

## Stock Selection: Research and Results July 2018

### *Analyzing the Yield Curve: Go Forward*

### *Top-Line Mania Usually Mean Reverts, Model and Portfolio Performance*

#### *Analyzing the Curve: Go Forward*

- We've had numerous discussions with clients about the yield curve, that's been flattening for 4½ years. They want to know is whether we've reached the point where it's telling us that a recession is on the horizon. The Fed has done some very good work on that topic and in a recent research report concluded that the traditional curve, like one based on the spread between the ten- and two-year Treasuries, isn't the best economic forecasting tool. That's because the long end embodies expectations for all sorts of things beyond just the fate of the business cycle.
- The report found that the better forecasting methodology involves comparing the current yield on three-month bills to the forecast for them contained in the six-month forwards. That spread speaks to expectations for monetary policy, specifically whether the Fed will have to reverse course soon. It changes more abruptly than do the forecasts of economists, a real virtue. The two methodologies based on the curve often tell the same story, but on occasion they don't, and now is one of those times. The expectations embodied in the forwards haven't changed materially in the past couple of years, even as the curve has flattened. They embody the view that the Fed will stay the course, one that's echoed in the multiples and valuation spreads of cyclical stocks. While a trade war would undermine the status quo, we don't see an immediate threat from monetary policy, and that's what the forwards are saying too.

#### *Top-Line Mania Usually Mean Reverts*

- We noticed that in the first-half of this year the stocks with the best top-line growth, measured over the prior four quarters, led the market by +10 percentage points, one of the best runs on record. There were eight episodes, spread over 65 years, that were better than this one and most coincided with economic/commodity booms. What's different this time is that the revenue-growth leadership has exceptional free cash flow margins, as some tech business models have proved to be highly scalable. The leadership's relative multiples are the highest they've been since the late-1990s, an acknowledgement of that virtue.
- After a big run like the latest one the precedents are that the revenue-growth leadership underperforms in the next year, against a backdrop of difficult comparisons. Our core model has proven to be helpful in such settings, producing above-average alpha. Exhibit 19 on page 8 uses that framework to rank the revenue-growth leadership stocks that produced at least +10% nominal returns in the first-half of the year.

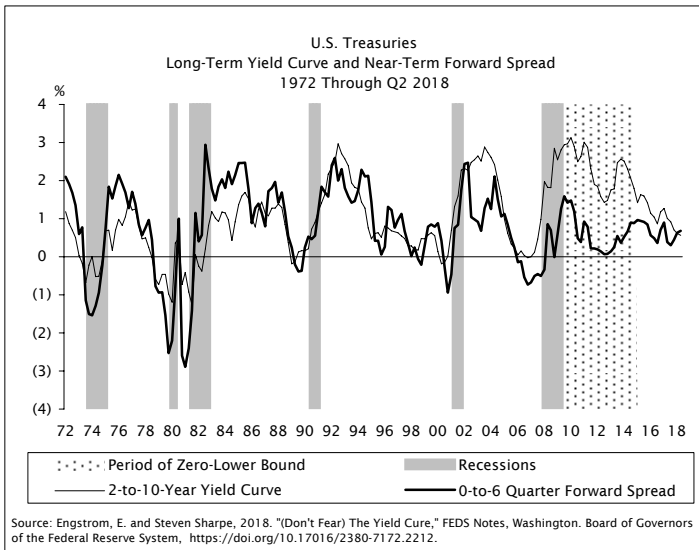
#### *Model and Portfolio Performance*

- Since it became apparent in late-March that the Administration was going to follow through on its intention to wage a trade war, investors have moved into high-growth, high-P/E stocks that are thought to be able to plow through the detritus left on the battlefield by trade skirmishes. That's classic behavior and is why recessions have generally occurred in market regimes that are growth-tilted or growth-driven. In the last six weeks our models, that pay at least some attention to valuation, have surrendered much of this year's alpha. That's been true not only in the U.S. but worldwide as well. Our recommended portfolios have suffered somewhat but were helped by strong stock selection in the energy sector. Exhibits 28 through 35, that begin on page 11, present the latest changes to them.

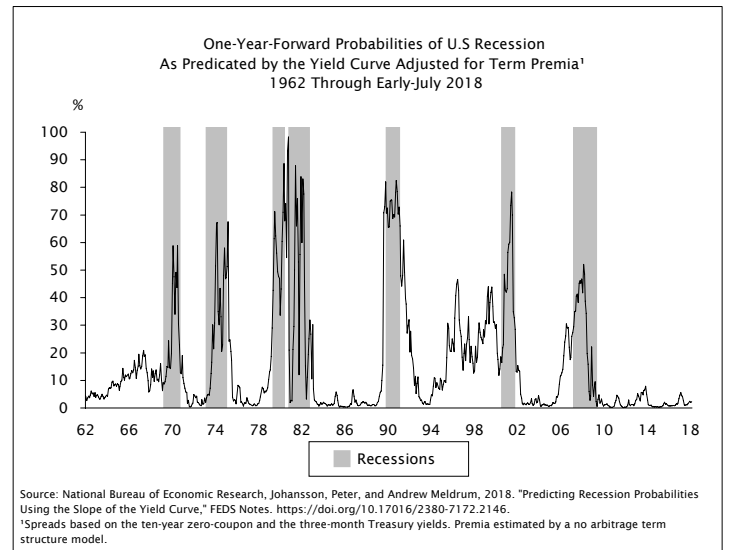
Nicole Price (212) 803-7935 Sungsoo Yang (212) 803-7925 Yi Liu (212) 803-7942 Yu Bai (212) 803-7919 Yuntao Ji (212) 803-7920 Janai Haynes (212) 803-8005

## Conclusions in Brief

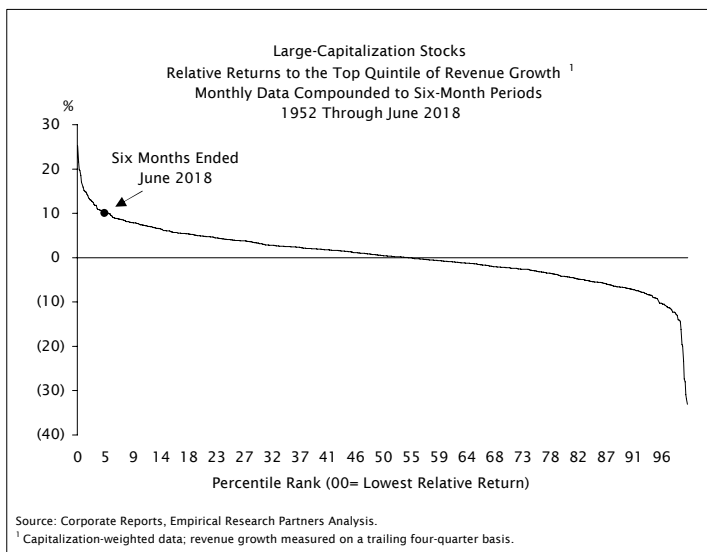
- The forwards are telling a different story than the yield curve...



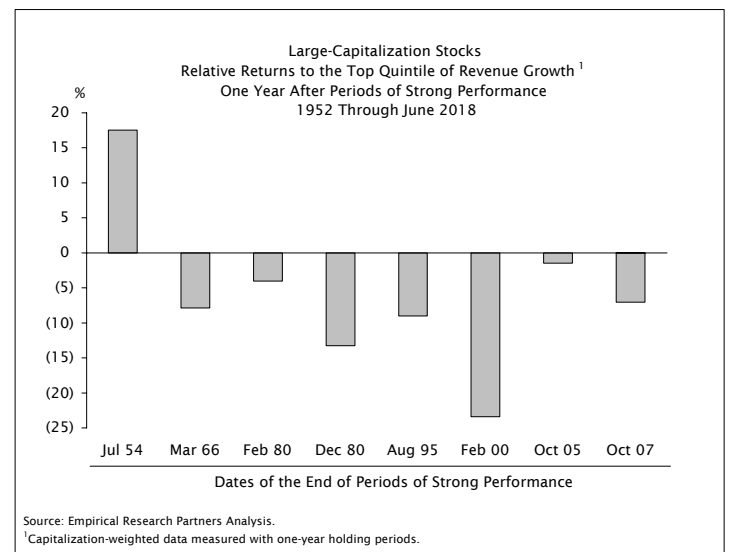
- ...And the absence of a term premium has had an effect on recession probabilities:



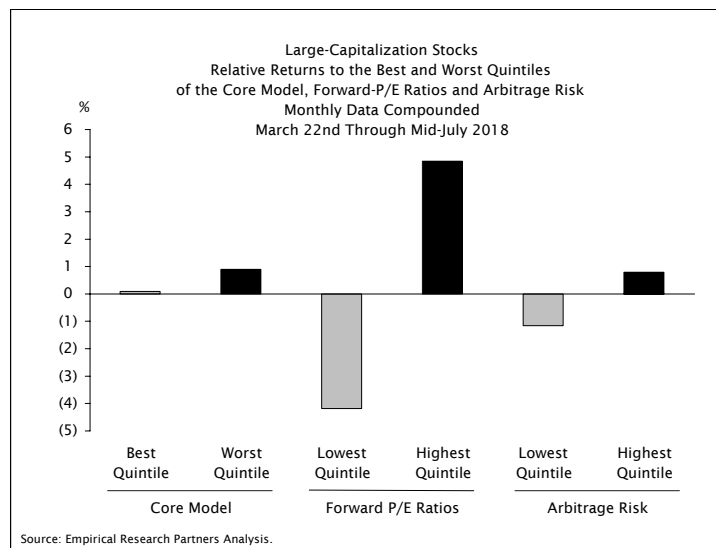
- Big top-line growers had a great first half...



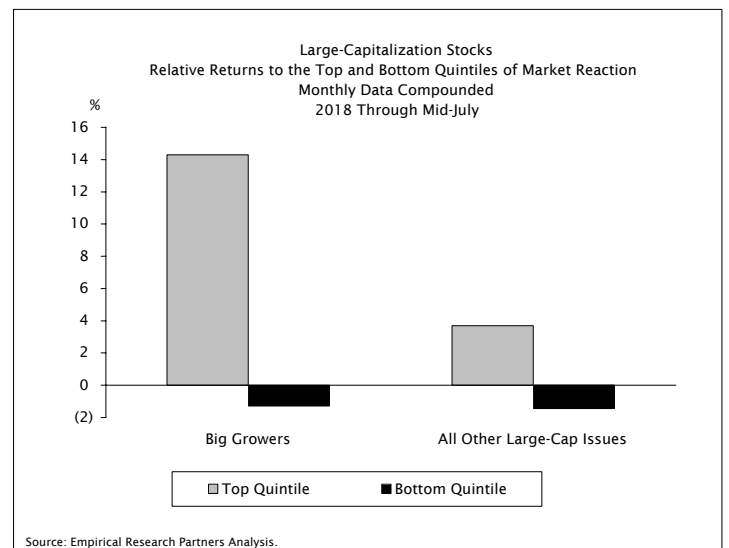
- ...And history tells us we should take a more cautious stance:



- Tariff talk has pushed investors into high-P/E stocks...



- ...And within that space they bought the winners:



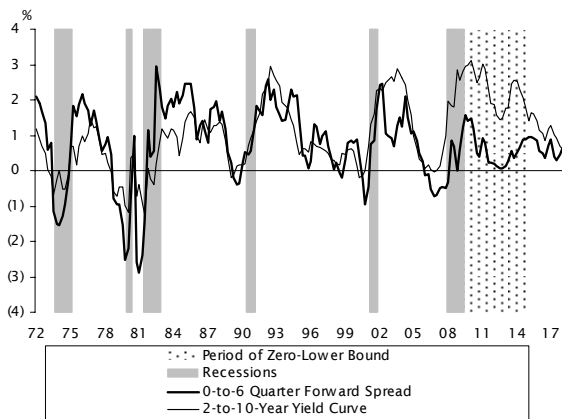
## Analyzing the Yield Curve: Go Forward

### The Fed Gets It Right

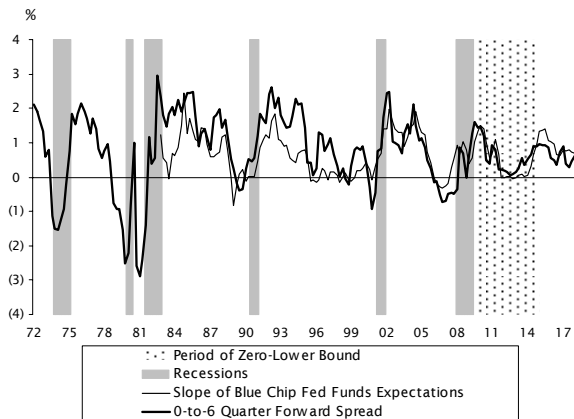
The last recession began in the bond market and since then equity investors have accorded the stories it tells even more respect than they had before. That mindset is apparent in the many discussions we've had with clients on the topic of the yield curve. What they want to know is whether it's predicting that a recession is on the horizon. And if not, what's different this time? We read an excellent (and brief) piece by two Fed economists that examined how best to extract a recession forecast from the curve.<sup>1</sup> The key point they make is that there are other factors beyond the outlook for the economy that can influence long rates, so comparing those on ten-year Treasuries to that on government debt of a one-year maturity isn't the most effective way to learn from the curve. Rather it's the embedded forecasts of monetary policy that count, and a better measure compares the current yield on three-month bills to a forecast for them derived from the forwards six quarters in the future. While most of the time the two methodologies produce similar results, sometimes they don't.

As shown in Exhibit 1, now is one of those times. The yield curve has been flattening for 4½ years, 3½ of which occurred after the exit from the zero-lower bound. The forward spreads, illustrated by the heavy black line, widened in the first part of that span and have been range bound in the last couple of years. What the black line is telling us is that the market has accepted the Fed's guidance about the viability of a gradual tightening program, and doesn't see a need for them to reverse course. The short-term forwards tend to track the forecasts of economists, but move more abruptly when there are signs that a recession lies ahead (see Exhibit 2). That's why they're valuable.

**Exhibit 1: U.S. Treasuries**  
**Long-Term Yield Curve and Near-Term Forward Spread**  
 1972 Through Q2 2018



**Exhibit 2: U.S. Treasuries**  
**Near-Term Forward Spread and**  
**Economists Forecasts of Short Rates**  
 1972 Through Q1 2018



Source: Engstrom, E. and Steven Sharpe, 2018. "(Don't Fear) The Yield Curve," FEDS Notes. Washington. Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/2380-7172.2212>.

Source: Engstrom, E. and Steven Sharpe, 2018. "(Don't Fear) The Yield Curve," FEDS Notes. Washington. Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/2380-7172.2212>.

The forecasts of recession derived from the near-term forwards are more volatile than those derived from a traditional yield curve analysis (see Exhibit 3). In the last few years they've assigned a higher probability of recession than the curve did, but neither has topped 40%.

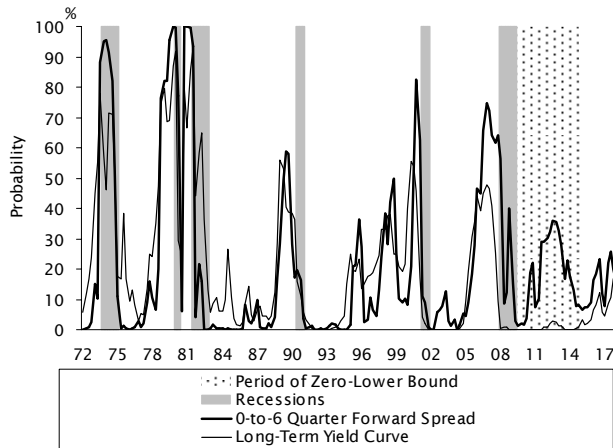
### The Absence of a Term Premium Has Changed the Game

In the current environment there are a couple of stumbling blocks when employing the traditional yield curve as a forecasting tool. Growth expectations have been marked down through much of the post-Crisis era and the associated reduction in the nominals has been imbued to the long end. More important, the term premium has disappeared from the Treasury market and investors are being paid nothing to take on duration risk (see Exhibit 4). The major Central Banks believe this unusual state of affairs is in large part attributable to their own QE programs, and there's considerable evidence that the cross-border flows have had a substantial effect on yields.<sup>2</sup> The causality moves across the oceans in both directions.

<sup>1</sup>Engstrom, E. and Steven Sharpe, 2018. "(Don't Fear) The Yield Curve," FEDS Notes, Washington. Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/2380-7172.2212>.

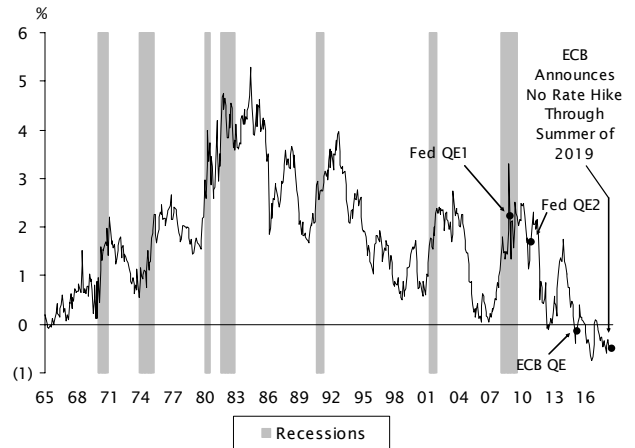
<sup>2</sup>Global Portfolio Strategy June 2018. "The Big Picture: Less Synchronous?"

**Exhibit 3: U.S. Treasuries**  
**Long-Term Yield Curve and Near-Term Forward Spread**  
**Estimated Recession Probabilities**  
**1972 Through Q1 2018**



Source: Engstrom, E. and Steven Sharpe, 2018. "(Don't Fear) The Yield Cure," FEDS Notes. Washington. Board of Governors of the Federal Reserve System.

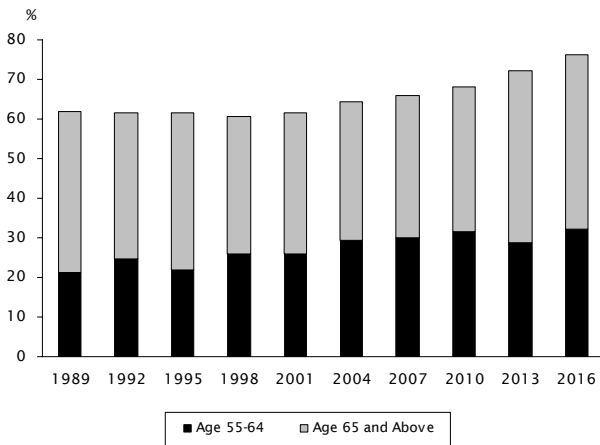
**Exhibit 4: Ten-Year Treasury Bond Term Premium**  
**1965 Through Early-July 2018**



Source: Adrian, T., Crump, R. K. and Emanuel Moench, 2008. "Pricing the Term Structure with Linear Regressions," National Bureau of Economic Research.

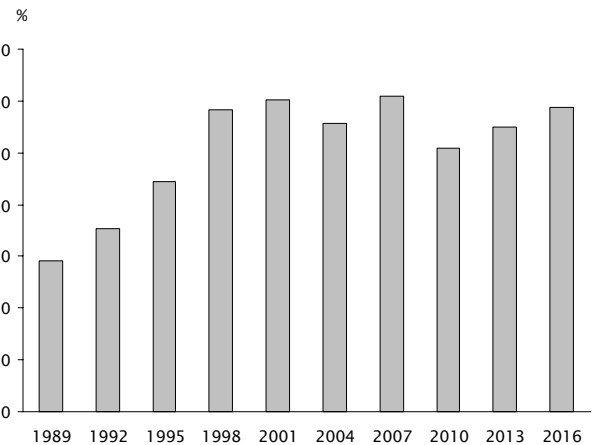
We also think that the aging of the baby boomer generation and the associated increase in the risk aversion of the household sector have had a consequential impact on the term premium. That's because Boomers and their predecessors own 70% of all household discretionary financial assets in the U.S. (see Exhibit 5). More than prior generations Boomers have held lots of equities, including in the decade that preceded the financial crisis (see Exhibit 6). In the past ten years they've reallocated toward perceived safe havens, and are apparently willing to accept very-low nominal returns from them. Even though they've been disinterested in equities the stock market performed well anyway, so their exposure to them remains at near a record level.

**Exhibit 5: Households: Age 55 and Above**  
**Share of Discretionary Financial Assets**  
**1989 Through 2016**



Source: Federal Reserve Board: Survey of Consumer Finance, Empirical Research Partners Analysis.

**Exhibit 6: U.S. Households: 55 Years and Above**  
**Equities as a Share of**  
**Discretionary Financial Assets**  
**1989 Through 2016**



Source: Federal Reserve Board: Survey of Consumer Finance, Empirical Research Partners Analysis.

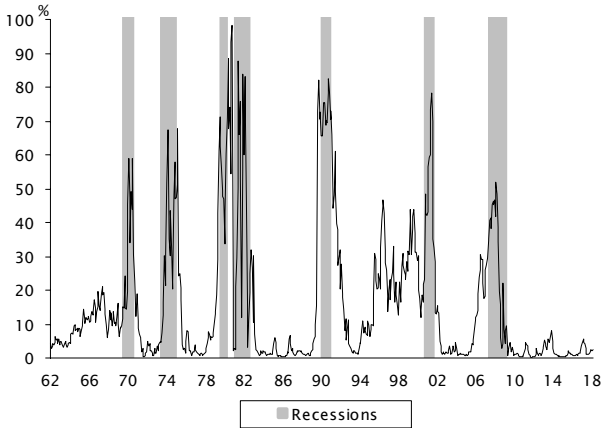
There's also the matter of the term premium, and if we adjust the traditional curve for changes in it, the odds of a recession decline to close to zero (see Exhibit 7). We're not sure a complete adjustment is the right thing to do, but we don't think the message from the curve should be taken at face value either.

**Conclusion: The Risk as Usual is Overconfidence**

It seems to us that the risk to this expansion, now technically in its tenth year, is not an infectious disease, but death at the hand of the Administration, as a widening trade war proves unwinnable, with profit margins among the first casualties. Bombing one's own supply chains, of the Special Forces no less, is a mistake. If that threat recedes, we don't yet see a serious endogenous risk to the cycle.

The inflation data still looks benign, and Exhibit 8 compares the Underlying Inflation Gauge, an indicator of the primary trend in the core CPI, to the Fed's favorite inflation construct, the core PCE deflator. The two are sending the same message: the Fed has been directionally correct and they're close to meeting their 2% inflation target with no overshoot in sight. Their work on the use of the forwards to assess the odds of recession also strikes us as on the mark.

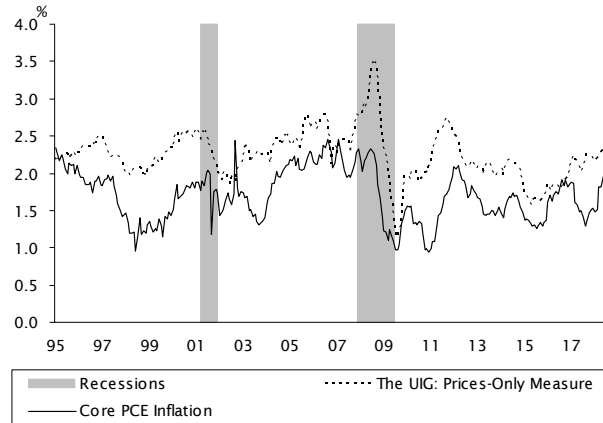
**Exhibit 7: One-Year-Forward Probabilities of U.S. Recession As Predicated by the Yield Curve Adjusted for Term Premia<sup>1</sup> 1962 Through Early-July 2018**



Source: National Bureau of Economic Research, Johansson, P. and Andrew Meldrum, 2018. "Predicting Recession Probabilities Using the Slope of the Yield Curve," FEDS Notes. <https://doi.org/10.17016/2380-7172.2146>.

<sup>1</sup>Spreads based on the ten-year zero-coupon and the three-month Treasury yields. Premia estimated by a no arbitrage term structure model.

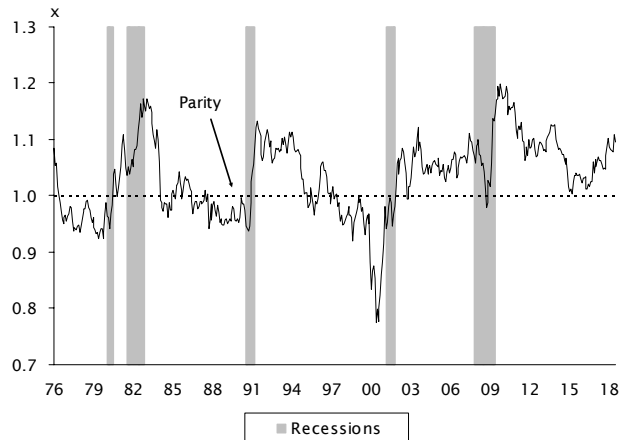
**Exhibit 8: The Underlying Inflation Gauge: Prices-Only Measure and the Core PCE Inflation 1995 Through June 2018**



Source: Federal Reserve Bank of New York, Bureau of Economic Analysis, National Bureau of Economic Research, Empirical Research Partners Analysis.

The internal dynamics of the market don't suggest that equity investors believe the cycle is near an end. The relative-P/E multiples of cyclicals aren't low nor have they been coming down (see Exhibit 9). Valuation spreads in those sectors are almost uniformly below average, as are those for the market as a whole (see Exhibit 10). The widest spreads have been in pharmaceuticals and biotech, as some stocks drawn from the latter industry have been priced to double-digit free cash flow yields. All of this suggests that investors have no insight as to the duration of the expansion and are treating it as though it will be of an indeterminate length. Given the facts at hand, we see that stance as rational, barring a trade war that spirals out of control.

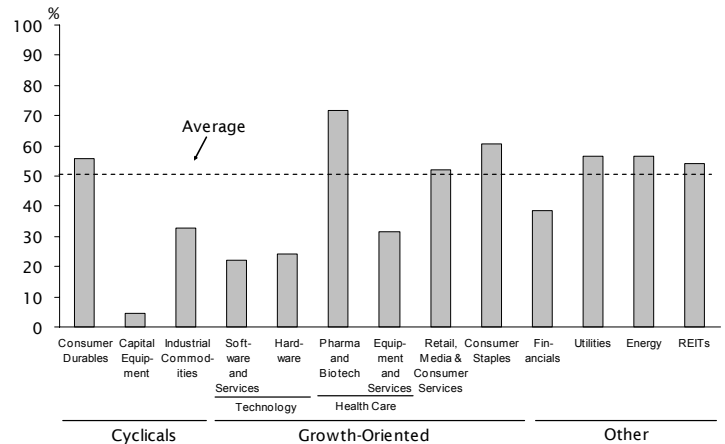
**Exhibit 9: Large-Capitalization Cyclical Stocks<sup>1</sup> Relative Forward-P/E Ratio<sup>2</sup> 1976 Through Early-July 2018**



Source: National Bureau of Economic Research Corporate Reports, Empirical Research Partners Analysis.

<sup>1</sup>Comprises industrial commodities, capital goods and consumer cyclicals.  
<sup>2</sup>Capitalization-weighted data.

**Exhibit 10: Intra-Sectoral Valuation Spreads<sup>1</sup> Current Readings Compared to the Long-Term History Percentiles (1=Narrowest; 100=Widest) 1952 Through June 2018**



Source: Empirical Research Partners Analysis.

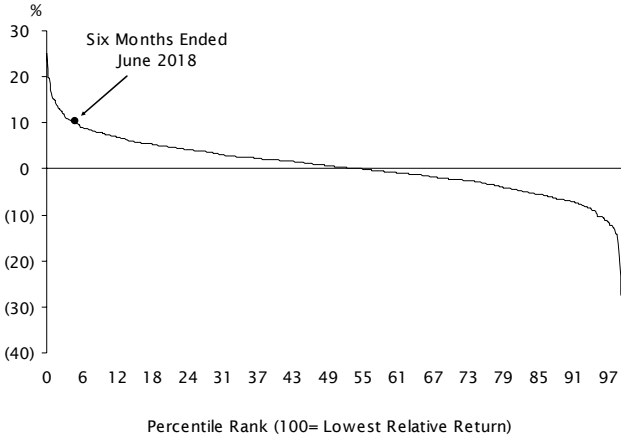
<sup>1</sup>Based on an analysis of a 1,500 stock universe. Framework varies across sectors depending on what's efficacious.

## Top-Line Mania Usually Mean Reverts

### Tech and Energy are the Story

In the first-half of this year an investor could have beat the market by more than +10 percentage points by simply buying the stocks with the best top-line growth, measured over the prior four quarters (see Exhibit 11). That ranks as one of the best runs of the last 65½ years. The handful of better ones often coincided with economic booms, when commodity prices were soaring (see Exhibits 12 and 13).

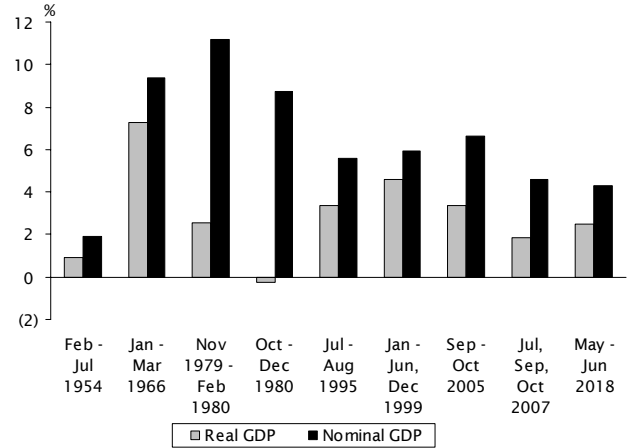
**Exhibit 11: Large-Capitalization Stocks  
Relative Returns to the Top Quintile of Revenue Growth'  
Monthly Data Compounded to Six-Month Periods  
1952 Through June 2018**



Source: Corporate Reports, Empirical Research Partners Analysis.

'Capitalization-weighted data; revenue growth measured on a trailing four-quarter basis.

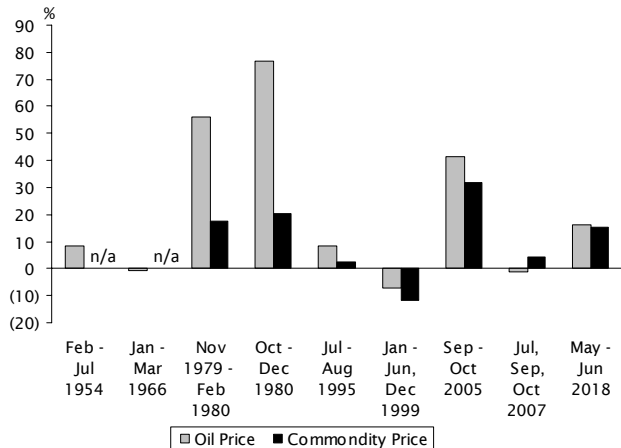
**Exhibit 12: Periods of Strong Relative Returns  
to the Top Quintile of Revenue Growth  
Trailing Four-Quarter Growth Rates  
in Real and Nominal GDP  
1952 Through June 2018**



Source: Bureau of Economic Analysis, Empirical Research Partners Analysis.

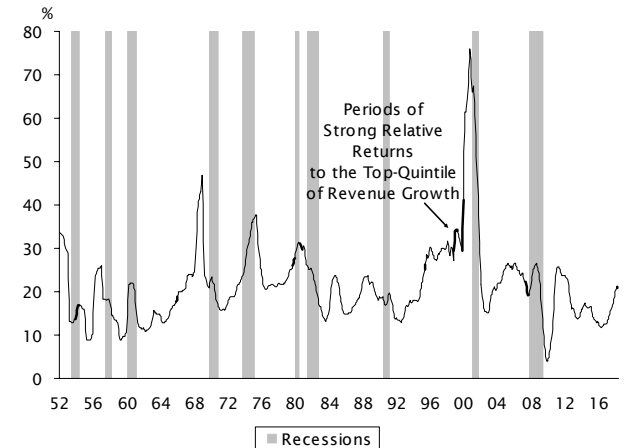
A singular focus on top-line growers has usually coincided with an acceleration in the pace of revenue gains. Exhibit 14 depicts the minimum four-quarter revenue growth rate required to rank in the market's top quintile, with the previous episodes of exceptional relative performance shown in black. Today's cut-off is comparable to the levels seen in 1995 and 2005 and is a far cry from what went on in the late-1990s, a true outlier.

**Exhibit 13: Periods of Strong Relative Returns  
to the Top Quintile of Revenue Growth  
Trailing Four-Quarter Commodity Price Returns  
1952 Through June 2018**



Source: Energy Information Administration, Bloomberg L.P., Empirical Research Partners Analysis.

**Exhibit 14: Large-Capitalization Stocks  
Minimum Growth Rate to Rank in the Top Quintile  
Measured on a Trailing Four-Quarter Basis'  
1952 Through June 2018**

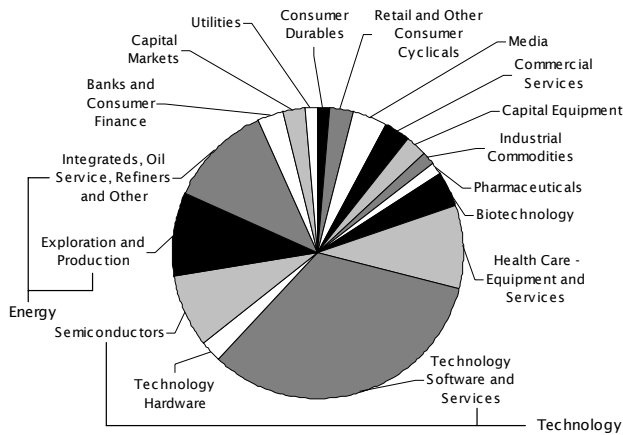


Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

'Data smoothed on a trailing three-month basis.

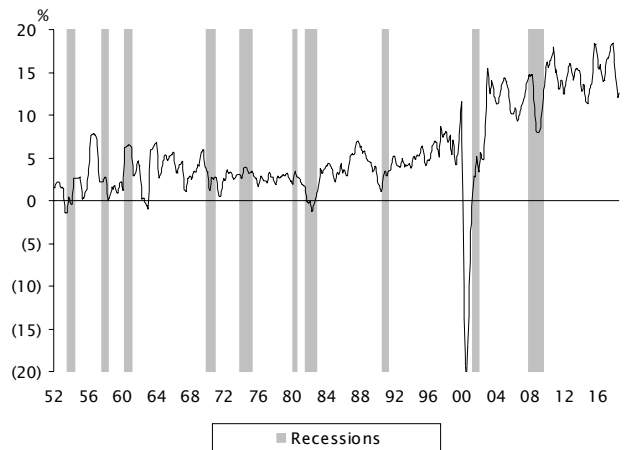
What's driven the strong relative returns this year are the tech-software/internet plays, along with the revaluation of the beleaguered energy sector (see Exhibit 15). Those two groups sourced just over 40% of the big top-line growers and more than 60% of the stocks that put up first-half returns of +10% or greater. What's different this time is that the technology leadership is enormously profitable, having business models that are scalable in a way not seen before. That's being picked up in the free cash flow margins of the leadership, that are about three times the long-term average (see Exhibit 16). The intersection of big growth and the nearly-unprecedented margins has proven very hard to beat. The forward multiple of the top-line growers has increasingly embodied that reality and now is at nearly a 40% premium to the market, the largest since the New Economy era (see Exhibit 17). The only other times we've seen premia of this sort was early in economic cycles, when years of margin expansion lie ahead.

**Exhibit 15: Large-Capitalization Stocks**  
Sector Mix of the Top Quintile of Revenue Growth With Nominal Returns Greater Than +10% 2018 Through June



Source: Empirical Research Partners Analysis.

**Exhibit 16: Large-Capitalization Stocks<sup>1</sup>**  
The Top Quintile of Revenue Growth Free Cash Flow Margins 1952 Through Early-July 2018

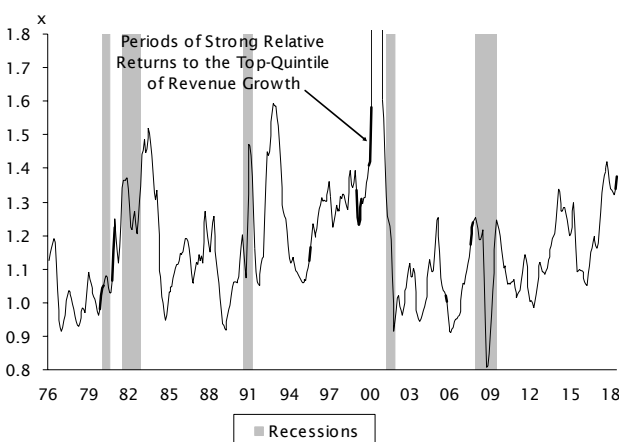


Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

<sup>1</sup>Excludes financials; capitalization-weighted data smoothed on a trailing three-month basis.

We then examined how the revenue leadership has done in the year following a big run of outperformance. In Exhibit 18 we depict the cap-weighted buy-and-hold returns of the leadership stocks over the subsequent twelve months. They've underperformed in every episode save that in the mid-1950s, as the tough comparisons weighed. The worst pain came when the New Economy era ended.

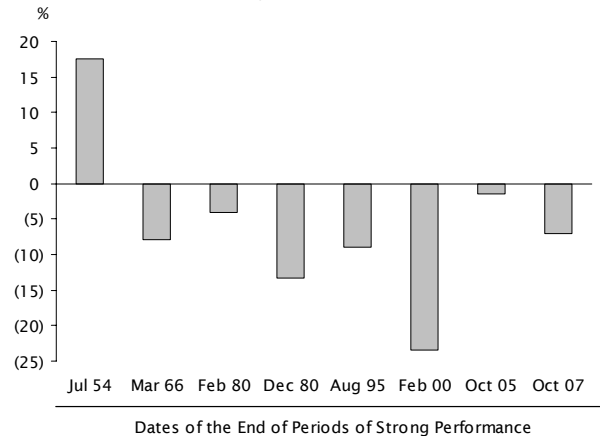
**Exhibit 17: Large-Capitalization Stocks<sup>1</sup>**  
In the Top Quintile of Revenue Growth Relative Forward-P/E Ratios 1976 Through June 2018



Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

<sup>1</sup>Excludes financials; capitalization-weighted data smoothed on a trailing three-month basis.

**Exhibit 18: Large-Capitalization Stocks**  
Relative Returns to the Top Quintile of Revenue Growth<sup>1</sup> One Year After Periods of Strong Performance 1952 Through June 2018



Source: Empirical Research Partners Analysis.

<sup>1</sup>Capitalization-weighted data measured with one-year holding periods.

**Conclusion: More Cautious After a Big Run**

History tells us that powerful runs by big top-line growers, like the one we've just seen, don't last, and in fact tend to mean revert. Some of that stems from the character of commodity prices. What's different this time is that the mega-cap technology leadership is inordinately profitable and generates lots of free cash flow. Our core model has been helpful after moves like the latest one, with the stocks in the top-quintile leading by +7.5 percentage points in the next year. Exhibit 19 uses that framework to rank the issues in the top-quintile of revenue growth that produced nominal returns of at least +10% in the first half of this year.

**Exhibit 19: Large-Capitalization Stocks  
Top Quintile of Revenue Growth With Returns of +10% or More in the First-Half of 2018  
Core Model Ranking Report  
Sorted by Capitalization Within Core Model Rank  
As of Early-July 2018**

Symbol	Company	Price	Quintile Ranks (1=Best; 5=Worst)					Core Model Rank	Forward-P/E Ratio	Market Capitalization (\$ Billion)
			Super Factors		Earnings					
			Valuation	Capital Deployment	Quality and Trend	Market Reaction				
BHP	BHP BILLITON GROUP (AUS)	\$50.83	2	1	1	2	1	15.0	x	\$135.3
ADBE	ADOBE SYSTEMS INC	249.77	5	3	1	1	1	35.6		122.5
EQNR	EQUINOR ASA	27.62	2	1	1	2	1	14.3		91.8
E	ENI SPA	38.54	1	2	1	2	1	13.9		69.7
MU	MICRON TECHNOLOGY INC	54.31	1	3	3	1	1	4.8		63.0
VLO	VALERO ENERGY CORP	109.27	2	1	4	1	1	15.8		47.1
HFC	HOLLYFRONTIER CORP	70.00	2	1	3	1	1	12.0		12.4
PE	PARSLEY ENERGY INC	32.44	3	5	1	1	1	19.9		10.5
ON	ON SEMICONDUCTOR CORP	23.33	1	3	5	2	1	13.1		10.0
RSPP	RSP PERMIAN INC	46.37	3	4	1	1	1	18.5		7.4
AR	ANTERO RESOURCES CORP	22.44	1	5	3	4	1	15.5		7.1
CRM	SALESFORCE.COM INC	141.76	5	3	3	1	2	61.2		105.3
BIDU	BAIDU INC	261.97	3	2	4	4	2	25.1		91.4
PSX	PHILLIPS 66	112.59	2	1	3	2	2	15.1		52.5
NOW	SERVICENOW INC	184.85	5	4	2	1	2	76.5		32.7
RHT	RED HAT INC	139.95	4	3	1	2	2	41.1		24.8
PANW	PALO ALTO NETWORKS INC	208.90	5	5	1	1	2	44.6		19.4
MRO	MARATHON OIL CORP	21.91	3	3	5	1	2	24.6		18.7
GDDY	GODADDY INC	74.72	5	5	1	1	2	135.1		17.0
ETFC	E TRADE FINANCIAL CORP	61.89	3	2	na	1	2	16.7		16.4
LNG	CHENIERE ENERGY INC	65.03	5	3	3	1	2	32.7		16.1
TEAM	ATLIASSIAN CORP PLC	64.78	5	3	1	1	2	99.6		15.2
SPLK	SPLUNK INC	102.15	5	2	4	1	2	93.4		14.8
WCG	WELLCARE HEALTH PLANS INC	254.71	2	4	5	1	2	24.5		11.4
UGI	UGI CORP	52.37	3	2	2	2	2	19.0		9.1
MSG	MADISON SQUARE GARDEN CO	322.02	5	4	1	1	2	NM		7.6
EPAM	EPAM SYSTEMS INC	130.48	4	4	4	1	2	30.3		7.0
EVHC	ENVISION HEALTHCARE CORP	44.20	1	3	5	4	2	12.1		5.4
GOOGL	ALPHABET INC	1,167.28	3	4	4	2	3	26.2		811.2
FB	FACEBOOK INC	204.74	3	5	3	2	3	25.8		594.2
NVDA	NVIDIA CORP	249.25	5	5	1	1	3	34.2		151.3
PYPL	PAYPAL HOLDINGS INC	86.23	5	3	3	2	3	35.9		102.4
OXY	OCCIDENTAL PETROLEUM CORP	85.25	4	1	4	1	3	17.6		65.3
ILMN	ILLUMINA INC	288.76	5	5	2	1	3	58.9		42.4
ADI	ANALOG DEVICES	97.18	4	3	4	2	3	16.8		36.0
ALGN	ALIGN TECHNOLOGY INC	348.97	5	5	1	1	3	71.1		28.0
CLR	CONTINENTAL RESOURCES INC	64.08	4	4	5	1	3	20.0		24.1
CTAS	CINTAS CORP	192.91	4	3	4	2	3	27.2		20.6
ANET	ARISTA NETWORKS INC	270.46	5	4	1	1	3	36.8		20.1
YNDX	YANDEX N.V.	37.49	4	2	5	3	3	35.7		12.3
VEEV	VEEVA SYSTEMS INC	80.20	5	3	3	1	3	57.5		11.5
MTCH	MATCH GROUP INC	39.82	4	4	3	1	3	28.0		11.0
LYV	LIVE NATION ENTERTAINMENT	50.04	4	2	4	3	3	NM		10.5
WAB	WABTEC CORP	101.66	4	4	2	1	3	25.8		9.8
SRPT	SAREPTA THERAPEUTICS INC	137.96	5	5	4	1	3	NM		9.0
EGN	ENERGEN CORP	76.64	3	5	5	1	3	20.3		7.5
TDY	TELEDYNE TECHNOLOGIES INC	204.58	4	3	3	2	3	26.1		7.3
AMZN	AMAZON.COM INC	1,739.02	5	5	5	1	4	130.3		843.9
NFLX	NETFLIX INC	418.97	5	4	5	1	4	133.8		182.1
ABT	ABBOTT LABORATORIES	62.44	4	2	3	3	4	21.6		109.5
ASML	ASML HOLDING NV	199.11	5	3	4	3	4	28.3		85.6
EOG	EOG RESOURCES INC	126.13	4	4	4	1	4	23.6		73.0
RACE	FERRARI NV	136.38	5	2	3	2	4	36.4		33.3
WDAY	WORKDAY INC	129.10	5	3	3	3	4	99.8		27.8
SQ	SQUARE INC	66.48	5	4	5	1	4	127.3		26.8
ANDV	ANDEAVOR	135.63	2	5	5	1	4	14.3		20.5
ABMD	ABIOMED INC	408.46	5	5	4	1	4	117.6		18.2
SIVB	SVB FINANCIAL GROUP	304.25	5	4	na	1	4	18.1		16.1
AMD	ADVANCED MICRO DEVICES	16.61	5	5	2	1	4	34.0		16.1
Z	ZILLOW GROUP INC	61.67	5	4	3	2	4	83.9		12.4
GRUB	GRUBHUB INC	109.67	5	5	5	1	4	58.6		9.9
NTNX	NUTANIX INC	53.14	5	5	5	1	4	NM		9.1
DXCM	DEXCOM INC	100.38	5	5	3	1	4	NM		8.8
EXAS	EXACT SCIENCES CORP	62.16	5	5	5	2	4	NM		7.6
BABA	ALIBABA GROUP HLDG	192.75	3	5	4	5	5	31.2		495.3
NTR	POTASH CORP SASKATCHEWAN INC	53.63	5	5	5	4	5	29.3		34.1
AMTD	TD AMERITRADE HOLDING CORP	56.21	4	5	na	3	5	15.6		31.9
OKE	ONEOK INC	71.31	4	5	5	1	5	26.6		29.3
GN	GLOBAL PAYMENTS INC	112.98	4	5	5	3	5	21.7		18.0
SHOP	SHOPIFY INC	158.45	5	5	5	1	5	NM		16.7
FRC	FIRST REPUBLIC BANK	101.38	4	4	na	5	5	20.4		16.4
CPRT	COPART INC	58.75	5	5	5	1	5	28.0		13.6
IT	GARTNER INC	139.07	4	5	5	4	5	36.4		12.7
SGEN	SEATTLE GENETICS INC	68.77	5	5	5	3	5	NM		10.9
W	WAYFAIR INC	121.12	5	5	4	1	5	NM		10.8
ANGI	ANGI HOMESERVICES INC	16.44	5	5	5	4	5	137.3		7.9
GWRE	GUIDEWIRE SOFTWARE INC	93.67	5	4	4	3	5	74.0		7.5

Source: Empirical Research Partners Analysis.

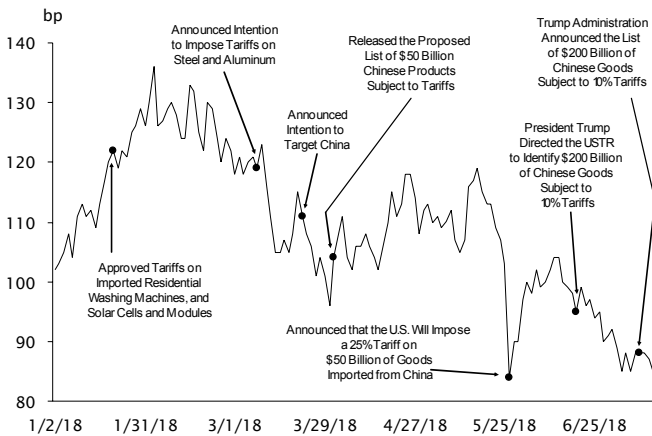


## Model and Portfolio Performance

### Trade Talk Calls the Tune

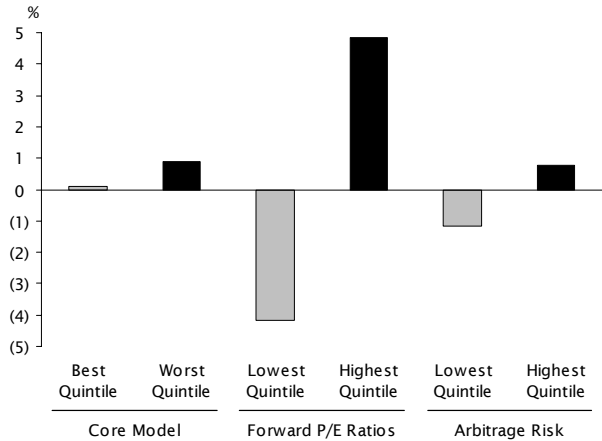
The prospect of a trade war has gradually been taken a little more seriously by the market. Paradoxically its response has been to rotate into high-P/E stocks, that have outperformed the market by +5 percentage points in the nearly four months since the Administration announced its intention to impose tariffs on steel and aluminum imports (see Exhibits 20 and 21). The highly-valued stocks are thought able to plow through the detritus left on the battlefield by a trade skirmish. The market's response has been a classic, matching behavior seen when other economic threats emerged. Recessions usually occur in market regimes that are growth-tilted or growth-driven when investors have crowded into the leadership that ultimately suffers when the bomb is actually detonated. The rotation into Big Growth created a headwind for our models, all of which pay at least some attention to valuation. Our U.S. models surrendered about half their year-to-date alpha in the last six weeks or so as a momentum market benefited the Big Growers (see Exhibits 22 and 23). Our specialty models have fared somewhat better than the generalized ones (see Exhibit 24).

**Exhibit 20: The Yield Curve Spread Between Ten-Year Treasury Bond and Three-Month Treasury Bill Yields and Protectionist Initiatives 2018 Through Mid-July**



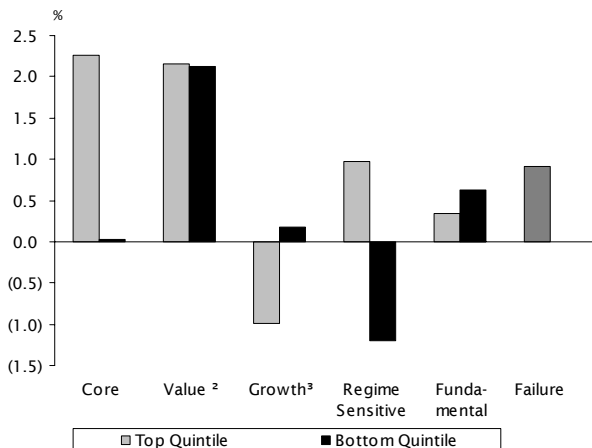
Source: Federal Reserve Board, Empirical Research Partners Analysis.

**Exhibit 21: Large-Capitalization Stocks Relative Returns to the Best and Worst Quintiles of the Core Model, Forward-P/E Ratios and Arbitrage Risk Monthly Data Compounded March 22<sup>nd</sup> Through Through Mid-July**



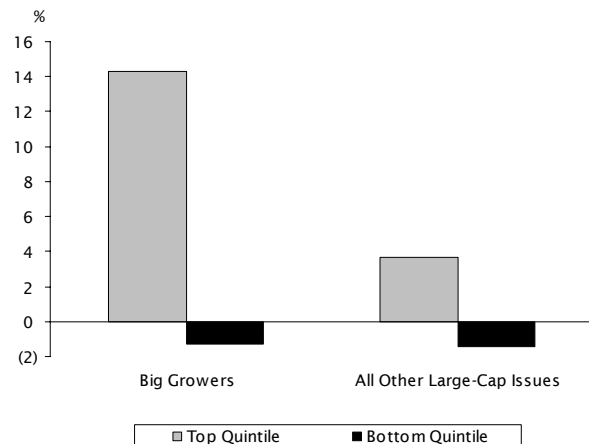
Source: Empirical Research Partners Analysis.

**Exhibit 22: Large-Capitalization Stock Selection Models Relative Returns to the Top and Bottom Quintiles<sup>1</sup> Monthly Data Compounded 2018 Through Mid-July**



Source: Empirical Research Partners Analysis.

**Exhibit 23: Large-Capitalization Stocks Relative Returns to the Top and Bottom Quintiles of Market Reaction Monthly Data Compounded 2018 Through Mid-July**



Source: Empirical Research Partners Analysis.

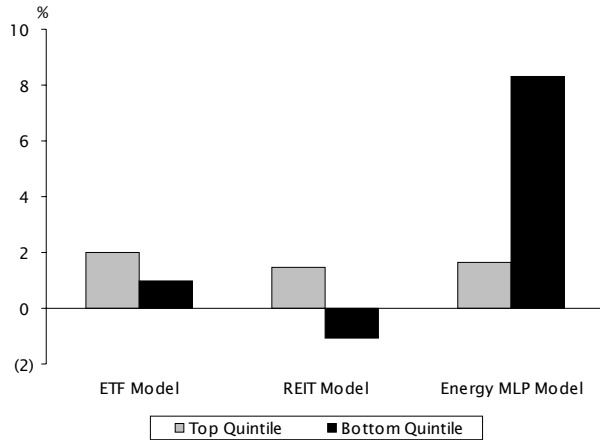
<sup>1</sup>Equally-weighted data relative to equally-weighted benchmarks.

<sup>2</sup>Relative to the Russell 1000 value index.

<sup>3</sup>Relative to the growth stock universe.

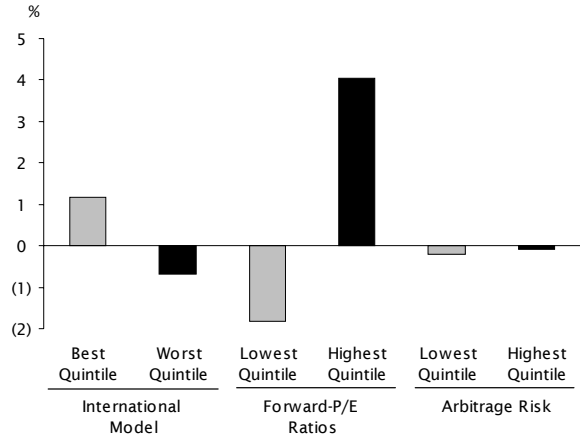
The dynamic we've witnessed in the U.S. was repeated in the international markets and there too we've given back the lion's share of this year's alpha (see Exhibits 25 and 26).

**Exhibit 24: Performance of the Empirical Specialty Models**  
**Relative Returns to the Top and Bottom Quintiles<sup>1</sup>**  
**Monthly Data Compounded**  
**2018 Through Mid-July**



Source: Empirical Research Partners Analysis.

**Exhibit 25: Developed World (ex-U.S.) Stocks**  
**Relative Returns to the Best and Worst Quintiles**  
**of the International Model, Forward-P/E Ratios**  
**and Arbitrage Risk**  
**Monthly Data Compounded**  
**March 22<sup>nd</sup> Through Mid-July 2018**



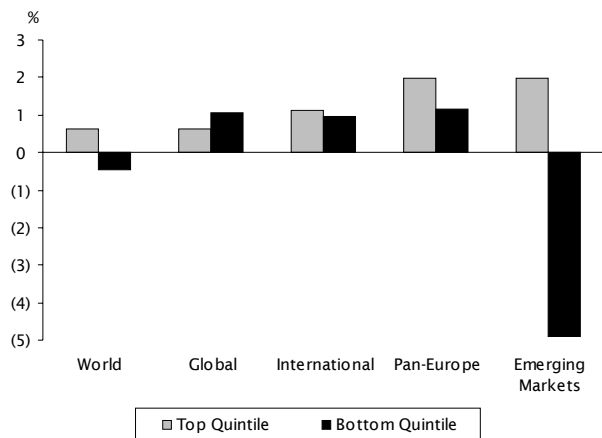
Source: Empirical Research Partners Analysis.

<sup>1</sup>Returns relative to the relevant universes.

**Portfolio Performance and Changes**

Our portfolios have suffered the same fate as our models, hurt by their underweights in the FANG stocks and overweights in the financials. Performance was boosted though by our move early this year into the energy stocks that were demonstrating improved capital allocation behavior, that've done well. The value and core portfolios have generated alpha while the more growth-focused ones have lagged (see Exhibit 27).

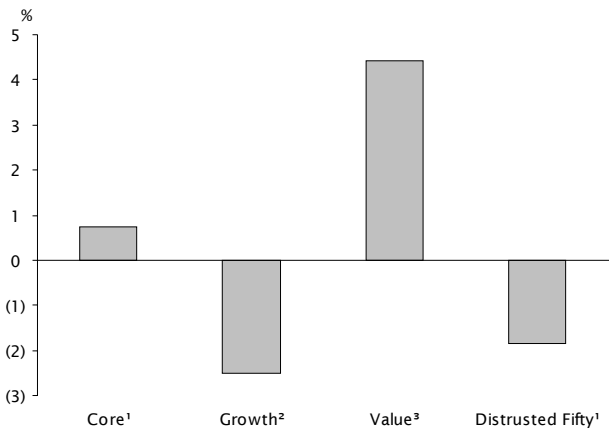
**Exhibit 26: Non-U.S. Stock Select Models**  
**Relative Returns of the Top and Bottom Quintiles<sup>1</sup>**  
**Monthly Data Compounded to Annual Periods**  
**2018 Through Mid-July**



Source: Empirical Research Partners Analysis.

<sup>1</sup>Equally-weighted data relative to equally-weighted benchmarks.

**Exhibit 27: Performance of Our Recommended Portfolios**  
**Relative Returns Versus Style-Specific Benchmarks**  
**2018 Through Mid-July**



Source: Empirical Research Partners Analysis.

<sup>1</sup>Compared to the S&P 500.

<sup>2</sup>Compared to Russell 1000 Growth.

<sup>3</sup>Compared to Russell 1000 Value.

From here, the stakes surrounding the trade war are huge. We don't have proprietary insight into the Administration's game plan, but we are sure what's going on is an existential threat to the Bretton Woods II era, that's proved very beneficial to margins. We're adding a little more to the traditional defensive sectors, where we've had minimal exposure, at the expense of our financials weighting. Exhibits 28 through 35, that begin on page 11, present the changes to, and holdings of, our managed portfolios.

**Exhibit 28: Changes to the Distrusted Fifty  
As of Mid-July 2018**

Symbol	Company	Price at Inclusion	Recent Price	Market Capitalization (\$ Billion)	Rationale
<b>Additions</b>					
JNJ	JOHNSON & JOHNSON	\$124.69	\$124.69	\$334.4	Add to Health Care
NVR	NVR INC	3,070.88	3,070.88	11.13	Attractive
QRVO	QORVO INC	81.33	81.33	10.27	Attractive
<b>Deletions</b>					
MMM	3M CO	\$77.21	\$201.11	\$119.4	Appreciation
AXP	AMERICAN EXPRESS CO	20.04	100.69	86.63	Appreciation
LBTYK	LIBERTY GLOBAL PLC	34.61	27.95	23.22	Better opportunity elsewhere

Source: Empirical Research Partners Analysis.

**Exhibit 29: The Distrusted Fifty  
Large-Capitalization Growth Stocks with High Reinvestment Rates Discounting Relatively Low Secular Earnings Growth  
Sorted by Capitalization  
As of Mid-July 2018**

Symbol	Company	Price at Inclusion	Recent Price	Quintile Ranks (1=Best; 5=Worst)					Growth Model Rank	Forward-P/E Ratio	Rate of Earnings Reinvestment	Implied Earnings Growth Rate	Implied Earnings Growth/Reinvestment Rate	Free Cash Flow Yield	Market Capitalization (\$ Billion)
				Super Factors											
				Capital Deployment	Earnings Quality and Trend	Market Reaction	Valuation								
AAPL	APPLE INC	\$13.24	\$190.91	2	1	2	1	1	15.5 x	31 %	+4.8 %	16 %	5.8 %	\$943.7	
GOOGL	ALPHABET INC	298.80	1,196.51	4	4	3	3	3	26.8	20	14.1	71	2.6	831.5	
MSFT	MICROSOFT CORP	41.23	104.91	1	4	2	3	2	26.2	NM	7.7	NM	4.2	806.8	
JNJ	JOHNSON & JOHNSON	124.69	124.69	2	3	5	2	3	15.2	13	3.0	22	5.5	334.4	
WFC	WELLS FARGO & CO	32.42	56.99	2	na	3	1	3	12.6	6	1.9	30	na	276.3	
UNH	UNITEDHEALTH GROUP INC	74.70	256.98	2	4	2	2	2	20.0	17	7.6	44	5.0	247.2	
BA	BOEING CO	74.78	356.10	1	1	1	3	1	23.8	NM	6.7	NM	6.1	208.0	
TSM	TAIWAN SEMICONDUCTOR MFG CO	16.75	37.79	1	2	4	1	1	16.2	11	3.7	33	4.9	196.0	
PEP	PEPSICO INC	82.15	112.96	1	3	3	2	2	19.6	25	5.7	23	3.7	159.8	
ABBV	ABBVIE INC	55.65	96.25	1	1	4	1	1	12.1	97	1.6	2	6.5	152.7	
AMGN	AMGEN INC	176.26	194.88	1	1	3	1	1	14.2	24	3.3	14	8.4	129.9	
PM	PHILIP MORRIS INTERNATIONAL	42.70	81.92	4	2	5	2	4	15.7	NM	2.8	NM	6.1	127.3	
ADBE	ADOBE SYSTEMS INC	27.81	254.68	3	1	1	5	1	36.4	26	18.6	71	2.6	124.9	
TXN	TEXAS INSTRUMENTS INC	59.28	114.56	3	1	2	4	2	20.8	17	5.7	33	4.4	112.5	
ACN	ACCENTURE PLC	31.89	167.64	3	3	3	2	3	23.6	26	5.8	22	4.8	109.7	
UNP	UNION PACIFIC CORP	146.14	138.89	1	4	2	3	2	17.7	12	5.4	43	3.6	107.7	
GILD	GILEAD SCIENCES INC	20.12	77.26	1	2	4	1	1	12.5	37	2.7	7	10.5	100.5	
AVGO	BROADCOM INC	32.35	203.25	2	2	5	1	1	10.0	22	(1.3)	NM	8.4	88.6	
BIIB	BIOMERIE INC	67.38	353.03	4	1	3	1	1	14.6	36	6.9	19	6.4	74.5	
CELG	CELGENE CORP	134.15	85.23	4	2	5	1	1	9.7	54	(0.4)	NM	6.0	62.4	
TJX	TJX COMPANIES INC	16.34	95.19	1	2	2	2	1	19.5	41	7.6	19	3.7	59.7	
AGN	ALLERGAN PLC	229.32	175.66	5	1	4	1	1	10.9	NM	3.7	NM	10.7	59.6	
LVS	LAS VEGAS SANDS CORP	62.27	74.08	1	1	3	2	1	20.6	NM	6.8	NM	7.1	58.5	
ITW	ILLINOIS TOOL WORKS	63.12	141.82	2	1	5	2	3	18.1	37	5.6	15	4.5	48.0	
AMAT	APPLIED MATERIALS INC	52.09	46.31	3	1	5	1	1	10.0	51	(0.4)	NM	7.7	46.7	
COF	CAPITAL ONE FINANCIAL CORP	42.77	95.91	4	na	2	1	2	9.4	5	(1.5)	NM	na	46.7	
MAR	MARRIOTT INTERNATIONAL INC	69.75	130.79	2	2	4	3	2	23.1	39	8.0	21	4.7	46.4	
HAL	HALLIBURTON CO	55.14	44.96	2	3	4	3	4	17.5	0	3.9	NM	4.1	39.4	
EBAY	EBAY INC	25.75	37.73	1	4	5	1	3	16.2	24	7.7	32	6.2	38.0	
HCA	HCA HEALTHCARE INC	81.95	106.83	1	4	2	1	1	12.0	34	4.4	13	6.2	37.5	
MCO	MOODY'S CORP	28.63	182.32	1	1	3	3	1	23.2	NM	8.0	NM	4.5	35.0	
STT	STATE STREET CORP	29.97	93.20	2	na	4	1	2	11.9	8	2.4	31	na	34.1	
TEL	TE CONNECTIVITY LTD	74.62	91.26	5	5	4	2	5	15.7	14	4.3	31	4.0	32.0	
TROW	PRICE (T. ROWE) GROUP	65.36	120.38	2	na	2	2	2	16.3	16	4.2	26	na	28.2	
LRCX	LAM RESEARCH CORP	82.66	171.79	1	1	5	1	1	10.0	36	(0.4)	NM	8.6	29.3	
MCK	MCKESSON CORP	182.39	135.58	1	5	4	1	2	10.1	4	(1.5)	NM	13.7	27.4	
DG	DOLLAR GENERAL CORP	73.39	99.13	4	2	3	1	2	16.3	23	7.2	32	4.4	26.5	
DFS	DISCOVER FINANCIAL SERVICES INC	43.74	70.56	1	na	2	2	1	8.9	15	(1.0)	NM	na	24.8	
CXO	CONCHO RESOURCES INC	153.16	147.86	5	5	5	3	5	32.5	4	18.6	501	(3.5)	22.0	
VRSN	VERISIGN INC	56.47	147.94	1	2	1	4	1	31.6	42	18.6	44	3.3	18.2	
WYNN	WYNN RESORTS LTD	137.30	166.03	2	5	4	3	5	19.7	NM	5.8	NM	0.0	18.0	
BEN	FRANKLIN RESOURCES INC	43.11	32.10	1	na	5	2	3	10.1	2	(2.1)	NM	na	17.4	
CHKP	CHECK POINT SOFTWARE TECHNOLOGIES INC	34.41	108.97	2	1	5	2	3	19.3	23	10.3	45	6.6	17.3	
WAT	WATERS CORP	47.00	193.50	1	1	4	3	2	23.3	26	12.3	47	4.0	15.2	
CTXS	CITRIX SYSTEMS INC	55.49	109.97	1	1	2	1	1	20.6	64	10.3	16	6.3	15.1	
NVR	NVR INC	3,070.88	3,070.88	1	1	2	2	1	15.3	44	6.9	16	4.8	11.1	
FFIV	F5 NETWORKS INC	118.56	175.68	1	1	1	2	1	17.5	46	9.1	20	6.7	10.7	
JAZZ	JAZZ PHARMACEUTICALS PLC	143.63	174.81	5	2	3	1	2	13.0	25	4.4	17	5.4	10.5	
QRVO	QORVO INC	81.33	81.33	1	1	3	1	1	13.8	13	5.9	44	5.7	10.3	
WH	WYNDHAM HOTELS & RESRTS	33.82	63.16	na	na	na	na	na	20.2	na	na	na	na	7.3	
Average									17.4 x	27 %	5.6 %	21 %	5.5 %		
All Other Large-Cap Stocks									17.7 x	8 %	6.6 %	80 %	3.6 %		

Source: Empirical Research Partners Analysis.

**Exhibit 30: Changes to Our Large-Capitalization Core Portfolio  
As of Mid-July 2018**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 07/16/18	Rationale
<b>Additions</b>					
DIS	DISNEY (WALT) CO	1.0 %	\$110.20	\$110.20	Attractive
EXC	EXELON CORP	1.0	42.15	42.15	Attractive
TEVA	TEVA PHARMACEUTICALS	1.0	23.30	23.30	Add to Pharmaceuticals
<b>Increasing Weights</b>					
GILD	GILEAD SCIENCES INC		\$97.21	\$77.26	Add to Biotechnology
	Was	0.8 %			
	Now	1.8			
JNJ	JOHNSON & JOHNSON		\$50.87	\$124.69	Add to Health Care
	Was	1.7 %			
	Now	2.0			
<b>Deletions</b>					
GS	GOLDMAN SACHS GROUP INC	1.7 %	\$120.49	\$231.44	Stress Test Result
<b>Declining Weights</b>					
COF	CAPITAL ONE FINANCIAL CORP		\$66.87	\$95.91	Stress Test Result
	Was	3.7 %			
	Now	2.7			
MS	MORGAN STANLEY		39.04	48.90	Stress Test Result
	Was	2.8 %			
	Now	2.0			
M	MACY'S INC		61.47	36.99	Better Opportunity Elsewhere
	Was	1.3 %			
	Now	0.5			

Source: Empirical Research Partners Analysis.

**Exhibit 31: The Large-Capitalization Core Portfolio  
Benchmarked to the S&P 500  
As of Mid-July 2018**

Symbol	Company	Weight	Price at Inclusion	Price 07/16/18	S&P 500 Weight	Symbol	Company	Weight	Price at Inclusion	Price 07/16/18	S&P 500 Weight
<b>CYCLICALS</b>						<b>GROWTH-ORIENTED (Cont.)</b>					
<b>Consumer Durables and Apparel</b>						<b>Health Care Equipment and Services</b>					
PHM	PULTEGROUP INC	2.0 %	\$27.16	\$30.13		ANTM	ANTHEM INC	3.4 %	\$75.58	\$248.28	
LEA	LEAR CORP	1.4	109.51	186.71		UNH	UNITEDHEALTH GROUP INC	3.0	37.16	256.98	
FCAU	FIAT CHRYSLER AUTOMOBILES NV	1.1	7.96	19.43		SYK	STRYKER CORP	1.4	49.25	173.42	
SNE	SONY CORP	0.7	30.88	53.27	1.8 %	HCA	HCA HOLDINGS INC	0.9	81.95	106.83	
		5.2 %				CAH	CARDINAL HEALTH INC	0.6	35.27	50.71	
<b>Capital Equipment</b>								9.3 %			6.4 %
BA	BOEING CO	2.6 %	\$74.78	\$356.10		<b>Retail, Media and Other Consumer Cyclicals</b>					
NOC	NORTHROP GRUMMAN CORP	1.3	62.51	320.33		H	HYATT HOTELS CORP	3.2 %	\$58.67	\$80.85	
SPR	SPIRIT AEROSYSTEMS HOLDINGS	1.1	54.55	87.76	6.8 %	TJX	TJX COMPANIES INC	1.7	10.84	95.19	
		5.1 %				COST	COSTCO WHOLESALE CORP	1.3	41.94	214.85	
<b>Commercial Services</b>								1.0	62.27	74.08	
MCO	MOODY'S CORP	1.1	\$28.63	\$182.32	1.0 %	LVS	LAS VEGAS SANDS CORP	1.0	110.20	110.20	
		1.1 %				DIS	DISNEY (WALT) CO	0.5	61.47	36.99	
<b>Industrial Commodities</b>								0.5	46.64	58.50	
LYB	LYONDELLBASELL INDUSTRIES NV	2.6	\$74.81	\$106.22		M	MACY'S INC	0.4	38.39	45.63	
FCX	FREEPORT-MCMORAN INC	1.4	16.65	16.77	2.5 %	WH	WYNDHAM HOTELS & RESRTS	0.5	46.64	58.50	
WLK	WESTLAKE CHEMICAL CORP	0.7	118.94	105.51		WYND	WYNDHAM DESTINATIONS INC	0.4	38.39	45.63	
		4.6 %						9.6 %			12.1 %
<b>Transports</b>						<b>Consumer Staples</b>					
UAL	UNITED CONTINENTAL HOLDINGS INC	0.6 %	\$22.38	\$72.26	2.1 %	PEP	PEPSICO INC	2.1	\$102.81	\$112.96	
		0.6 %				PM	PHILIP MORRIS INTERNATIONAL	1.3 %	42.16	81.92	
								3.4 %			5.8 %
<b>GROWTH-ORIENTED</b>						<b>OTHER</b>					
<b>Technology</b>						<b>Financials</b>					
MSFT	MICROSOFT CORP	5.2 %	\$52.15	\$104.91		JPM	JPMORGAN CHASE & CO	4.0 %	\$46.90	\$110.58	
AAPL	APPLE INC	3.4	63.25	190.91		C	CITIGROUP INC	3.7	55.03	69.46	
VRSN	VERISIGN INC	2.6	74.26	147.94		COF	CAPITAL ONE FINANCIAL CORP	2.7	66.87	95.91	
ACN	ACCENTURE PLC	2.1	50.25	167.64		PNC	PNC FINANCIAL SERVICES GROUP INC	2.3	66.75	140.89	
TSM	TAIWAN SEMICONDUCTOR MFG CO	2.0	9.16	37.79		MS	MORGAN STANLEY	2.0	39.04	48.90	
XLNX	XILINX INC	2.0	35.08	67.72		BAC	BANK OF AMERICA CORP	1.4	35.40	29.78	
FDC	FIRST DATA CORP	1.6	15.62	22.25		CFG	CITIZENS FINANCIAL GROUP INC	1.1	26.77	39.98	
FLEX	FLEX LTD	1.5	10.12	14.80		DFS	DISCOVER FINANCIAL SVCS INC	0.9	59.41	70.56	
EBAY	EBAY INC	1.3	28.87	37.73				18.0 %			13.6 %
VMW	VMWARE INC -CL A	1.1	138.02	155.24		<b>Energy</b>					
HPE	HEWLETT PACKARD ENTERPRISE	0.4	9.59	15.64		COP	CONOCOPHILLIPS	3.6 %	\$47.66	\$70.58	
HPQ	HP INC	0.3	14.98	23.57	26.2 %	HES	HESS CORP	1.6	67.69	63.88	
		23.6 %				OXY	OCCIDENTAL PETROLEUM CORP	1.3	91.75	82.53	
<b>Pharmaceuticals &amp; Biotechnology</b>								1.2	20.00	71.42	
JNJ	JOHNSON & JOHNSON	2.0 %	\$63.95	\$124.69		MPX	MARATHON PETROLEUM CORP	1.0	153.16	147.86	
GILD	GILEAD SCIENCES INC	1.8	86.64	77.26		NBL	NOBLE ENERGY INC	0.7	39.46	34.86	
AMGN	AMGEN INC	1.5	132.53	194.88		APA	APACHE CORP	0.4	97.66	46.00	
TEVA	TEVA PHARMACEUTICALS	1.0	23.30	23.30		MDR	MCDERMOTT INTL INC	0.3	39.76	17.72	
PFE	PFIZER INC	1.0	21.76	37.38		CHK	CHESAPEAKE ENERGY CORP	0.2	25.64	4.90	
ABBV	ABBVIE INC	1.0	88.86	96.25	7.8 %			10.2 %			6.1 %
		8.3 %				<b>Telecommunication Services</b>					
						None					
								0.0 %			2.0 %
						<b>Utilities</b>					
						EXC	EXELON CORP	1.0 %	\$42.15	\$42.15	
								1.0 %			2.9 %
						<b>Real Estate</b>					
						None					
								0.0 %			2.8 %
						<b>TOTAL</b>					
								100.0 %			100.0 %

Source: Empirical Research Partners Analysis.

**Exhibit 32: Changes to Our Large-Capitalization Value Portfolio  
As of Mid-July 2018**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 07/16/18	Rationale
<b>Increasing Weights</b>					
PEP	PEPSICO INC		\$89.89	\$112.96	Add to Staples
	Was	1.5 %			
	Now	3.5 %			
AMGN	AMGEN INC		84.65	194.88	Attractive
	Was	1.3 %			
	Now	2.0 %			
TEVA	TEVA PHARMACEUTICALS		30.21	23.30	Add to Pharmaceuticals
	Was	1.4 %			
	Now	2.1 %			
<b>Deletions</b>					
DLPH	DELPHI TECHNOLOGIES PLC	0.1 %	\$32.73	\$43.71	Appreciation
<b>Declining Weights</b>					
MS	MORGAN STANLEY		\$40.80	\$48.90	Stress Test Result
	Was	3.5 %			
	Now	2.0 %			
COF	CAPITAL ONE FINANCIAL CORP		75.40	95.91	Stress Test Result
	Was	3.1 %			
	Now	1.5 %			
M	MACY'S INC		27.01	36.99	Reduce Retailer
	Was	1.4 %			
	Now	1.0 %			

Source: Empirical Research Partners Analysis.

**Exhibit 33: The Large-Capitalization Value Portfolio<sup>1</sup>  
Benchmarked to the Russell 1000 Value Index  
As of Mid-July 2018**

Symbol	Company	Weight	Price at Inclusion	Price at 07/16/18	Benchmark Weight	Symbol	Company	Weight	Price at Inclusion	Price at 07/16/18	Benchmark Weight
<b>CYCLICALS:</b>						<b>GROWTH-ORIENTED CONT.:</b>					
<b>Consumer Durables &amp; Apparel</b>						<b>Health Care Equipment &amp; Services</b>					
PHM	PULTEGROUP INC	2.0 %	\$26.24	\$30.13		ANTM	ANTHEM INC	3.5 %	\$90.73	\$248.28	
FCAU	FIAT CHRYSLER AUTOMOBILES NV	1.1 %	7.96	19.43		UNH	UNITEDHEALTH GROUP INC	3.1 %	51.21	256.98	
SNE	SONY CORP	1.1 %	21.26	53.27		HCA	HCA HOLDINGS INC	2.0 %	51.26	106.83	
LEA	LEAR CORP	1.1 %	142.65	186.71		MCK	MCKESSON CORP	1.0 %	41.55	135.58	
		5.3 %			2.0 %			9.5 %			6.5 %
<b>Capital Equipment</b>						<b>Retail, Media, and Other Consumer Cyclical</b>					
BA	BOEING CO	2.7 %	\$74.78	\$356.10		H	HYATT HOTELS CORP	3.0 %	\$57.96	\$80.85	
NOC	NORTHROP GRUMMAN CORP	1.7 %	57.77	320.33		WMT	WAL-MART STORES INC	1.5 %	78.14	87.64	
DOV	DOVER CORP	0.8 %	21.80	74.10		M	MACY'S INC	1.0 %	27.01	36.99	
		5.1 %			5.8 %	WH	WYNDHAM HOTELS & RESRTS	0.5 %	46.64	58.50	
<b>Commercial Services &amp; Supplies</b>						<b>Consumer Staples</b>					
None		0.0 %			0.6 %	WYND	WYNDHAM DESTINATIONS INC	0.4 %	38.39	45.63	
<b>Industrial Commodities</b>						<b>OTHER:</b>					
LYB	LYONDELLBASELL INDUSTRIES NV	2.1 %	\$67.57	\$106.22		<b>Financials</b>					
FCX	FREEPORT-MCMORAN INC	1.3 %	19.18	16.77		C	CITIGROUP INC	3.9 %	\$54.69	\$69.46	
TECK	TECK RESOURCES LTD	1.2 %	25.39	24.32		JPM	JPMORGAN CHASE & CO	3.1 %	43.89	110.58	
CE	CELANESE CORP	1.0 %	85.99	108.57		BAC	BANK OF AMERICA CORP	2.6 %	25.90	29.78	
		5.6 %			4.0 %	WFC	WELLS FARGO & CO	2.3 %	33.65	56.99	
<b>Transports</b>						<b>Energy</b>					
DAL	DELTA AIR LINES INC	1.6 %	\$13.54	\$50.67		MS	MORGAN STANLEY	2.0 %	40.80	48.90	
UAL	UNITED CONTINENTAL HOLDINGS INC	1.2 %	22.38	72.26		PNC	PNC FINANCIAL SERVICES GROUP INC	2.0 %	64.26	140.89	
		2.8 %			1.5 %	DFS	DISCOVER FINANCIAL SVCS INC	1.7 %	45.94	70.56	
<b>GROWTH-ORIENTED:</b>						<b>Capital One Financial Corp</b>					
<b>Technology</b>						<b>APACHE CORP</b>					
MSFT	MICROSOFT CORP	3.9 %	\$47.54	\$104.91				1.5 %	75.40	95.91	
AAPL	APPLE INC	3.8 %	76.33	190.91				19.2 %			23.7 %
ADBE	ADOBE SYSTEMS INC	3.4 %	32.62	254.68		<b>Energy</b>					
TSM	TAIWAN SEMICONDUCTOR MFG CO	2.2 %	8.86	37.79		NBL	NOBLE ENERGY INC	2.1 %	\$34.58	\$34.86	
CHKP	CHECK POINT SOFTWARE TECHNOLOGY	2.1 %	52.75	108.97		OXY	OCCIDENTAL PETROLEUM CORP	1.7 %	59.46	82.53	
EBAY	EBAY INC	1.2 %	20.39	37.73		DVN	DEVON ENERGY CORP	1.6 %	49.14	44.21	
PYPL	PAYPAL HOLDINGS INC	0.7 %	10.09	87.77		CVX	CHEVRON CORP	1.5 %	83.39	122.98	
HPE	HEWLETT PACKARD ENTERPRISE	0.4 %	6.18	15.64		MRO	MARATHON OIL CORP	1.2 %	16.32	20.04	
HPQ	HEWLETT-PACKARD CO	0.4 %	9.57	23.57		HES	HESS CORP	1.0 %	67.69	63.88	
		18.1 %			9.9 %	MPC	MARATHON PETROLEUM CORP	0.8 %	45.49	71.42	
<b>Pharmaceuticals &amp; Biotechnology</b>						<b>APACHE CORP</b>					
TEVA	TEVA PHARMACEUTICALS	2.1 %	\$27.68	\$23.30		APA	APACHE CORP	0.6 %	49.32	46.00	
AMGN	AMGEN INC	2.0 %	124.10	194.88				10.4 %			10.8 %
BIIB	BIOGEN IDEC INC	1.9 %	67.38	353.03		<b>Telecommunications</b>					
PFE	PFIZER INC	1.9 %	22.41	37.38		<b>Utilities</b>					
CELG	CELGENE CORP	1.1 %	134.15	85.23		<b>None</b>					
ABBV	ABBVIE INC	1.0 %	88.86	96.25		<b>None</b>					
		10.0 %			7.5 %	<b>None</b>					
						<b>Real Estate</b>					
						<b>JLL JONES LANG LASALLE INC</b>					
						0.9 % \$176.67 \$167.00					
						0.9 %					
						100.0 %					
						100.0 %					

Source: Empirical Research Partners Analysis.

<sup>1</sup>The universe of eligible stocks is all large-cap issues.

**Exhibit 34: Changes to Our Large-Capitalization Growth Portfolio  
As of Mid-July 2018**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 07/16/18	Rationale
<b>Additions</b>					
AMGN	AMGEN INC	1.5 %	\$194.88	\$194.88	Attractive
NVR	NVR INC	1.4	3,070.88	3,070.88	Attractive
<b>Increasing Weights</b>					
PEP	PEPSICO INC		\$84.82	\$112.96	Add to Defensives
	Was	2.6 %			
	Now	3.5			
<b>Deletions</b>					
GS	GOLDMAN SACHS GROUP INC	1.9 %	\$123.55	\$231.44	Stress Test Result
SLB	SCHLUMBERGER LTD	1.2	83.64	67.42	Better Opportunity Elsewhere
WDC	WESTERN DIGITAL CORP	0.8	41.08	78.43	Appreciation

Source: Empirical Research Partners Analysis.

**Exhibit 35: The Large-Capitalization Growth Portfolio  
Benchmarked to the Russell 1000 Growth Index  
As of Mid-July 2018**

Symbol	Company	Weight	Price at Inclusion	Price at 7/16/2018	Sector Benchmark Weight	Symbol	Company	Weight	Price at Inclusion	Price at 7/16/2018	Sector Benchmark Weight
<b>CYCLICALS</b>						<b>GROWTH-ORIENTED (Cont.)</b>					
<b>Consumer Durables and Apparel</b>						<b>Health Care Equipment and Services</b>					
NVR		1.4 %	\$3,070.88	\$3,070.88	2.2 %	ANTM	ANTHEM INC	3.0 %	\$45.60	\$248.28	
		1.4 %				MDT	MEDTRONIC PLC	2.2	71.26	87.73	
<b>Capital Equipment</b>						<b>Retail, Media, and Other Consumer Cyclicals</b>					
BA	BOEING CO	3.6 %	\$67.85	\$356.10		AMZN	AMAZON.COM INC	5.0 %	\$832.35	\$1,822.49	
ITW	ILLINOIS TOOL WORKS	1.3	45.36	141.82		COST	COSTCO WHOLESALE CORP	3.0	42.02	214.85	
HON	HONEYWELL INTERNATIONAL INC	1.1	73.54	146.40	8.1 %	LVS	LAS VEGAS SANDS CORP	2.0	66.09	74.08	
		6.0 %				WH	WYNDHAM HOTELS & RESRTS	1.2	43.85	58.50	
<b>Commercial Services</b>						<b>WYNN</b>					
MCO	MOODY'S CORP	1.1 %	\$28.63	\$182.32	1.7 %	WYNN	WYNN RESORTS LTD	1.0	144.21	166.03	
		1.1 %				WYND	WYNDHAM DESTINATIONS INC	0.9	36.09	45.63	
<b>Industrial Commodities</b>						<b>Consumer Staples</b>					
None		0.0 %			1.7 %	PEP	PEPSICO INC	3.5 %	\$92.27	\$112.96	
<b>Transportation</b>						<b>OTHER</b>					
UNP	UNION PACIFIC CORP	1.5 %	\$115.97	\$138.89	2.6 %	<b>Financials</b>					
		1.5 %				COF	CAPITAL ONE FINANCIAL CORP	2.8 %	\$70.76	\$95.91	
<b>GROWTH-ORIENTED</b>						<b>Energy</b>					
<b>Technology</b>						<b>Telecommunications</b>					
MSFT	MICROSOFT CORP	5.2 %	\$33.64	\$104.91		<b>Utilities</b>					
VMW	VMWARE INC-CL A	4.9	109.97	155.24		<b>Real Estate</b>					
AAPL	APPLE INC	4.9	31.15	190.91		AMT	AMERICAN TOWER CORP	0.9	\$134.86	\$141.76	
GOOGL	ALPHABET INC	3.3	565.70	1196.51				0.9 %			2.1 %
FB	FACEBOOK INC	3.1	110.26	207.23		<b>TOTAL</b>					
ADBE	ADOBE SYSTEMS INC	2.5	23.89	254.68				100.0 %			100.0 %
MA	MASTERCARD INC	2.5	127.00	204.08							
ACN	ACCENTURE PLC	1.9	42.54	167.64							
VRSN	VERISIGN INC	1.6	64.75	147.94							
TSM	TAIWAN SEMICONDUCTOR MFG CO	1.6	8.31	37.79							
LRCX	LAM RESEARCH CORP	1.6	82.66	171.79							
CHKP	CHECK POINT SOFTWARE TECHNOLOGY	1.5	58.12	108.97							
CTXS	CITRIX SYSTEMS INC	1.5	106.61	109.97							
STX	SEAGATE TECHNOLOGY PLC	1.2	11.29	58.45							
AKAM	AKAMAI TECHNOLOGIES INC	0.9	68.70	77.68	41.9 %						
		38.3 %									
<b>Pharmaceuticals &amp; Biotechnology</b>											
BIIB	BIOGEN INC	2.4 %	\$52.15	\$353.03							
JNJ	JOHNSON & JOHNSON	1.8	55.25	124.69							
GILD	GILEAD SCIENCES INC	1.6	20.12	77.26							
AMGN	AMGEN INC	1.5	194.88	194.88							
TMO	THERMO FISHER SCIENTIFIC INC	1.4	72.64	208.80							
AGN	ALLERGAN PLC	1.2	229.32	175.66	7.7 %						
		9.9 %									

Source: Empirical Research Partners Analysis.