

December 2019 Monthly Performance Report for Elm Partners Portfolio LLC

Active Index Investing®

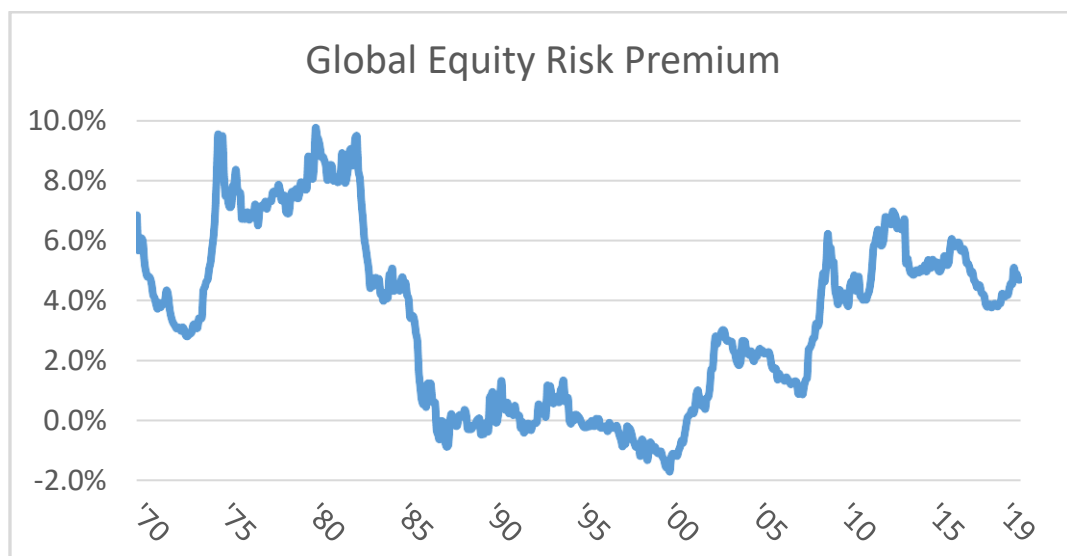
Low Cost, Common-Sense Asset Allocation Combining Diversification, Value and Momentum to Achieve Superior Long-Term Returns¹

Asset Allocation

Your Fund's asset allocation started 2019 defensively, with about 45% in equities and other risk-assets, and the balance in mostly short-term, high-quality bonds. This defensive positioning was due to the 13% decline in global equities over Q4 2018, and was the main contributor to the Fund's outperformance in 2018 and underperformance in 2019. By the end of Q1 2019 equities had almost fully recovered, momentum shifted back to positive in many asset buckets, and your Fund's allocation to equities and other risk-assets was restored to roughly its 75% Baseline weight. As of December 2019, the risk-asset allocation stood at about 90%, the highest level over the Fund's eight-year life. This high risk-asset allocation is due to a combination of positive momentum across all risk buckets plus relatively attractive global equity valuations.

	MTD	YTD	LTD (pa)
Fund	3.60%	15.46%	7.02%
Baseline	2.88%	19.30%	6.80%
Benchmark	2.22%	19.18%	7.68%

The chart below provides a history for our primary valuation metric for global equities: the spread between the Cyclically Adjusted Earnings Yield (CAEY) and the US long-term real interest rate. CAEY is an accepted predictor of long-term real returns, and we want to scale Fund allocations proportionally to the excess return over the long-term risk-free real rate. This excess expected return, also known as the 'equity risk premium,' stood at 4.7% at the end of 2019, meaning our central long-term expectation is for global equity returns 4.7% above the current real-yield on US Treasury Inflation Protected bonds (TIPS). Although many market observers believe equities have gone up so much that they no longer offer attractive returns, the history in the chart below suggests the current global equity risk premium of 4.7% is actually more attractive than it has been for 62% of the time since 1970.



Sources: Bloomberg, MSCI, Robert Shiller (<http://www.econ.yale.edu/~shiller/data.htm>), King and Low (2013), Federal Reserve Bank of New York, Federal Reserve Bank of Philadelphia ²

¹ Elm Partners Portfolio LLC is open only to qualified purchasers. This monthly note and related materials are not intended to solicit future investment, but rather to elicit discussion and exploration of better ways to invest. Please see www.elmfunds.com for supporting research. This is a preliminary "flash" return estimate, net of fees; the official monthly return is as reported by the Fund's administrator, Circle Partners. **Past performance is not necessarily indicative of future results.** The Baseline Portfolio is the starting point of the Elm Partners Investment strategy, which is a portfolio more diversified, and with more potential sources of return than the Benchmark Portfolio. See column 2 of the decomposition table, or column 3 of the Asset Allocation Table. The Benchmark Portfolio represents a standardized reference point for long-horizon passive investing. It consists of 65% global equities, 20% US broad bond market and 15% money market investments. Returns represent performance since the inception of the Fund on January 1st, 2012.

Some of the current attractiveness of global equities based on this metric stems from the moderate-to-high earnings yields in Europe, Asia, and Emerging Markets, and some from the historically low level of long-term US real rates. Of course, we cannot say with confidence that equities will provide a strong return in 2020 or in any given year, but we do believe the long-run relative attractiveness of global equities, in combination with their short-term positive momentum, warrants the current high allocation to equities at the start of this new year.

Efficiency

This past year saw further reductions in the fees charged on the ETFs and index funds we use to build the Fund's portfolio. Most recently, Vanguard cut their fees on the main ETFs we use for non-US equity exposure and certain fixed income exposure by 1-3 basis points (a 10%-30% reduction), bringing the weighted average expense ratio of the vehicles owned by your Fund down to 0.09%. In addition to cost efficiency, we also are focused on tax-efficiency, and we're pleased that the Fund's return for 2019 was achieved relatively tax-efficiently, with a small amount of realized short-term capital losses offset by roughly the same amount of realized long-term capital gains, and most of the dividend income delivered in the form of Qualified Dividends.

Thank you for your continued trust in Elm Partners. As always, we welcome your questions and suggestions.

Wishing you the very best for 2020, and the decade ahead –

Victor and James

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² Data for US CAEY uses the standard Shiller series. Data for non-US-CAYE is from MSCI and Bloomberg. From 1970-1985, US 10-year real rates are generated by subtracting Federal Reserve expected inflation survey data from nominal 10-year Treasury yields, then smoothing and volatility-adjusting the resulting real rate. From 1985-1999 we use real yields from UK inflation-linked bonds smoothed to match US TIPS real yields in 1999. From 1999 we use the real yield of 10-year US TIPS. From 1970-1999, the start of the US TIPS series, constructed real yields were in the range of 1% - 5%.

Asset Allocation Table: Elm Partners Portfolio LLC

	Benchmark Weights	Elm Baseline Weights*	Desired	Deviation from Baseline	Desired	Valuation Measure**	Scaling function	Slope	Valuation Centering Point	Valuation Signal	Change to Baseline Weight from Valuation †	Momentum Signal (current vs 1 year avg less hurdle)	Change to Baseline Weight from Momentum ‡	Asset Class Dec Performance	Asset Class Contribution to Portfolio Returns
			12/31/19		11/29/19										
US Equities	34.5%	24.5%	25.2%	0.7%	26.3%						-4.1%		4.8%	2.9%	
US Broad Equity		21.0%	21.1%	0.1%	22.1%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.0%	3.3%	-4.1%	8.4%	4.2%	2.9%	0.64%
US Value		1.7%	2.0%	0.3%	2.1%	10yr Broad US EY ϕ - 10yr TIPS	log	1	4.0%	3.3%	0.0%	7.1%	0.3%	2.8%	0.06%
						3yr Ret vs Broad pa	linear	-10	0.5%	-3.2%	--	--	--	--	--
US Small Cap		1.7%	2.0%	0.3%	2.1%	10yr Broad US EY ϕ - 10yr TIPS	log	1	4.0%	3.3%	0.0%	5.6%	0.3%	2.6%	0.06%
						3yr Ret vs Broad pa	linear	-10	0.5%	-3.1%	--	--	--	--	--
Non-US equities	30.6%	33.0%	48.0%	15.0%	46.2%						10.4%		4.6%	4.2%	
Europe x-UK Broad		10.5%	13.3%	2.8%	14.0%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.5%	5.0%	1.1%	7.3%	1.7%	3.7%	0.52%
UK Broad		3.2%	4.7%	1.5%	5.0%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.5%	6.2%	1.1%	7.4%	0.4%	5.6%	0.28%
Japan Broad		3.4%	4.9%	1.6%	5.1%	10yr Earning Yld ϕ - 10yr TIPS	log	1	3.5%	4.9%	1.1%	6.6%	0.5%	2.0%	0.10%
Asia Dev x-Japan Broad		1.7%	2.7%	1.0%	2.4%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.0%	6.5%	0.8%	2.0%	0.2%	2.7%	0.07%
Canada Broad		1.9%	2.7%	0.8%	2.8%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.0%	5.4%	0.6%	5.7%	0.3%	3.3%	0.09%
Emerging Markets Broad		12.4%	19.7%	7.3%	16.8%	10yr Earning Yld ϕ - 10yr TIPS	log	1	4.5%	7.2%	5.8%	5.9%	1.5%	7.4%	1.24%
Real Estate	0.0%	7.5%	8.7%	1.2%	9.0%						-0.1%		1.3%		
US REITs		5.0%	5.1%	0.1%	5.2%	10yr DivYld - 10yr TIPS	log	1	4.0%	3.4%	-0.9%	3.0%	1.0%	-0.6%	-0.03%
x-US Real Estate Co's		2.5%	3.6%	1.1%	3.8%	10yr DivYld - 10yr TIPS	log	1	2.5%	3.4%	0.7%	5.1%	0.4%	3.8%	0.14%
Commodities	0.0%	5.0%	5.9%	0.9%	4.6%						0.1%		0.9%		
Oil		2.5%	3.7%	1.2%	2.2%	vs 25yr avg Price Backwardation	log	-1	100.0%	80.1%	0.8%	4.8%	0.3%	10.1%	0.22%
							linear	6	3.5%	10.8%	--	--	--	--	--
Gold		2.5%	2.3%	-0.2%	2.4%	vs 25yr avg Price	log	-1	100.0%	135.3%	-0.8%	6.7%	0.5%	3.6%	0.09%
US Fixed Income	20.0%	15.0%	8.6%	-6.4%	10.2%						-9.0%		2.6%	-0.1%	
US 10yr US TIP		4.0%	2.4%	-1.6%	2.4%	10yr Real Yld	log	1	2.0%	0.1%	-2.7%	0.9%	1.0%	0.3%	0.01%
10yr Nominal US Tsy Notes		3.0%	1.0%	-2.0%	1.8%	10yr Real Yld	log	1	2.0%	0.1%	-2.0%	0.1%	0.0%	-0.3%	0.00%
10yr Inv Grade Muni Bonds		6.0%	4.1%	-1.9%	4.7%	10yr Real Yld	log	1	2.0%	0.1%	-3.0%	0.5%	1.1%	0.4%	0.02%
						PreTax Sprd to Tsy	linear	40	1.3%	0.9%	--	--	--	--	--
US Inv Grade Corp Bonds		2.0%	1.2%	-0.8%	1.2%	10yr Real Yld	log	1	2.0%	0.1%	-1.3%	4.3%	0.5%	0.5%	0.01%
						Sprd to Tsy	log	1	1.3%	0.5%	--	--	--	--	--
US High Yield	0.0%	5.0%	3.5%	-1.5%	3.8%						-2.7%		1.2%		
US High Yield		5.0%	3.5%	-1.5%	3.8%	10yr Real Yld	log	1	2.0%	0.1%	-2.7%	2.0%	1.2%	1.9%	0.07%
						Sprd to Tsy	log	1	5.0%	3.4%	--	--	--	--	--
Short Term Fixed Income	15.0%	10.0%	0.0%	-10.0%	0.0%									0.1%	0.00%
Total	100.0%	100.0%	100.0%		100.0%										3.54%

* Baseline weights (and choice of asset classes) were chosen with an affluent, taxable US investor in mind. Weights for Non-US equities are net of exposure in small cap and value indexes.

** All relevant calcs are infl-adjusted. Oil and Gold 25 year avgs include an additional 1.5% p.a. growth assumption.

† Valuation can increase or decrease weights by a max of 2/3 of their baseline weights. For compound signals, a weighting of 2/3 is given to the first signal, and 1/3 to the second. In the case of Oil and US High Yield, a 50/50 weighting is used.

‡ Momentum increases or decreases weights by 1/3 of their baseline weights when the signal is stronger than a pre-set threshold value.

ϕ Source: MSCI. 10 Yr Earning Yld metrics are calculated using data from a number of sources, including MSCI. As pertains to that part of the calculation that uses MSCI data, neither MSCI, nor any party involved in or related to compiling, computing or creating the MSCI data makes any express or implied warranties with respect to such data and all such parties disclaim all warranties of originality, accuracy, completeness or fitness for a particular purpose with respect to any such data. In no event shall MSCI, any of its affiliates or any third party involve in creating the data have any liability for any direct, indirect, special, punitive, consequential or other damages even if notified. No further distribution or dissemination of this data is permitted without the express written consent of Elm Partners Management LLC and MSCI.

Instrument Table: Elm Partners Portfolio LLC

Description	Ticker	% Weight in Portfolio (futures excluded from sum)	Annual Fees	Fund Size (\$BB)	Duration (years)	ETF or Fund	Fund Manager	Change on Month (including dividends)	Change on Year (including dividends)
		100.00%	0.09%						
Vanguard European Stock Index ETF	VGK	4.98%	0.08%	14.8	-	ETF	Vanguard	4.5%	24.9%
Vanguard Total Intl Stock ETF	VXUS	0.01%	0.08%	18.7	-	ETF	Vanguard	4.4%	21.8%
Vanguard European Equities - Institutional	VESIX	10.30%	0.08%	5.7	-	Fund	Vanguard	4.3%	24.3%
Vanguard FTSE All World (x.US) Fund	VFWAX	1.49%	0.11%	14.7	-	Fund	Vanguard	4.2%	21.6%
Vanguard Asia Developed Stock Index	VPADX	0.00%	0.10%	3.0	-	Fund	Vanguard	2.6%	17.6%
Vanguard Pacific Stock Index Fund - Institutional	VPKIX	4.34%	0.08%	3.0	-	Fund	Vanguard	2.6%	17.6%
Vanguard Pacific Stock Index Fund - ETF	VPL	0.96%	0.08%	3.9	-	ETF	Vanguard	2.5%	18.2%
iShares Core S&P 500 ETF	IVV	6.21%	0.04%	202.0	-	ETF	iShares	2.9%	31.3%
Vanguard Total US Stock Market ETF	VTI	5.51%	0.03%	138.4	-	ETF	Vanguard	2.8%	30.7%
Vanguard Total US Stock Market - Institutional	VITSX	9.21%	0.03%	741.2	-	Fund	Vanguard	2.9%	30.8%
DFA US Large Cap Value	DFLVX	1.16%	0.27%	27.0	-	Fund	DFA	2.8%	25.5%
Vanguard MSCI US Prime Market Value	VVIAX	0.48%	0.05%	34.5	-	Fund	Vanguard	2.7%	25.8%
iShares Russell 2000 US Small Cap ETF	IWM	0.45%	0.19%	48.1	-	ETF	iShares	2.8%	25.4%
Vanguard US Small Cap ETF	VB	0.89%	0.05%	27.5	-	ETF	Vanguard	2.2%	27.3%
Vanguard US Small Cap ETF - Institutional	VSCIX	1.59%	0.04%	68.4	-	Fund	Vanguard	2.2%	27.4%
JPMorgan BetaBuilders Canada ETF	BBCA	2.05%	0.19%	4.0	-	ETF	iShares	2.4%	28.9%
iShares Core MSCI Emerging Markets ETF	IEMG	5.23%	0.14%	62.0	-	ETF	iShares	7.5%	17.8%
Vanguard FTSE Emerging Market ETF	VWO	3.33%	0.10%	67.2	-	ETF	Vanguard	7.1%	20.8%
Vanguard Emerging Market Equities Fund - Institutional	VEMIX	9.42%	0.11%	23.9	-	Fund	Vanguard	7.0%	20.4%
Vanguard x-US Value	VTRIX	0.06%	0.37%	10.5	-	Fund	Vanguard	4.2%	20.4%
iShares MSCI EAFE Small Cap ETF	SCZ	1.25%	0.39%	11.0	-	ETF	iShares	4.2%	24.7%
Vanguard FTSE World x-US Small Cap ETF	VSS	2.91%	0.11%	5.7	-	ETF	Vanguard	5.3%	21.4%
Vanguard FTSE World x-US Small Cap - Institutional	VFSNX	0.44%	0.11%	1.2	-	Fund	Vanguard	5.2%	21.7%
Vanguard US REIT's	VGSLX	0.00%	0.11%	32.7	-	Fund	Vanguard	0.8%	28.9%
Vanguard US REIT's - Institutional	VGSNX	5.35%	0.09%	32.7	-	Fund	Vanguard	0.8%	29.0%
Vanguard Non-US Real Estate Co's ETF	VNQI	2.83%	0.12%	5.8	-	ETF	Vanguard	3.9%	21.6%
Vanguard Non-US Real Estate Co's Fund - Admiral	VGRLX	0.70%	0.12%	0.8	-	Fund	Vanguard	3.7%	21.3%
Oil Futures - WTI	CLMO	1.70%	0.00%	-	-	Future	--	12.4%	-
Oil Futures - Brent	COMO	1.68%	0.00%	-	-	Future	--	12.0%	-
iShares Gold ETF	IAU	2.39%	0.25%	17.5	-	ETF	iShares	3.7%	18.0%
Vanguard Inf-Protected Securities Fund (ADM)	VAIPX	0.00%	0.10%	28.1	-	Fund	Vanguard	0.4%	8.2%
Vanguard Inf-Protected Securities Fund (INST)	VIPIX	2.38%	0.07%	28.1	-	Fund	Vanguard	0.4%	8.2%
Vanguard Intermediate-Term Govt Bond ETF	VGIT	0.49%	0.05%	4.5	-	ETF	Vanguard	-0.3%	6.2%
Vanguard Tax-Exempt Bond ETF	VTEB	1.39%	0.06%	6.7	-	ETF	Vanguard	0.3%	7.3%
Vanguard Intermediate-Term Muni Bond Fund	VWIUX	3.55%	0.09%	72.3	8.40	Fund	Vanguard	0.4%	6.9%
Vanguard Total Bond Market ETF	BND	2.18%	0.04%	48.4	4.3	ETF	Vanguard	-0.1%	8.8%
Vanguard High Yield Corporate - Admiral	VWEAX	3.91%	0.13%	26.2	4.10	Fund	Vanguard	1.3%	15.9%
Vanguard Short-Term Bond Fund - Institutional	VBITX	0.46%	0.05%	27.7	2.8	Fund	Vanguard	0.1%	4.9%
Vanguard Prime Money Market Fund	VMFXX	0.00%	0.11%	144.1	-	Fund	Vanguard	0.1%	2.1%
Vanguard Short-Term Tax Exempt Fund	VWSUX	0.35%	0.09%	16.9	1.2	Fund	Vanguard	0.2%	2.5%
TBILLS Various Maturities	TBILLS	0.84%	0.00%	-	-	Security	US Treasury	-	-
Cash at Morgan Stanley	Cash	0.90%							