

# Undergraduate Student Investment Management Fund

Spring 2017

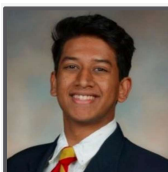
# The Team

## Fund Manager

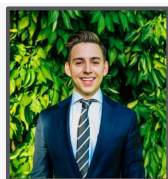


Gregory Nowicki

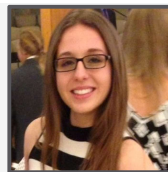
## Fund Analysts



Sanketh Macha



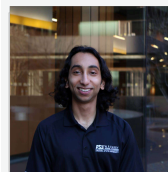
Michael  
Muscheid



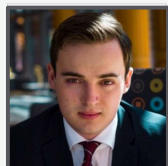
Paige Weisman



Gregory Goulder



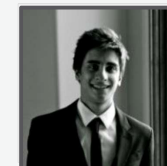
Hamza Amjad



Alex Glenn



Charles Goode



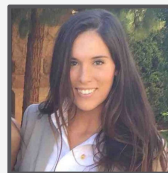
Ryan Hebel



Ernest De la Cruz



Daniel Martin



Madeline  
Osadjan

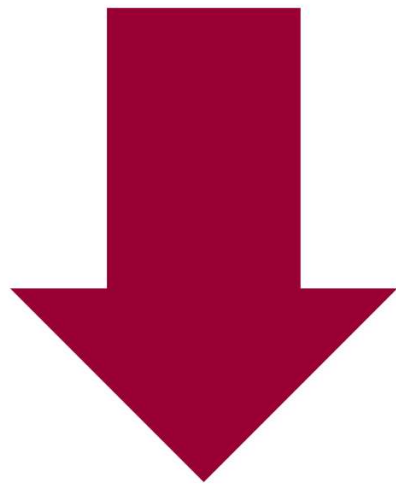


Junci Zhao

# Asymmetric Arbitrage

## Asymmetric Arbitrage

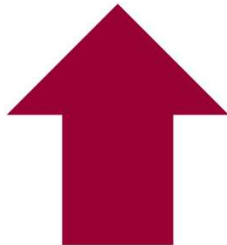
*Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle*  
Stambaugh, Yu, and Yuan (2015)



Overpriced Securities  
+ Unable to Short  
=  
Negative Expected Return

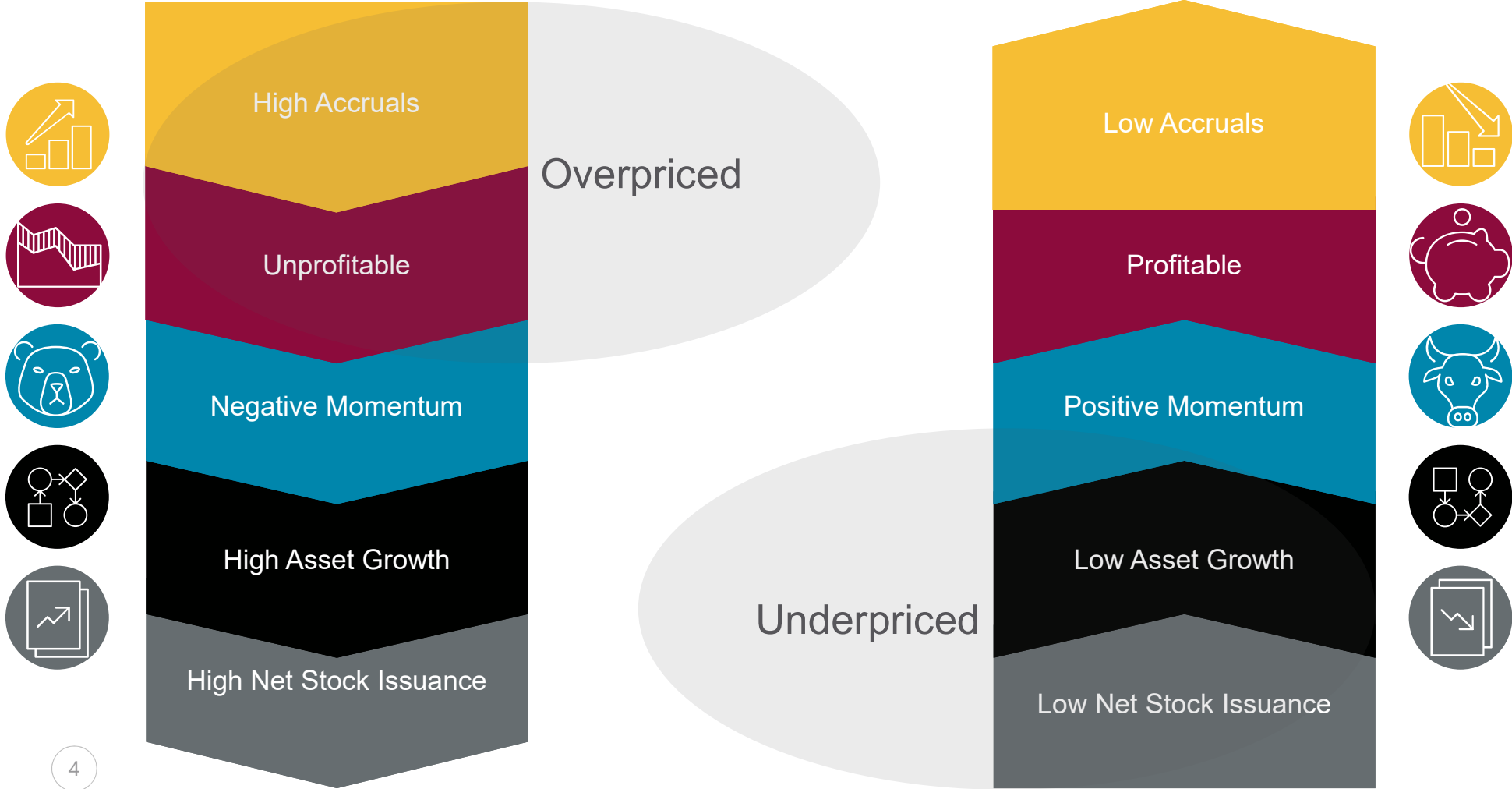


Negative Overall  
Expected Return to IVOL

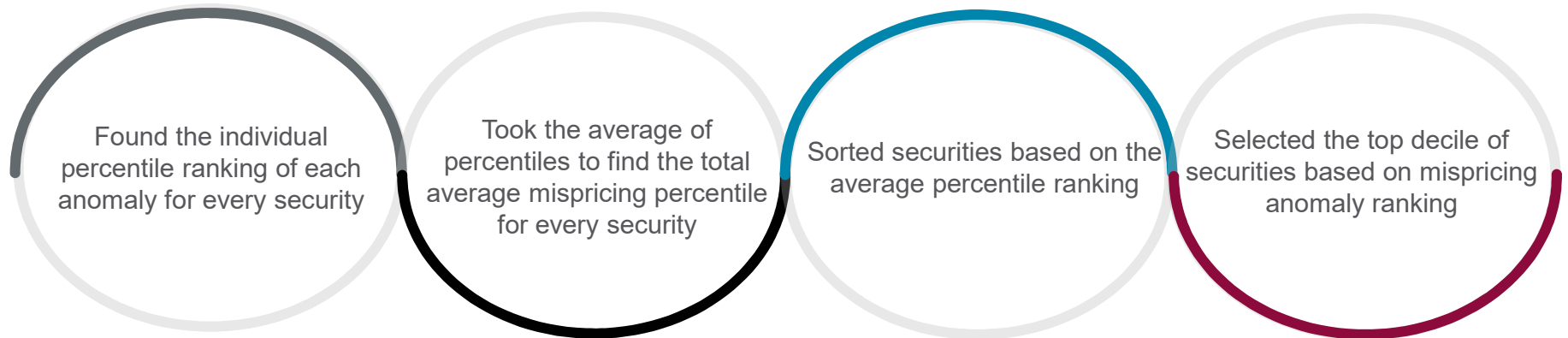


Underpriced Securities  
+ Unable to Long  
=  
Positive Expected Return

# Mispricing & Idiosyncratic Volatility



# Simple Average Ranking Construction

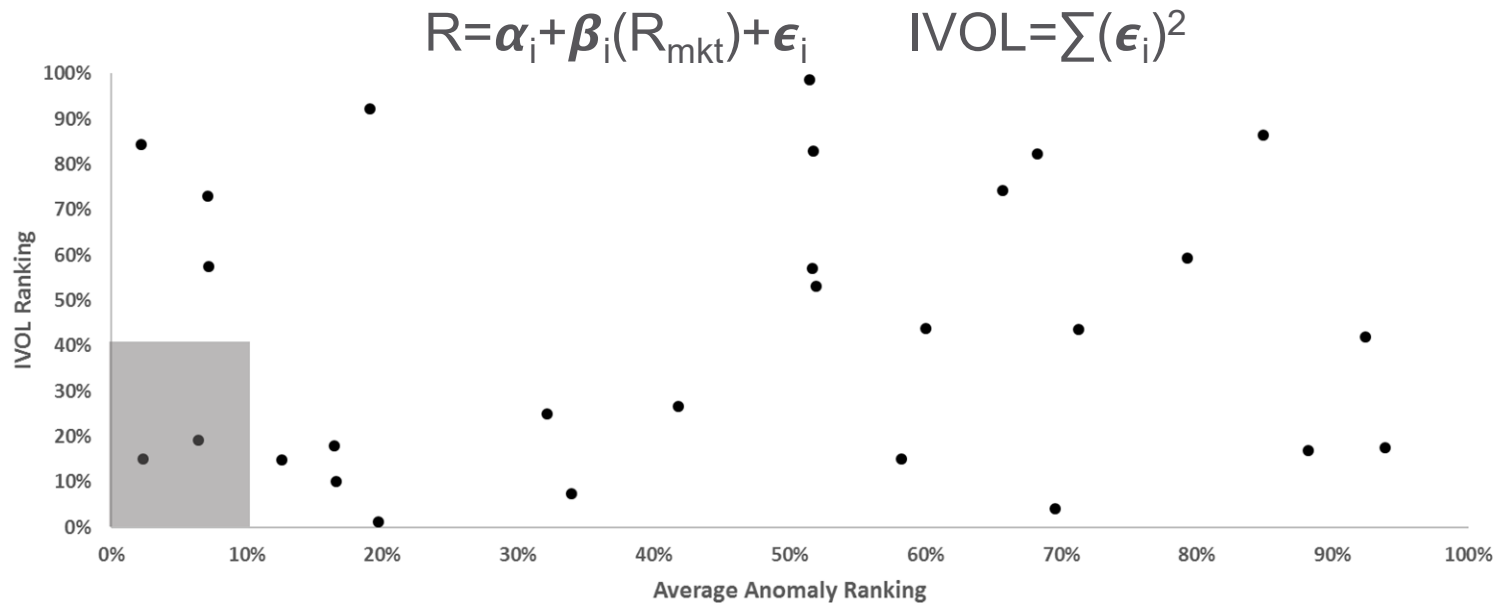


Ticker	Accruals	Asset Growth	Momentum	Net Issuance	Profitability	Average
Company A	10%	20%	30%	30%	10%	20%
Company B	20%	30%	20%	20%	30%	24%
Company C	30%	10%	10%	10%	20%	16%

# Idiosyncratic Volatility (IVOL) & Mispricing

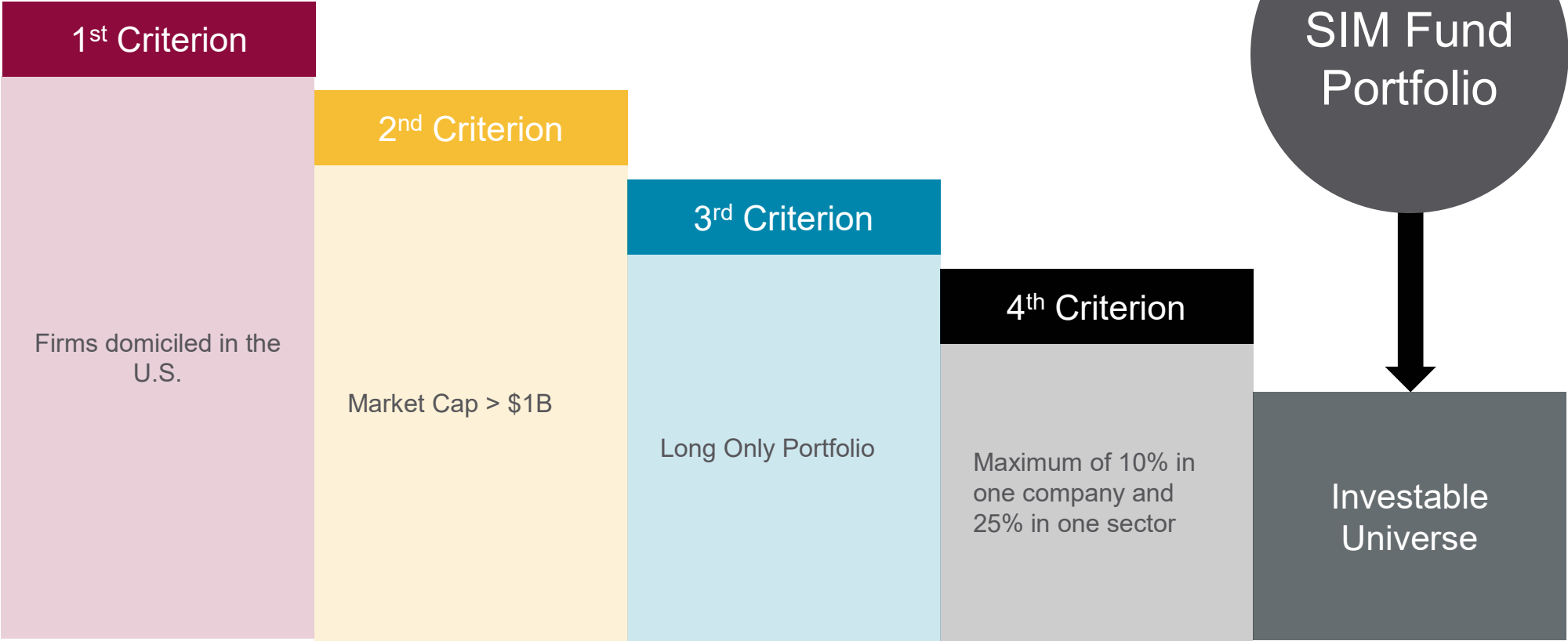


- Market variance unattributed to variance of market return of iShares Russell 3000 ETF
- Magnitude of mispricing much greater amongst securities with high IVOL as a result of arbitrage risk



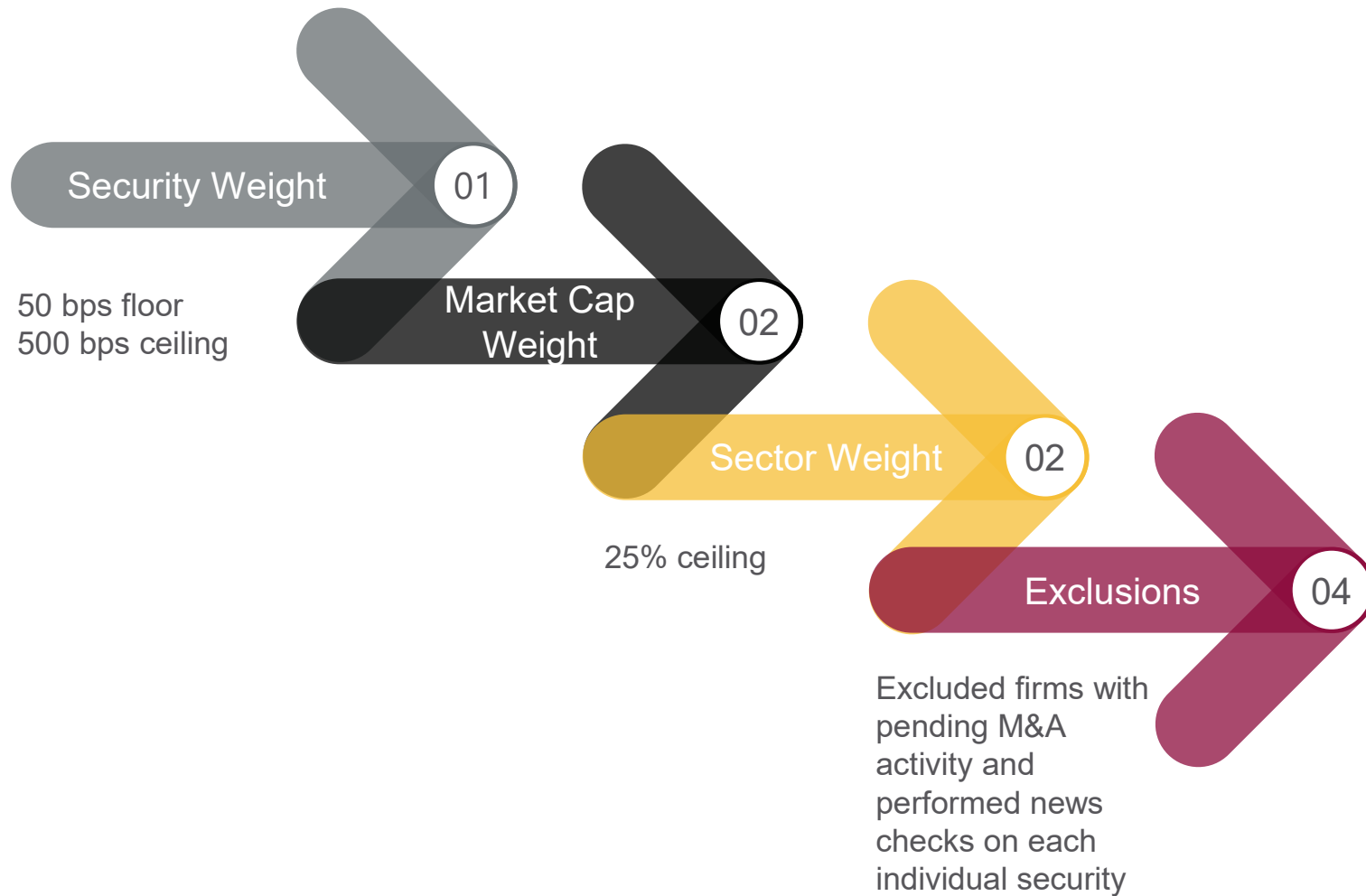
# Strategy Implementation

# Charter Constraints

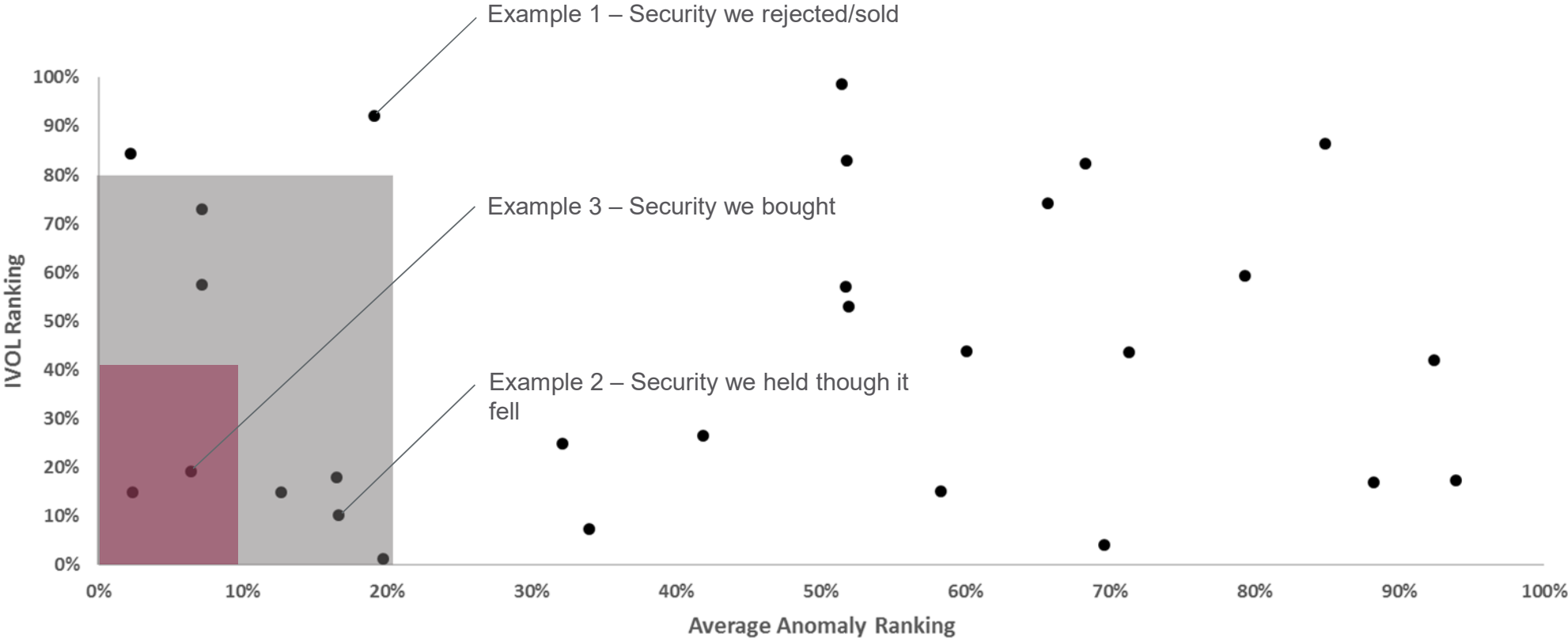




# Investment Process

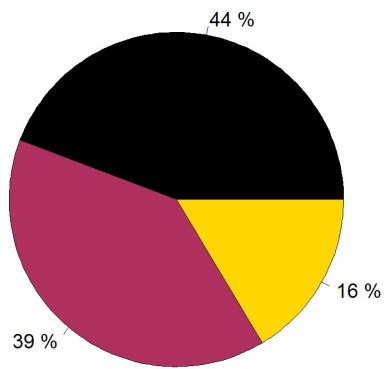


# Rebalance Process - Hold

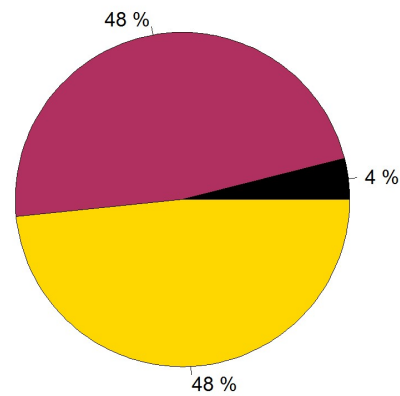


# Market Cap Weights

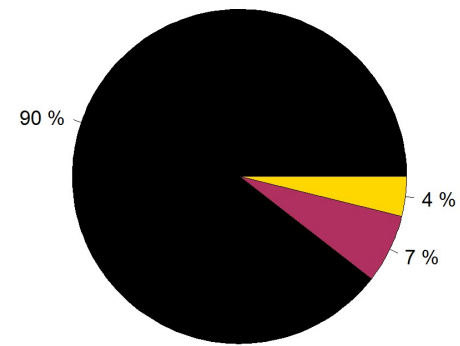
## Portfolio



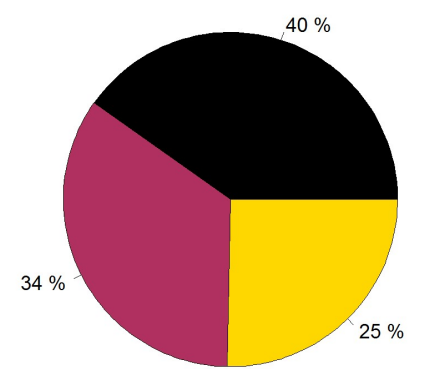
## IWM



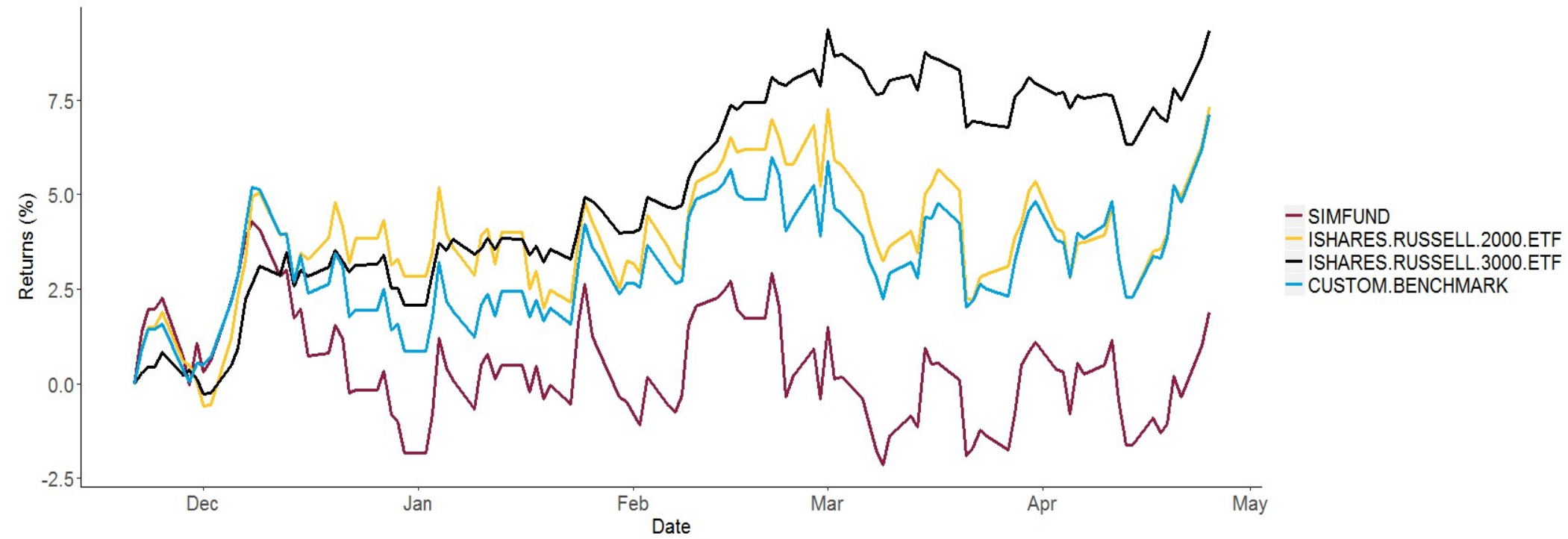
## IWV



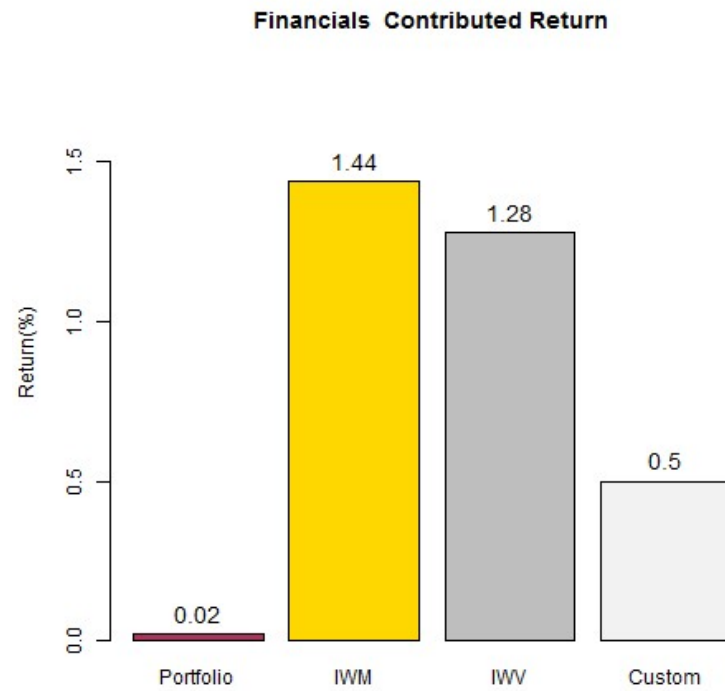
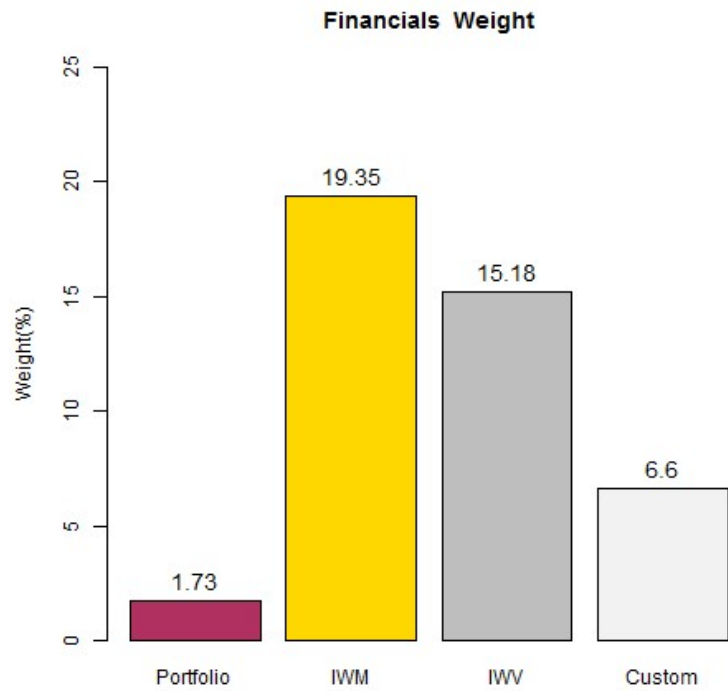
## Custom



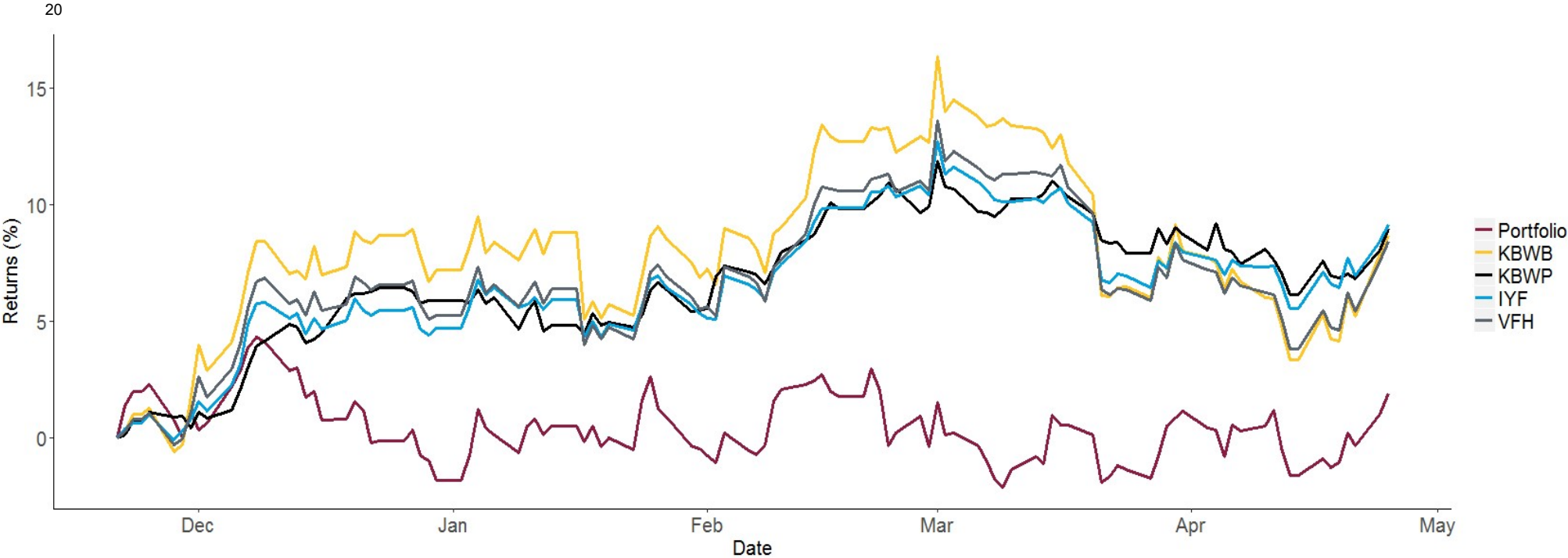
# Portfolio Returns - Benchmarks



# Sector Comparison - Financials



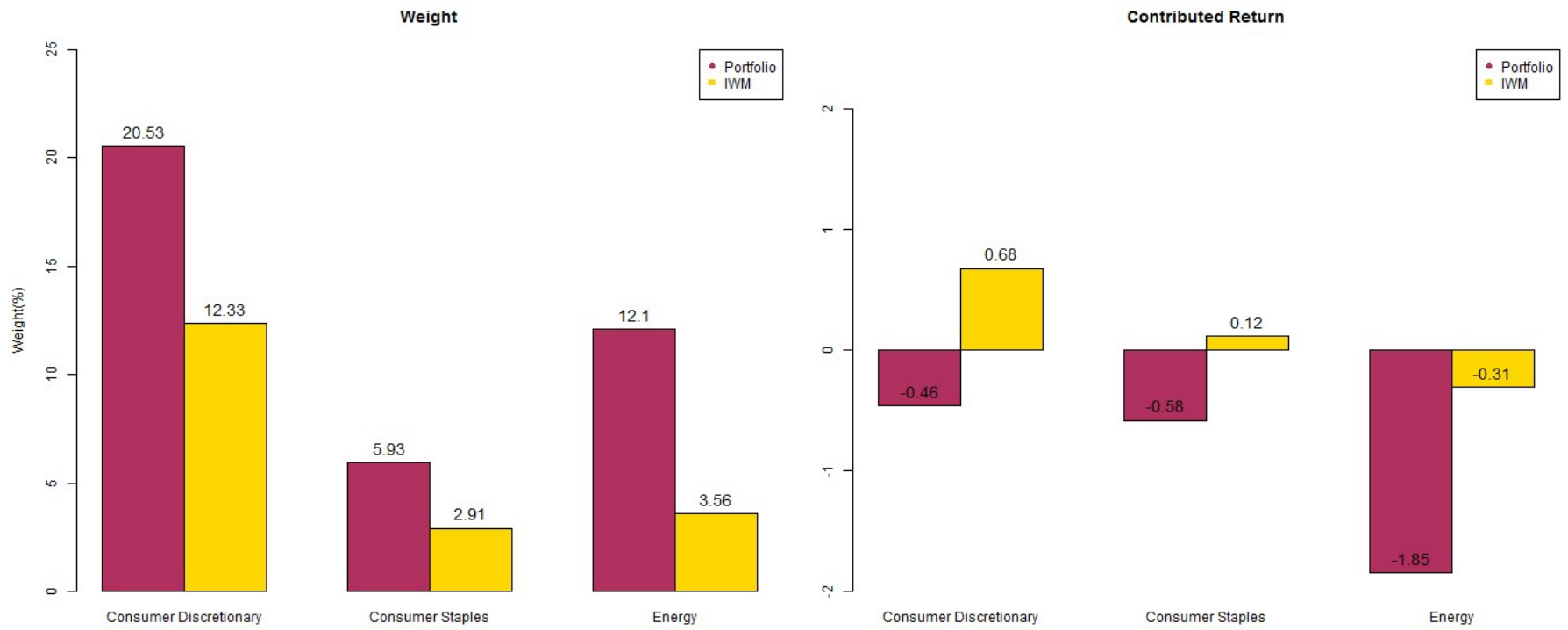
# Portfolio Returns – Financials



## Financials - Alternate Gross Profit Calculations

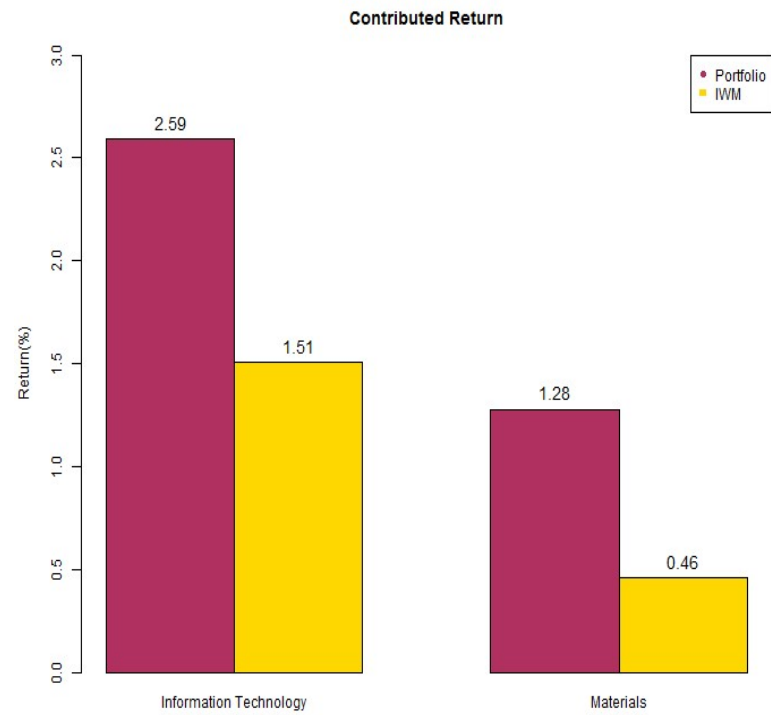
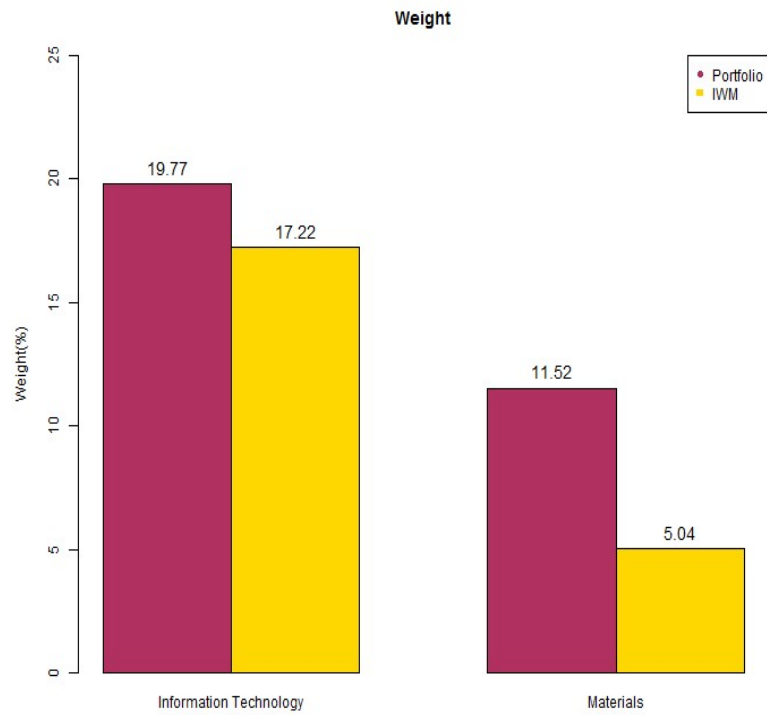
<b>Real Estate</b>	$\frac{(\text{Revenue} - \text{Adjusted Operating Expenses} + \text{Depreciation})}{\text{Total Assets}}$
<b>Insurance</b>	$\frac{(\text{Investment Income} + \text{Net Premiums} - \text{Total Claims} + \text{Underwriting Expense})}{(\text{Investable Assets} + \text{Accounts Receivable})}$
<b>Investment (Banks,etc.)</b>	$\frac{\text{Net Interest Income}}{\text{Total Investable Assets}}$

# Sector Comparison

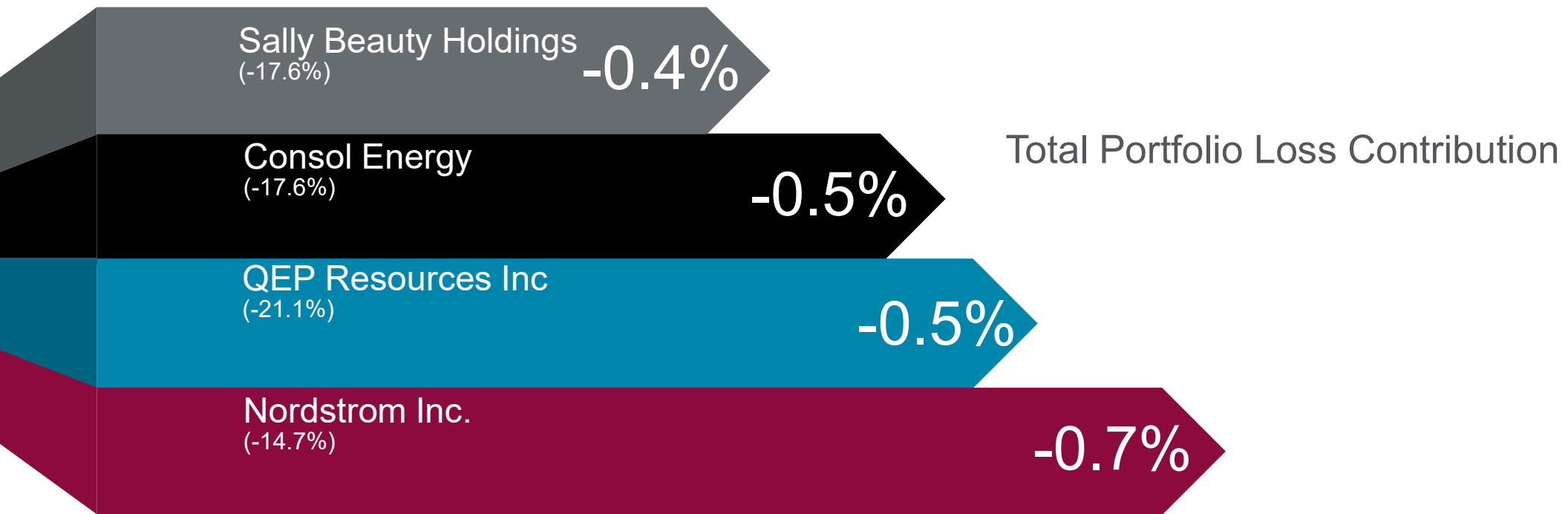




# Sector Comparison



## Worst Performers



**Our Experiences**

**+**

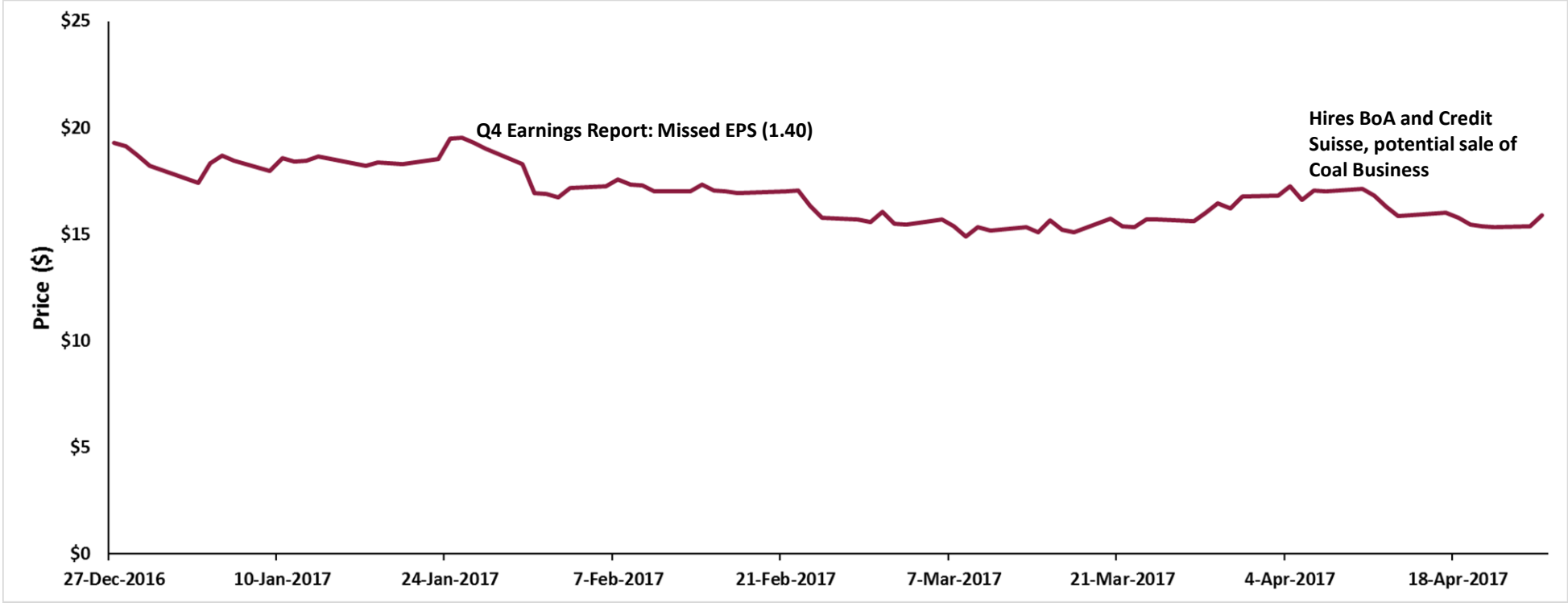
**Moving Forward**

# Underperforming Securities

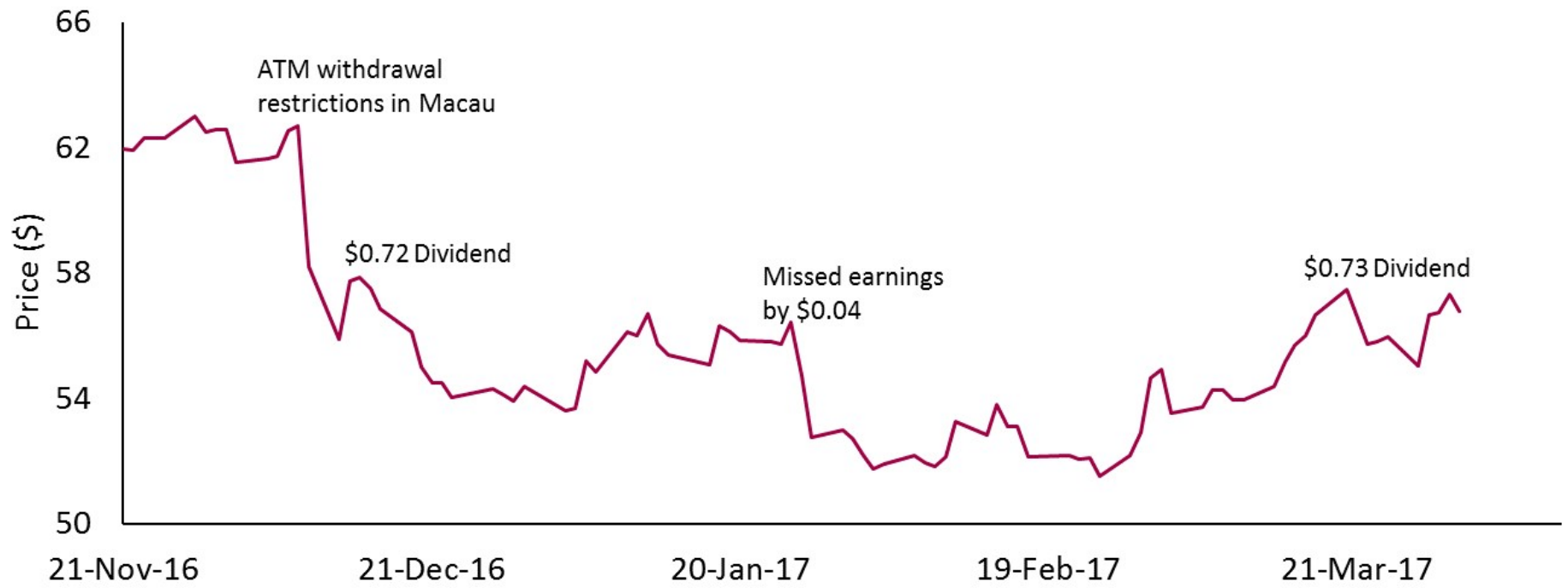
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# Anomalies

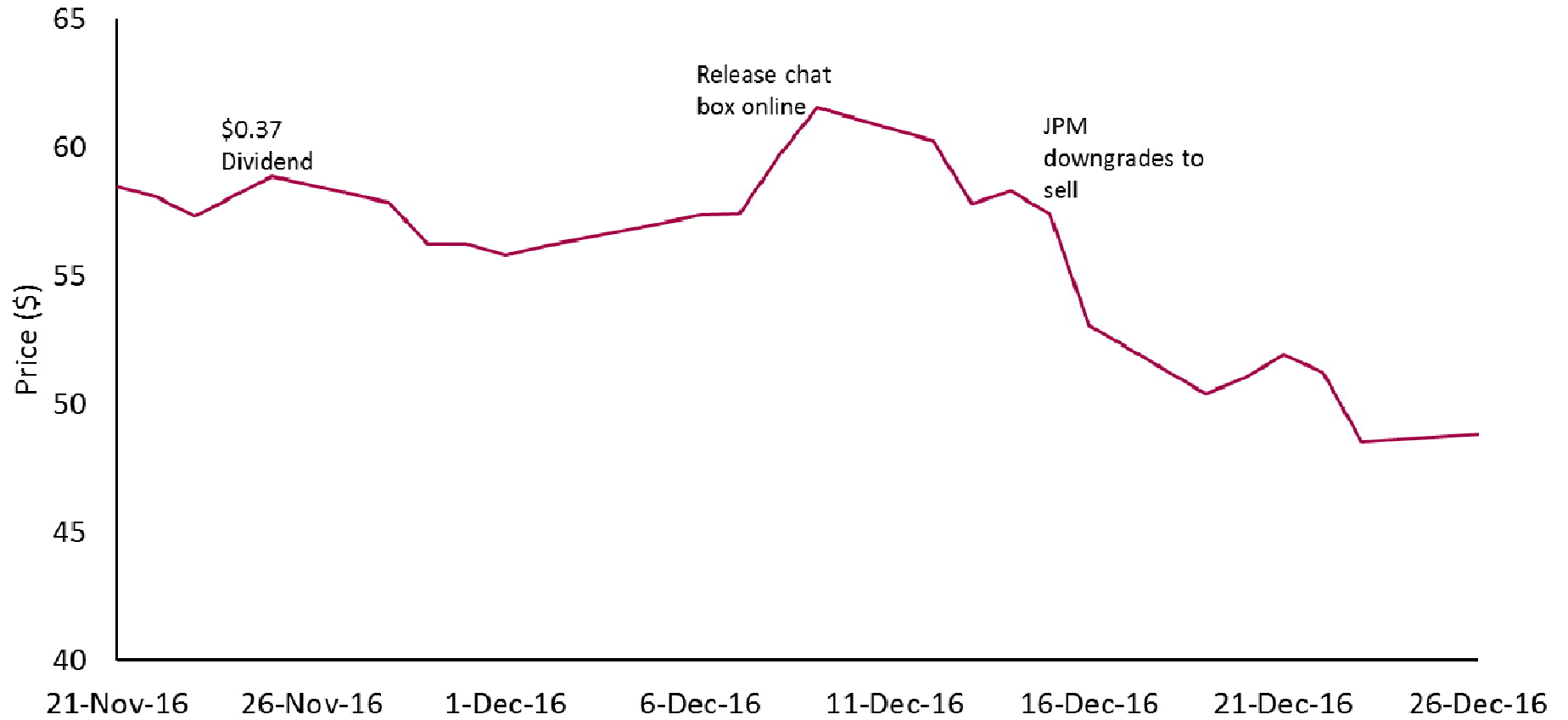
# Consol Energy Inc. (CNX)



# Las Vegas Sands (LVS)



# Nordstrom (JWN)



# Sally Beauty Holdings (SBH)





# Anomaly Correlations

Anomaly	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Panel A. Correlations: long minus short</i>												
(1) Failure Probability	1.00											
(2) Oshlon's O (distress)	0.47	1.00										
(3) Net stock issues	0.27	0.20	1.00									
(4) Composite equity issues	0.20	0.11	0.43	1.00								
(5) Total accruals	0.15	0.08	0.15	0.11	1.00							
(6) Net operating assets	0.09	0.16	0.22	0.10	0.26	1.00						
(7) Momentum	0.62	0.18	0.22	0.25	0.15	0.14	1.00					
(8) Gross profitability	0.36	0.34	0.21	0.01	0.12	0.13	0.19	1.00				
(9) Asset growth	0.09	0.03	0.36	0.22	0.22	0.36	0.17	-0.01	1.00			
(10) Return on assets	0.58	0.41	0.16	0.01	0.03	0.02	0.31	0.38	-0.03	1.00		
(11) Investment-to-assets	-0.02	-0.01	0.19	0.12	0.34	0.32	0.08	-0.08	0.51	-0.08	1.00	
(12) Combination	0.77	0.52	0.52	0.39	0.42	0.42	0.68	0.43	0.44	0.56	0.35	1.00
<i>Panel B. Excess returns</i>												
Long leg (mean)	0.94	0.51	0.70	0.62	0.72	0.71	1.11	0.69	1.00	0.64	0.91	0.76
Short leg (mean)	-0.01	-0.19	0.07	0.20	0.13	0.06	-0.45	0.29	0.04	-0.34	0.15	-0.01
Long minus short (mean)	0.95	0.70	0.63	0.42	0.58	0.65	1.56	0.40	0.96	0.98	0.75	0.77
Long leg (t-statistic)	3.97	2.18	3.66	3.47	2.54	2.98	3.81	3.20	3.82	2.56	3.65	3.57
Short leg (t-statistic)	-0.01	-0.51	0.27	0.79	0.40	0.22	-1.23	1.33	0.14	-0.88	0.57	-0.05
Long minus short (t-statistic)	2.55	2.83	5.11	2.59	3.11	4.41	5.45	2.45	5.34	3.53	5.22	6.91
<i>Panel C. Benchmark-adjusted returns</i>												
Long leg (mean)	0.39	0.21	0.20	0.02	0.26	0.25	0.63	0.43	0.22	0.38	0.17	0.28
Short leg (mean)	-1.16	-0.93	-0.46	-0.41	-0.34	-0.51	-1.14	-0.23	-0.44	-0.90	-0.37	-0.60
Long minus short (mean)	1.55	0.13	0.66	0.43	0.61	0.76	1.77	0.66	0.66	1.28	0.54	0.87
Long leg (t-statistic)	3.39	3.37	3.87	0.29	1.85	2.27	4.95	4.42	1.76	4.40	1.59	7.66
Short leg (t-statistic)	-4.53	-6.17	-4.62	-3.85	-2.24	-4.75	-5.11	-2.19	-3.93	-4.29	-3.30	-7.07
Long minus short (t-statistic)	5.00	7.13	5.96	3.18	3.09	4.98	5.82	4.30	3.94	5.48	3.78	9.38

# Accruals

*Do Stock Prices Fully Reflect Information in Accruals  
and Cash Flows about Future Earnings?*  
Sloan (1996)

- Companies with low accruals have a higher expected future return
- Invest in companies with the lowest accrual portion of earnings
- Number of securities: 1,714

$$\text{Accruals} = \frac{(\Delta CA - \Delta \text{Cash}) - (\Delta CL - \Delta STD - \Delta TP) - \Delta \text{Dep}}{\text{Average Total Assets}}$$

# Momentum

*Returns to Buying Winners and Selling Losers: Implications for Stock  
Market Efficiency*  
Jegadeesh and Titman (1993)

- “Winners continue to win and losers continue to lose.”
- Ranked on compounded monthly returns during September 2015 to September 2016
- Number of securities: 2,757

$$\text{Momentum} = (R_{t-1})(R_{t-2})\dots(R_{t-13}) - 1$$

# Asset Growth

*Asset Growth and the Cross-Section of Stock Returns*  
Cooper, Gulen, and Schill (2008)

- Firms that have high asset growth are less likely to perform well in future
- Invest in firms with low asset growth
- Number of securities: 2,212

$$\text{Asset Growth} = \frac{(\text{Total Assets}_t - \text{Total Assets}_{t-1})}{\text{Total Assets}_{t-1}}$$

# Gross Profitability

*The Other Side of Value: The Gross Profitability Premium*  
Novy-Marx (2013)

- Firms with high gross profit are expected to generate abnormally high future returns
- Invest in companies with high profitability
- Number of securities: 1,642

$$\text{Gross Profitability} = \frac{\text{Revenue} - \text{Cost of Goods Sold}}{\text{Total Assets}}$$

# Net Issuance

*Share Issuance and Cross-Sectional Returns*  
Pontiff and Woodgate (2008)

- Management tends to repurchase shares when stock is undervalued
- Invest in companies with lower net issuance
- Number of securities: 2,592

$$\text{Net Issuance} = \ln(\text{Adj. Shares Outstanding})_t - \ln(\text{Adj. Shares Outstanding})_{t-11}$$

# Idiosyncratic Volatility (IVOL)

*Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle*  
Stambaugh, Yu, and Yuan (2015)

- High IVOL indicates high expected returns
- Calculated for 60 trading days from August 26, 2016 to November 17, 2016
- Number of securities: 2,843

$$R = \alpha_i + \beta_i(R_{mkt} - R_i) + \epsilon_i \quad IVOL = \sum(\epsilon_i)^2$$

## Sector Attributions

Sector	Weight (%)				Contributed Return (%)			
	Portfolio	IWM	IWV	Custom	Portfolio	IWM	IWV	Custom
Consumer Discretionary	20.53	12.33	12.58	21.88	-0.46	0.68	1.33	1.44
Consumer Staples	5.93	2.91	8.28	6.54	-0.58	0.12	0.89	0.15
Energy	12.1	3.56	6.49	6.73	-1.85	-0.31	-0.3	-0.07
Financials	1.73	19.35	15.18	6.6	0.02	1.44	1.28	0.5
Healthcare	4.51	12.69	13.17	6.13	0.45	0.93	1.04	0.72
Industrials	22.67	14.55	10.81	24.56	0.46	1.05	0.94	1.86
Information Technology	19.77	17.22	20.47	16.43	2.59	1.51	2.84	1.98
Materials	11.52	5.04	3.38	7.05	1.28	0.46	0.35	0.49