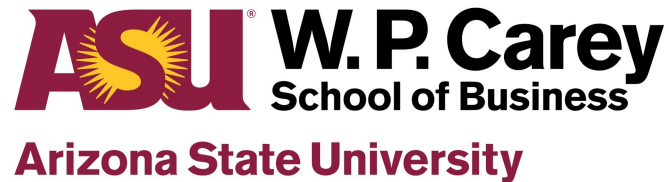




# Small Cap - Value - Profitability Portfolio

MBA Student Investment Management Fund  
December 2017



# MBA SIM Fund Members



Andrew Farmer



Enny Kho



Sahil Kwatra



Katie Lundy



Andres Vargas

# Agenda

- *Motivation*
- *Implementation*
- *Financials*
- *Weighting*
- *Benchmarking*
- *Returns*
- *Future Work*

# Motivation

*Value*<sup>1</sup>

Linked to profitability. Also, necessary to filter out small / growth firms.

*Profitability*<sup>2</sup>

Capture premium. Deepen knowledge of accounting concepts & analysis.

<sup>1</sup> Ball E et al. 2015 Deflating Profitability.

<sup>2</sup> Novy-Marx R 2011 The other side of value: The Gross Profitability Premium.

# Implementation

## Research Returns

**Value Portfolio (1943 - 2017 Sept)  
 Monthly Excess Return\***

Size	Portfolio Value	Excess return	
Small	1	-4.79	⇒ Low Value
	10	1.82	⇒ High Value
	10-1	6.61	
Big	1	0.91	
	10	-6.37	
	10-1	-7.28	

**Cash Based Operating Profitability  
 Portfolio Monthly Excess Returns\*\***

Size	Portfolio Profit ranking	Excess return	
Small	1	0.26	⇒ Low Profitability
	10	1.13	⇒ High Profitability
	10-1	0.87	
Big	1	0.22	
	10	0.65	
	10-1	0.43	

\* Extracted from [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

\*\* Extracted from "Accruals, Cash Flows, and Operating Profitability in the Cross Section of Stock Returns", 2016, Ball et. al.

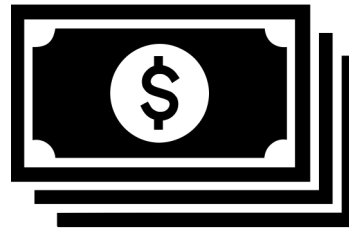
# Implementation

## *Charter Constraints*

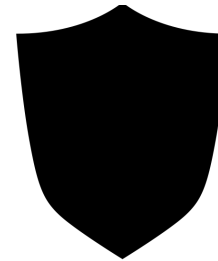
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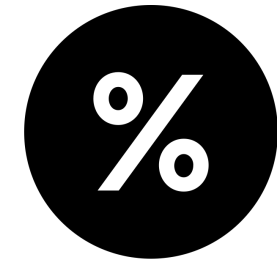
Firms Domiciled  
in the U.S. > 75%



Market Cap  
> \$1B



Long-Only  
Portfolio



10% Firm;  
25% Sector

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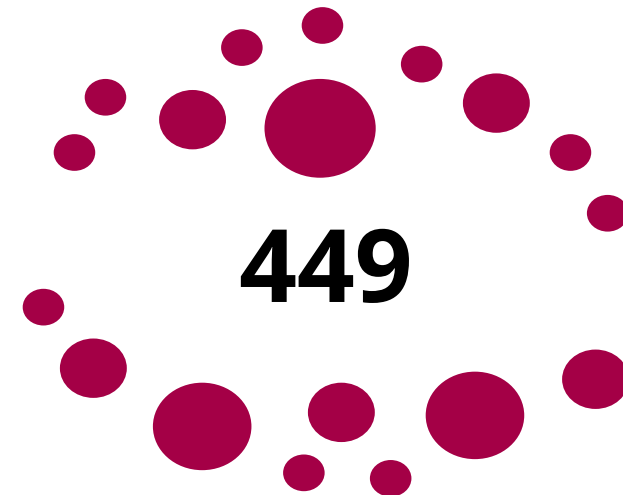
# Implementation

## *Defining Small Cap*

- **Measure:** Most Recent Market Cap
- **Small Cap:**  $\$1\text{B} < x < \$2\text{B}$  (IPS)



US Domiciled, Common equity



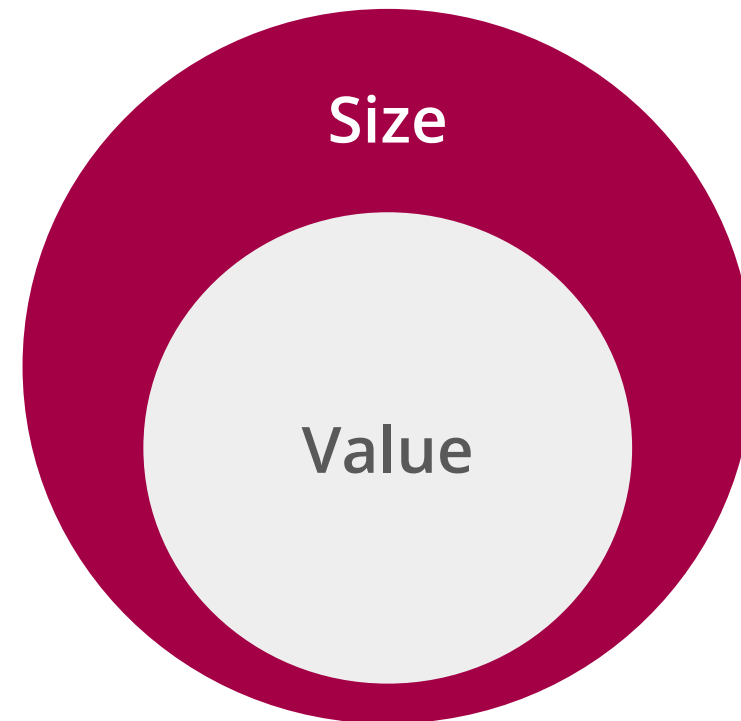
# Implementation

## *Value Premium*

- **Measure:** Price-to-Cashflow Ratio (P/CF)

$$\frac{P}{CF} = \frac{\text{Last Price}}{\text{Operational Cash Flow per Share}}$$

- **Sort:**
  - Dependent to Size
  - Independent of Profitability





# Implementation

## *Profitability Premium*

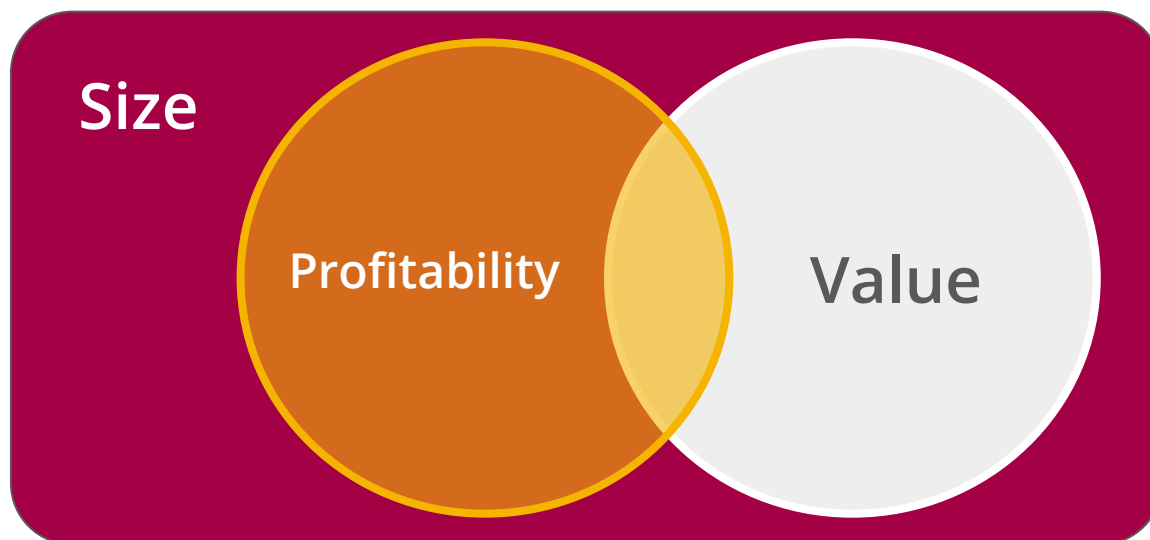
- **Measure:** Cash-Based Operating Profitability (CBOP), trailing 12 months

$$\begin{aligned}
 CBOP = & \text{Revenue} - COGS - SG\&A + R\&D \text{ Exp.} \\
 & -(\Delta AR - \Delta Inv - \Delta PP \text{ Exp}) \\
 & +(\Delta AP + \Delta DR + \Delta Acc \text{ Exp})
 \end{aligned}$$

- Deflated CBOP by Total Assets

$$\text{Deflated CBOP} = \frac{CBOP}{\text{Total Assets}}$$

- **Sort:**
  - Dependent to Size
  - Independent of Value



# Implementation

## Screening



311



### Excluded:

- Financials
- Recent IPOs
- Negative CFO
- Dual Class Shares

### Sorted by Market Cap:

- Profitability: Deciles 6-10 (most profitable)
- Value: Deciles 1-5 (value firms)

### Sector Agnostic

# Financials

*Vanguard ETF (VFH)*

## Advantages

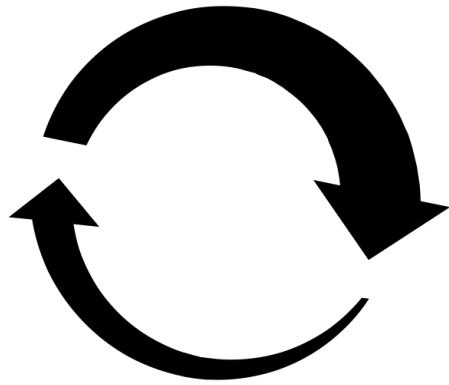
highly diversified  
very low expense ratio  
exposure to value

## Disadvantages

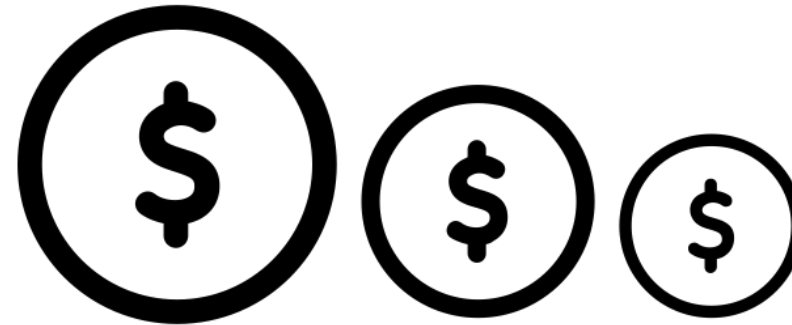
large caps misalign with  
strategy  
lose exposure to  
profitability premium

# Weighting

*Market Cap*



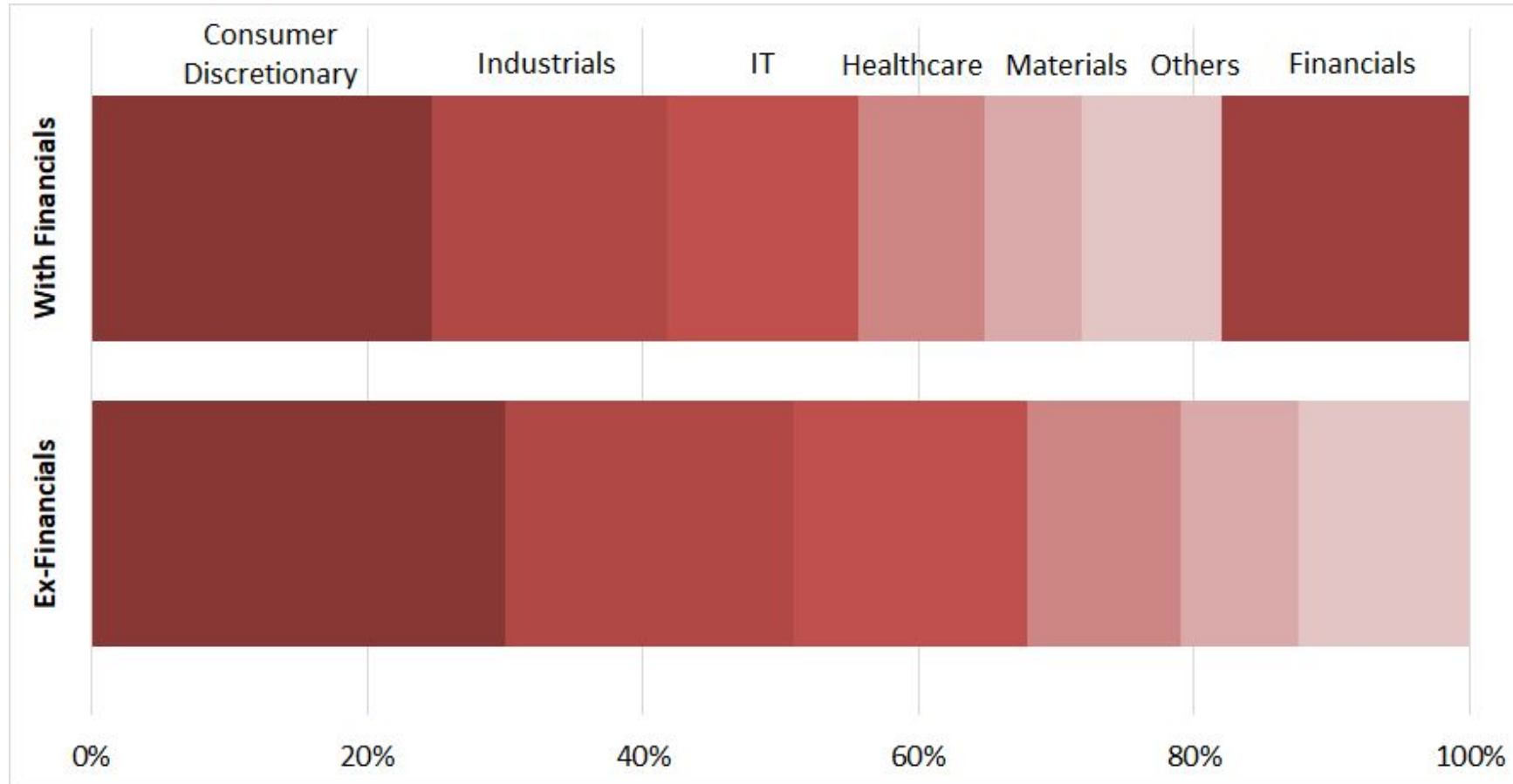
Relatively Lower  
Turnover



Relatively Lower  
Transaction Costs

# Weighting

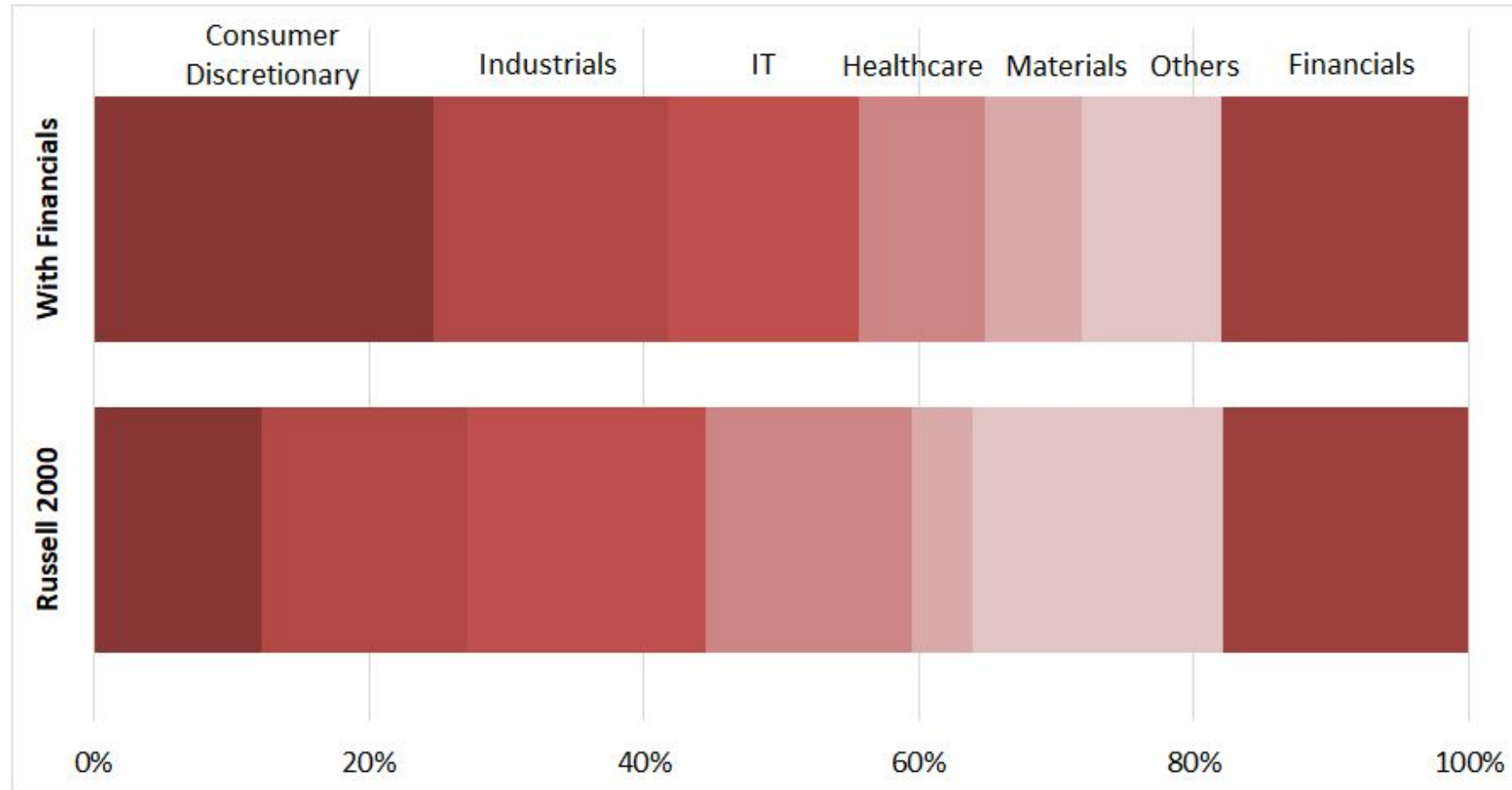
## *Portfolio Composition*



By Market Cap

# Benchmarking

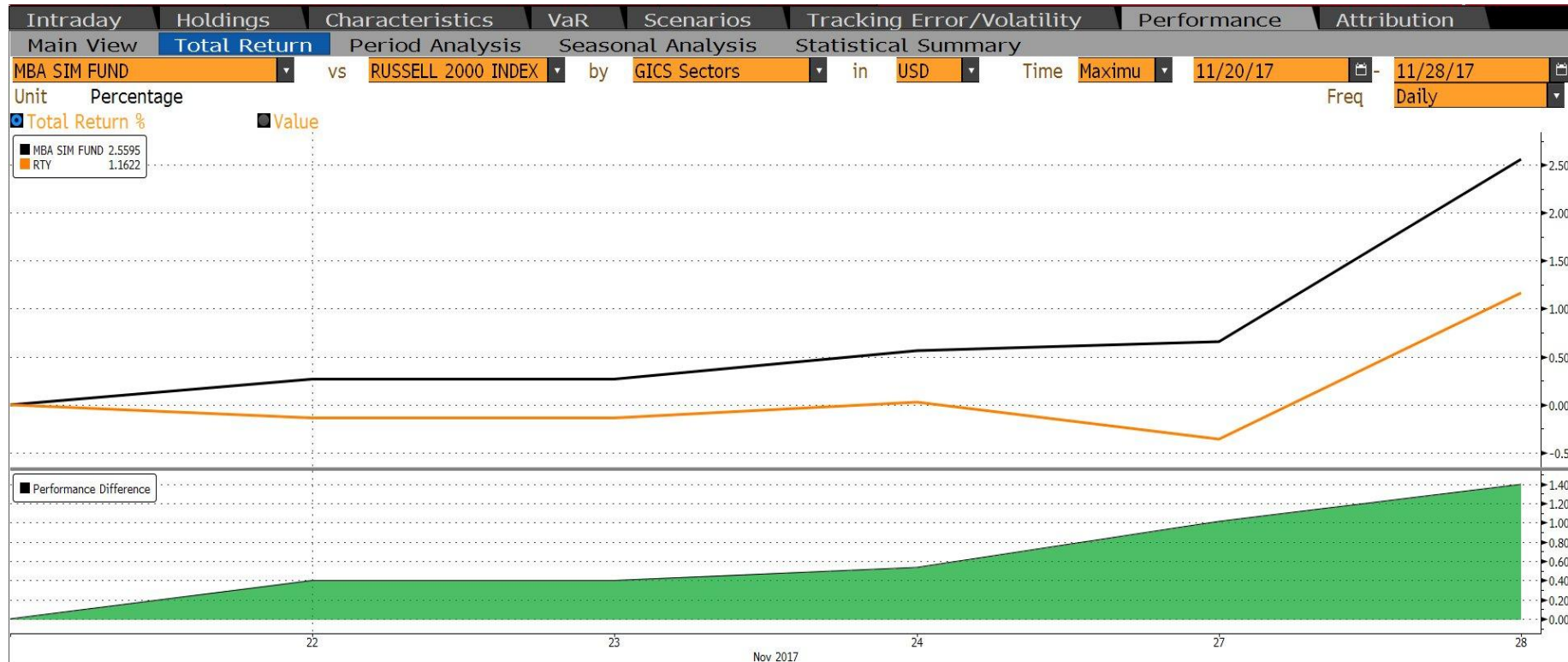
## *Russell 2000*



By Market Cap

# Returns

## Portfolio Performance



51 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852  
 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2017 Bloomberg Fi  
 SN 530671 MST GMT-7:00 G627-3412-1 29-Nov-2017 14:57:34

# Future Work

- *Automation (slice & dice data)*
- *Monthly Rebalancing*
- *Attribution Analysis*
- *Alert System & Constant Check of Investments*



# Appendix

## Averages

	Average Beta	Average 1 month return*	Average 1 year return*	Average P/CF	Average CBOP
Consumer Discretionary	0.92	5.31	16.06	-6.21	0.31
Consumer Staples	0.95	3.96	9.86	13.00	1.23
Energy	0.66	11.70	2.19	6.29	0.20
Financials	1.22	-1.98	19.31	--	--
Health Care	1.10	0.09	3.31	7.75	0.50
Industrials	1.36	2.70	10.17	-1.03	0.36
Information Technology	1.43	-0.85	4.09	6.25	0.27
Materials	1.70	21.52	39.10	6.11	0.35
Telecommunication Services	1.31	-5.34	32.16	7.91	0.16
Utilities	0.94	1.32	24.10	11.27	0.19
<b>Grand Total</b>	<b>1.19</b>	<b>2.97</b>	<b>13.89</b>	<b>1.38</b>	<b>0.28</b>

Benchmark	--	2.25	16.12	13.99	--
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\* Units in percentage, historical figures

# Appendix

## Firms by Sector - Consumer Discretionary

Consumer Discretionary	% Average Weight	Total Return (%)
CHILDREN'S PLACE INC/THE	2.4	1.03
SALLY BEAUTY HOLDINGS INC	2.18	2.97
BLOOMIN' BRANDS INC	1.92	-3.46
PINNACLE ENTERTAINMENT INC	1.79	0.79
OVERSTOCK.COM INC	1.76	-4.05
AMC ENTERTAINMENT HLDS-CL A	1.74	17.32
DSW INC-CLASS A	1.73	3.12
PARTY CITY HOLDCO INC	1.56	1.61
BRINKER INTERNATIONAL INC	1.55	1.04
SHUTTERFLY INC	1.51	3.8
MSG NETWORKS INC- A	1.38	-4.58
TROPICANA ENTERTAINMENT INC	1.35	-0.39
EW SCRIPPS CO/THE-A	1.3	0.13
SEAWORLD ENTERTAINMENT INC	0.99	-0.09

# Appendix

## *Firms by Sector - Industrials*

Industrials	% Average Weight	Total Return (%)
HERMAN MILLER INC	2.19	-1.86
HAWAIIAN HOLDINGS INC	2.16	1.70
BRADY CORPORATION - CL A	2.09	0.13
STEELCASE INC-CL A	1.78	-2.37
SAIA INC	1.74	-1.17
HERC HOLDINGS INC	1.73	-0.42
AIR TRANSPORT SERVICES GROUP	1.48	-0.76
AXON ENTERPRISE INC	1.36	2.43
ATKORE INTERNATIONAL GROUP I	1.36	-1.16
QUAD GRAPHICS INC	1.17	-0.51
MARTEN TRANSPORT LTD	1.11	-0.52

# Appendix

## *Firms by Sector - Information Technology*

Information Technology	% Average Weight	Total Return (%)
TELETECH HOLDINGS INC	2.03	-1.92
PLANTRONICS INC	1.81	-0.40
NETGEAR INC	1.65	0.20
CSG SYSTEMS INTL INC	1.60	0.22
ELECTRONICS FOR IMAGING	1.42	1.45
SYNAPTICS INC	1.42	-4.99
OCLARO INC	1.27	2.19
EPLUS INC	1.21	-1.77
WEB.COM GROUP INC	1.17	-0.43
INFINERA CORP	1.16	1.53

# Appendix

## *Firms by Sector - Healthcare*

Healthcare	% Average Weight	Total Return (%)
BROOKDALE SENIOR LIVING INC	2.08	3.57
LIFEPOINT HEALTH INC	1.84	2.62
INNOVIVA INC	1.55	-2.24
TIVITY HEALTH INC	1.45	0.14
TENET HEALTHCARE CORP	1.43	3.97
ANALOGIC CORP	1.13	0.06

# Appendix

## *Firms by Sector - Materials*

Materials	% Average Weight	Total Return (%)
VALHI INC	2.14	18.41
CLEVELAND-CLIFFS INC	2.02	1.27
KAISER ALUMINUM CORP	1.73	-2.83

# Appendix

## *Firms by Sector - Other*

<b>Consumer Staples</b>	<b>% Average Weight</b>	<b>Total Return (%)</b>
USANA HEALTH SCIENCES INC	1.71	5.53
<b>Energy</b>	<b>% Average Weight</b>	<b>Total Return (%)</b>
ULTRA PETROLEUM CORP	1.99	1.62
ARCH COAL INC - A	1.89	-2.05
<b>Telecommunication Services</b>	<b>% Average Weight</b>	<b>Total Return (%)</b>
SHENANDOAH TELECOMMUNICATION	1.92	0.27
<b>Utilities</b>	<b>% Average Weight</b>	<b>Total Return (%)</b>
OTTER TAIL CORP	1.94	0.00
CHESAPEAKE UTILITIES CORP	1.43	-0.60

# Appendix

## *Sector Exposure - Financials*

Financials	% Average Weight	Total Return (%)
VANGUARD FINANCIALS ETF (VFH)	17.69	-0.63