Best Practices in Hedging

Quantitative Evaluation of Hedges

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Today's Presenters

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Today, we will cover:

- Important Quantitative tools used to evaluate hedges
- Concrete Example: What does an ideal hedge look like?
- Concrete Example: How should I evaluate my real hedge today?

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Evaluating Hedges Quantitatively

1. Quantitatively = Through the Lens of a Factor Risk Model

2. Ex-Ante Perspective using Predicted Risks, Exposures, and Stress Tests

3. Ex-Post Perspective using Realized Asset and Factor Returns

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Case Study: Ideal Hedge - Shorting Macy's

1.

Short Macy's at the end of February 2020

2.

Compare the naked short with several hedge options

Macy's is in several ETFs– obvious choices

- iShares Russell 2000 (IWM)
- SPDR Retail (XRT)

Build Custom Hedge Basket

- Minimize Risk
- Buy names in XRT

3.

Rebalance weekly and hold for four months

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Case Study: Ideal Hedge - Shorting Macy's Predicted Risks

Predicted Risks as of original Rebalancing on 2/28/2020

	Short_M	Short_M_Long_IWM	Short_M_Long_XRT	Short_M_Long_Custom
Total Risk	43.74%	16.90%	15.36%	13.85%
Risk Decomposition				
Specific	33.24%	55.79%	68.64%	91.40%
Factors	66.76%	44.21%	31.36%	8.60%
Market	26.16%	0.01%	0.00%	0.00%
Style	35.52%	34.54%	28.68%	6.97%
Sector	5.09%	9.66%	2.68%	1.63%

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Case Study: Ideal Hedge - Shorting Macy's Predicted Risks

Predicted Style Risks as of original Rebalancing on 2/28/2020

Style				
Style	35.52%	34.54%	28.68%	6.97%
★ Market Sensitivity	13.48%	10.24%	9.82%	1.38%
Medium-Term Momentum	4.39%	5.30%	3.14%	0.05%
Dividend Yield	4.28%	6.36%	5.39%	2.28%
Value	3.92%	4.16%	4.22%	1.47%
Volatility	2.65%	0.51%	-0.46%	-0.21%
Short-Term Momentum	2.20%	2.45%	3.05%	0.64%

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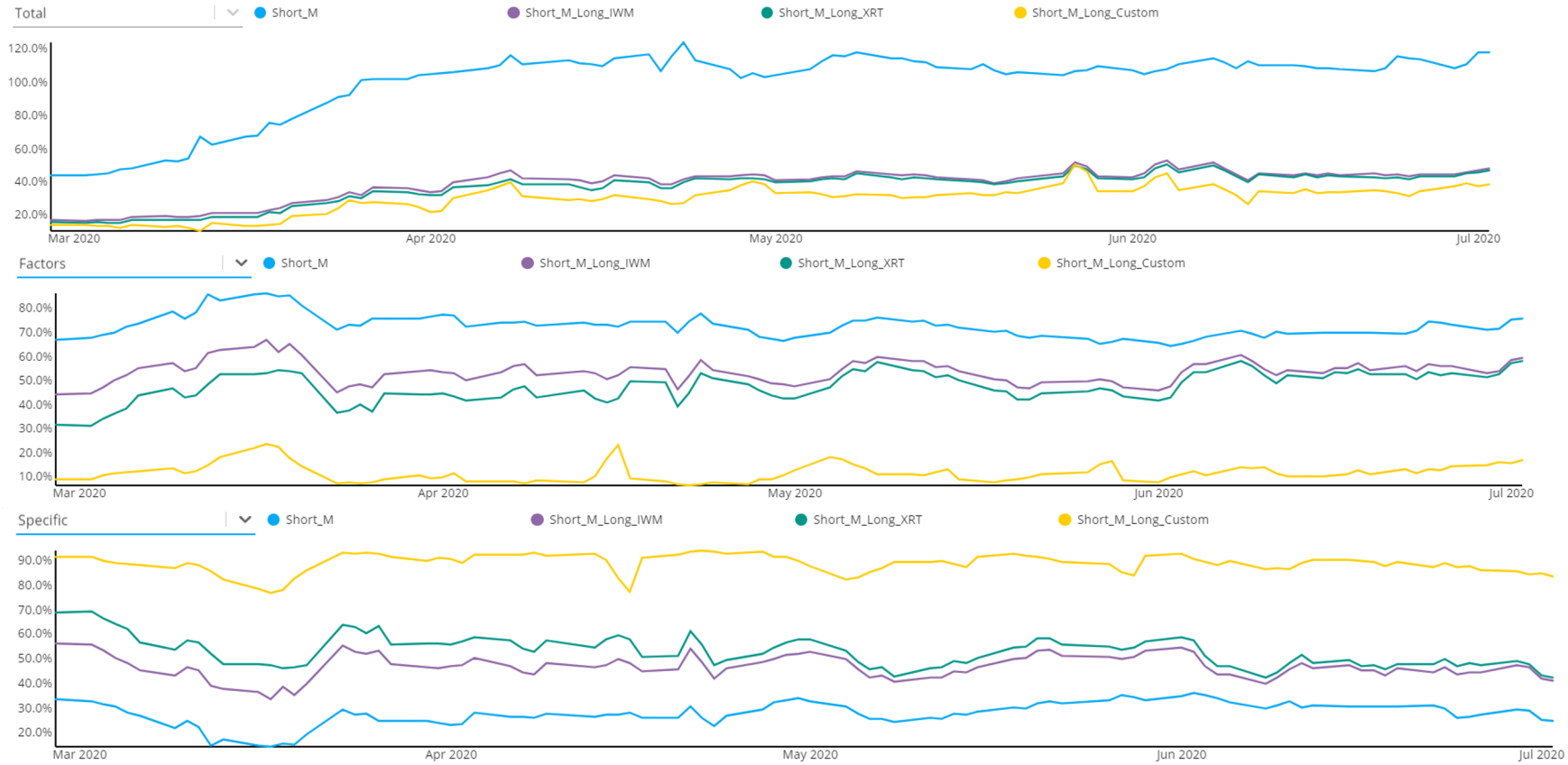
Case Study: Ideal Hedge - Shorting Macy's Predicted Risks



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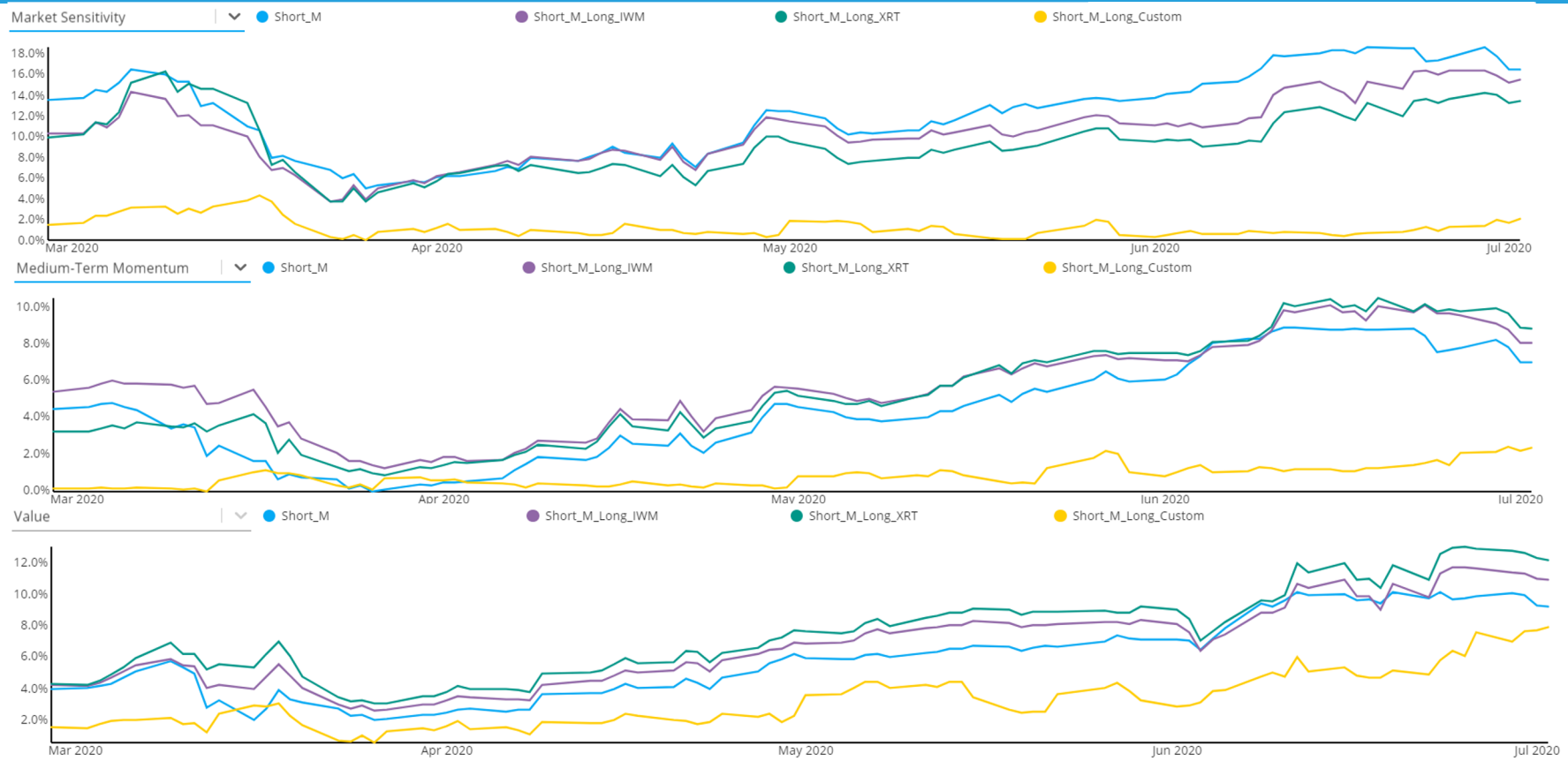
Case Study: Ideal Hedge - Shorting Macy's Predicted Risks



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Case Study: Ideal Hedge - Shorting Macy's Realized Performance

	Short_M	Short_M_Long_IWM	Short_M_Long_XRT	Short_M_Long_Custom
Total Return	3.30%	15.59%	22.51%	28.89%
Annualized Returns	9.85%	52.13%	80.04%	108.58%
Annualized Volatility	129.19%	48.27%	45.88%	32.34%
Sharpe	0.08	1.08	1.74	3.36
Sortino Ratio	0.13	1.74	2.80	6.36
Returns Correlation	1.00	0.87	0.88	0.41
Max Drawdown	64.33%	25.63%	24.13%	10.07%
Alpha	68.85%	28.41%	30.85%	25.76%
Factors	-65.56%	-12.83%	-8.34%	3.13%

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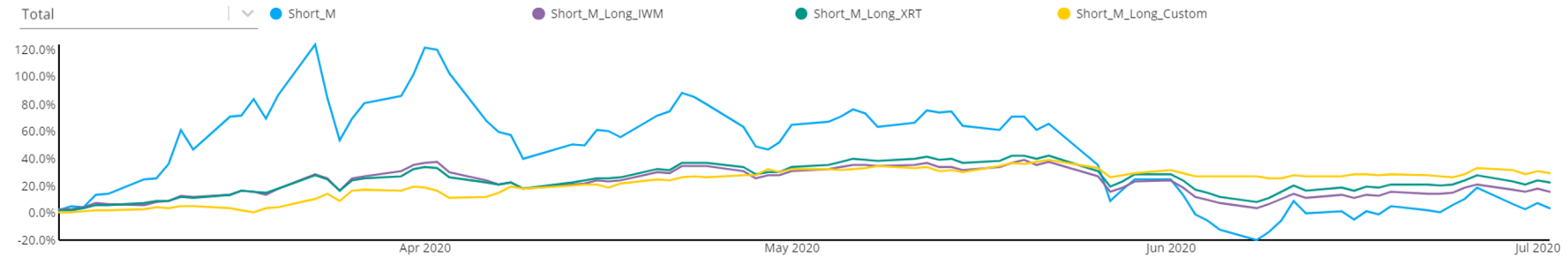
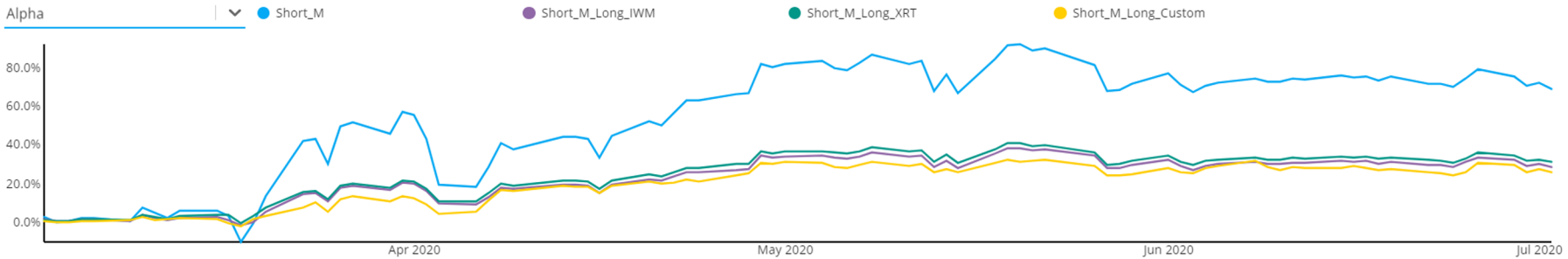
Case Study: Ideal Hedge - Shorting Macy's Realized Performance





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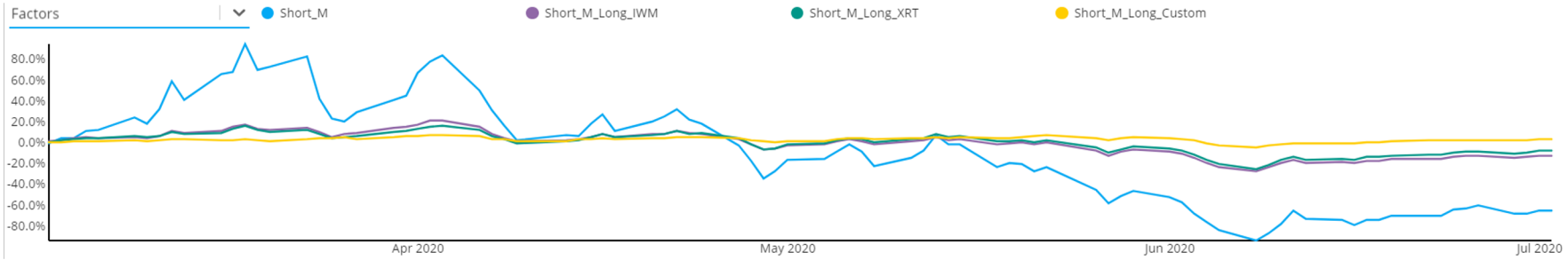
Case Study: Ideal Hedge - Shorting Macy's Realized Performance



	Short_M	Short_M_Long_IWM	Short_M_Long_XRT	Short_M_Long_Custom
Alpha	68.85%	28.41%	30.85%	25.76%
Factors	-65.56%	-12.83%	-8.34%	3.13%
Market	-32.08%	-0.06%	0.23%	0.83%
Style	-16.23%	-4.78%	-5.36%	6.15%
Sector	-17.26%	-7.99%	-3.20%	-3.84%

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Case Study #2: Hedging In The Current Environment

"I am a Fundamental PM betting on XOM making a comeback after the election and as COVID settles down. I believe that American shale has been laid to waste, so I want to make a play on the big international player to outperform. I don't have confidence in the entire Energy sector doing well nor the market, so I want to hedge it all"

FOUR SCENARIOS

1.

Buy XOM

Will still have market, industry and style risk that could overwhelm the XOM bet

2.

Buy XOM and short the market (SPY)

No more market risk, but still have industry and style risk

3.

Buy XOM and short Energy ETF (XLE)

Reduces industry risk but style risk remains, and portfolio is long and short XOM

4.

Buy XOM and create a custom hedge basket to minimize style bets

Focus on XOM and reduces all other risks, XOM not in the short basket

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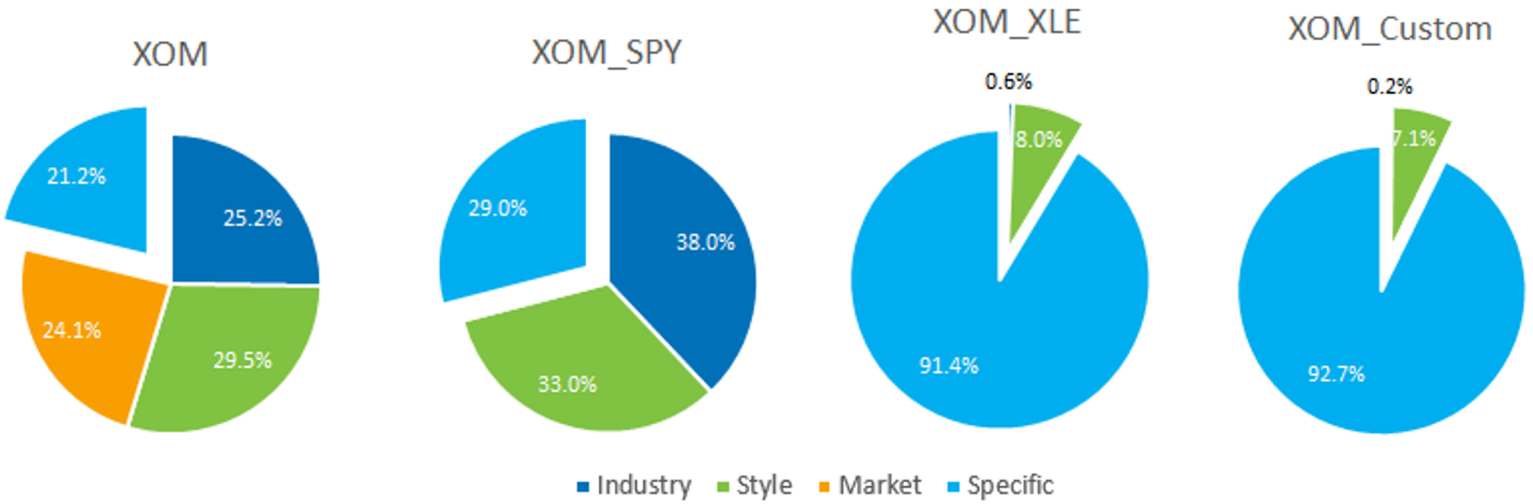
Distribution of Portfolio Risk



As hedge gets more customized the emphasis on XOM gets bigger and other risks are reduced or eliminated.

Source: Axioma US Equity Factor Medium-Horizon Fundamental Risk Model

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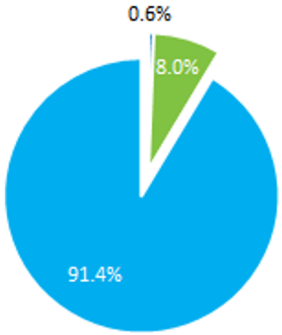
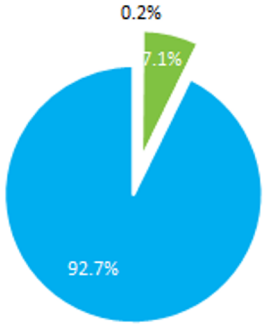
Tie-Breaker

XOM_XLE



XOM_Custom



1

XOM_XLE and XOM_Custom look similar

- Style and market risk are minimized
- Specific risk % is similar
- So how to choose between the two?

2

What is the dollar investment in and % of specific risk from XOM?

- XOM is in both SPY and XLE, so portfolio will be both long and short
- The custom hedge gets a higher dollar exposure and percent of specific risk vs. XLE
- Although SPY hedge has better exposures to XOM, it has much more style exposure

	XOM_SPY	XOM_XLE	XOM_Custom
Net Exposure ($MM)	4.97	3.88	5.00
XOM % of Specific Risk	98.7%	86.3%	88.8%

Source: Axioma US Equity Factor Medium-Horizon Fundamental Risk Model

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Sanity Check via Stress Test

Stress Testing: How will different environments affect my portfolio?

Many different ways to stress test, but here we will replay history

- Periods when oil prices rose and fell substantially
- Look at 2020 peak to trough and trough to peak - coincided with market moves

Stress tests replay current factor returns during stress period

- Ignores specific risk; all expected return is in factors
- Low expected return is therefore a positive, as we are taking advantage of our expectation of specific return

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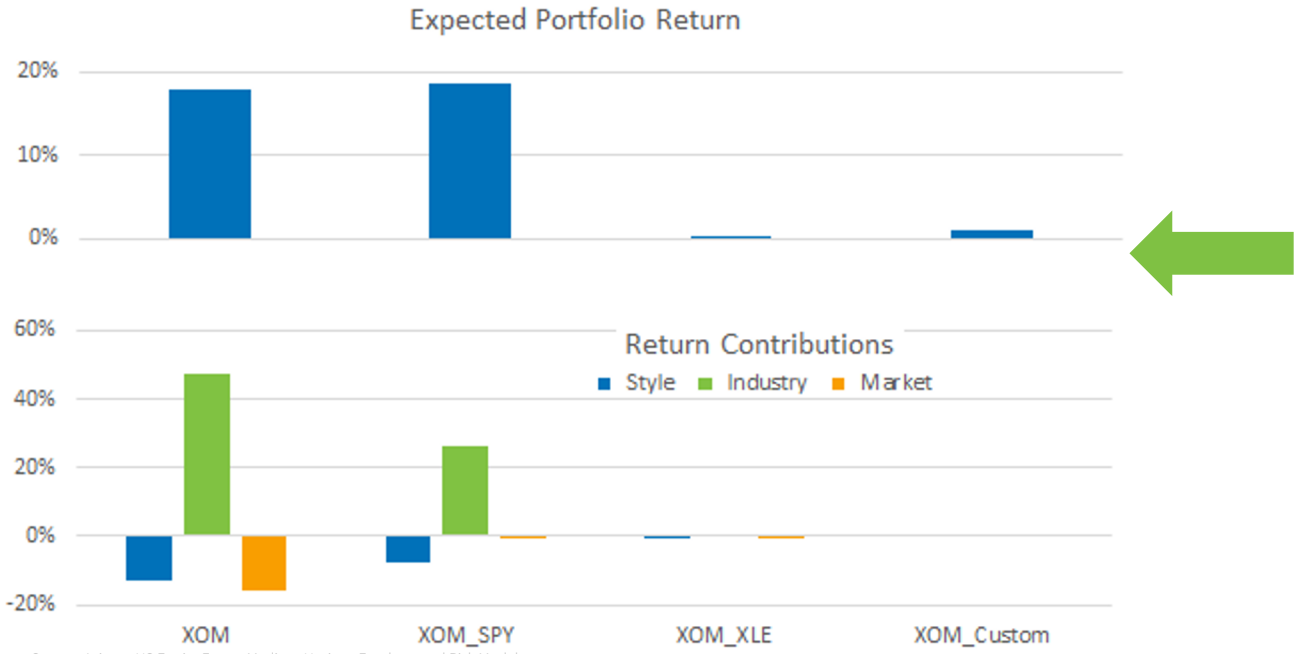
Sanity Check via Stress Test

Stress Test 1: Sharp increase in oil prices, 10/7/2007 to 7/1/2008



Better hedges mean less factor return

Source: Axioma US Equity Factor Medium-Horizon Fundamental Risk Model

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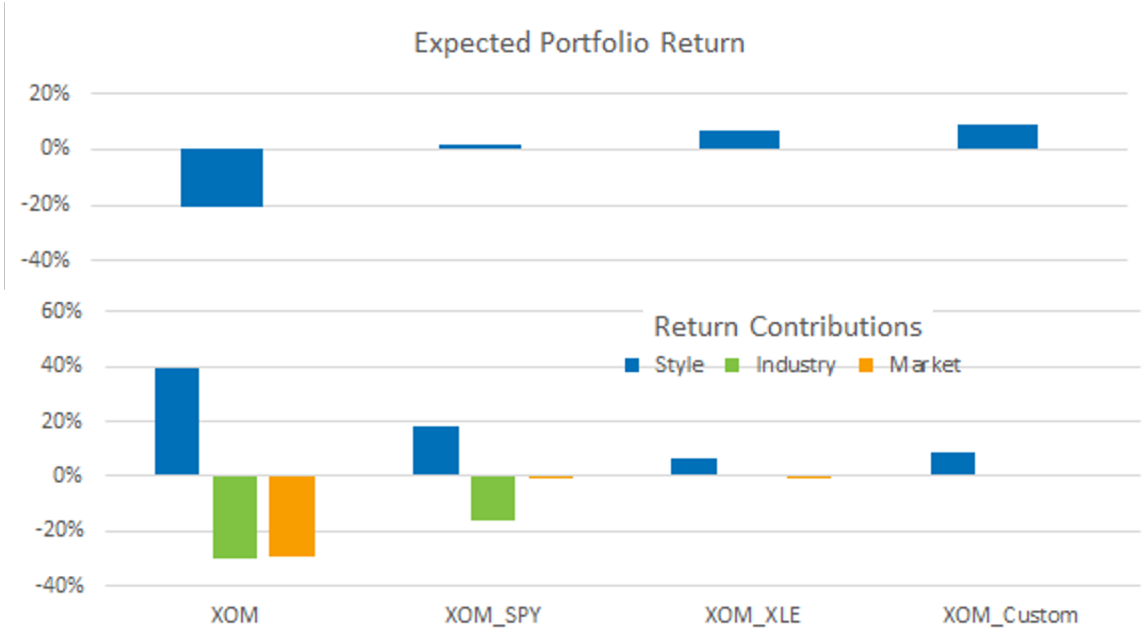
Sanity Check via Stress Test

Stress Test 2: Sharp decrease in oil prices and market, 7/1/2008 to 1/2/2009



Source: Axioma US Equity Factor Medium-Horizon Fundamental Risk Model

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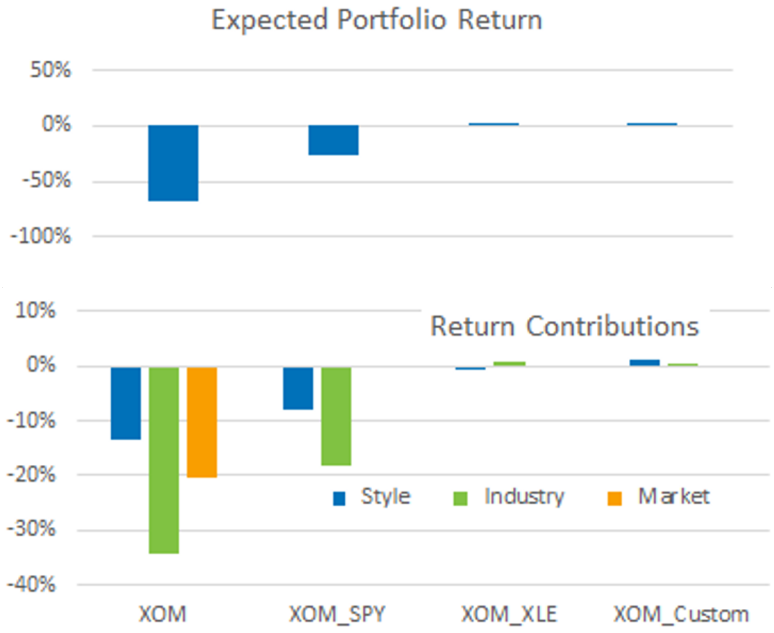
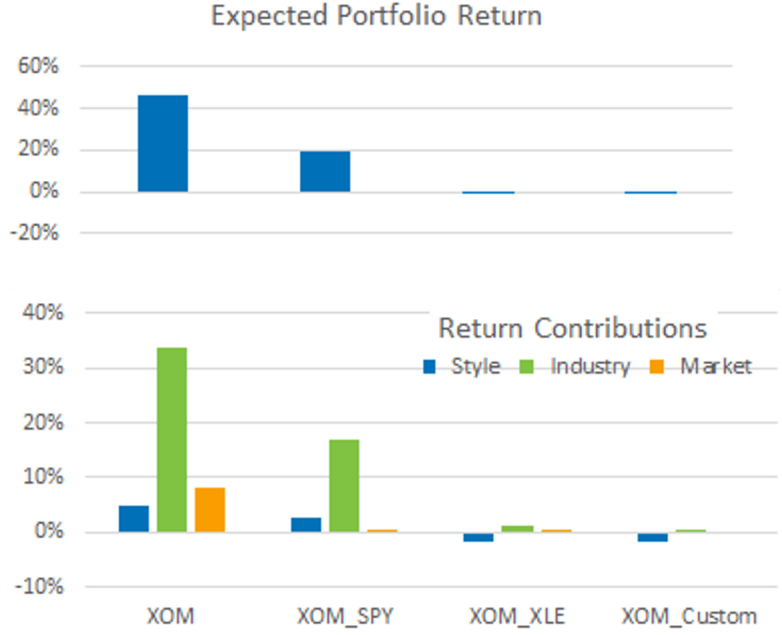
Sanity Check via Stress Test

2020

January 2 - March 30



March 30 -- May 4



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Sanity Check via Stress Test

Many portfolios have unwanted market, style and industry bets	Hedging with a market ETF eliminates the market risk, but portfolio still has unintended style and industry bets	Customizing the hedge portfolio, even by just reweighting the assets in the standard hedge portfolio to reduce style and industry bets can reduce unwanted tilts even more	Portfolio is left with specific risk, which is what the manager is betting on

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Join us next week for Part 3 in our webcast series:

Monitoring and Rebalancing of Your Hedge Positions in Changing Markets

Registration Link

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