The MarketGrader 100 Index
2016 Performance Review

January 2017

For the MarketGrader 100 Index (MG100)–and most indexes tracking companies outside the market's largest names—calendar year 2016 started the way 2015 ended: trending downward. In fact, in the grueling first two weeks of January, the picture for equities overall looked, frankly, pretty dire. A year later investors may be forgiven for thinking of January 2016 as only a fading memory in the distant past. Over the course of the year, especially in the last two months and particularly after the U.S. presidential election a fresh new picture for U.S. equities emerged. As is usually the case, the path forward is often best understood in the context of yesterday's events, so let's look back at how MarketGrader's flagship index, MG100, did in 2016.

As a reminder, MG100 Index seeks to track the performance of the most fundamentally sound companies with the best growth prospects in the U.S. Its objective is to provide a benchmark seeking long-term capital appreciation through diversified exposure to U.S. equities. The index uses MarketGrader's fundamental analysis and a proprietary growth at a reasonable price (GARP) methodology to select the top 100 constituents in the U.S. equity universe after filtering for liquidity and diversifying over size segments and economic sectors. So, for starters, in 2016 MG100 lived up to its stated objective, delivering a full-year price return of 8.3%, well above its 10-year annualized return of 6.52%. Despite this, early-year returns for non-cap weighted indexes were too poor to overcome and the index lagged the broad market benchmarks. The post-election reversal, for small and mid cap names in particular, was nothing short of stunning. MG100 took full advantage of it, especially as investors gravitated to quality names that had mostly languished since the summer of 2015, when large tracts of these market segments corrected. Figure 1 presents the price performance of MG100 in all of 2016 as well as the periods before and after the election and compares it to six other measures of the U.S. equity market across size categories.

Figure 1. The MarketGrader 100 – 2016 Price Performance vs Benchmarks

Time Period	2016	Pre-Election: January 1 to November 7	Post-Election: November 8 to December 31
MG 100	8.33	-3.13	11.83
S&P 500	9.54	4.68	4.64
Russell 3000	10.42	4.68	5.48
Russell 1000 Large	9.70	4.64	4.84
Russell Mega	8.85	4.19	4.47
Russell Mid	11.76	5.69	5.74
Russell 2000 Small	19.48	5.22	13.55
Russell Micro	18.83	1.52	17.05

Source: MarketGrader Research and Bloomberg.

MG100: Long-Run Performance

As Figure 1 illustrates, 2016 was a tale of two markets, one before and one after the presidential election. As is often the case, market trends care not about the calendar and instead shift based on unpredictable events. Therefore understanding the prevailing trend in 2015 and the first ten months of 2016, as well as the index's long-term performance, provides investors with the appropriate context from which to judge MG100's performance in 2016. Figure 2 presents the annualized price returns of MG100 over various time periods, ending in 2016 and compares them to the S&P 500 and Russell 3000 indexes.

Figure 2. The MarketGrader 100 – Annualized Price Performance vs Benchmarks: Ending 2016

Time Period	MG 100	S&P 500	Russell 3000
1 - Year	8.33%	9.54%	10.41%
3 - Years	3.20	6.60	6.31
5 - Years	12.65	12.23	12.39
Since September 2007[1]	5.55	4.67	4.89
10 - Years	6.52%	4.67%	4.94%
Since September 2002[2]	10.48	6.43	6.93

Source: MarketGrader Research and Bloomberg. 1 The MG 100 was first calculated live on 9/1/2007, therefore, all of the performance up to this time period (and shorter time periods) is actual price performance of the index. 2 The inception date of the MG 100 is 8/16/2002, so September 2002 is the first complete month of returns for the index. It includes back-tested performance from September 2002 through August 2007. For calendar year performance of the MG 100, see Figure A1 in the Appendix.

The inception (base) date of MG100 is August 16, 2002. Starting in September 2002 (its first full calendar month) through December 2016, a period of 14 and 1/3 years, MG100 significantly outperformed its benchmarks. Over this time period, its annualized price performance was 10.48%, while that of the S&P 500 and Russell 3000 was 6.43% and 6.93%, respectively. This signifies an annual outperformance that is more than 4% greater than the S&P 500 and more than 3.5% greater than the Russell 3000. MG100 was first calculated live by the New York Stock Exchange (MG100's official calculation agent) on September 1, 2007, which means that the index's live history covers a period of 9 and 1/3 years ending in 2016. So, the entire history incorporates back-tested performance of a period of five years.

On the other hand, the 10-Year performance incorporates back-tested performance of only eight months. Even over this time period, the MG 100 handily outperformed both the S&P 500 and Russell 3000 by significant margins: 6.52% versus 4.67% and 4.94%, respectively. On a 5-year basis, MG100's returns are very much in line with both the S&P 500 and the broad Russell 3000. Its 12.65% annualized price performance was 42 basis points greater than the S&P 500 (12.23%) and 26 basis points greater than the Russell 3000 (12.39%). This suggests that in spite of MG100 being a much more concentrated index relative to its benchmarks (which all hold many more components), it has done a remarkable job of delivering broad equity-like returns.

In more recent years, especially since 2014, MG100 struggled to keep up with the performance of large cap stocks, as documented in our 2015 review a year ago; however, this trend seems broken with small and mid caps having staged a strong comeback in the last two months of 2016 (more on this below). Thus, on a 3-year annualized basis, MG100 trailed the S&P 500 and the Russell 3000 by 340 and 311 basis points respectively. Which brings us to the performance in the year 2016: On a price-only basis, MG100 climbed 8.33% last year. Similarly, the S&P 500 climbed 9.54% and the Russell 3000 was up 10.41%. This means that the MG 100 underperformed the S&P 500 by 1.21% and the Russell 3000 by 2.09% in 2016. This relative underperformance, though unwarranted, is not outrageously extreme. Below we explore what the index got right and wrong in 2016, leading to these results.

MG100 Sector Allocations: What Worked and What Didn't In 2016

MG100 reconstitutes and rebalances twice annually: on the third Friday of February and August. Depending on the turnover, the reconstitutions can significantly change the make-up of the index. Therefore, throughout a given calendar year, MG100 essentially has exposure to three different portfolio allocations – the portfolio from the prior year's August reconstitution, the current year's February reconstitution, and the current year's August reconstitution. Given that these three allocations impact the index for different periods of time, using these time exposures it is possible to construct a time-weighted average exposure for MG100 for any given calendar year.

Figure 3 presents the time-weighted average sector exposures for MG100 for 2016; and because MG100 is an equally weighted index, these time-weighted average components by sectors when expressed as percentages can also be thought of as the approximate sector weights of MG100 for the year. To provide perspective to the sector weights, Figure 3 also presents the sector weights of a broad U.S. equity benchmark – the S&P 1500 as of the end of 2016. The differences are remarkable. Essentially, in the year 2016, MG100 was over-weighted only two sectors relative to the S&P 1500 – Consumer Discretionary by 7.5% and Industrials by 13.1%. The significant over-weightings in these two sectors was achieved by under-weighting Utilities by -3.3%, Consumer Staples by -4.6%, Energy by -4.4%, Telecommunications by -2.4% and Real Estate by -3.6%. Financials and Materials were only marginally underweighted by -1.1% and -1.5%. Finally, Health Care with an over-weight of 0.6%, and Technology with an underweight of -0.3%, could be thought of as having neutral exposures to the S&P 1500 sectors.

Before proceeding, though, it's useful to remember that MG100 uses fundamental analysis and a proprietary growth at a reasonable price (GARP) methodology to select the top 100 constituents in the U.S. equity universe after filtering for liquidity and diversifying over size segments and economic sectors. In other words, it's a bottom-up portfolio constructed at the component level; therefore any over/under weightings at the sector level as a result of the stock selection are purely incidental. Unlike a top-down methodology, which determines sector weights first and then selects components from those sectors to satisfy those weights, MG100 does not perform component selection at the sector level, but uses the entire U.S. equity universe as the selection universe with the goal of selecting the top 100 components that satisfy the liquidity and size/sector diversification screens. From that perspective, it's a true gauge if the overall health of corporate profits among the country's publicly listed companies.

Figure 3. The MarketGrader 100 – Time-Weighted Average Sector Exposures for 2016

Sector	Time-Weighted Average Sector Weight[1] (A)	S&P 1500 Sector Weight[2](B)	Difference (A-B)
Consumer Discretionary	19.5%	12.0%	7.5%
Utilities	0	3.3	-3.3
Consumer Staples	4.2	8.8	-4.6
Energy	2.8	7.2	-4.4
Financials	14.0	15.1	-1.1
Health Care	13.7	13.1	0.6
Industrials	24.0	10.9	13.1
Materials	1.8	3.3	-1.5
Technology	20.0	20.3	-0.3
Telecommunications	0	2.4	-2.4
Real Estate	NA	3.6	-3.6
Total	**100**	**100**	**0**

Source: MarketGrader Research and us.spindices.com. 1 Since the MG 100 is reconstituted on the third Friday of February and August, the "Time-Weighted Average Sector Weight" for 2016 is calculated as if the index were holding the year's starting allocations for two months, the February reconstitution allocations for six months, and the August reconstitution allocations for four months. See Figure A2 in the Appendix for these allocations. Per its methodology, the MG 100 cannot allocate to REITs consequently the "NA". 2 The "S&P 1500 Sector Weight" are as of December 30, 2016.

So, having identified the effective sector over and under weightings, did these implicit bets pay off? Put differently, if a portfolio would have held passive sector index funds in the relative weights of MG100, how would it have performed? Figure 4 provides the answer. A portfolio invested in passive sector funds according to the sector weights allocated to them by MG100 would have resulted in a return of 11.50%. This portfolio would have outperformed the broad S&P 1500 benchmark, which had a price return of 10.29%. In other words, the implicit sector bets of MG100 were directionally correct.

Figure 4. The MarketGrader 100 – Implied Passive Sector Performance for 2016

Sector	Time-Weighted Average Sector Weight[1] (A)	Benchmark Sector Returns[2] (B)	Implied "Passive" Portfolio Return[3] (A x B)
Consumer Discretionary	19.5%	4.97%	0.98%
Utilities	0	13.69	0
Consumer Staples	4.2	3.09	0.13
Energy	2.8	23.71	0.67
Financials	14.0	21.5	3.01
Health Care	13.7	-3.64	-0.50
Industrials	24.0	17.79	4.27
Materials	1.8	19.08	0.35
Technology	20.0	13.00	2.60
Telecommunications	0	17.79	0
Real Estate	**NA**	**NA**	**NA**
Total	**100**		**11.50%**

Source: MarketGrader Research and Bloomberg. 1 Since the MG 100 is reconstituted on the third Friday of February and August, the "Time-Weighted Average Sector Weight" for 2016 is calculated as if the index were holding the year's starting allocations for two months, the February reconstitution allocations for six months, and the August reconstitution allocations for four months. See Figure A2 in the Appendix for these allocations. Per its methodology, the MG 100 cannot allocate to REITs consequently the "NA". 2 The "Benchmark Sector Returns" are the respective returns of the S&P 1500 Sector indexes. 3 The "Implied Passive Portfolio Return" is the product of the "Time-Weighted Average Sector Weight" times the "Benchmark Sector Returns".

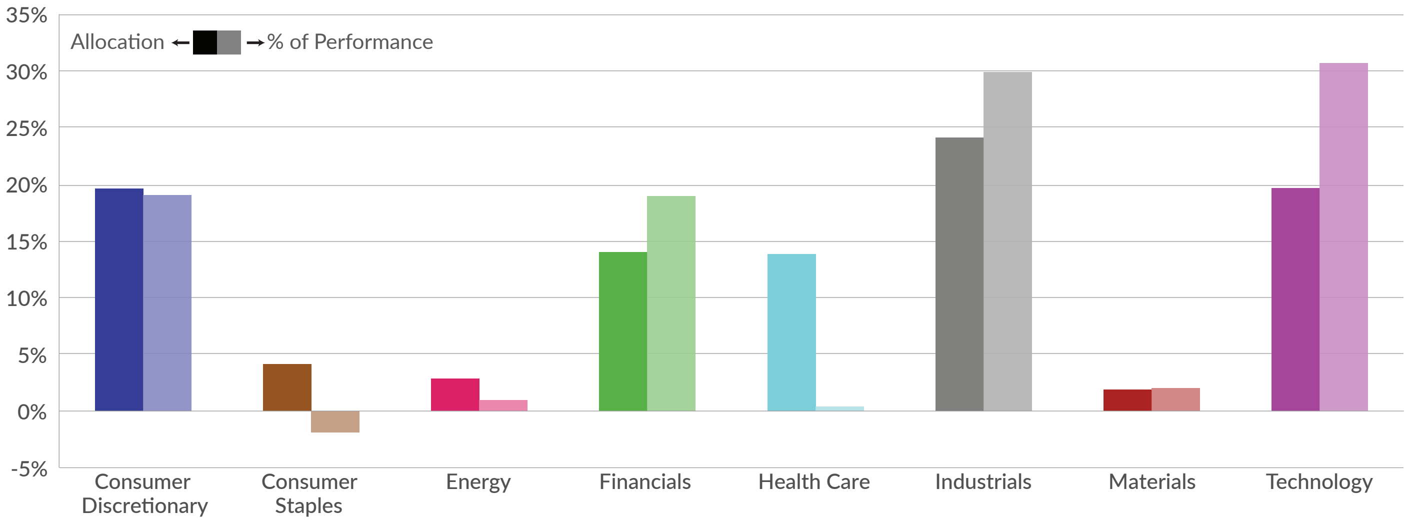
As is often the case in asset allocation, a single sector in the right or wrong direction can make all the difference in a portfolio's performance over a given time period. Such was the case of MG100 in 2016. Its mild underperformance relative to the benchmarks can be largely attributed to its allocation to Health Care, which received almost 14% of the time-weighted allocation based on MarketGrader's bottom-up selection process. Figures 5 and 6 illustrate this clearly through what we call the "Contribution Ratio." This figure shows the amount of performance the index got from every 1% of allocation to any given sector. For example, if the weighted returns of all stocks in a sector that represented 10% of the weight of the index added up to 10% of the index's return, the ratio would be 1; therefore the higher the ratio, the better. From Figure 5 it is clear that the sector that provided the most "bang for the buck" in 2016 was Financials. MG100 allocated 14% of its weight to it but received almost 19% of its performance from it, or 1.35 units of return for every unit of exposure. Health Care, on the other hand, delivered the least by far. With an almost 14% of the weight of the index, the sector delivered only 3% of its return. In other words, from an allocation perspective, monies invested in Health Care by MG100 were poorly allocated in 2016, as the index received only 0.3 units of return for every unit of exposure. Consumer Staples, it could be argued, did the worst for MG100 in 2016 based on a negative contribution ratio (in other words, it detracted from the index's positive return). While this is correct, MG100 only allocated about 4% of its weight to it. So, while this allocation did some damage, proportionally speaking it was nowhere as detrimental to performance than the large allocation to Health Care.

Figure 5. The MarketGrader 100 – Performance Contribution Ratio by Sector in 2016

	Allocation	% of Performance	Contribution Ratio
Consumer Discretionary	19.60%	19.02%	0.97
Consumer Staples	4.14%	-1.89%	-0.46
Energy	2.86%	0.96%	0.34
Financials	14.00%	18.95%	1.35
Health Care	13.82%	0.39%	0.03
Industrials	24.09%	29.88%	1.24
Materials	1.87%	2.01%	1.07
Technology	19.63%	30.68%	1.56
	100.00%	100.00%	1.00

Source: MarketGrader Research

Figure 6. The MarketGrader 100 – Performance Contribution by Sector in 2016



Source: MarketGrader Research

MG100 Size Allocations: What Worked and What Didn't In 2016

The other factor that determines portfolio performance is size, or the allocation of the portfolio to large and small capitalization stocks. Using the August 2015, February 2016 and August 2016 reconstitutions of MG100, Figure 7 presents the time-weighted size category allocations of MG100 for 2016. Consistent with the Russell size indexes, the "Large" capitalization stocks are further broken down by "Mega" and "Mid" capitalization stocks. In 2016 MG100 had an average exposure of 26% to mega cap stocks, 52% to mid cap stocks, 17% to small stocks and the remaining 5% to micro cap stocks. Since the exact weightings of the Russell 3000 stocks are not easily available, it is safe to conclude that relative to the Russell 3000, MG100 is overweight in mid-cap and small-cap stocks, the source of underperformance in 2015.

Figure 7 also presents the implied "passive" contributions for the size weighting of MG100 in 2016. A portfolio invested in passive size funds allocated in MG100's size weightings would have resulted in a return of 11.80%. Note that this implied passive return is better than the 10.41% returned by the Russell 3000. This means that the implicit size bets of MG100, which were an outcome of the bottom-up stock selection, were once again directionally correct.

Figure 7. The MarketGrader 100 – Time-Weighted Average Size Exposures and Implied Passive Size Performance for 2016.

Capitalization	Time-Weighted Average Size Weight[1] (A)	Benchmark Size Returns[2] (B)	Implied "Passive" Portfolio Return[3] (A x B)
Large	78%	9.70%	7.78%
Mega	26	8.85	2.27
Mid	52	11.76	3.39
Small	17	19.48	3.25
Micro	5	18.82	0.97
Total	100		11.80%

Source: MarketGrader Research and Bloomberg. 1 Since the MG 100 is reconstituted on the third Friday of February and August, the "Time-Weighted Average Size Weight" for 2016 is calculated as if the index were holding the year's starting allocations for two months, the February reconstitution allocations for six months, and the August reconstitution allocations for four months. See Figure A3 in the Appendix for these allocations. The "Large" capitalization category is broken up into "Mega" and "Mid" categories. Therefore the "Total" doesn't include those breakdowns. 2 The "Benchmark Size Returns" are the respective returns of the Russell size indexes. 3 The "Implied Passive Portfolio Return" is the product of the "Time-Weighted Average Size Weight" times the "Benchmark Sector Returns".

In looking at the "contribution ratio" we discussed above in our sector analysis but applied to size categories, an interesting picture emerges. As can be seen in Figure 8, the size segment that, by far, delivered the most "bang for the buck" for MG100 in 2016 was small caps, where an allocation of just under 17% delivered almost 30% of the index's positive return. In other words, if MG100 had picked more small caps throughout the year (assuming it had picked the right ones!), its overall performance would likely be higher. The most disappointing category was mega caps, which punched below their weight and delivered about 22% of the index's positive return despite an allocation of almost 26%. Also disappointing, but to a lesser degree, were mid caps, which tends to be MG100's largest size allocation. The category delivered 26% of the return but it required an allocation of almost 29% to do so.

Figure 8. The MarketGrader 100 – Performance Contribution Ratio by Size in 2016

	Allocation	% of Performance	Contribution Ratio
Mega Caps	25.73%	21.90%	0.85
Large Caps	23.64%	24.34%	1.03
Mid Caps	28.68%	26.35%	0.92
Small Caps	16.81%	29.74%	1.77
Micro Caps	5.13%	-2.33%	-0.45
Total	100		11.80%

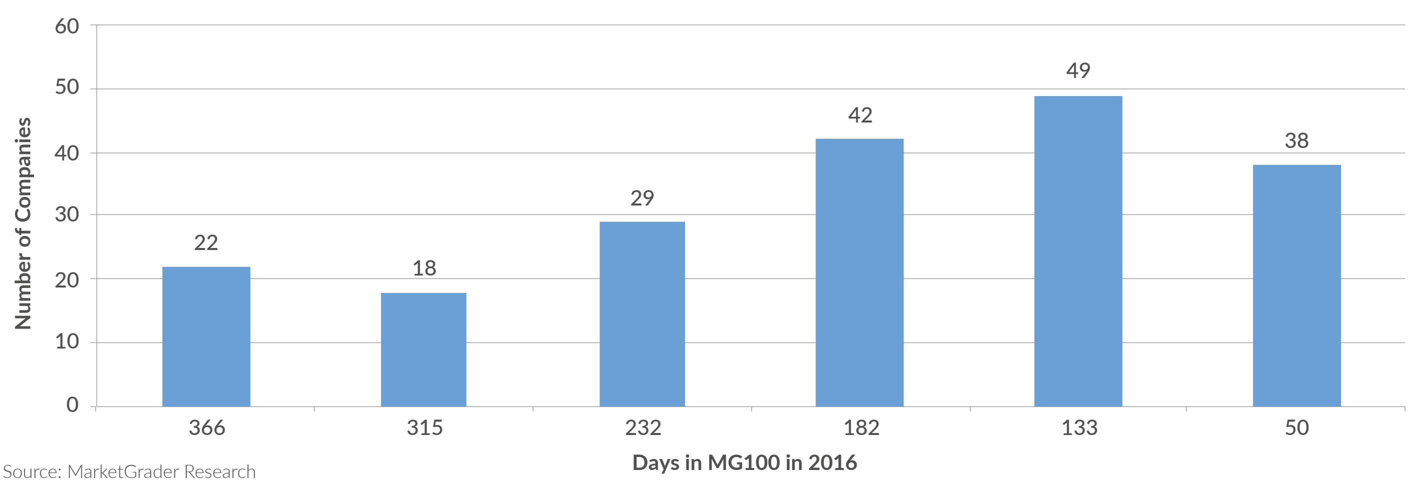
Size classifications used by MarketGrader are not aligned with Russell's size classifications. MarketGrader classifies mega caps as companies with a total market cap of more than $10 billion; large caps as companies with a total market cap between $3 and $10 billion; mid caps as companies with a total market cap between $1 and $3 billion; small caps as companies with a total market cap between $500 million and $1 billion; and micro caps as companies with a total market cap below $500 million.
Source: MarketGrader Research

MG100 Stock Selection: What Worked and What Didn't In 2016

We conclude our performance review with MG100's bread and butter: stock selection. This, of course, should be contextualized within the sector and size discussions presented above as often times stocks move up or down in the near term based on their sector or size rather than on company fundamentals. In the long run, on the other hand, fundamentals dictate returns.

In order to arrive at MG100's sources of returns in 2016 at the individual stock level we also measured all holdings' performance on a time-weighted basis. This is particularly important as there were stocks that during calendar year 2016 only spent about 50 days as members of MG100 while many others spent all 366 days in the index (2016 was a leap year). Figure 9 illustrates the company breakdown based on the number of days each spent as a member of MG100 in 2016.

Figure 9. The MarketGrader 100 Index – Number of Days Spent by All Index Constituents in MG100 in 2016



Source: MarketGrader Research

MG100 held a total of 198 companies in 2016 (by virtue of its two rebalance dates within the year). 122 of those had a time-weighted positive return while only 76 had a negative return. The 122 with positive performance contributed an average of 9.3 basis points each to MG100's overall return in 2016 while each one of the negative performers subtracted, on average, 5.4 basis points apiece. The top 20 time-weighted performers for the year contributed a total of 549 basis points to the index's overall annual performance, or roughly two thirds of its annual return; the bottom 20 performers, on the other hand, subtracted 259 basis points combined from the index's annual return. Figure 10 has the complete list of all 40 names along with the total number of days each spent in MG100 and their time-weighted return.

Figure 10. The MarketGrader 100 – Top and Bottom 20 Performers Based on Time Weighted Price-Only Returns in 2016

Ticker	Company Name	Sector	Days	Weight	Bps Cont.
MDVN	MEDIVATION INC	Health Care	182	0.50%	52.36
ULTA	ULTA SALON COSMETICS & FRAGRANCE INC	Consumer Discretionary	365	1.00%	36.17
EBIX	EBIX INC	Financials	182	0.50%	34.97
PLOW	DOUGLAS DYNAMICS INC	Industrials	315	0.86%	34.35
AMAT	APPLIED MATERIALS INC	Technology	365	1.00%	33.57
UBNT	UBIQUITI NETWORKS INC	Technology	365	1.00%	32.75
TREE	LENDINGTREE INC	Financials	315	0.86%	30.16
ATRO	ASTRONICS CORP	Industrials	182	0.50%	29.45
CRUS	CIRRUS LOGIC INC	Technology	182	0.50%	28.53
GBX	GREENBRIER COS INC	Industrials	365	1.00%	28.01
DRII	DIAMOND RESORTS INTERNATIONAL INC	Consumer Discretionary	232	0.64%	26.26
AMBA	AMBARELLA INC	Technology	232	0.64%	23.02
MKTX	MARKETAXESS HOLDINGS INC	Financials	182	0.50%	22.97
IDCC	INTERDIGITAL INC	Technology	182	0.50%	22.13
QLYS	QUALYS INC	Technology	232	0.64%	20.97
TRN	TRINITY INDUSTRIES INC	Industrials	232	0.64%	20.68
LOPE	GRAND CANYON EDUCATION INC	Consumer Discretionary	365	1.00%	18.66
UVE	UNIVERSAL INSURANCE HOLDINGS INC	Financials	365	1.00%	18.50
AGX	ARGAN INC	Industrials	133	0.36%	17.65
FOXF	FOX FACTORY HOLDING CORP	Consumer Discretionary	133	0.36%	17.61
				13.99%	548.75

Ticker	Company Name	Sector	Days	Weight	Bps Cont.
NLNK	NEWLINK GENETICS CORP	Health Care	232	0.64%	-32.69
FSLR	FIRST SOLAR INC	Technology	182	0.50%	-19.83
INSY	INSYS THERAPEUTICS INC	Health Care	315	0.86%	-18.86
TNK	TEEKAY TANKERS LTD	Industrials	182	0.50%	-17.64
FNHC	FEDERATED NATIONAL HOLDING CO	Financials	232	0.64%	-15.91
SYNA	SYNAPTICS INC	Technology	182	0.50%	-15.54
ZAGG	ZAGG INC	Industrials	182	0.50%	-14.20
THRM	GENTHERM INC	Industrials	232	0.64%	-13.46
SMCI	SUPER MICRO COMPUTER INC	Technology	232	0.64%	-12.20
HRTG	HERITAGE INSURANCE HOLDINGS INC	Financials	365	1.00%	-10.63
MCK	MCKESSON CORP	Health Care	133	0.36%	-10.04
SCMP	SUCAMPO PHARMACEUTICALS INC	Health Care	232	0.64%	-10.01
GILD	GILEAD SCIENCES INC	Health Care	365	1.00%	-9.76
AKRX	AKORN INC	Health Care	133	0.36%	-9.26
NHTC	NATURAL HEALTH TRENDS CORP	Consumer Staples	365	1.00%	-9.14
ENTA	ENANTA PHARMACEUTICALS INC	Health Care	182	0.50%	-9.11
WETF	WISDOMTREE INVESTMENTS INC	Financials	232	0.64%	-9.11
AOBC	SMITH & WESSON HOLDING CORP	Industrials	183	0.50%	-8.50
AEO	AMERICAN EAGLE OUTFITTERS INC	Consumer Discretionary	133	0.36%	-7.39
NKE	NIKE INC	Consumer Discretionary	365	1.00%	-6.04
				12.76%	-259.31

Source: MarketGrader Research

Appendix

Figure A1. The MarketGrader 100 – Calendar Year Price Performance Vs Benchmarks

Time Period	MG 100	S&P 500	Russell 3000
2002*	-3.6%	-4.0%	-3.9%
2003	51.7	26.4	28.7
2004	20.6	9.0	10.1
2005	18.5	3.0	4.3
2006	6.2	13.6	13.7
2007	14.0	3.5	3.3
2008	-45.5	-38.5	-38.7
2009	40.9	23.5	25.5
2010	19.2	12.8	14.8
2011	-0.6	0.0	-0.9
2012	16.6	12.4	14.0
2013	41.6	29.6	30.9
2014	8.5	11.4	10.5
2015	-6.5	-0.7	-1.5
2016	8.3	9.5	10.4

Source: MarketGrader Research. * Reflects partial year returns starting in September 2002. The inception date of the MG 100 is 8/16/2002, so September 2002 is the first complete month of returns for the index.

Figure A2. The MarketGrader 100 – Sector Exposures for 2016

Sector	**Reconstitution: August 2015**	**Reconstitution: February 2016**	**Reconstitution: August 2016**
Consumer Discretionary	20	17	23
Utilities	0	0	0
Consumer Staples	6	3	5
Energy	1	4	2
Financials	15	13	15
Health Care	11	13	16
Industrials	21	25	24
Materials	2	1	3
Technology	24	24	12
Telecommunications	0	0	0
Real Estate	NA	NA	NA
Total	**100**	**100**	**100**

Source: MarketGrader Research. These are the three reconstitutions that impacted the make-up of the MG 100 in 2016 and are used to construct the "Time-Weighted Average Sector Weight" for 2016 as presented in Figure 3 of the paper.

Figure A3. The MarketGrader 100 – Size Exposure for 2016

Sector	**Reconstitution: August 2015**	**Reconstitution: February 2016**	**Reconstitution: August 2016**
Large	84	75	80
Mega	25	25	27
Mid	59	50	53
Small	11	19	16
Micro	5	6	4
Total	**100**	**100**	**100**

Source: MarketGrader Research. These are the three reconstitutions that impacted the make-up of the MG 100 in 2016 and are used to construct the "Time-Weighted Average Size Weight" for 2016 as presented in Figure 5 of the paper. The "Large" capitalization category is broken up into "Mega" and "Mid" categories.

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