

Stock Selection: Research and Results February 2017

Correlations Come Down: Is There a Message? Serial Repurchasers: Go Big Model and Portfolio Performance

Correlations Drop, By the Most Since the Crisis

- The correlation among the returns of large-cap U.S. equities, measured daily, have in the 2000s resembled those in place during the 1930s and they've been at a level that's about 1.7 times the average seen in the intervening 70 years. We've chalked most of that up to concerns about the vulnerability of the European and Chinese systems. In recent months though the correlations have broken down, falling to their lowest point since 2006. The decline has been most acute in the stable and bond surrogate cohorts of the market. Conversely, the comovement among the issues most *anti*-correlated with the bond market, 70% of which are financials, hasn't come down at all, suggesting that investors now regard that attribute as a virtue. The bond surrogates still sell at a +32% P/E premium to their opposite numbers, compared to one of +54% at mid-year and a long-term average that's around parity.
- The correlations began to recede in the second-quarter of last year when wage growth for low-paid jobs finally turned up in earnest. At that point the overhang from the financial crisis had finally run its course and the laws of supply and demand began to reassert themselves, boosting the nominals. The election of Donald Trump as President pushed the sentiment further in the same direction. We think the message from the internals of the market is directionally correct, and we've been reluctant to give up on the financials. In the short run though we have little room for error because they've been transformed into momentum stocks. Our larger concern is that tax policies seen as protectionist become reality and undermine the market's multiple.

Serial Repurchasers: Go Big

- There are a great many companies that buy back their stock year after year, irrespective of its price. We wondered whether we should give them credit for that behavior, and instead of computing the change in share count over four quarters, as we do now, perhaps we should extend the window to encompass multiple years. We tried that and found no benefit from doing so. What did seem to matter though was size, and big reductions, of (10)% or more spread over two years have added considerable value. Those companies have led by about +5 percentage points per annum, including in this decade. If they also rank well in our core stock selection model that added another +3 percentage points to the result.
- A (5)% annual reduction in share count is a significant number when the economy is growing at a +4% nominal rate. With the market's multiple high, size should matter more than usual and we expect only the big repurchasers to generate alpha. Appendix 1 highlights companies with double-digit declines in share count in the past two years, and ranked within our core model. Airlines, insurers and credit card companies stand out.

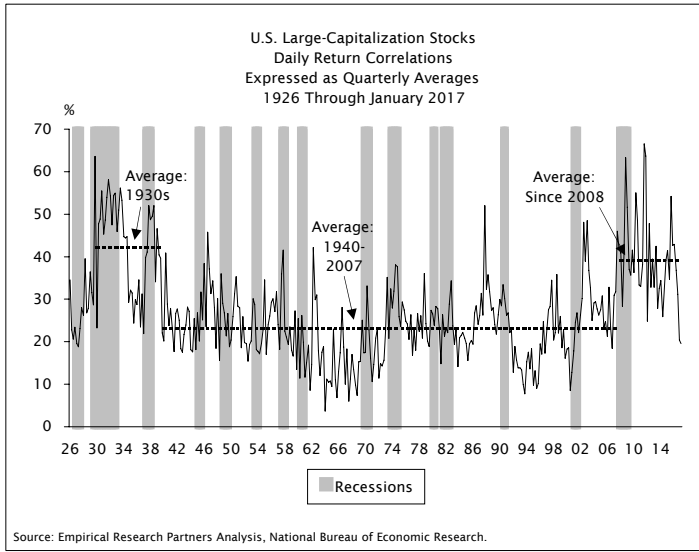
Model and Portfolio Performance

- Our stock selection models had a strong 2016, as their regime shift toward value early in the year carried the day. The best were those that pick among emerging market stocks and MLPs, along with our U.S. large- and small-cap failure models, all of which generated at least 15 percentage points of alpha. Returns in January were lackluster with the better results coming outside the U.S.
- Our portfolios had mixed performance last year with the core version and the Distrusted Fifty topping the S&P 500. The growth portfolio matched its benchmark while the value one had a significant deficit, as its performance was impaired by inadequate exposure to energy sector. It's done well in January. Exhibits 35 through 42 beginning on page 11 present the entire portfolios and changes to them.

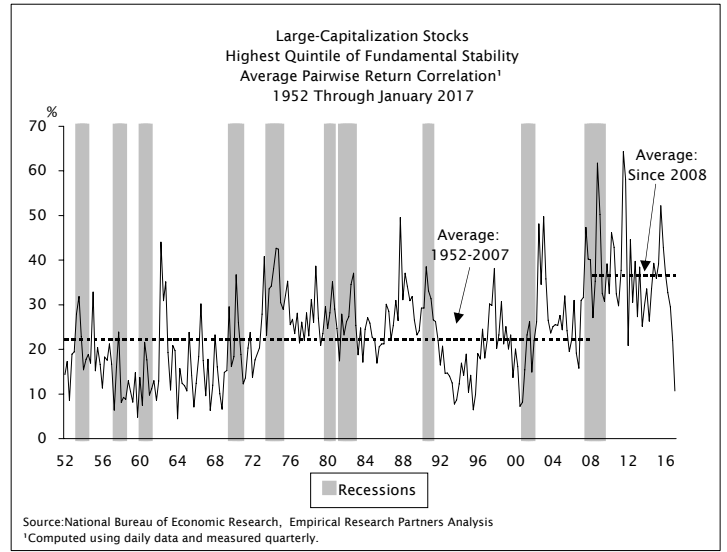
Sungsoo Yang (212) 803-7925 Yi Liu (212) 803-7942 Yu Bai (212) 803-7919 Yuntao Ji (212) 803-7920 Janai Haynes (212) 803-8005

Conclusions in Brief

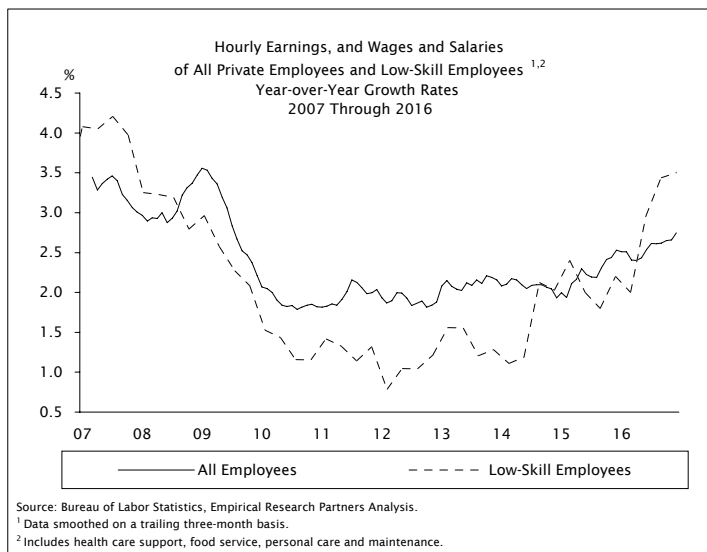
- Correlations in the daily returns of large-cap equities have come down...



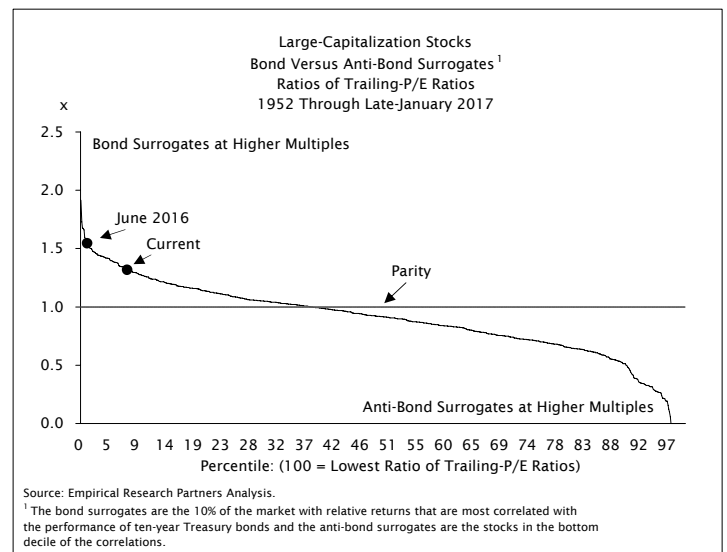
- ...Particularly among companies with stable fundamentals:



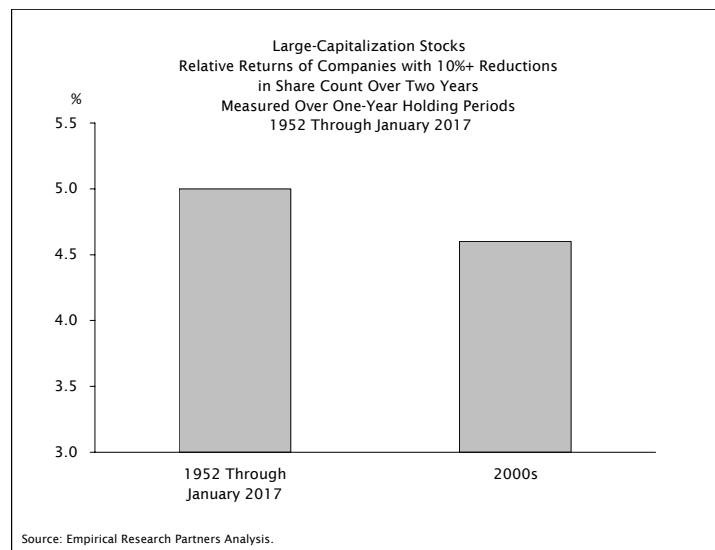
- The shift was tied to an acceleration in the nominals...



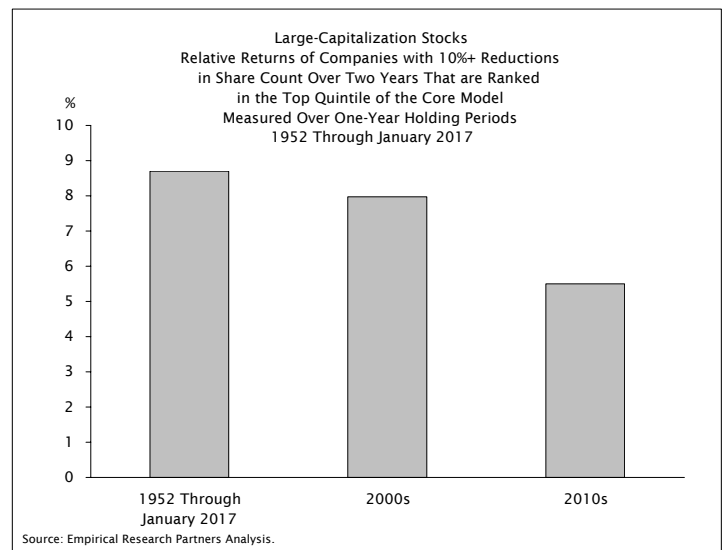
- ...And we're still a long way from normal:



- Big buybacks over multiple years produce alpha...



- ...Particularly if the stocks rank well in our core model:

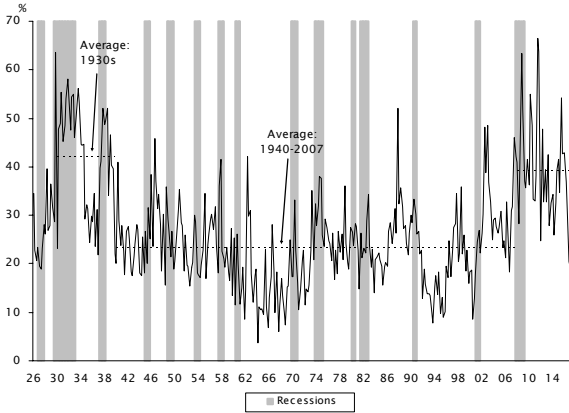


Correlations Come Down: Is There a Message?

Something is Going On

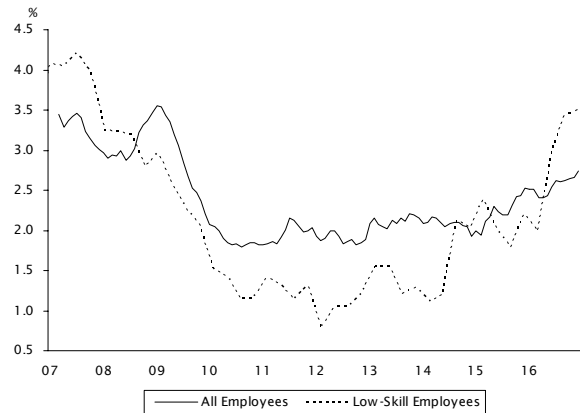
A chart that's made a distinct impression on us depicts the correlation in returns among all large-cap stocks, measured daily and reported quarterly. Since 2008 the level of those correlations has been much higher than the norms of the prior 70 years and this period has resembled what went on during the 1930s (see Exhibit 1). We've chalked that up to ongoing concerns about the viability of the post-Crisis world order, tied first and foremost to the systems in the Eurozone and China. The most recent spike occurred in the first-quarter of last year, although it fell well short of the heights reached during the European debt crisis four years earlier. In the final quarter of last year and in the first month of this one, correlations fell sharply, to their lowest point in a decade.

Exhibit 1: U.S. Large-Capitalization Stocks Daily Return Correlations Expressed as Quarterly Averages 1926 Through January 2017



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

Exhibit 2: Hourly Earnings, and Wages and Salaries of All Private and Low-Skill Employees^{1,2} Year-over-Year Growth Rates 2007 Through 2016



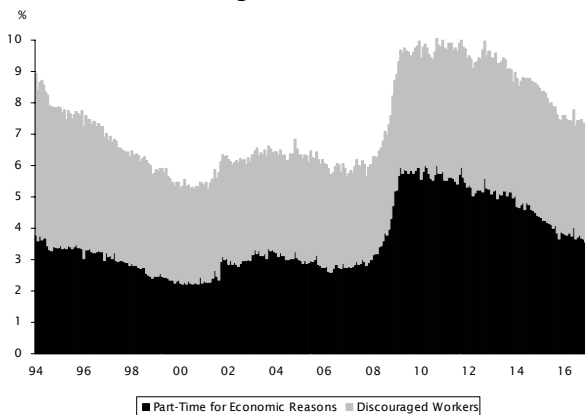
Source: Bureau of Labor Statistics, Empirical Research Partners Analysis.

¹Data smoothed on a trailing three-month basis.

²Includes health care support, food service, personal care and maintenance.

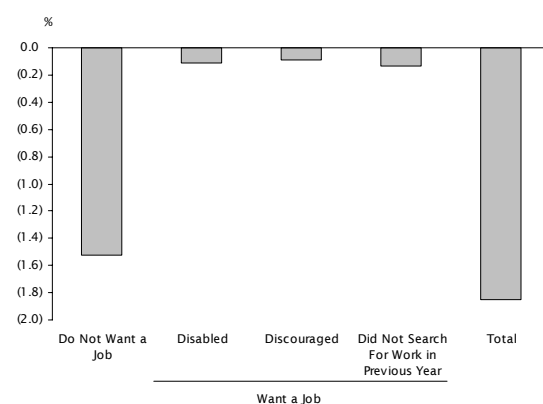
One explanation for the decline in correlations is tied to the nominals in the system, that look set to improve. Wage growth began to accelerate in 2015 and continued to do so last year after going nowhere for the better part of a decade (see Exhibit 2). That's because the inventory of people displaced by the financial crisis has finally been cleared (see Exhibit 3). The other half of the unemployment equation, the decline in the labor force participation rate, has largely stemmed from an increase in the number of people who claim they simply don't want a job (see Exhibit 4). Finally, after more than seven years, the market is regarding this cycle as being like those of the past.

Exhibit 3: The U.S. Discouraged Workers and Those Working Part-Time for Economic Reasons As a Share of the Labor Force 1994 Through 2016



Source: Bureau of Labor Statistics, Federal Reserve Bank of San Francisco, Empirical Research Partners Analysis.

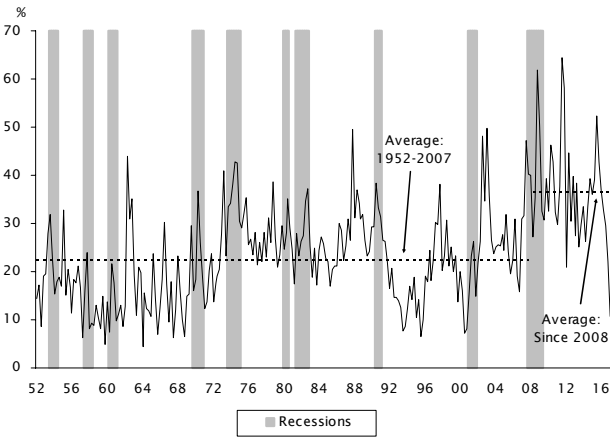
Exhibit 4: Decomposition of the Decline in the Labor Participation Rate For Those Aged Between 25 and 54 2016 Versus 2007



Source: Bureau of Labor Statistics, Empirical Research Partners Analysis.

Where there's been a real breakdown in cohesion is among the market's fundamentally-stable cohort (see Exhibit 5). To identify the members of that group we rank the stocks in the large-cap universe using an algorithm that accounts for the level and variability of ROEs, earnings stability, the dispersion of earnings estimates, financial leverage and beta (see Exhibit 6). We see a somewhat less dramatic change among the issues that sit at the other end of the distribution, the stocks with the most volatile fundamentals (see Exhibit 7).

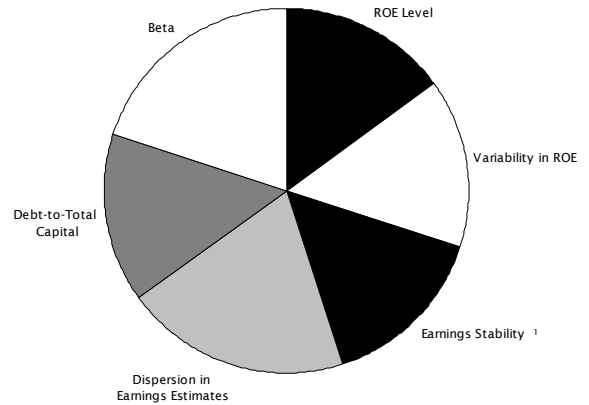
**Exhibit 5: Large-Capitalization Stocks
Highest Quintile of Fundamental Stability
Average Pairwise Return Correlation¹
1952 Through January 2017**



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

¹Computed using daily data and measured quarterly.

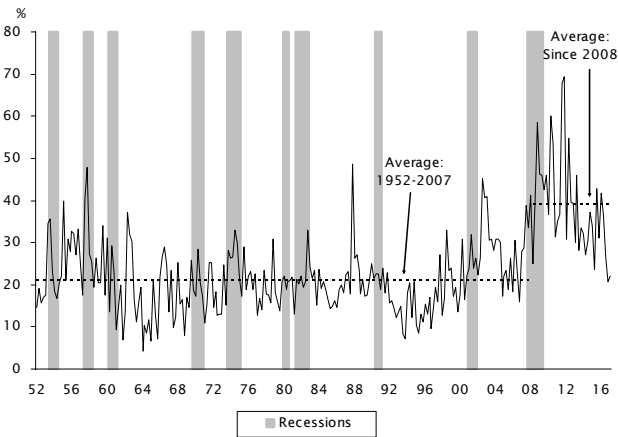
**Exhibit 6: The Fundamental Stability Scoring System
Factor Composition
2016**



Source: Empirical Research Partners Analysis.

¹Computed over the trailing twelve-quarters.

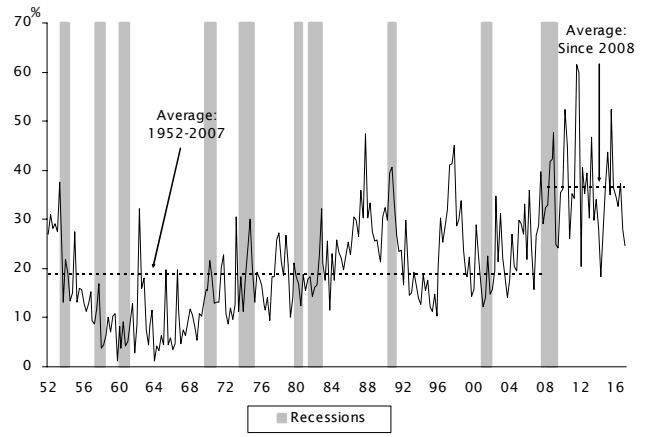
**Exhibit 7: Large-Capitalization Stocks
Lowest Quintile of Fundamental Stability
Average Pairwise Return Correlation¹
1952 Through January 2017**



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

¹Computed using daily data and measured quarterly.

**Exhibit 8: Large-Capitalization Bond Surrogates¹
Daily Return Correlations Expressed as
Quarterly Averages
1952 Through January 2017**



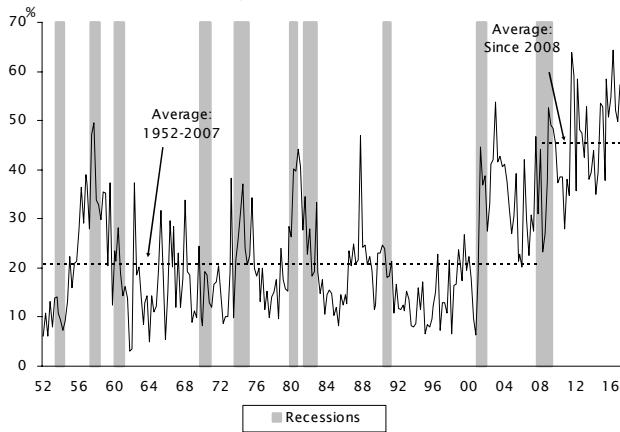
Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Bond surrogates are the 10% of the market with relative returns that are most correlated with the performance of ten-year Treasury bonds.

The Bond Surrogates Run for the Hills

The most notable divergence we see in the data are the correlations among stocks that have acted as bond surrogates and those with returns that have been anti-correlated with those of that market. The chart for the former group looks like the one for the stable stocks, while that for their opposite numbers tells a completely different story (see Exhibits 8 and 9). The stocks that represent bets against the bond market continue to behave as a single unit, perhaps because that attribute is now seen as valuable. The multiple premium of the bond surrogates has come down but we're still a long way from a literal regression to the mean (see Exhibit 10). Rather, the premium now sits at the 6th percentile of the historic distribution.

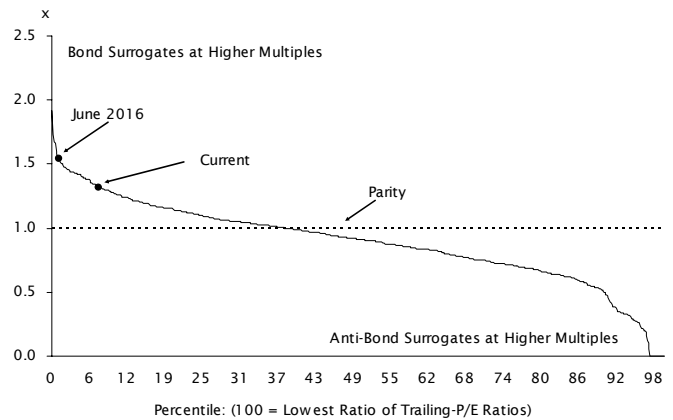
**Exhibit 9: Large-Capitalization Stocks
Stocks Most Anti-Correlated with the Bond Market¹
Daily Return Correlations Expressed as Quarterly Averages
1952 Through January 2017**



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

¹Anti-bond surrogates are the 10% of the market with relative returns that are least correlated with the performance of ten-year Treasury bonds.

**Exhibit 10: Large-Capitalization Stocks
Bond Versus Anti-Bond Surrogates¹
Ratios of Trailing-P/E Ratios
1952 Through Late-January 2017**



Source: Empirical Research Partners Analysis.

¹Bond surrogates are the 10% of the market with relative returns that are most correlated with the performance of ten-year Treasury bonds and anti-bond surrogates are the stocks in the bottom decile of the correlations.

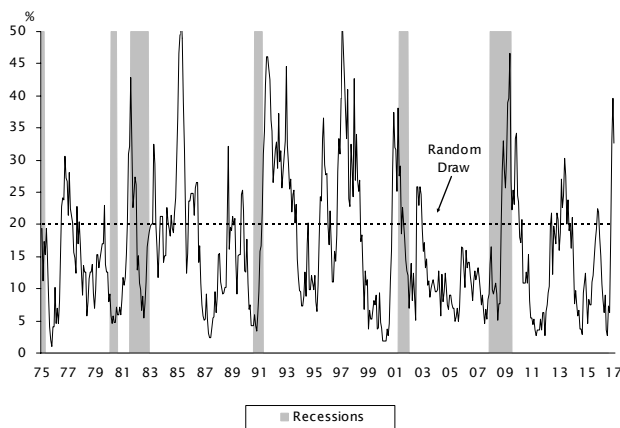
Conclusion: A Big Call

In the first-half of last year the evidence began to mount that the economic fundamentals of the U.S. were diverging from those seen elsewhere in the developed world, and that after a long malaise the nominals were poised to trend higher. Then Donald Trump got elected President on a platform of making that happen. All of that was reflected in the internal dynamics of the equity market and the virtue of stability was called into question, but not repudiated.

It's a judgment call as to whether the rotation in sentiment is correct and whether we're somewhere near a major inflection point. We think the shift in sentiment probably will turn out to be on the mark and given that we've been reluctant to give up on the financials. We're vulnerable though to any weak economic data, because like it or not, we're now long the momentum leadership (see Exhibit 11).

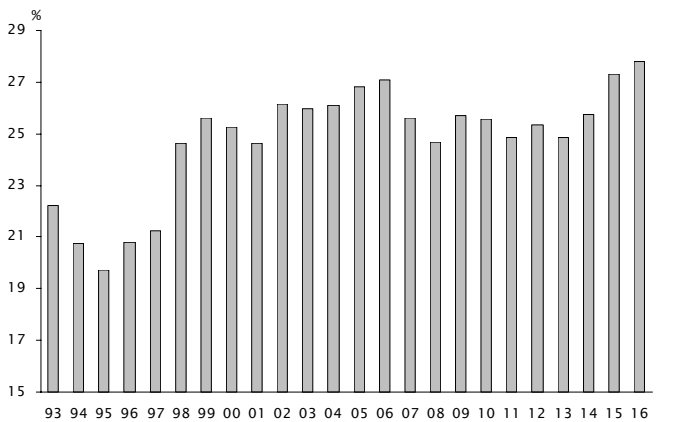
What we're most worried about is any tax scheme that smacks of protectionism and calls the world order, that's become increasingly dependent on trade, into question. In fact, in recent weeks our concerns about potentially-destructive changes in U.S. policy have mounted. China is the key link in the chain that could crack if that begins to happen (see Exhibit 12). The concerns about the viability of the Chinese system, that reached a fever pitch a year ago, could easily reemerge as their system comes under attack.

**Exhibit 11: Large-Capitalization Financial Stocks
Share in the Highest Quintile of
Nine-Month Stock Price Trends
1975 Through Late-January 2017**



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

**Exhibit 12: China's Exports to the Developed World
Share Going to the U.S.
1993 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

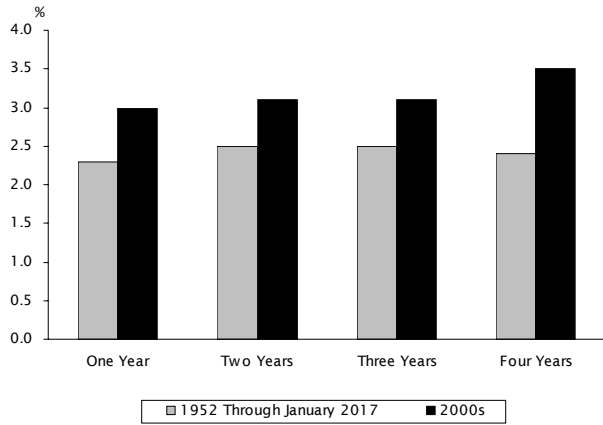
Serial Repurchasers: Go Big

It's What You've Done for Me Lately that Counts

We noticed there are many companies who've become serial repurchasers of their own stock, executing buybacks year in and year out. We wondered if we should give them extra credit for that behavior, and instead of measuring the change in share count over four quarters as we do now, we should look back over a longer window. We experimented with varying windows and found little benefit from changing what we've long done (see Exhibit 13). Apparently, like other dynamics in the investing world, what matters most is what you've done for me lately.

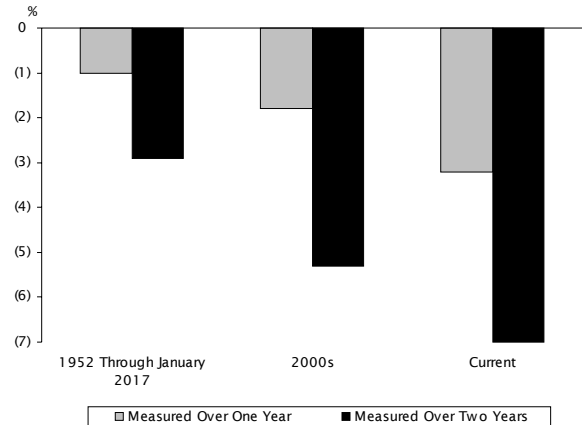
One thing that's for sure is that what it takes to qualify as a big buyback is today much larger than what it was in the past. Over the last 64 years a decline of (1)% in a year was enough to admit a company to the market's best quintile of share count change (see Exhibit 14). In the 2000s that cut-off moved up to (2)%, and at the moment it's (3.2)%. We see the same pattern when the window is extended out to two years.

Exhibit 13: Large-Capitalization Stocks
Relative Returns from Top Quintile Reductions in Share Count Depending on the Look-Back Period Measured Over One-Year Holding Periods 1952 Through January 2017



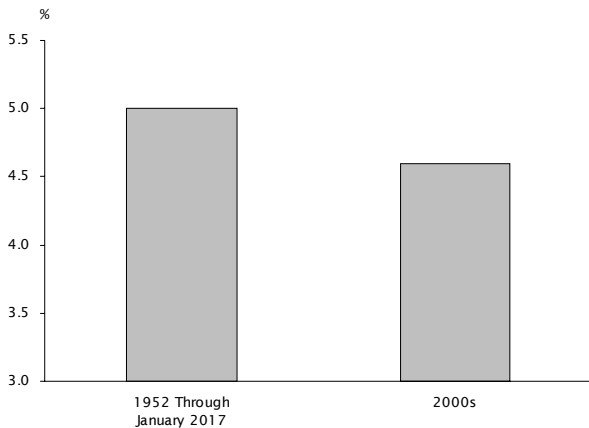
Source: Empirical Research Partners Analysis.

Exhibit 14: Large-Capitalization Stocks
Minimum Reduction in Share Count to Rank in the Top Quintile Measured Over One- and Two-Year Windows 1952 Through January 2017



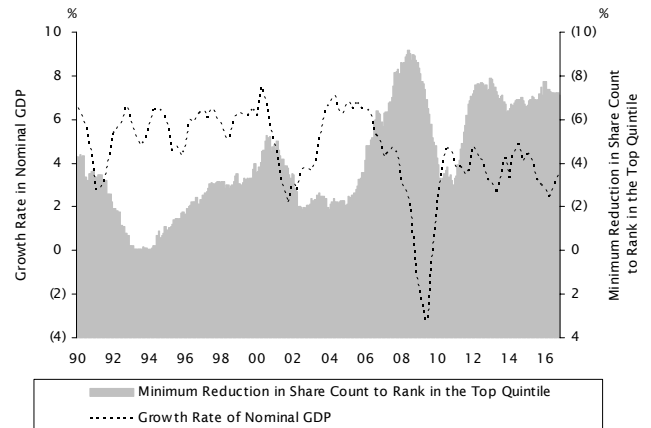
Source: Empirical Research Partners Analysis.

Exhibit 15: Large-Capitalization Stocks
Relative Returns of Companies with 10%+ Reductions in Share Count Over Two Years Measured Over One-Year Holding Periods 1952 Through January 2017



Source: Empirical Research Partners Analysis.

Exhibit 16: Large-Capitalization Stocks
Minimum Reduction in Share Count to Rank in the Top Quintile and Year-over-Year Growth Rate of Nominal GDP 1990 Through 2016



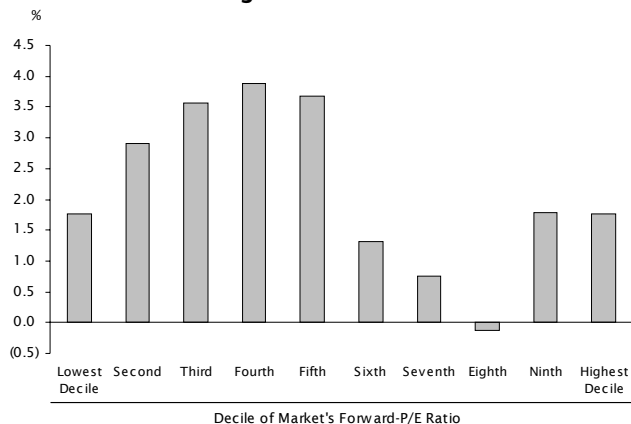
Source: Empirical Research Partners Analysis.

One thing we know for sure is that when it comes to buybacks, bigger is better. A reasonable rule of thumb is that a (10)% or greater contraction in share count over two years is meaningful. Companies exceeding that threshold have outperformed the market consistently, by about five percentage points per annum (see Exhibit 15). And with the economy growing at a nominal rate of only around +4%, really-big buybacks *should* generate alpha (see Exhibit 16).

Of course divestitures can influence the share count as well, as has been the case at GE for example in recent years. We haven't removed those companies from the analysis.

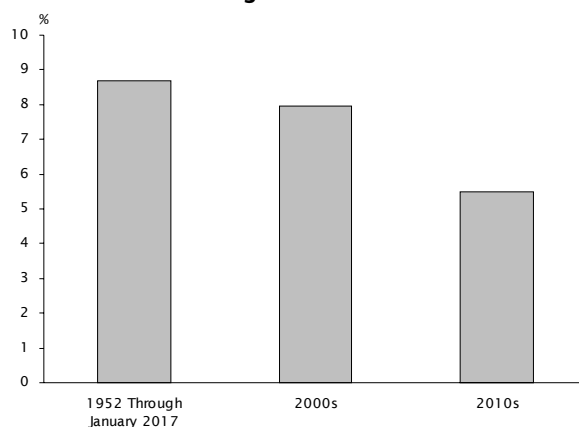
Given where the market's forward multiple now sits, in the top-decile of the range seen over the past four decades, small reductions in share count are likely to be seen as rounding errors and will in all likelihood produce little-to-no alpha (see Exhibit 17). Companies with double-digit declines that also rank well in our core model have done well over time and we think that combination still has a good chance of working (see Exhibit 18).

Exhibit 17: Large-Capitalization Stocks
Relative Returns to the Best Quintile of the Change in Shares Outstanding Contingent on the Market's Forward-P/E Ratio Measured Over One-Year Holding Periods 1976 Through 2016



Source: Empirical Research Partners Analysis.

Exhibit 18: Large-Capitalization Stocks
Relative Returns of Companies with 10%+ Reductions in Share Count Over Two Years Ranked in the Top Quintile of the Core Model Measured Over One-Year Holding Periods 1952 Through 2016



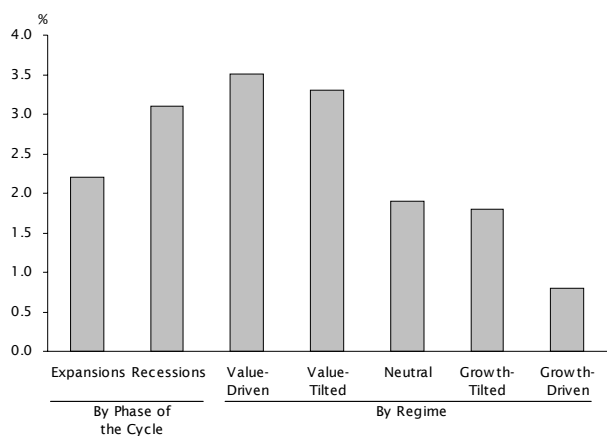
Source: Empirical Research Partners Analysis.

Conclusion: Still Something Left to Exploit

The payoff to buybacks typically follows a predictable trajectory with the greatest rewards going to companies that repurchase near the bottom of the cycle. We see that in the pattern of relative returns, that've been best during recessions and in value regimes (see Exhibit 19). In fact big buybacks have generated the greater rewards in companies where earnings are expected to fall (see Exhibit 20).

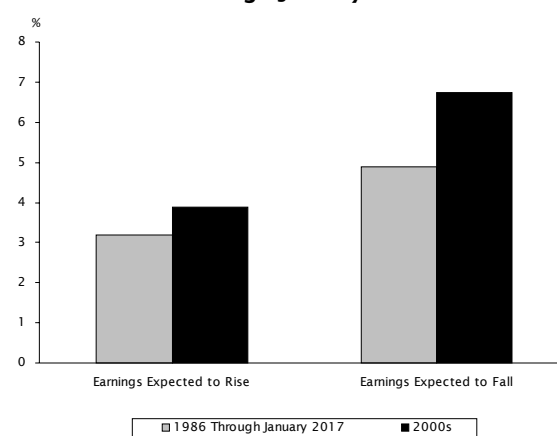
We're a long way from the bottom and neither earnings nor multiples are depressed. Still, there are almost 70 large-cap companies that have cut their share counts by double-digit amounts in the past couple of years and we rank them using our core model in Appendix 1 on page 15. Airlines, insurers, credit card companies and a few tech hardware issues stand out.

Exhibit 19: Large-Capitalization Stocks
Relative Returns of the Top Quintile of Change in Shares Outstanding Measured Over One-Year Holding Periods 1952 Through January 2017



Source: Empirical Research Partners Analysis.

Exhibit 20: Large-Capitalization Stocks
Relative Returns of Companies with 10%+ Reductions in Share Count Over Two Years Depending on the Direction of Earnings Measured Over One-Year Holding Periods 1986 Through January 2017



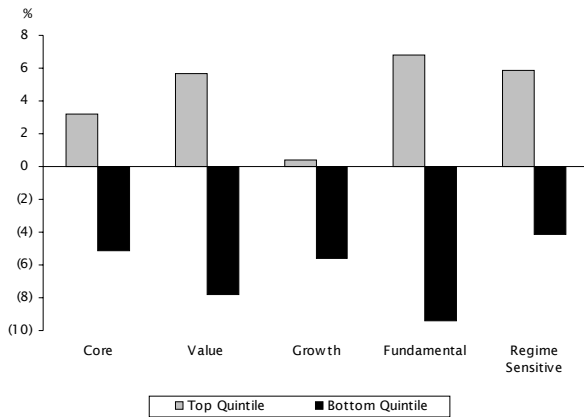
Source: Empirical Research Partners Analysis.

Model and Portfolio Performance

2016 Was a Good Year

Our models performed well in 2016 as their regime-shifting features once again added a good deal of alpha. Our fundamental model, that takes no account of investor behavior whatsoever, was the best of those used in the large-cap U.S. market (see Exhibit 21). On the whole undervalued stocks enjoyed a tailwind, while whipsaws undermined trend-following approaches (see Exhibit 22). Our non-U.S. models benefited from the same dynamics as their domestic counterparts especially that focused on the emerging markets (see Exhibit 23). So too did our specialized frameworks that pick among REITs and energy MLPs (see Exhibit 24).

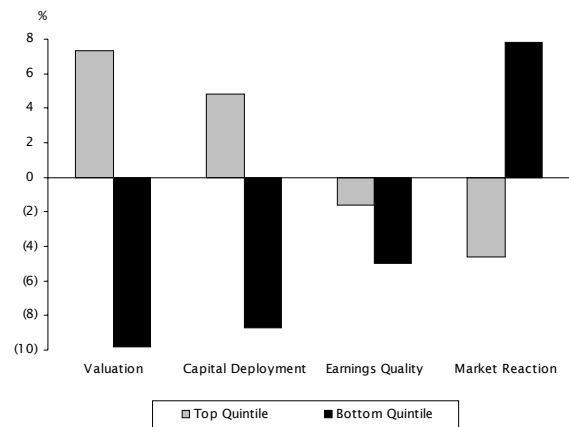
Exhibit 21: U.S. Large-Capitalization Stock Selection Models
Relative Returns of the Top and Bottom Quintiles¹
Monthly Data Compounded
2016



Source: Empirical Research Partners Analysis.

¹Equally-weighted data.

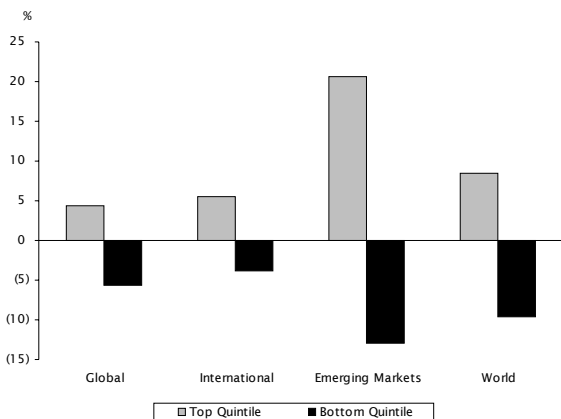
Exhibit 22: U.S. Large-Capitalization Stocks
Relative Returns of the Top and Bottom Quintiles
of Our Super Factors¹
Monthly Data Compounded
2016



Source: Empirical Research Partners Analysis.

¹Equally-weighted data.

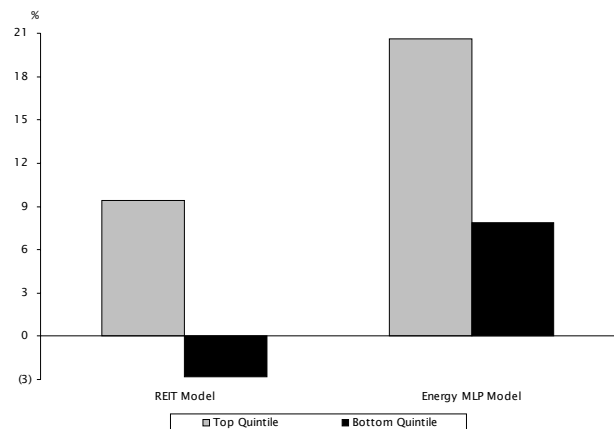
Exhibit 23: Non-U.S. Stock Selection Models
Relative Returns of the Top and Bottom Quintiles¹
Monthly Data Compounded
2016



Source: Empirical Research Partners Analysis.

¹Equally-weighted data.

Exhibit 24: The Specialized Models¹
Relative Returns of the Top and Bottom Quintiles
Monthly Data Compounded
2016

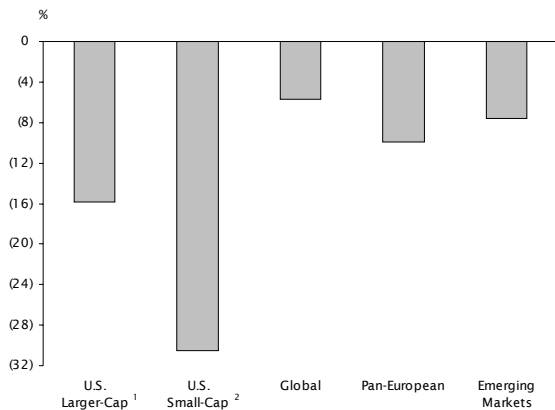


Source: Empirical Research Partners Analysis.

¹Equally-weighted returns versus equally-weighted (sector-specific) benchmarks.

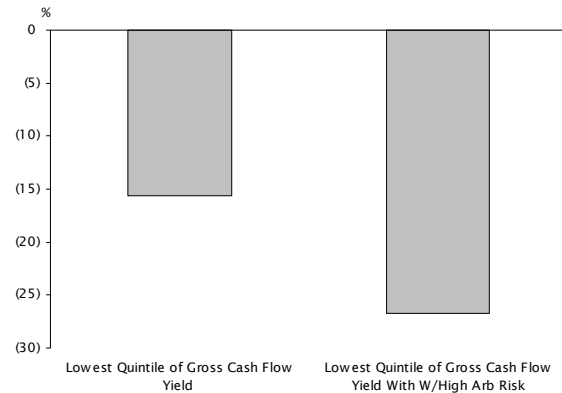
Our failure models, that search for stocks poised to underperform, also had a strong 2016, with the U.S. variants the best of the lot (see Exhibit 25). In a setting of improving economic fundamentals, companies with gross cash flow yields below 5% performed poorly, especially if they were surrounded by dispute (see Exhibit 26). That latter combination is at the heart of our failure modeling.

Exhibit 25: Global Equities Failure Models
Relative Returns Versus Regional Markets
Monthly Data Compounded
2016



Source: Empirical Research Partners Analysis.
¹Using a universe of the 1,000 largest-cap issues.
²Using a universe of 2,000 smaller-cap issues.

Exhibit 26: U.S. Equities
Relative Returns to the Lowest Quintile
of Gross Cash Flow Yield
All Stocks and Those With Top-Quintile Arbitrage Risk
Monthly Data Compounded
2016

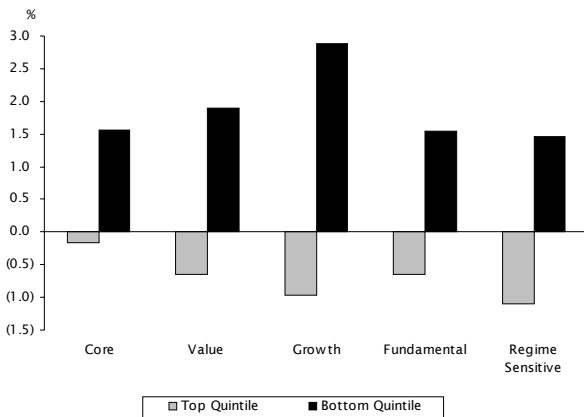


Source: Empirical Research Partners Analysis.

January Shows Some Reversal

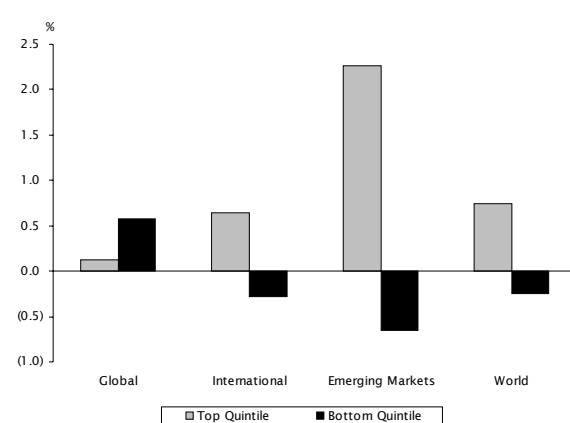
The positive economic sentiment that arose in the aftermath of the election reversed in January, particularly since the inauguration, and our U.S. models underperformed (see Exhibit 27). Their international counterparts fared better, with the emerging markets one once again in the lead (see Exhibit 28). Our failure and specialized models were a mixed bag (see Exhibits 29 and 30). The run in value prompted by the Trump victory lasted for a little more than a month (see Exhibit 31). The bond surrogates, though, continued to lag in January (see Exhibit 32).

Exhibit 27: U.S. Large-Capitalization Stock Selection Models
Relative Returns of the Top and Bottom Quintiles¹
Monthly Data Compounded
January 2017



Source: Empirical Research Partners Analysis.
¹Equally-weighted data.

Exhibit 28: Non-U.S. Stock Selection Models
Relative Returns of the Top and Bottom Quintiles¹
Monthly Data Compounded
January 2017



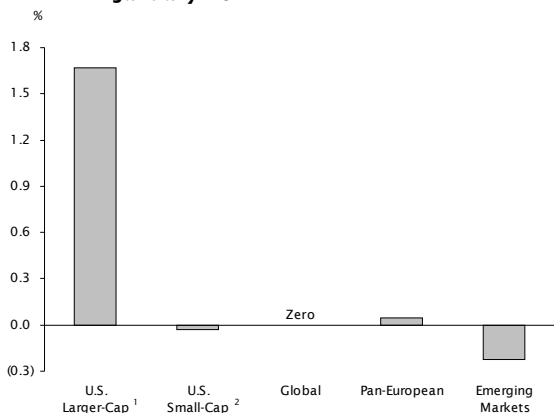
Source: Empirical Research Partners Analysis.
¹Equally-weighted data.

Portfolio Performance and Changes

Our managed portfolios had a mixed 2016 with the Distrusted Fifty again producing a premium (see Exhibit 33). The value portfolio, that produced a +13% nominal return last year, trailed its benchmark by more than (4) percentage points, a victim of too little exposure to the energy sector. Moreover, last year turned out to be a disappointment for the money management industry at large. Only 40% of the top 300 actively-managed mutual funds investing in large-cap U.S. equities, irrespective of style, outperformed the S&P 500, with the median manager was (2) percentage points behind the index (see Exhibit 34). The poor performance of the health care sector, a favorite of many managers, explains a lot.

Exhibits 35 through 42 present changes to and the holdings of our managed portfolios.

Exhibit 29: Global Equities Failure Models
Relative Returns Versus Regional Markets
Monthly Data Compounded
January 2017

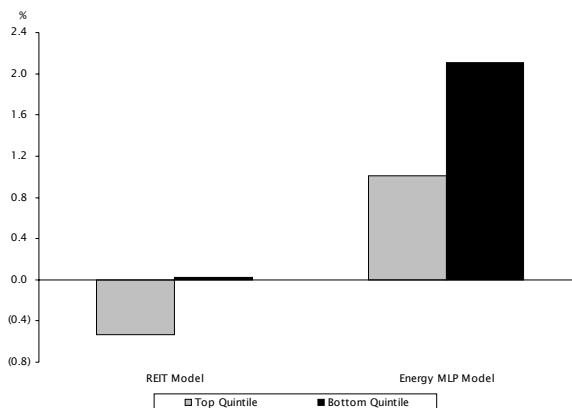


Source: Empirical Research Partners Analysis.

¹Using a universe of the 1,000 largest-cap issues.

²Using a universe of 2,000 smaller-cap issues.

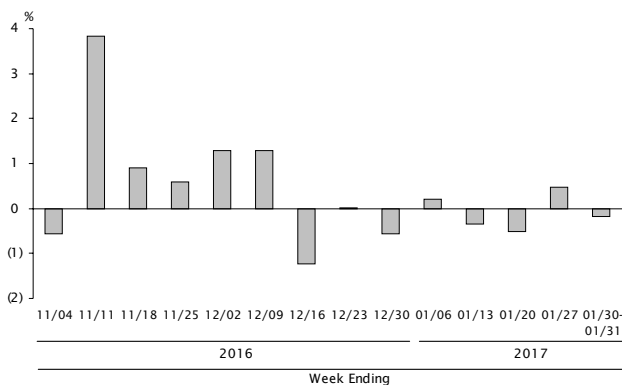
Exhibit 30: The Empirical Specialized Models¹
Relative Returns to the Top and Bottom Quintiles
Monthly Data Compounded
January 2017



Source: Empirical Research Partners Analysis.

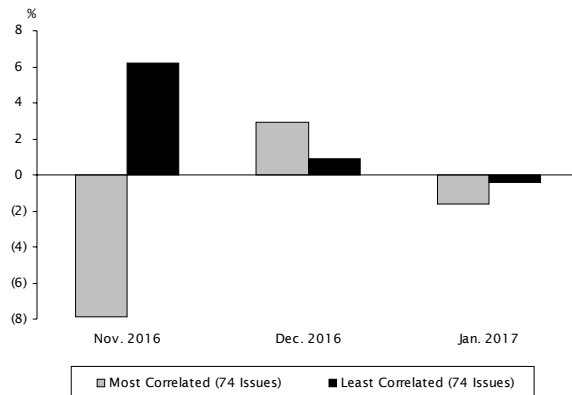
¹Equally-weighted returns versus equally-weighted (sector-specific) benchmarks.

Exhibit 31: Large-Capitalization Stocks
The Top Quintile of Valuation
Weekly Relative Returns
November 2016 Through January 2017



Source: Empirical Research Partners Analysis.

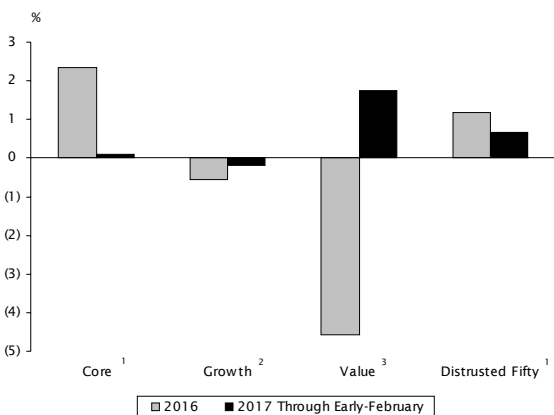
Exhibit 32: Large-Capitalization Stocks
Relative Returns of the Stocks Most- and Least-
Correlated With the Bond Market's Performance¹
November 2016 Through January 2017



Source: Empirical Research Partners Analysis.

¹Equally-weighted data.

Exhibit 33: Performance of Our Recommended Portfolios
Relative Returns Versus Style-Specific Benchmarks
2016 Through Early-February 2017



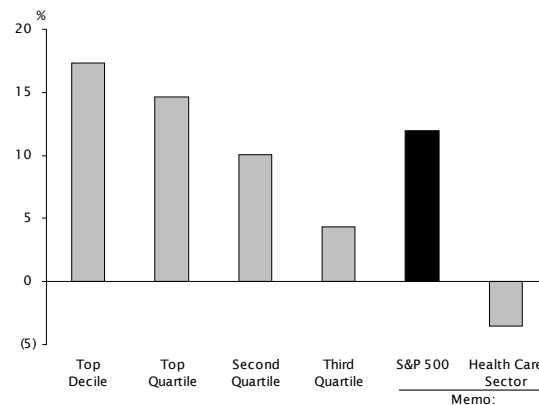
Source: Empirical Research Partners Analysis.

¹Compared to the S&P 500.

²Compared to Russell 1000 Growth.

³Compared to Russell 1000 Value.

Exhibit 34: Mutual Funds Investing in Large-Cap U.S. Stocks¹
Returns at the Lower Bounds of Quartiles
of the Distribution
2016



Source: Strategic Insight Simfund, Empirical Research Partners Analysis.

¹Managing assets of \$1 billion or more.

**Exhibit 35: Changes to the Distrusted Fifty
As of Early-February 2017**

Symbol	Company	Price at Inclusion	Recent Price	Market Capitalization (\$ Billion)	Rationale
Additions					
AGN	ALLERGAN PLC	\$229.32	\$229.32	\$83.5	Attractive
DG	DOLLAR GENERAL CORP	73.39	73.39	20.6	Attractive
TEL	TE CONNECTIVITY LTD	74.62	74.62	26.4	Attractive
Deletions					
KSS	KOHL'S CORP	\$49.76	\$39.48	\$7.0	Better opportunity elsewhere
QCOM	QUALCOMM INC	73.87	53.15	79.0	Better opportunity elsewhere
SPR	SPIRIT AEROSYSTEMS HOLDINGS	54.55	55.80	7.3	Better opportunity elsewhere

Source: Empirical Research Partners Analysis.

**Exhibit 36: The Distrusted Fifty
Large-Capitalization Growth Stocks With High Reinvestment Rates Discounting Relatively Low Secular Earnings Growth
Sorted by Capitalization
As of Early-February 2017**

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	\$128.75	3	3	4	1	3	14.4 x	26 %	+4.2 %	16 %	7.8 %	\$676.9
GOOGL	ALPHABET INC	149.40	815.24	2	2	4	3	3	24.2	15	12.3	81	4.6	563.6
MSFT	MICROSOFT CORP	41.23	63.58	1	2	2	2	1	21.0	7	6.1	84	5.7	491.5
WFC	WELLS FARGO & CO	32.42	55.91	3	na	4	1	3	13.4	7	3.3	47	na	280.5
CMCSA	COMCAST CORP	54.67	75.61	3	2	3	2	2	20.2	11	7.1	63	5.3	180.9
IBM	IBM CORP.	119.33	174.29	3	5	3	1	2	12.6	44	1.7	4	7.9	165.7
TSM	TAIWAN SEMICONDUCTOR MFG CO	16.75	31.08	2	3	1	2	1	14.1	14	2.8	20	4.1	161.2
UNH	UNITEDHEALTH GROUP INC	74.70	162.71	1	4	1	2	2	17.1	13	5.5	43	4.8	154.9
PM	PHILIP MORRIS INTERNATIONAL	42.70	95.95	4	1	4	4	4	20.3	1	6.1	NM	4.5	148.9
PEP	PEPSICO INC	82.15	103.01	3	1	4	3	3	20.0	19	5.7	30	5.2	147.9
MMM	3M CO	77.21	175.17	3	2	5	3	4	20.3	19	5.7	30	5.0	104.5
BA	BOEING CO	74.78	163.97	1	2	3	2	2	17.7	42	3.7	9	7.8	101.2
ABBV	ABBVIE INC	55.65	60.89	1	2	3	1	1	11.1	43	(3.0)	NM	7.0	99.0
GILD	GILEAD SCIENCES INC	20.12	72.82	1	2	5	1	1	6.8	74	(0.6)	NM	18.0	96.3
AGN	ALLERGAN PLC	229.32	229.32	1	1	5	3	1	14.4	NM	4.4	NM	5.9	87.5
AVGO	BROADCOM LTD	32.35	203.69	5	5	2	4	5	14.2	NM	4.4	NM	3.5	81.3
TXN	TEXAS INSTRUMENTS INC	59.28	76.27	2	1	2	4	1	20.8	18	5.9	32	5.4	76.2
ACN	ACCENTURE PLC	31.89	113.21	3	1	4	3	2	19.2	44	5.9	13	6.1	75.1
AXP	AMERICAN EXPRESS CO	20.04	76.76	1	na	3	2	3	13.5	20	4.2	21	na	70.3
BIIB	BIOGEN INC	67.38	281.69	3	3	4	2	2	13.4	34	5.9	17	5.5	60.8
ADBE	ADOBE SYSTEMS INC	27.81	113.36	3	1	3	5	2	30.0	16	14.1	87	3.5	56.4
TJX	TJX COMPANIES INC	16.34	74.68	2	2	4	2	2	19.8	38	7.6	20	4.9	48.7
HAL	HALLIBURTON CO	55.14	56.23	2	5	1	5	5	48.9	NM	11.1	NM	(4.7)	48.6
ITW	ILLINOIS TOOL WORKS	63.12	126.88	2	2	2	4	2	20.5	24	6.2	26	4.6	44.5
ESRX	EXPRESS SCRIPTS HOLDING CO	74.58	69.11	1	3	4	1	2	10.0	17	(0.4)	NM	0.1	42.6
COF	CAPITAL ONE FINANCIAL CORP	42.77	87.51	1	na	3	1	1	11.1	6	(1.0)	NM	na	42.0
EBAY	EBAY INC	25.75	32.18	1	1	2	1	1	16.0	28	6.9	25	6.1	36.0
MAR	MARRIOTT INTERNATIONAL INC	69.75	84.64	5	5	1	4	5	21.1	37	6.2	17	3.8	33.1
HCA	HCA HOLDINGS INC	81.95	81.96	2	2	3	1	1	11.1	34	(0.4)	NM	9.5	30.4
MCK	MCKESSON CORP	182.39	140.03	1	4	5	1	2	11.6	22	4.4	20	20.1	29.7
STT	STATE STREET CORP	29.97	76.34	1	na	2	1	1	13.3	7	2.4	36	na	29.2
DFS	DISCOVER FINANCIAL SERVICES INC	43.74	68.77	1	na	3	2	2	11.3	16	(0.9)	NM	na	26.8
TEL	TE CONNECTIVITY LTD	74.62	74.62	3	1	2	2	1	16.9	17	6.4	37	5.5	26.5
WDC	WESTERN DIGITAL CORP	18.87	79.16	5	5	1	1	2	9.6	NM	3.7	NM	7.6	22.6
DG	DOLLAR GENERAL CORP	73.39	73.39	3	2	5	1	2	15.7	18	4.8	27	5.9	20.5
MCO	MOODY'S CORP	28.63	103.55	2	1	4	3	2	20.4	NM	7.1	NM	5.1	19.8
LRCX	LAM RESEARCH CORP	82.66	117.74	1	2	1	1	1	12.9	13	3.8	29	6.8	19.1
CHKP	CHECK POINT SOFTWARE TECHNOLOGIES INC	34.41	97.91	4	3	2	3	3	19.1	20	9.1	45	5.2	17.1
TROW	PRICE (T. ROWE) GROUP	65.36	66.77	2	na	5	1	3	13.8	13	2.8	21	na	16.3
ADS	ALLIANCE DATA SYSTEMS CORP	152.77	230.39	1	3	4	1	1	12.5	28	4.4	16	14.1	13.3
WAT	WATERS CORP	47.00	145.73	1	2	2	4	2	20.8	24	10.3	43	4.3	11.7
TDG	TRANSDIGM GROUP INC	259.46	219.68	2	1	5	2	2	18.2	72	9.1	13	5.3	11.7
CTXS	CITRIX SYSTEMS INC	55.49	71.24	1	1	3	1	1	15.4	21	6.9	33	8.8	11.1
WYNN	WYNN RESORTS LTD	137.30	97.86	4	1	4	4	3	23.9	NM	7.3	NM	(6.4)	10.0
SNI	SCRIPPS NETWORKS INTERACTIVE	63.97	75.84	3	1	2	1	1	14.2	38	4.4	12	8.3	9.8
FFIV	F5 NETWORKS INC	118.56	132.34	3	3	2	2	2	15.9	30	6.9	23	7.4	8.6
WYN	WYNDHAM WORLDWIDE CORP	61.65	79.28	1	1	1	1	1	12.7	41	1.9	5	8.9	8.5
VRSN	VERISIGN INC	56.47	80.23	1	1	4	1	1	20.9	40	10.3	26	7.5	8.4
JAZZ	JAZZ PHARMACEUTICALS PLC	143.63	123.23	1	4	5	1	3	11.1	22	(0.4)	NM	7.0	7.4
BBY	BED BATH & BEYOND INC	67.34	39.79	1	2	5	1	1	8.7	26	(0.4)	NM	0.2	6.0
Average									16.7 x	25 %	4.9 %	19 %	6.0 %	
All Other Large-Cap Stocks									18.1 x	5 %	6.4 %	127 %	3.5 %	

Source: Empirical Research Partners Analysis.

**Exhibit 37: Changes to Our Large-Capitalization Core Portfolio
As of Early-February 2017**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 02/01/17	Rationale
Additions					
NBL	NOBLE ENERGY INC	1.0 %	\$39.46	\$39.46	Attractive
AGN	ALLERGAN PLC	1.0	229.32	229.32	Attractive
GM	GENERAL MOTORS CO	1.0	36.14	36.14	Attractive
H	HYATT HOTELS CORP	1.0	54.82	54.82	Attractive
Increasing Weights					
MSFT	MICROSOFT CORP		\$41.23	\$63.58	Attractive
	Was	2.1 %			
	Now	4.0			
LEA	LEAR CORP		101.63	142.65	Attractive
	Was	1.6 %			
	Now	2.0			
Deletions					
RAI	REYNOLDS AMERICAN INC	1.8 %	\$15.86	\$59.95	Acquired
JNPR	JUNIPER NETWORKS INC	0.9	25.48	26.81	Better opportunity elsewhere
ORCL	ORACLE CORP	0.9	31.10	39.84	Better opportunity elsewhere
DDAIF	DAIMLER AG	0.8	52.34	75.75	Moved to GM
GME	GAMESTOP CORP	0.5	39.47	24.30	Moved to H
Declining Weights					
NOC	NORTHROP GRUMMAN CORP		\$62.51	\$228.82	Appreciation
	Was	2.8 %			
	Now	1.2			

Source: Empirical Research Partners Analysis.

**Exhibit 38: The Large-Capitalization Core Portfolio
Benchmarked to the S&P 500
As of Early-February 2017**

Symbol	Company	Weight	Price at Inclusion	Price 02/01/17	S&P 500 Weight	Symbol	Company	Weight	Price at Inclusion	Price 02/01/17	S&P 500 Weight
CYCLICALS						GROWTH-ORIENTED (Cont.)					
Consumer Durables and Apparel						Health Care Equipment and Services					
LEA	LEAR CORP	2.0 %	\$109.51	\$142.65		ANTM	ANTHEM INC	2.8 %	\$75.58	\$160.79	
GM	GENERAL MOTORS CO	1.0	36.14	36.14		UNH	UNITEDHEALTH GROUP INC	2.4	37.16	162.71	
FCAU	FIAT CHRYSLER AUTOMOBILES NV	0.8	7.96	10.98		SYK	STRYKER CORP	1.3	49.25	123.12	
GT	GOODYEAR TIRE & RUBBER CO	0.5	32.24	32.11		CAH	CARDINAL HEALTH INC	1.2	35.27	75.35	
SNE	SONY CORP	0.5	30.88	30.24		HCA	HCA HOLDINGS INC	0.9	81.95	81.96	
RACE	FERRARI NV	0.4	41.55	62.14				8.6 %			5.1 %
		5.3 %			2.5 %	Retail, Media and Other Consumer Cyclicals					
Capital Equipment						TJX	TJX COMPANIES INC	1.7 %	\$10.84	\$74.68	
BA	BOEING CO	1.5 %	\$74.78	\$163.97		COST	COSTCO WHOLESALE CORP	1.2	41.94	161.86	
NOC	NORTHROP GRUMMAN CORP	1.2	62.51	228.82		M	MACY'S INC	1.2	61.47	29.21	
HON	HONEYWELL INTERNATIONAL INC	1.1	27.16	118.00		H	HYATT HOTELS CORP	1.0	54.82	54.82	
SPR	SPIRIT AEROSYSTEMS HOLDINGS	0.9	54.55	55.80		WYN	WYNDHAM WORLDWIDE CORP	0.8	85.03	79.28	
CBI	CHICAGO BRIDGE & IRON CO	0.4	22.51	32.90		AN	AUTONATION INC	0.8	63.28	52.42	
		5.1 %			6.9 %	WPPGY	WPP PLC	0.6	47.31	116.26	
Commercial Services								7.4 %			11.5 %
MCO		1.1 %	\$28.63	\$103.55	0.8 %	Consumer Staples					
		1.1 %				PM	PHILIP MORRIS INTERNATIONAL	1.9 %	\$42.16	\$95.95	
Industrial Commodities						PEP	PEPSICO INC	1.0	95.34	103.01	
LYB	LYONDELLBASELL INDUSTRIES NV	3.1	\$67.53	\$95.07	2.7 %	CVS	CVS HEALTH CORP	0.9	75.86	77.97	
		3.1 %				EPC	EDGEWELL PERSONAL CARE CO	0.5	58.34	77.69	
Transports						ENR	ENERGIZER HOLDINGS INC	0.4	22.62	52.11	
UAL	UNITED CONTINENTAL HOLDINGS INC	0.8 %	\$22.38	\$71.48	2.3 %			4.8 %			8.9 %
		0.8 %				OTHER					
GROWTH-ORIENTED						Financials					
Technology						JPM	JPMORGAN CHASE & CO	3.8 %	\$46.90	\$84.95	
MSFT	MICROSOFT CORP	4.0 %	\$52.15	\$63.58		COF	CAPITAL ONE FINANCIAL CORP	2.9	52.59	87.51	
GLW	CORNING INC	3.1	20.51	26.21		PNC	PNC FINANCIAL SERVICES GROUP INC	2.5	66.75	121.14	
AAPL	APPLE INC	2.9	63.25	128.75		WFC	WELLS FARGO & CO	2.2	33.07	55.91	
XLNX	XILINX INC	2.1	35.08	57.39		TRV	TRAVELERS COS INC	2.1	49.52	116.54	
FLEX	FLEX LTD	2.1	10.12	15.49		GS	GOLDMAN SACHS GROUP INC	2.1	120.49	230.67	
TSM	TAIWAN SEMICONDUCTOR MFG CO	2.0	9.16	31.08		C	CITIGROUP INC	1.6	44.91	56.05	
ACN	ACCENTURE PLC	1.8	50.25	113.21		AIG	AMERICAN INTERNATIONAL GROUP	1.5	59.39	64.27	
TEL	TE CONNECTIVITY LTD	1.2	40.96	74.62		BAC	BANK OF AMERICA CORP	1.3	35.40	22.89	
VRSN	VERISIGN INC	1.1	64.75	80.23		CFG	CITIZENS FINANCIAL GROUP INC	1.3	26.77	36.49	
EBAY	EBAY INC	1.1	24.57	32.18		MS	MORGAN STANLEY	1.2	27.21	42.70	
WDC	WESTERN DIGITAL CORP	0.9	29.52	79.16		DFS	DISCOVER FINANCIAL SVCS INC	1.1	59.41	68.77	
MRVL	MARVELL TECHNOLOGY GROUP LTD	0.8	15.21	15.33		LM	LEGG MASON INC	0.4	62.76	33.49	
MU	MICRON TECHNOLOGY INC	0.6	33.19	24.75				24.1 %			17.8 %
HPE	HEWLETT PACKARD ENTERPRISE	0.4	18.01	22.59		Energy					
HPQ	HP INC	0.3	14.98	14.99		COP	CONOCOPHILLIPS	1.7 %	\$44.00	\$48.50	
		24.5 %			20.8 %	HES	HESS CORP	1.6	67.69	53.51	
Pharmaceuticals & Biotechnology						OXY	OCCIDENTAL PETROLEUM CORP	1.3	91.75	67.61	
PFE	PFIZER INC	2.0 %	\$21.76	\$31.67		NBL	NOBLE ENERGY INC	1.0	39.46	39.46	
JNJ	JOHNSON & JOHNSON	1.9	50.87	113.23		MPC	MARATHON PETROLEUM CORP	1.0	20.00	47.71	
AMGN	AMGEN INC	1.6	132.53	159.67		APA	APACHE CORP	0.6	97.66	57.78	
AGN	ALLERGAN PLC	1.0	229.32	229.32		CHK	CHESAPEAKE ENERGY CORP	0.3	25.64	6.40	
GILD	GILEAD SCIENCES INC	1.0	97.21	72.82		MDR	MCDERMOTT INTL INC	0.2	17.28	8.26	
		7.5 %			8.1 %			7.8 %			7.2 %
						Telecommunication Services					
						None					
						0.0 %					
						Utilities					
						None					
						0.0 %					
						2.9 %					
						TOTAL					
						100.0 %					
						100.0 %					

Source: Empirical Research Partners Analysis.

**Exhibit 39: Changes to Our Large-Capitalization Value Portfolio
As of Early-February 2017**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 02/01/17	Rationale
Additions					
CE	CELANESE CORP	1.0 %	\$85.99	\$85.99	Attractive
LEA	LEAR CORP	1.0	142.65	142.65	Attractive
SNI	SCRIPPS NETWORKS INTERACTIVE	1.0	75.84	75.84	Attractive
Increasing Weights					
NBL	NOBLE ENERGY INC		\$31.74	\$39.46	Attractive
	Was	1.9 %			
	Now	3.0			
MSFT	MICROSOFT CORP		41.23	63.58	Attractive
	Was	2.1 %			
	Now	2.9			
DVN	DEVON ENERGY CORP		52.32	45.54	Attractive
	Was	1.1 %			
	Now	2.0			
GM	GENERAL MOTORS CO		40.03	36.14	Attractive
	Was	0.8 %			
	Now	1.6			
Deletions					
DDAIF	DAIMLER AG	0.9 %	\$61.20	\$75.75	Moved to GM
ORCL	ORACLE CORP	0.8	28.48	39.84	Appreciation
QCOM	QUALCOMM INC	0.6	73.89	53.15	Moved to MSFT
GME	GAMESTOP CORP	0.6	39.47	24.30	Better opportunity elsewhere
CHK	CHESAPEAKE ENERGY CORP	0.2	19.57	6.40	Moved to NBL
Declining Weights					
NOC	NORTHROP GRUMMAN CORP		\$57.77	\$228.82	Appreciation
	Was	3.4 %			
	Now	1.5			
OXY	OCCIDENTAL PETROLEUM CORP		56.03	67.61	Moved to NBL
	Was	2.5 %			
	Now	1.0			

Source: Empirical Research Partners Analysis.

**Exhibit 40: The Large-Capitalization Value Portfolio¹
Benchmarked to the Russell 1000 Value Index
As of Early-February 2017**

Symbol	Company	Weight	Price at Inclusion	Price at 02/01/17	Benchmark Weight	Symbol	Company	Weight	Price at Inclusion	Price at 02/01/17	Benchmark Weight
CYCLICALS:						GROWTH-ORIENTED CONT.:					
Consumer Durables & Apparel						Health Care Equipment & Services					
GM	GENERAL MOTORS CO	1.6 %	\$40.03	\$36.14		UNH	UNITEDHEALTH GROUP INC	2.4 %	\$51.21	\$162.71	
F	FORD MOTOR CO	1.0	14.03	12.32		ANTM	ANTHEM INC	2.2	67.93	160.79	
LEA	LEAR CORP	1.0	142.65	142.65		HCA	HCA HOLDINGS INC	1.9	51.26	81.96	
GT	GOODYEAR TIRE & RUBBER CO	0.9	32.24	32.11		MCK	MCKESSON CORP	1.2	41.55	140.03	
DLPH	DELPHI AUTOMOTIVE PLC	0.9	67.17	71.00				7.7 %			5.8 %
SNE	SONY CORP	0.8	21.26	30.24		Retail, Media, and Other Consumer Cyclicals					
FCAU	FIAT CHRYSLER AUTOMOBILES NV	0.8	7.96	10.98		M	MACY'S INC	1.2 %	\$27.01	\$29.21	
RACE	FERRARI NV	0.4	31.53	62.14		SNI	SCRIPPS NETWORKS INTERACTIVE	1.0	75.84	75.84	
		7.4 %			2.7 %	WPPGY	WPP GROUP PLC	1.0	45.81	116.26	
Capital Equipment						Consumer Staples					
BA	BOEING CO	1.5 %	\$74.78	\$163.97		WYN	WYNDHAM WORLDWIDE CORP	0.8	85.03	79.28	
NOC	NORTHROP GRUMMAN CORP	1.5	57.77	228.82		DISCA	DISCOVERY COMMUNICATIONS INC	0.8	29.10	28.04	
HON	HONEYWELL INTERNATIONAL INC	1.4	53.15	118.00				4.9 %			6.1 %
DOV	DOVER CORP	0.8	21.80	78.22		Energy					
		5.2 %			7.4 %	NBL	NOBLE ENERGY INC	3.0 %	\$34.58	\$39.46	
Commercial Services & Supplies						OTHER:					
None		0.0 %			0.7 %	Financials					
Industrial Commodities						WFC					
LYB	LYONDELLBASELL INDUSTRIES NV	3.6 %	\$67.57	\$95.07		JPM	JPMORGAN CHASE & CO	2.9	43.89	84.95	
IP	INTERNATIONAL PAPER CO	1.1	33.83	56.50		MS	MORGAN STANLEY	2.3	34.72	42.70	
CE	CELANESE CORP	1.0	85.99	85.99		TRV	TRAVELERS COS INC	2.2	47.55	116.54	
TCK	TECK RESOURCES LTD	0.4	35.69	25.36		AIG	AMERICAN INTERNATIONAL GROUP	2.1	57.07	64.27	
		6.1 %			3.4 %	PNC	PNC FINANCIAL SERVICES GROUP INC	2.1	64.26	121.14	
Transports						DFS					
DAL	DELTA AIR LINES INC	1.8 %	\$13.54	\$47.26		C	CITIGROUP INC	2.0	46.66	56.05	
UAL	UNITED CONTINENTAL HOLDINGS INC	1.5	22.38	71.48		BAC	BANK OF AMERICA CORP	1.4	27.96	22.89	
		3.3 %			1.1 %	VOYA	VOYA FINANCIAL INC	1.3	41.14	40.86	
GROWTH-ORIENTED:						HIG					
Technology						COF					
MSFT	MICROSOFT CORP	2.9 %	\$47.54	\$63.58				1.1	41.44	87.51	
AAPL	APPLE INC	2.6	63.25	128.75				23.9 %			25.3 %
CHKP	CHECK POINT SOFTWARE TECHNOLOGY	2.3	52.75	97.91		Energy					
TSM	TAIWAN SEMICONDUCTOR MFG CO	2.1	8.86	31.08		NBL	NOBLE ENERGY INC	3.0 %	\$34.58	\$39.46	
GLW	CORNING INC	2.1	17.14	26.21		DVN	DEVON ENERGY CORP	2.0	49.14	45.54	
ADBE	ADOBE SYSTEMS INC	1.9	32.62	113.36		CXV	CHEVRON CORP	1.6	83.39	111.00	
IBM	INTERNATIONAL BUSINESS MACHINES CORP	1.6	110.29	174.29		OXY	HESS CORP	1.0	67.69	53.51	
EBAY	EBAY INC	1.2	20.39	32.18		HPE	HEWLETT PACKARD ENTERPRISE	1.0	56.03	67.61	
MU	MICRON TECHNOLOGY INC	0.6	33.19	24.75		PYPL	PAYPAL HOLDINGS INC	0.4	10.09	39.31	
HPE	HEWLETT PACKARD ENTERPRISE	0.5	11.51	22.59		HPQ	HEWLETT-PACKARD CO	0.3	9.57	14.99	
AMGN	AMGEN INC	1.3	84.65	159.67				18.7 %			13.2 %
TEVA	TEVA PHARMACEUTICALS	0.5	60.70	34.69		Telecommunications					
		5.5 %			6.4 %	CTL	CENTURYLINK INC	0.9	\$28.98	\$25.51	
Pharmaceuticals & Biotechnology						Utilities					
PFE	PFIZER INC	1.9 %	\$22.41	\$31.67		None		0.0 %			4.7 %
BIIB	BIOGEN IDEC INC	1.8	67.38	281.69		TOTAL					
AMGN	AMGEN INC	1.3	84.65	159.67				100.0 %			100.0 %
TEVA	TEVA PHARMACEUTICALS	0.5	60.70	34.69							

Source: Empirical Research Partners Analysis.

¹The universe of eligible stocks is all large-cap issues.

**Exhibit 41: Changes to Our Large-Capitalization Growth Portfolio
As of Early-February 2017**

Symbol	Company	Suggested Weight	Price at Inclusion	Price at 02/01/17	Rationale
Additions					
AMZN	AMAZON.COM INC	3.0 %	\$832.35	\$832.35	Attractive
AGN	ALLERGAN PLC	2.0	229.32	229.32	Attractive
EOG	EOG RESOURCES INC	2.0	101.00	101.00	Attractive
SNI	SCRIPPS NETWORKS INTERACTIVE	1.5	75.84	75.84	Attractive
VMW	VMWARE INC -CL A	1.4	87.19	87.19	Attractive
AKAM	AKAMAI TECHNOLOGIES INC	1.0	68.70	68.70	Attractive
Deletions					
CVS	CVS CAREMARK CORP	2.8 %	\$61.66	\$77.97	Better opportunity elsewhere
ORCL	ORACLE CORP	1.5	21.69	39.84	Better opportunity elsewhere
MCK	MCKESSON CORP	1.3	90.65	140.03	Moved to AGN
KO	COCA-COLA CO	1.1	22.18	41.26	Better opportunity elsewhere
SPR	SPIRIT AEROSYSTEMS HOLDINGS	1.0	54.55	55.80	Better opportunity elsewhere
CAT	CATERPILLAR INC	0.9	107.97	95.11	Better opportunity elsewhere
BBBY	BED BATH & BEYOND INC	0.5	74.15	39.79	Better opportunity elsewhere
WLL	WHITING PETROLEUM CORP	0.2	83.10	11.00	Moved to EOG
DNR	DENBURY RESOURCES INC	0.2	15.96	3.37	Moved to EOG
Declining Weights					
WFC	WELLS FARGO & CO		\$33.28	\$55.91	Moved to SCH
	Was	5.0 %			
	Now	3.6			

Source: Empirical Research Partners Analysis.

**Exhibit 42: The Large-Capitalization Growth Portfolio
Benchmarked to the Russell 1000 Growth Index
As of Early-February 2017**

Symbol	Company	Weight	Price at Inclusion	Price at 2/1/2017	Sector Benchmark Weight	Symbol	Company	Weight	Price at Inclusion	Price at 2/1/2017	Sector Benchmark Weight
CYCLICALS						GROWTH-ORIENTED (Cont.)					
Consumer Durables and Apparel						Health Care Equipment and Services					
None						None					
0.0 %						2.2 %					
Capital Equipment						Retail, Media, and Other Consumer Cyclicals					
BA	BOEING CO	2.1 %	\$67.85	\$163.97		AMZN	AMAZON.COM INC	3.0 %	\$832.35	\$832.35	
TDG	TRANSIGM GROUP INC	1.5	219.86	219.68		COST	COSTCO WHOLESALE CORP	2.8	42.02	161.86	
ITW	ILLINOIS TOOL WORKS	1.4	45.36	126.88		WYN	WYNDHAM WORLDWIDE CORP	1.8	75.63	79.28	
MMM	3M CO	1.2	160.62	175.17		LBTYA	LIBERTY GLOBAL PLC	1.5	16.39	36.23	
HON	HONEYWELL INTERNATIONAL INC	1.2	73.54	118.00		DISH	DISH NETWORK CORP	1.5	24.42	61.14	
7.5 %						4.3 %					
Commercial Services						Consumer Staples					
MCO	MOODY'S CORP	1.9 %	\$28.63	\$103.55		PEP	PEPSICO INC	2.1 %	\$75.13	\$103.01	
1.9 %						1.1 %					
Industrial Commodities						OTHER					
None						Financials					
0.0 %						2.1 %					
Transportation						Energy					
ALK	ALASKA AIR GROUP INC	1.9 %	\$46.03	\$93.63		EOG	EOG RESOURCES INC	2.0 %	\$101.00	\$101.00	
1.9 %						2.1 %					
GROWTH-ORIENTED						Telecommunications					
Technology						None					
MSFT	MICROSOFT CORP	4.1 %	\$33.64	\$63.58		0.0 %					
AAPL	APPLE INC	3.7	13.24	128.75		Utilities					
NXPI	NXP SEMICONDUCTORS NV	2.3	69.96	97.75		None					
CHKP	CHECK POINT SOFTWARE TECHNOLOGY	1.8	58.12	97.91		0.0 %					
GOOGL	GOOGLE INC	1.7	239.41	815.24		TOTAL					
FB	FACEBOOK INC	1.6	74.57	133.23		100.0 %					
TSM	TAIWAN SEMICONDUCTOR MFG CO	1.6	8.31	31.08		100.0 %					
ACN	ACCENTURE PLC	1.6	42.54	113.21		8.5 %					
ADS	ALLIANCE DATA SYSTEMS CORP	1.6	211.25	230.39							
ADBE	ADOBE SYSTEMS INC	1.5	23.89	113.36							
VMW	VMWARE INC -CL A	1.4	87.19	87.19							
LRCX	LAM RESEARCH CORP	1.4	82.66	117.74							
VRSN	VERISIGN INC	1.2	64.75	80.23							
STX	SEAGATE TECHNOLOGY PLC	1.2	11.29	44.78							
TEL	TE CONNECTIVITY LTD	1.2	53.42	74.62							
WDC	WESTERN DIGITAL CORP	1.0	41.08	79.16							
AKAM	AKAMAI TECHNOLOGIES INC	1.0	68.70	68.70							
FFIV	F5 NETWORKS INC	1.0	125.96	132.34							
MU	MICRON TECHNOLOGY INC	0.7	30.84	24.75							
31.6 %						34.9 %					
Pharmaceuticals & Biotechnology											
BIIB	BIOGEN IDEC INC	2.3 %	\$52.15	\$281.69							
JNJ	JOHNSON & JOHNSON	2.1	55.25	113.23							
AGN	ALLERGAN PLC	2.0	229.32	229.32							
GILD	GILEAD SCIENCES INC	2.0	20.12	72.82							
TMO	THERMO FISHER SCIENTIFIC INC	1.4	72.64	152.94							
9.7 %											

Source: Empirical Research Partners Analysis.

**Appendix 1: Large-Capitalization Stocks
Stocks With (10)% or Greater Reductions in Share Count Over Two Years
Core Model Ranking Report
Sorted by Rank and Percentage Change in Share Count
As of End-January 2017**

Symbol	Company	Price	Percentage Change in Share Count 2015-16	Quintile Ranks (1=Best; 5=Worst)									Forward- P/E Ratio	Market Capitalization
				Super Factors				Memo:						
				Valuation	Capital Deployment	Earnings Quality and Trend	Market Reaction	Core Model Rank	Free Cash Flow-to- Enterprise Value	Free Cash Flow Margin	Three- Month Earnings Revision			
Consumer Durables														
HOG	HARLEY-DAVIDSON INC	\$59.09	(17) %	2	1	3	2	1	2	2	2	14.1 x	\$10.4	
PHM	PULTEGROUP INC	21.26	(10)	2	2	1	2	1	5	5	2	9.7	7.1	
LEA	LEAR CORP	141.26	(10)	1	1	2	1	1	1	4	1	9.1	9.9	
Retailers and Other Consumer Cyclical														
HRB	BLOCK H & R INC	\$22.19	(23) %	1	1	2	2	1	2	3	5	13.0 x	\$4.7	
BBBY	BED BATH & BEYOND INC	39.74	(19)	1	1	1	5	1	1	3	5	8.7	6.0	
SIG	SIGNET JEWELERS LTD	79.99	(13)	1	1	1	5	1	1	4	5	10.2	5.6	
KSS	KOHL'S CORP	39.00	(12)	1	1	1	5	1	1	3	5	10.4	6.9	
H	HYATT HOTELS CORP	55.60	(12)	2	1	1	2	1	1	2	2	34.3	7.3	
TGT	TARGET CORP	63.70	(12)	1	1	2	5	1	1	4	5	12.0	35.9	
WYN	WYNNDHAM WORLDWIDE CORP	79.72	(11)	1	1	3	1	1	1	2	2	14.0	8.6	
BBY	BEST BUY CO INC	43.47	(11)	1	1	2	1	1	1	4	1	12.5	13.6	
KORS	MICHAEL KORS HOLDINGS LTD	41.53	(18)	1	3	3	5	2	1	1	5	9.4	6.8	
DPZ	DOMINO'S PIZZA INC	172.02	(13)	5	3	1	1	2	4	3	3	40.5	8.3	
YUM	YUM BRANDS INC	65.90	(13)	3	1	2	2	2	4	3	4	27.0	24.8	
AN	AUTONATION INC	52.18	(11)	1	2	5	3	2	4	5	5	13.0	5.3	
M	MACY'S INC	29.11	(10)	1	1	2	5	2	1	4	5	9.2	8.9	
MCD	MCDONALD'S CORP	122.86	(14)	4	1	1	4	3	3	1	3	19.9	102.0	
YUMC	YUM CHINA HOLDINGS INC	28.05	(12)	4	4	1	4	3	3	2	5	21.6	10.7	
KMX	CARMAX INC	67.46	(11)	5	5	3	1	3	5	5	2	19.3	12.6	
Media														
SIRI	SIRIUS XM HOLDINGS INC	\$4.75	(14) %	4	1	1	2	1	2	1	2	32.0 x	\$23.0	
CBS	CBS CORP	64.74	(14)	2	1	1	3	1	2	2	2	15.8	28.3	
DISCA	DISCOVERY COMMUNICATIONS INC	28.06	(12)	1	1	1	4	1	1	1	3	13.5	10.9	
FOXA	TWENTY-FIRST CENTURY FOX INC	31.29	(13)	3	1	1	4	2	1	2	2	16.0	58.1	
Capital Equipment														
PWR	QUANTA SERVICES INC	\$36.70	(31) %	2	2	5	1	1	3	4	2	23.8 x	\$5.5	
AER	AERCAP HOLDINGS NV	44.34	(14)	1	1	3	2	1	4	5	4	7.1	8.1	
URI	UNITED RENTALS INC	128.26	(14)	1	2	1	1	1	1	1	1	14.3	10.8	
SPR	SPIRIT AEROSYSTEMS HOLDINGS	59.41	(29)	1	2	4	2	2	1	3	2	12.7	7.2	
BA	BOEING CO	167.70	(13)	2	1	2	3	2	1	3	5	18.1	103.5	
GWV	GRAINGER (W W) INC	256.39	(13)	3	3	2	2	3	3	4	4	21.6	15.1	
NOC	NORTHROP GRUMMAN CORP	229.83	(12)	3	5	2	4	4	3	3	2	19.4	40.2	
GE	GENERAL ELECTRIC CO	30.01	(12)	2	2	4	5	5	1	1	4	18.2	265.5	
Commercial Services and Supplies														
MAN	MANPOWERGROUP	\$93.68	(14) %	1	1	3	2	1	1	4	4	14.6 x	\$6.3	
CTAS	CINTAS CORP	117.29	(10)	4	3	4	1	3	5	4	2	25.0	12.3	
Industrial Commodities														
LYB	LYONDELLBASELL INDUSTRIES NV	\$95.30	(16) %	1	5	3	4	3	1	3	2	10.4 x	\$39.0	
ASH	ASHLAND GLOBAL HOLDINGS INC	118.91	(10)	3	2	2	3	3	2	3	5	28.5	7.4	
Transports														
UAL	UNITED CONTINENTAL HLDGS INC	\$74.42	(15) %	1	1	5	1	1	1	3	1	11.0 x	\$23.7	
AAL	AMERICAN AIRLINES GROUP INC	46.95	(26)	1	1	5	2	2	4	5	1	10.1	24.4	
DAL	DELTA AIR LINES INC	49.70	(11)	1	2	5	3	2	1	3	4	9.6	37.2	
CP	CANADIAN PACIFIC RAILWAY LTD	154.59	(12)	4	1	3	3	3	4	3	5	13.5	22.6	
Technology Software and Services														
TDC	TERADATA CORP	\$29.12	(12) %	1	1	1	2	1	1	2	5	11.7 x	\$3.8	
VRSN	VERISIGN INC	81.22	(11)	2	1	1	4	1	1	1	2	22.7	8.5	
Technology Hardware/Semiconductors														
GLW	CORNING INC	\$26.68	(27) %	1	1	1	1	1	2	3	5	16.1 x	\$25.4	
AMAT	APPLIED MATERIALS INC	35.04	(12)	3	2	1	1	1	1	1	1	14.7	37.9	
NTAP	NETAPP INC	37.76	(11)	2	1	2	1	1	1	1	1	14.0	10.4	
QCOM	QUALCOMM INC	54.24	(11)	1	1	2	5	1	1	1	5	11.7	80.2	
STX	SEAGATE TECHNOLOGY PLC	44.50	(10)	1	2	2	1	1	1	3	1	9.9	13.1	
TEL	TE CONNECTIVITY LTD	74.50	(13)	4	2	3	2	2	2	2	1	16.9	26.5	
FFIV	F5 NETWORKS INC	135.54	(11)	3	3	1	2	2	1	1	2	16.3	8.8	
MSI	MOTOROLA SOLUTIONS INC	82.98	(24)	5	2	3	4	4	2	2	2	17.5	13.8	
Pharmaceuticals/Biotechnology														
GILD	GILEAD SCIENCES INC	\$71.26	(12) %	1	1	5	5	2	1	1	5	6.2 x	\$94.2	
Health Care Equipment and Services														
ESRX	EXPRESS SCRIPTS HOLDING CO	\$67.59	(15) %	1	2	1	5	1	1	4	2	10.6 x	\$41.7	
HCA	HCA HOLDINGS INC	79.52	(11)	1	2	3	3	1	1	4	1	11.1	29.9	
Consumer Staples														
WFM	WHOLE FOODS MARKET INC	\$30.31	(12) %	1	2	1	3	1	3	4	4	20.8 x	\$9.7	
Banks, Consumer Finance and Other														
AIG	AMERICAN INTERNATIONAL GROUP	\$65.21	(24) %	1	1	na	5	1	na	na	4	17.3 x	\$68.0	
VOYA	VOYA FINANCIAL INC	40.69	(20)	1	1	na	2	1	na	na	4	16.3	7.9	
AIZ	ASSURANT INC	97.88	(16)	2	1	na	2	1	na	na	4	22.1	5.7	
AMP	AMERIPRISE FINANCIAL INC	113.40	(13)	2	1	na	3	1	na	na	1	13.9	18.0	
COF	CAPITAL ONE FINANCIAL CORP	89.15	(13)	1	1	na	3	1	na	na	2	11.3	42.8	
AXS	AXIS CAPITAL HOLDINGS LTD	64.54	(11)	1	1	na	3	1	na	na	1	14.7	5.7	
LNC	LINCOLN NATIONAL CORP	69.30	(11)	1	1	na	1	1	na	na	1	10.8	15.8	
RF	REGIONS FINANCIAL CORP	14.54	(10)	1	1	na	1	1	na	na	1	14.9	17.7	
DFS	DISCOVER FINANCIAL SVCS INC	69.06	(13)	2	1	na	3	2	na	na	4	11.3	26.9	
TRV	ST PAUL TRAVELERS COMPANIES INC	118.10	(13)	2	1	na	4	2	na	na	5	12.5	33.0	
ALL	ALLSTATE CORP	75.59	(12)	2	1	na	4	2	na	na	2	17.4	27.8	
HIG	HARTFORD FINANCIAL SERVICES	48.93	(11)	2	1	na	3	2	na	na	1	15.0	18.6	
MSCI	MSCI INC	82.76	(16)	5	1	na	3	3	na	na	3	27.9	7.8	
AXP	AMERICAN EXPRESS CO	76.85	(12)	3	1	na	4	3	na	na	1	13.5	70.3	
Energy														
VLO	VALERO ENERGY CORP	\$67.31	(12) %	1	1	3	2	1	1	4	1	12.7 x	\$30.5	
HFC	HOLLYFRONTIER CORP	29.09	(10)	1	4	2	5	2	5	5	1	54.6	5.1	

Source: Empirical Research Partners Analysis.