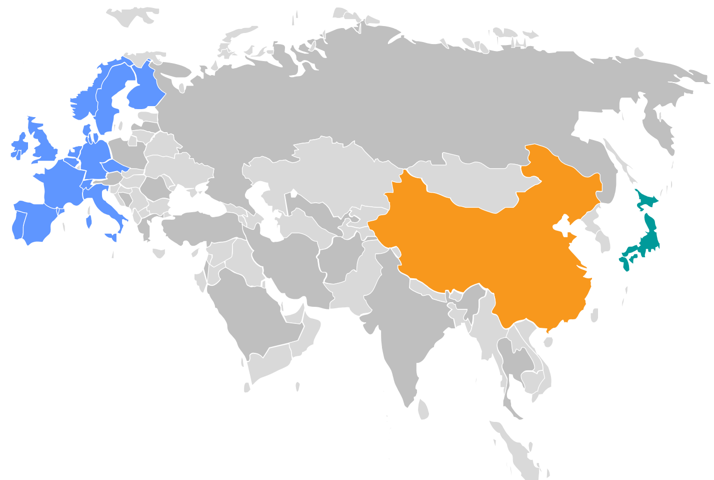
U.S.

- 2020 GDP loss of 3.5% for the year is the deepest recession in 75 years. Fed expects 6.5% growth in 2021.
- Retail sales, durable goods, and personal spending rebounded late in 2020 and 1Q21 following the vaccine announcement and passage of new stimulus.
- Unemployment dropped to 6.0% in March, with an eye-popping 916,000-job gain.
  - Jobless claims decelerated to less than 1 million per week but are still elevated relative to prior recession peaks.
- Housing benefiting from relatively low mortgage rates
- Fed left rates close to 0% and expects to be on hold until 2023.

Global

- Euro zone GDP contracted 4.9% in 2020, after shrinking by 2.4% in 2019.
- U.K. GDP sank 7.3% in 2020—most ever, struck by the double-whammy of the pandemic and Brexit.
- Japan’s economy shrank 4.8% in 2020, continuing a decline that began in 4Q19.
- China’s GDP grew 2.3% in 2020, one of the few countries to see positive growth. 1Q21 growth inched up just 0.6%, far below expectations.

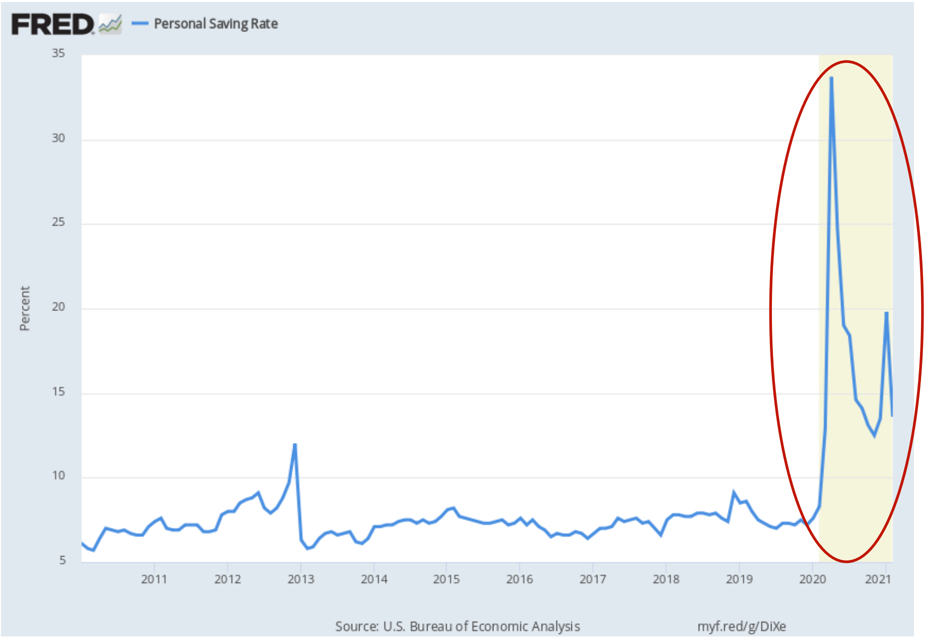




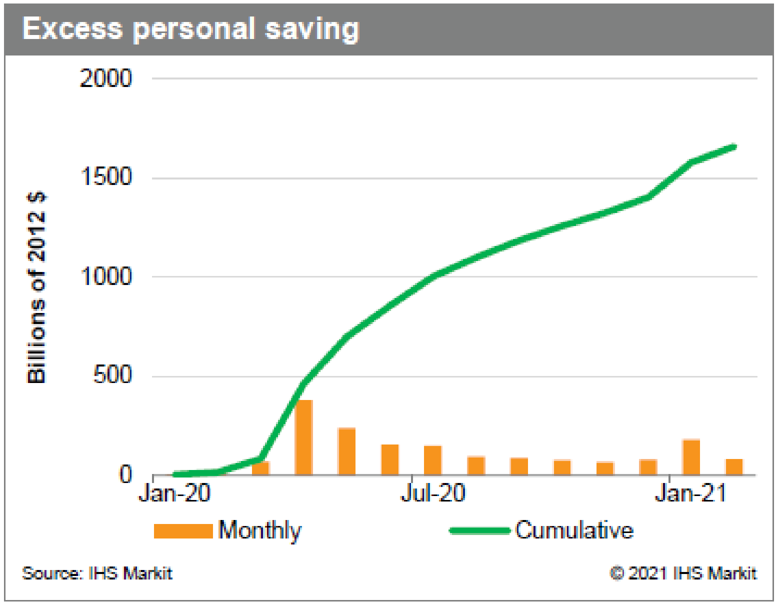
Liquidity Supporting Economy (and Driving Markets)

Consumers = more money, fewer problems; investors = dry powder abundant

U.S. Personal Savings Rate



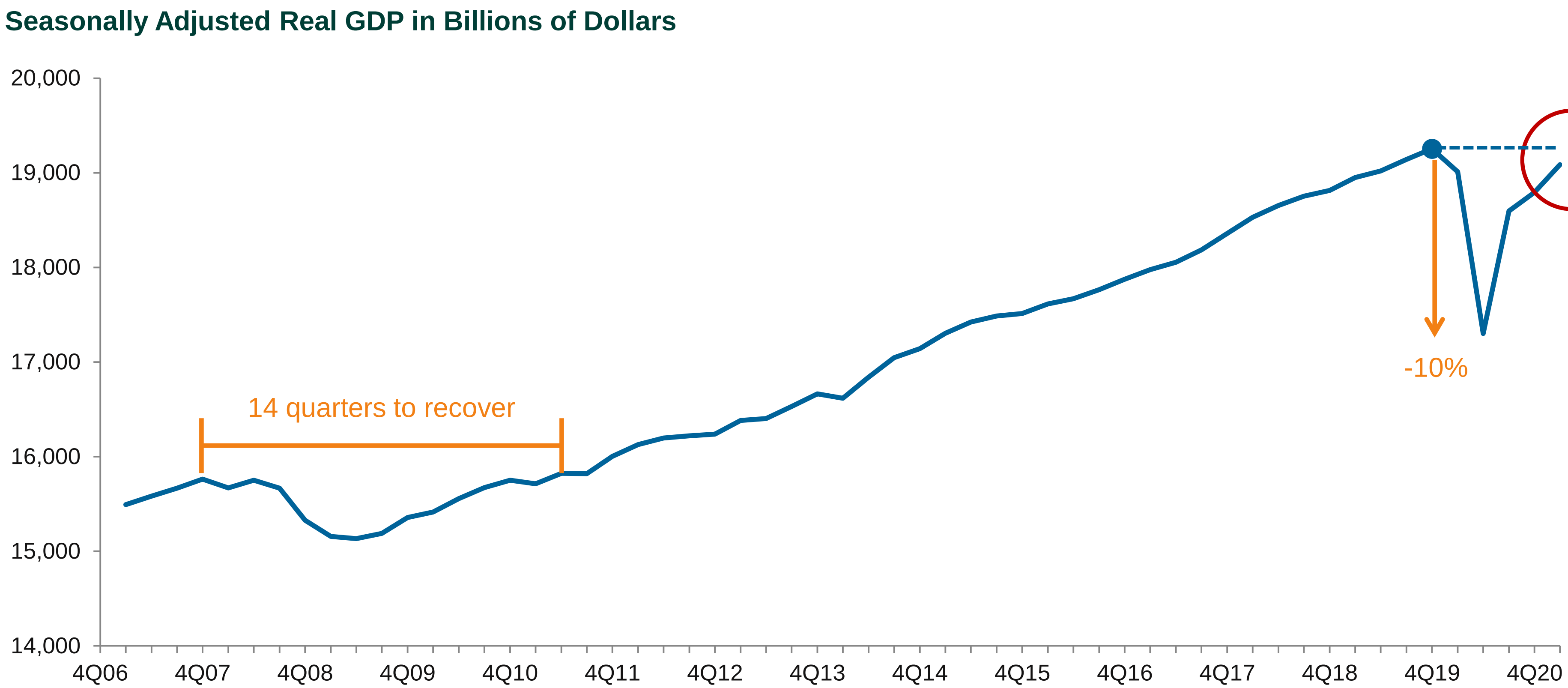
Excess Personal Saving



- U.S. personal savings rate far exceeds levels seen in the post-WWII era; shot up to 34% last April, spiked again to 20% with new lockdowns imposed at the end of 2020.
  - Savings usually FALLS in a recession. Disposable income rose under congressional pandemic relief measures, and state and local government restrictions on activities hindered spending.
- Excess savings will insulate consumer spending during economic wobbles and through the winding down of fiscal stimulus.
  - Rapid depletion of excess savings could goose GDP and spur short-term inflation; consumer theory and experience following WWII suggests a modest increase in consumption.

Excess savings = savings in excess of the 7.4% average savings rate for the year prior to the pandemic; calculation performed by IHS Markit
Sources: Federal Reserve, IHS Markit

GDP Will Recover Pre-Pandemic Level in 2021 After Deepest Drop in 75 Years



- After the Global Financial Crisis, it took 3.5 years before real GDP reclaimed its pre-recession highs.
- GFC peak to trough was down 4%.
- 2Q20 real GDP level was down over 10% from 4Q19, annual GDP declined 3.5% over 2019.
- Second half 2020 GDP rose 8.6%; GDP at end of 4Q20 was down only 2.4% from the level set in 4Q19.
- Pre-pandemic peak level of GDP likely to be reached in 2Q21 (forecast by IHS Markit)

Source: St. Louis FRED.

Callan Periodic Table of Investment Returns

Cumulative Returns Ending March 31, 2021						Monthly Returns		
Last Quarter	**Last Year**	**Last 3 Years**	**Last 5 Years**	**Last 7 Years**	**Last 10 Years**	**Jan 2021**	**Feb 2021**	**Mar 2021**
Small Cap Equity **12.70%**	Small Cap Equity **94.85%**	Large Cap Equity **16.78%**	Small Cap Equity **16.35%**	Large Cap Equity **13.59%**	Large Cap Equity **13.91%**	Small Cap Equity **5.03%**	Small Cap Equity **6.23%**	Large Cap Equity **4.38%**
Large Cap Equity **6.17%**	Emerging Market Equity **58.39%**	Small Cap Equity **14.76%**	Large Cap Equity **16.29%**	Small Cap Equity **11.05%**	Small Cap Equity **11.68%**	Emerging Market Equity **3.07%**	Real Estate **3.70%**	Real Estate **2.85%**
Real Estate **5.80%**	Large Cap Equity **56.35%**	High Yield **6.84%**	Emerging Market Equity **12.07%**	Emerging Market Equity **6.58%**	High Yield **6.48%**	High Yield **0.33%**	Large Cap Equity **2.76%**	Dev ex-U.S. Equity **2.55%**
Dev ex-U.S. Equity **4.04%**	Dev ex-U.S. Equity **45.86%**	Emerging Market Equity **6.48%**	Dev ex-U.S. Equity **8.92%**	High Yield **5.42%**	Real Estate **5.73%**	U.S. Fixed Income **-0.72%**	Dev ex-U.S. Equity **2.55%**	Small Cap Equity **1.00%**
Emerging Market Equity **2.29%**	Real Estate **34.65%**	Dev ex-U.S. Equity **6.34%**	High Yield **8.06%**	Real Estate **4.90%**	Dev ex-U.S. Equity **5.21%**	Real Estate **-0.81%**	Emerging Market Equity **0.76%**	High Yield **0.15%**
High Yield **0.85%**	High Yield **23.72%**	Real Estate **5.06%**	Real Estate **3.86%**	Dev ex-U.S. Equity **4.75%**	Emerging Market Equity **3.65%**	Large Cap Equity **-1.01%**	High Yield **0.37%**	U.S. Fixed Income **-1.25%**
U.S. Fixed Income **-3.37%**	Global ex-U.S. Fixed Income **7.15%**	U.S. Fixed Income **4.65%**	U.S. Fixed Income **3.10%**	U.S. Fixed Income **3.31%**	U.S. Fixed Income **3.44%**	Global ex-U.S. Fixed Income **-1.03%**	U.S. Fixed Income **-1.44%**	Emerging Market Equity **-1.51%**
Global ex-U.S. Fixed Income **-5.29%**	U.S. Fixed Income **0.71%**	Global ex-U.S. Fixed Income **1.15%**	Global ex-U.S. Fixed Income **2.13%**	Global ex-U.S. Fixed Income **0.91%**	Global ex-U.S. Fixed Income **1.26%**	Dev ex-U.S. Equity **-1.07%**	Global ex-U.S. Fixed Income **-1.94%**	Global ex-U.S. Fixed Income **-2.42%**

Sources: ● Bloomberg Barclays Aggregate ● Bloomberg Barclays Corp High Yield ● Bloomberg Barclays Global Aggregate ex US ● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

U.S. Equity Performance: 1Q21

New market peaks in year of the pandemic

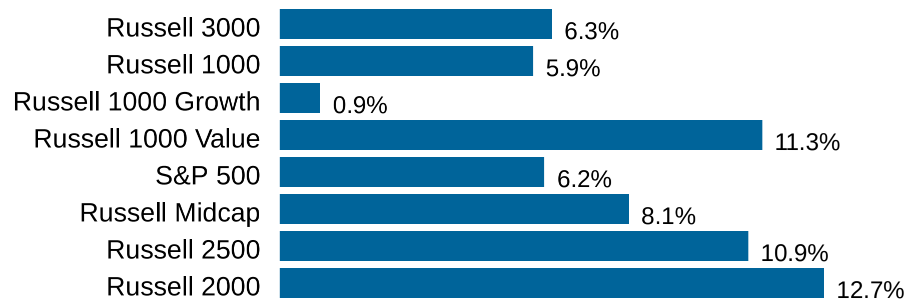
Markets continue setting all-time highs

- The S&P 500 Index hit record highs in 1Q21, gaining 6.2%.
  - Since the prior peak (February 2020) the S&P is up over 19.6%, with only Energy (-4.7%) and Utilities (-4.9%) declining from peak-to-peak.
  - Since March 2020 market low, S&P up over 80.7%, with all sectors posting gains over 40%; Energy +116.2%
  - 1Q21 top sectors were Energy and Financials, while Industrials and Consumer Staples underperformed.
  - "Re-opening" industries (airlines, retail REITs, hospitality) outperformed while "work from home" industries (online retail, home improvement) lagged.

Value and small cap trends continued through 1Q21

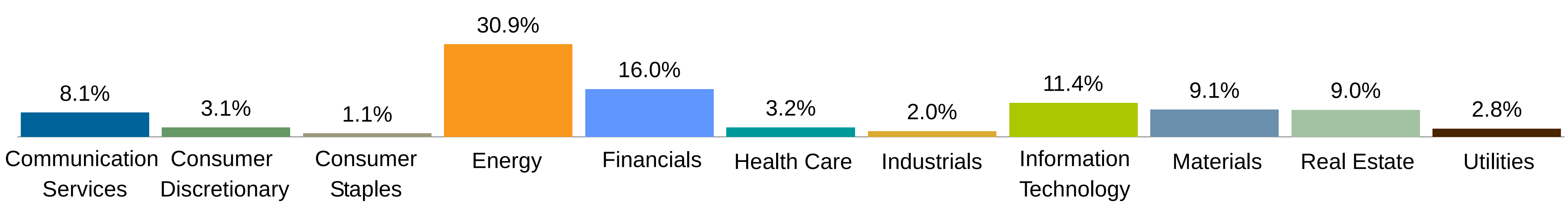
- Value outperformed growth across the market cap spectrum.
- Small caps outperformed large in 1Q.
- Small value was the top-performing asset class for the quarter (+21.2%) and from the March 2020 low (+127.7%).

U.S. Equity: Quarterly Returns



U.S. Equity: One-Year Returns

Industry Sector Quarterly Performance (S&P 500)



Sources: FTSE Russell, S&P Dow Jones Indices

Global ex-U.S. Equity Performance: 1Q21

Nearly 100 million people fully vaccinated worldwide

– Markets responded positively to the global rollout of the COVID-19 vaccine.

– Most risk assets continued to outperform as global businesses reopen.

– Small cap outperformed large over the quarter on continued economic optimism.

– Emerging markets trailed developed markets; COVID-19 outbreaks and vaccination challenges hindered EM results.

Market continues to favor cyclicals

– Sustained market recovery and rising interest rates buoyed cyclical stocks; Energy, Financials, and Industrials drove the market.

– Factor performance showed a preference for beta and volatility, similar to 4Q20.

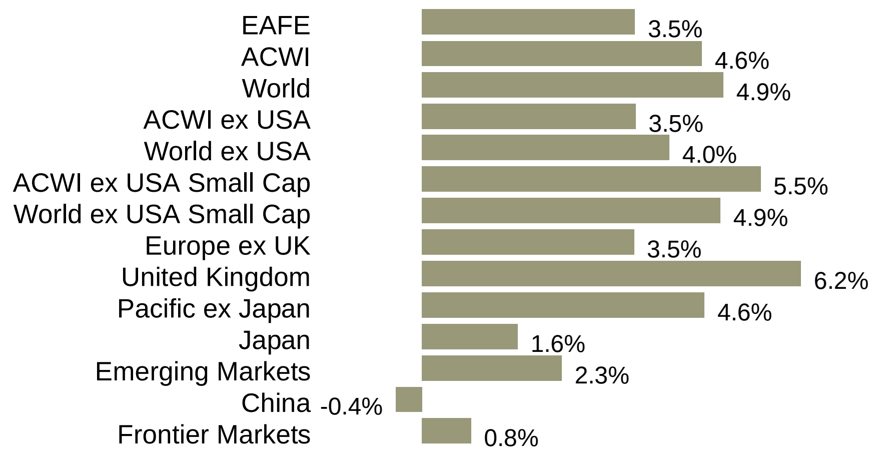
U.S. dollar vs. other currencies

– The U.S. stimulus package announcement, combined with yields rising on economic confidence, fueled the U.S. dollar.

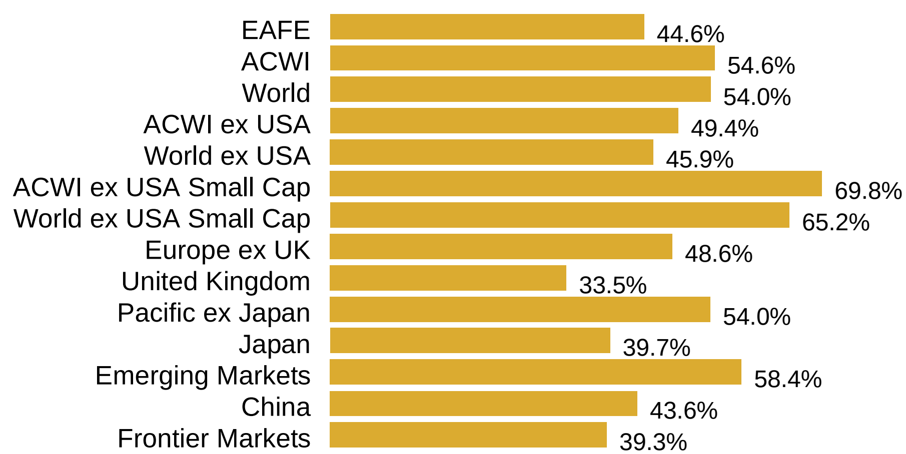
Growth vs. value

– Value outpaced growth for the second consecutive quarter.

Global Equity: Quarterly Returns



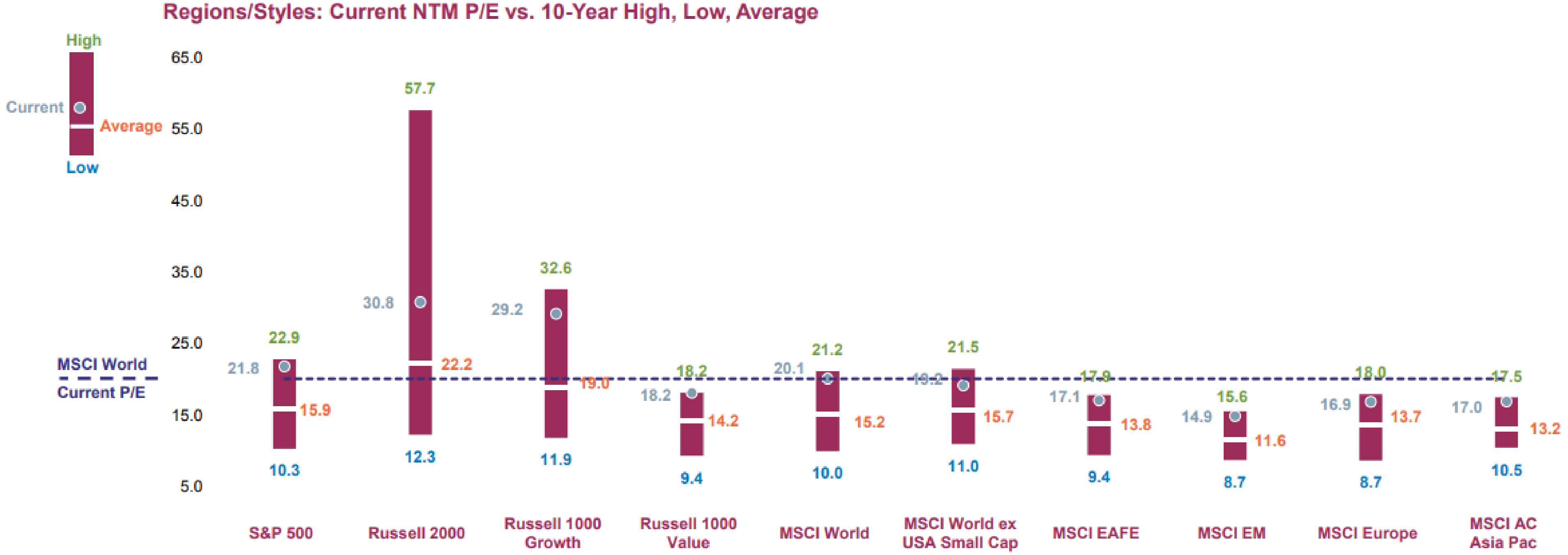
Global Equity: One-Year Returns



Source: MSCI

Equity Valuations as of March 31, 2021

Last 10 Years



	S&P 500	Russell 2000	Russell 1000 Growth	Russell 1000 Value	MSCI World	MSCI World ex USA Small Cap	MSCI EAFE	MSCI EM	MSCI Europe	MSCI AC Asia Pac
High Date	8/20	6/20	8/20	3/21	8/20	8/20	8/20	1/21	6/20	1/21
Low Date	9/11	9/11	9/11	9/11	9/11	9/11	9/11	9/11	9/11	9/11

Source: Eaton Vance Monthly Market Monitor, FactSet as of 3/31/21. NTM P/E is market price per share divided by expected earnings per share over the next twelve months.

U.S. Fixed Income Performance: 1Q21

The U.S. Treasury yield curve steepened

- The 10-year U.S. Treasury yield closed 1Q21 at 1.74%, up 81 bps from 4Q20.
- The short-end of the curve remained anchored, with no rate hikes expected until at least 2023, steepening the yield curve.
- TIPS outperformed nominal U.S. Treasuries as 10-year breakeven spreads widened from 1.99% to 2.37%.

Bloomberg Barclays Aggregate fell

- The Bloomberg Barclays US Aggregate Bond Index dropped 3.4%, with spread sectors outperforming treasuries.
- Demand for corporate credit remains strong, and spreads did not change meaningfully over the quarter

High yield bonds gained as rally extended

- High yield (HY) bonds outperformed investment grade (IG) in 1Q, gaining 0.8% amid a wave of new issuance.
- Leveraged loans rose 1.8% during the quarter, driven by favorable supply/demand dynamics, floating rate coupons, and relatively short durations.

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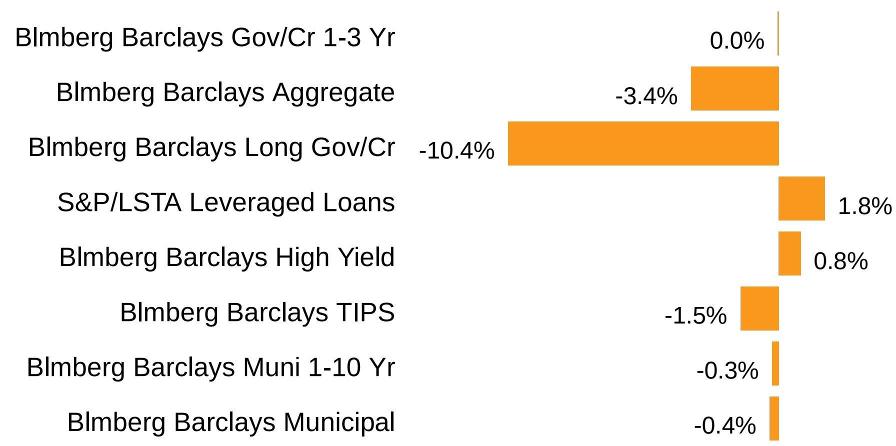
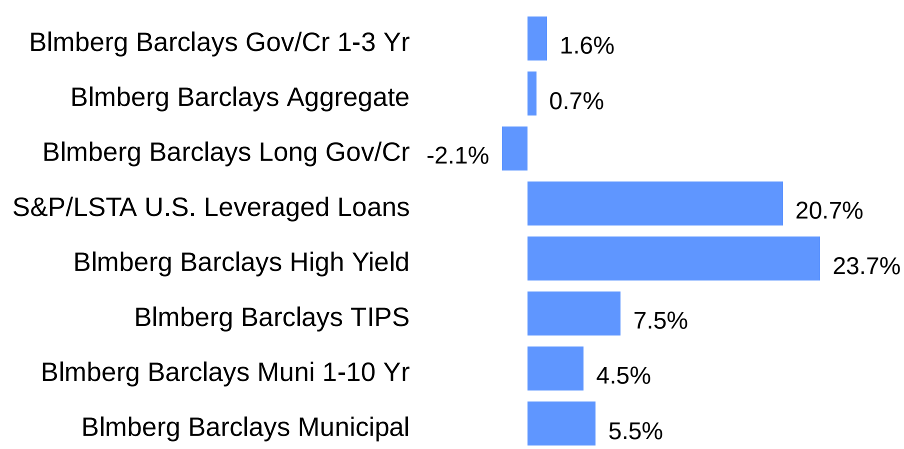
U.S. Fixed Income: Quarterly Returns



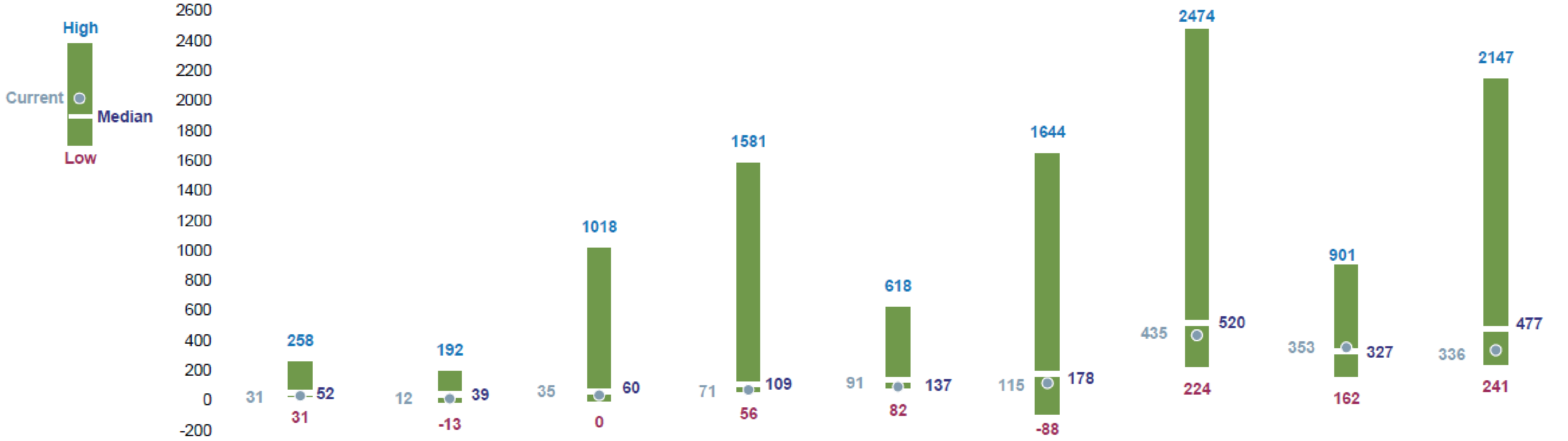
U.S. Fixed Income: One-Year Returns



Source: Bloomberg Barclays

Fixed Income Spreads as of March 31, 2021

Past 15 Years



	Aggregate	MBS	ABS	CMBS	Corporate	Preferred	Floating-Rate Loans	Emerging Markets (USD)	High Yield
Max Spread Date	12/3/2008	12/3/2008	1/6/2009	11/21/2008	12/3/2008	3/9/2009	12/19/2008	10/24/2008	12/15/2008
Min Spread Date	3/31/2021	7/27/2010	10/1/2009	1/31/2018	2/22/2007	12/6/2017	4/28/2006	6/1/2007	6/1/2007
Spread on 12/31/20	42	39	33	81	96	71	475	352	386
Spread on 12/31/19	39	39	44	72	93	17	461	291	360
Spread on 12/31/18	54	35	53	86	153	242	551	415	533

Spreads across sectors have recovered to pre-pandemic levels and below their 15-year medians

– Narrower spreads imply lower rates of returns going forward.

– Tight valuations draw attention to managers' ability to add value through sedurity selection.

Sources: Eaton Vance Monthly Market Monitor, FactSet as of 3/31/21.

Recent Activity and Plan Performance

Quarterly Total Fund Highlights

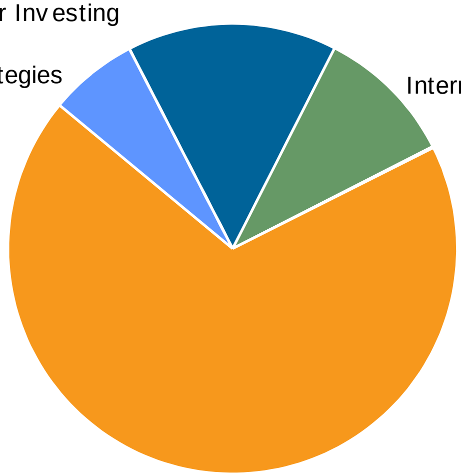
As of March 31, 2021

- **CO PSPF ended the quarter with $1.3 billion in assets, down $21.5 million from the fourth quarter.**
  - Of which $13.5 million was attributable to investment losses and $8 million to the periodic sweep of investment income.
- **The Total Fund was down -1.04% net of fees during the quarter, 17 basis points above the Total Benchmark Return of -1.21%.**
- **The Global Equity Composite outperformed its benchmark by 54 basis points with a net return of 5.75% compared to the 60% Russell 3000 / 40% MSCI ACWI ex-US benchmark return of 5.21%.**
  - Domestic Equity outperformed its benchmark by 24 basis points with a net return of 6.59% compared to the Russell:3000 Index return of 6.35%.
  - International Equity outpaced its benchmark by 90 basis points with a net return of 4.59% compared to the MSCI:ACWI ex-U.S. return of 3.49%.
- **The Fixed Income Composite underperformed its benchmark by 19 basis points with a net return of -3.23% compared to the benchmark return of -3.04%.**
  - The Market Duration bond portfolio underperformed its benchmark by 20 basis points with a net return of -3.57% compared to the Aggregate return of -3.37%.
  - The Janus Short Duration bond portfolio underperformed its benchmark by 20 basis points with a net return of -0.24% compared to the Gov/Credit 1-3Yr return of -0.04%.
- **The High Income Strategies Composite outperformed its benchmark by 22 basis points with a net return of 0.88% compared to the benchmark return of 0.66%.**
  - The MacKay Shields' high yield bond portfolio outperformed its benchmark by 14 basis points with a net return of 0.99% compared to the Blmbg High Yield Index return of 0.85%.
  - The Principal / Spectrum preferred securities portfolio outperformed its benchmark by 63 basis points with a net return of 0.22% compared to the ICE BofA All Cap Secs return of -0.41%.

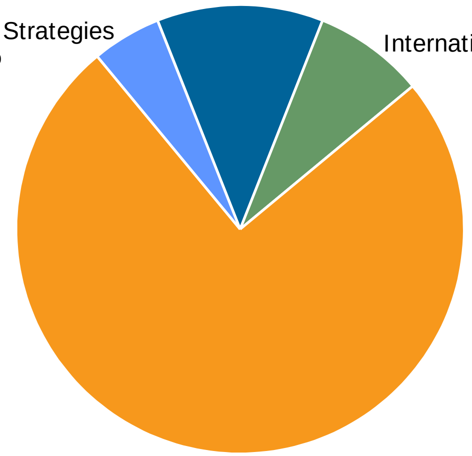
Total Fund Asset Allocation

As of March 31, 2021

Actual Asset Allocation



Target Asset Allocation



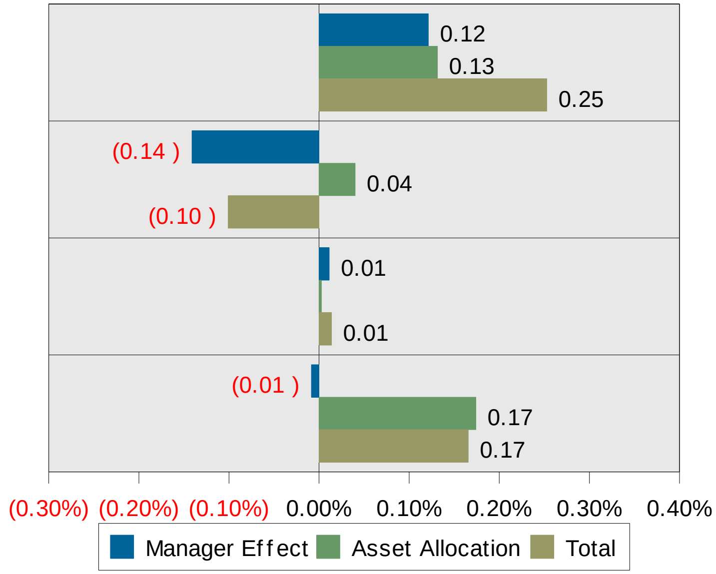
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Domestic Equity	196,549	15.1%	12.0%	3.1%	40,649
International Equity	130,414	10.0%	8.0%	2.0%	26,482
Equity Cash	1,025	0.1%	0.0%	0.1%	1,025
Fixed Income	888,283	68.4%	75.0%	(6.6%)	(86,087)
High Income Strategies	82,649	6.4%	5.0%	1.4%	17,691
Cash Avail. For Investing	241	0.0%	0.0%	0.0%	241
Total	1,299,160	100.0%	100.0%		

***Note**: The first step in the migration to the new asset allocation took place on March 15th. The interim fund target will change as of April 1st to Domestic equity 15%, Int'l Equity 10%, Fixed Income 69%, and High Income Strategies 6%.

One-Quarter Performance and Attribution

As of March 31, 2021

Relative Attribution by Asset Class



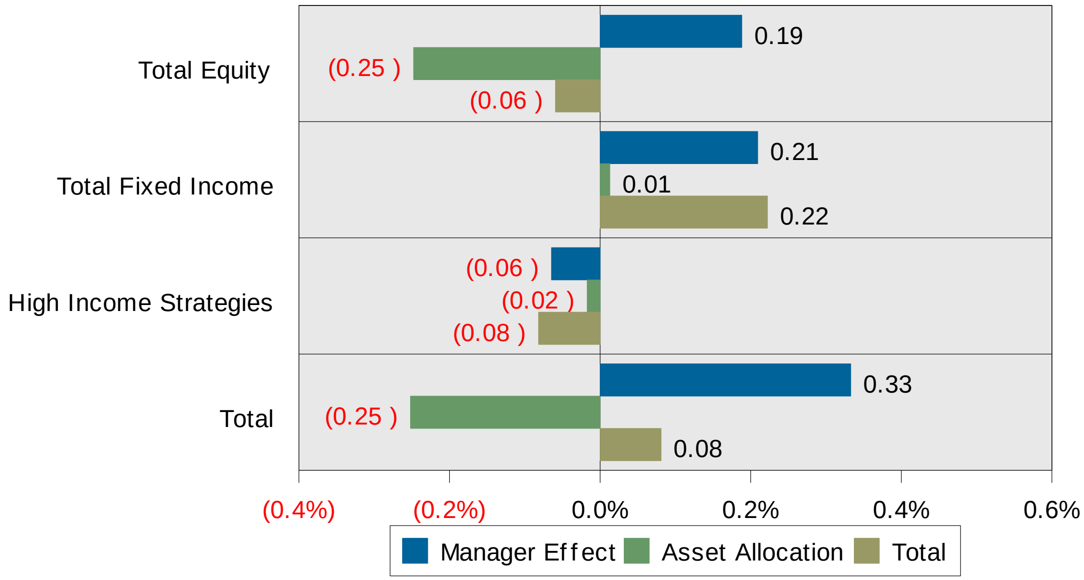
Relative Attribution Effects for Quarter ended March 31, 2021

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	22%	20%	5.75%	5.21%	0.12%	0.13%	0.25%
Total Fixed Income	73%	75%	(3.23%)	(3.04%)	(0.14%)	0.04%	(0.10%)
High Income Strategies	5%	5%	0.88%	0.66%	0.01%	0.00%	0.01%
Total			**(1.04%) =**	**(1.21%) +**	**(0.01%) +**	**0.17%**	**0.17%**

One-Year Performance and Attribution

As of March 31, 2021

One Year Relative Attribution Effects



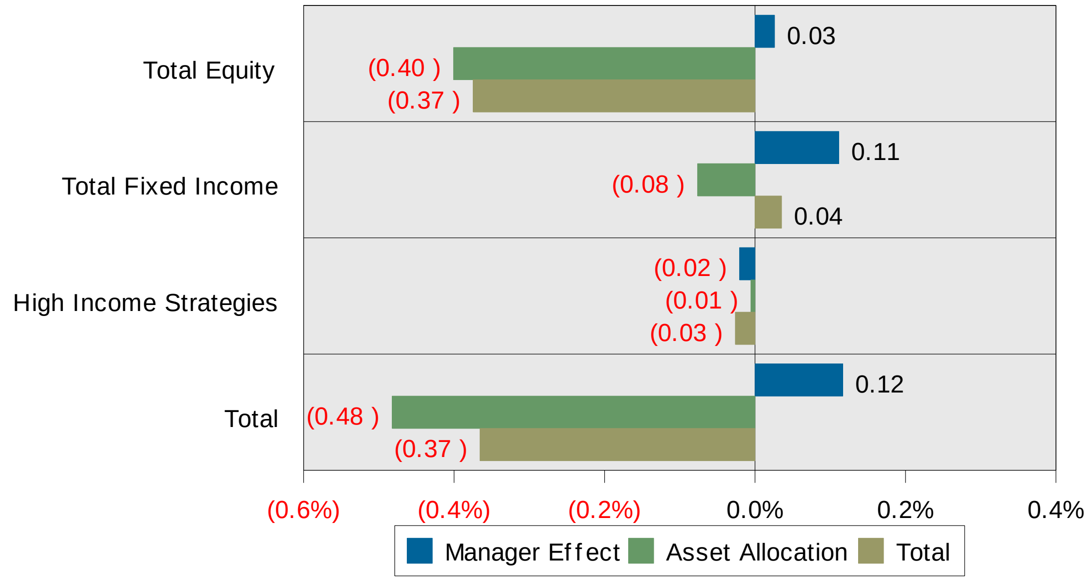
One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	20%	20%	58.43%	57.23%	0.19%	(0.25%)	(0.06%)
Total Fixed Income	77%	78%	1.01%	0.80%	0.21%	0.01%	0.22%
High Income Strategies	3%	3%	-	-	(0.06%)	(0.02%)	(0.08%)
Total			**11.26% =**	**11.18% +**	**0.33% +**	**(0.25%)**	**0.08%**

Three-Year Performance and Attribution

As of March 31, 2021

Three Year Annualized Relative Attribution Effects



Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Total Equity	19%	20%	12.82%	12.83%	0.03%	(0.40%)	(0.37%)
Total Fixed Income	80%	79%	4.59%	4.48%	0.11%	(0.08%)	0.04%
High Income Strategies	1%	1%	-	-	(0.02%)	(0.01%)	(0.03%)
Total			**6.38% =**	**6.75% +**	**0.12% +**	**(0.48%)**	**(0.37%)**

Manager & Composite Cumulative Returns

As of March 31, 2021

	Last Quarter	Last Year	Last 5 Years	Last 10 Years
Total Equity	**5.75%**	**58.43%**	**-**	**-**
60% Russell 3000/40% ACWI ex US	5.21%	57.23%	13.90%	10.24%
Domestic Equity	**6.59%**	**62.84%**	**-**	**-**
Russell 3000 Index	6.35%	62.53%	16.64%	13.79%
International Equity	**4.59%**	**52.68%**	**-**	**-**
MSCI ACWI ex US	3.49%	49.41%	9.76%	4.93%
Total Fixed Income	**(3.23%)**	**1.01%**	**2.95%**	**3.21%**
Total Fixed Income Benchmark (1)	(3.04%)	0.80%	2.91%	2.88%
Market Duration	**(3.57%)**	**0.48%**	**3.03%**	**3.25%**
Colorado Treasurer's Portfolio (2)	(3.57%)	0.48%	3.03%	3.25%
PSPF Custom Benchmark (3)	(3.37%)	0.71%	3.01%	2.93%
Short Duration	**(0.24%)**	**5.74%**	**-**	**-**
Janus Henderson Short Duration	(0.24%)	5.74%	-	-
Blmbg Gov/Cred 1-3 Yr	(0.04%)	1.57%	2.00%	1.57%
85% 1-3YR G/C; 15% 1-3YR BB (4)	0.09%	3.56%	2.50%	2.11%
High Income Strategies	**0.88%**	**-**	**-**	**-**
High Income Strategies Benchmark (5)	0.66%	23.32%	7.85%	-
High Yield Fixed Income	**0.99%**	**-**	**-**	**-**
Mackay Shield US High Yield	0.99%	-	-	-
Blmbg High Yield	0.85%	23.72%	8.06%	6.48%
Preferred Securities	**0.22%**	**-**	**-**	**-**
Principal Preferred Securities	0.22%	-	-	-
ICE BofA US All Cap Secs	(0.41%)	21.06%	6.66%	-
Total Fund w/o CAI (6)	**(1.04%)**	**11.26%**	**4.03%**	**3.74%**
Total Fund Benchmark (6)	(1.21%)	11.18%	4.27%	3.56%

Manager & Composite Annual Fiscal Year Returns

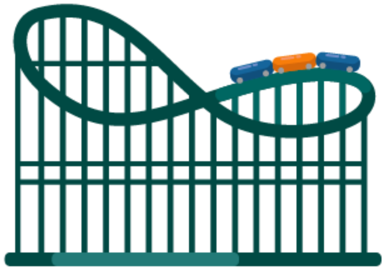
	6/2020-3/2021	FY 2020	FY 2019	FY 2018	FY 2017
Total Equity	**32.22%**	**1.82%**	**5.64%**	**-**	**-**
60% Russell 3000/40% ACWI ex US	31.39%	1.90%	5.92%	11.78%	19.35%
Domestic Equity	**33.51%**	**6.40%**	**8.85%**	**-**	**-**
Russell 3000 Index	33.19%	6.53%	8.98%	14.78%	18.51%
International Equity	**30.44%**	**(4.71%)**	**0.67%**	**-**	**-**
MSCI ACWI ex US	28.67%	(4.80%)	1.29%	7.28%	20.45%
Total Fixed Income	**(2.13%)**	**8.79%**	**7.38%**	**(0.39%)**	**0.09%**
Total Fixed Income Benchmark (1)	(1.87%)	8.28%	7.52%	(0.40%)	0.26%
Market Duration	**(2.56%)**	**9.26%**	**7.77%**	**(0.39%)**	**0.09%**
Colorado Treasurer's Portfolio (2)	(2.56%)	9.26%	7.77%	(0.39%)	0.09%
PSPF Custom Benchmark (3)	(2.12%)	8.74%	7.87%	(0.40%)	0.26%
Short Duration	**1.65%**	**4.41%**	**-**	**-**	**-**
Janus Henderson Short Duration	1.65%	4.41%	-	-	-
Blmbg Gov/Cred 1-3 Yr	0.40%	4.20%	4.27%	0.21%	0.35%
85% 1-3YR G/C; 15% 1-3YR BB (4)	1.44%	3.94%	4.59%	0.44%	1.15%
High Income Strategies	**6.16%**	**-**	**-**	**-**	**-**
High Income Strategies Benchmark (5)	11.96%	0.46%	7.58%	2.39%	11.99%
High Yield Fixed Income	**6.02%**	**-**	**-**	**-**	**-**
Mackay Shield US High Yield	6.02%	-	-	-	-
Blmbg High Yield	12.29%	0.03%	7.48%	2.62%	12.70%
Preferred Securities	**6.91%**	**-**	**-**	**-**	**-**
ICE BofA US All Cap Secs	10.11%	2.86%	8.12%	1.14%	7.89%
Total Fund w/o CAI (6)	**4.84%**	**7.37%**	**6.94%**	**(0.36%)**	**0.09%**
Total Fund Benchmark (6)	4.78%	7.87%	7.49%	0.01%	0.26%

Appendix

Published Research Highlights from 1Q21

2021 Defined Contribution Survey

GameStopped—Or Just Getting Started?



Coping with COVID-19: Investment Manager Survey 3rd Edition

Callan's 2021-2030 Capital Markets Assumptions

Recent Blog Posts

Relief Bill Provides Shot in the Arm to Corporate Pensions

William Emmett & Sweta Vaidya

Why the Yield Curve Is Really Curving

Dario Buechi

Plus our blog contains a wide array of posts related to the pandemic

Additional Reading

Private Equity Trends quarterly newsletter

Active vs. Passive quarterly charts

Capital Markets Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Callan Institute Events

Upcoming conferences, workshops, and webinars

2021 National Conference

July 19-21, 2021

Salt Lake City, UT

We are excited to announce our confirmed speakers and workshop topics below. We will continue to update you as we finalize our lineup for this event!

Confirmed Conference Speakers:

– Niall Ferguson

– Scott Gottlieb, M.D.

This year's Callan-led workshops will cover the following topics:

– Callan's Fund Sponsor Cost of Doing Business Survey Results

– Defined Contribution: Are Managed Accounts Adding Value?

– How to Navigate Your Corporate DB Plan in This Low-Rate Era

– Real Estate Debt as an Alternative to Traditional Fixed Income in the Hunt for Yield

Callan College

Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of nonprofits, and public and corporate funds. This session familiarizes fund sponsor trustees and staff with basic investment theory, terminology, and practices.

Join our next virtual session:

Aug. 17, 2021 – Aug. 19, 2021
2-3 hour sessions over 3 days

Join our next LIVE session in Chicago:

Oct. 6, 2021 – Oct. 7, 2021
1.5-day session held in Callan's Chicago office

Webinars

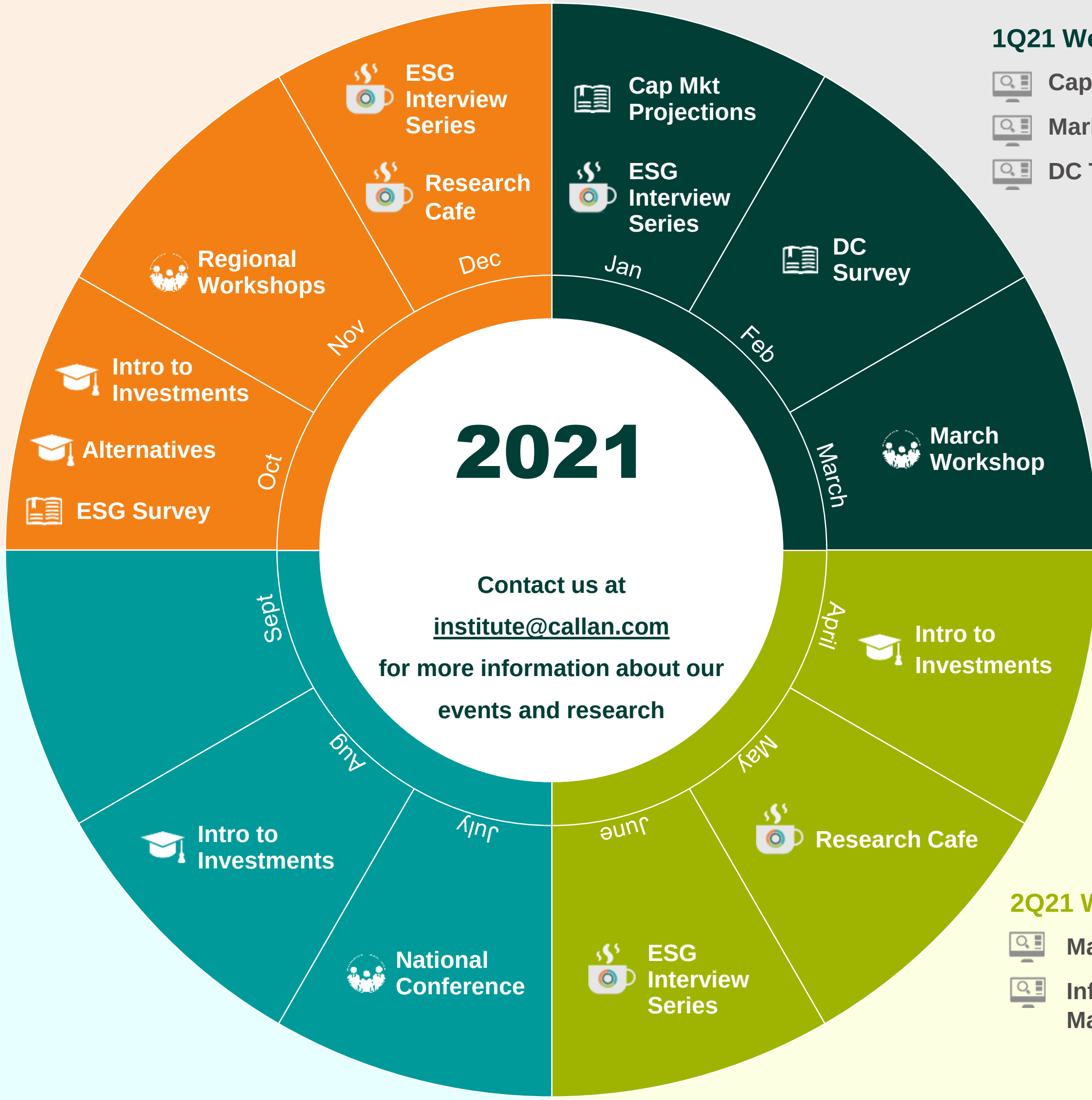
Research Café: Insurance Session
May 19, 2021 – 9:30am (PT)

Inflation and Why Debt Matters
May 25, 2021 – 9:30am (PT)

Content Calendar – Callan Institute

4Q21 Webinar Topics:
- Market Intelligence
- ESG Survey
- TBD

1Q21 Webinar Topics:
- Capital Markets Assumptions
- Market Intelligence
- DC Trends Survey



3Q21 Webinar Topics:
- Market Intelligence
- TBD

2Q21 Webinar Topics:
- Market Intelligence
- Inflation and Why Debt Matters

Callan College | Conference/Workshop | Publication | Webinar | Research Cafe