



# Factor Performance & Research Update

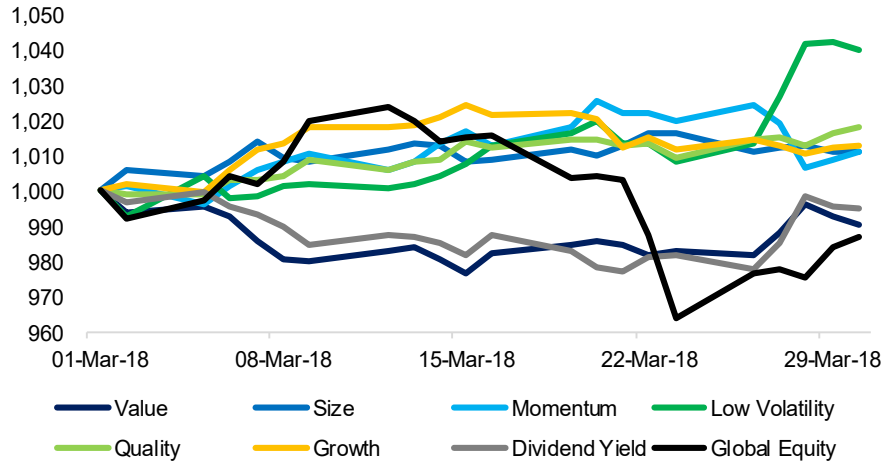
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## Factor Performance Update

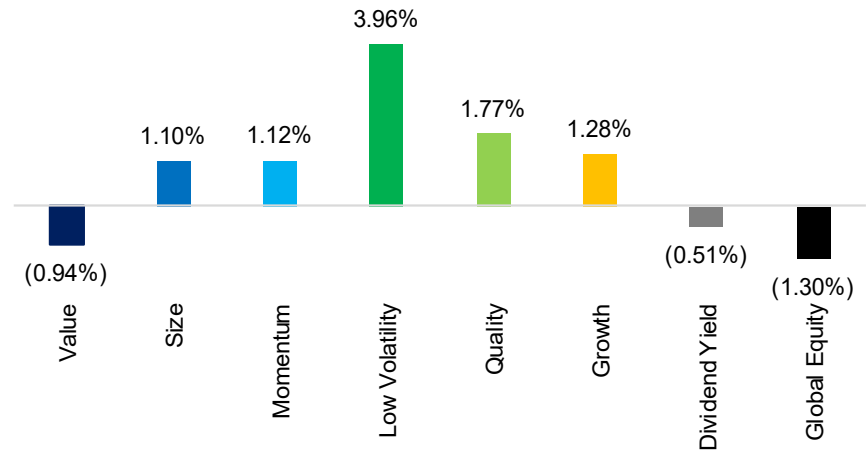
# Factor Performance Update: March 2018

## Market correction had no significant impact on factor performance

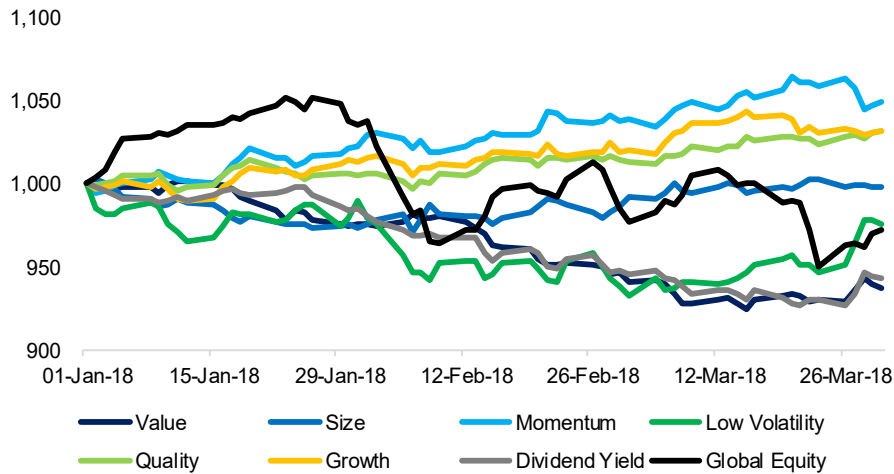
Global Equity Factors (Long-Short): Last Month



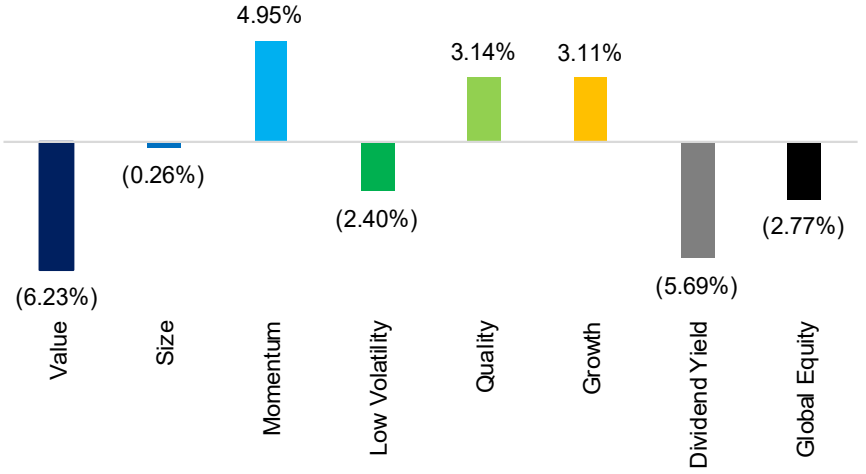
Global Equity Factors (Long-Short): Last Month



Global Equity Factors (Long-Short): Year to Date



Global Equity Factors (Long-Short): Year to Date



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Research Topic 1:  
Equity Factors & GDP Growth

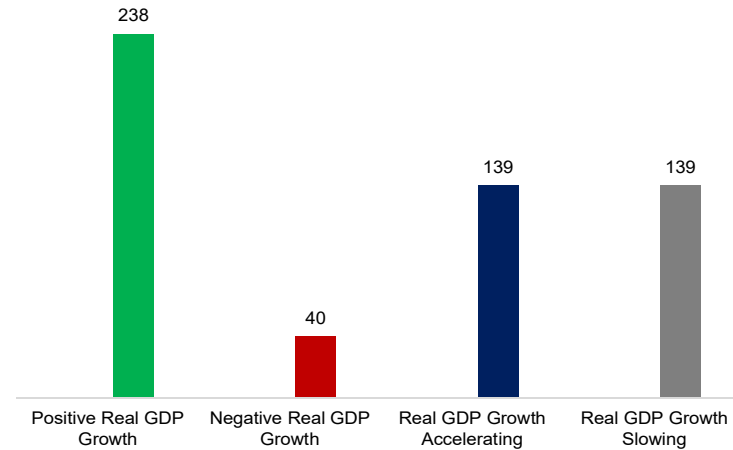
# Equity Factors & GDP Growth (I / II)

## Does strong economic growth equate to high factor returns?

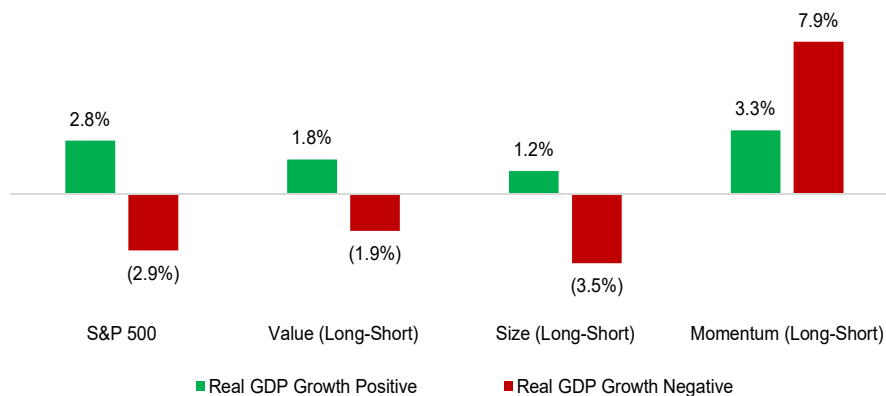
### Comment

- Economic cycles have a clear impact on factor performance
- Equity markets as well as the Value and Size factors show positive returns in periods of economic growth and negative returns in periods of decline
- The Size factor in particular was negatively impacted by declining growth

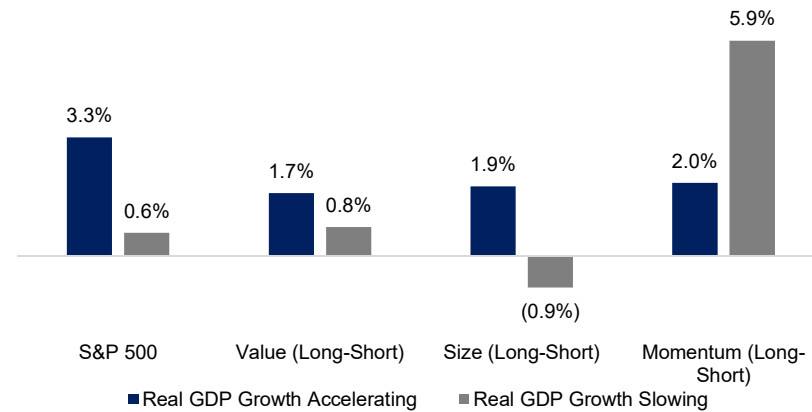
### US Real GDP Growth in Number of Quarters (1947 - 2017)



### Returns & GDP Growth: Positive or Negative (1947 - 2017)



### Returns & GDP Growth: Accelerating or Slowing (1947 - 2017)



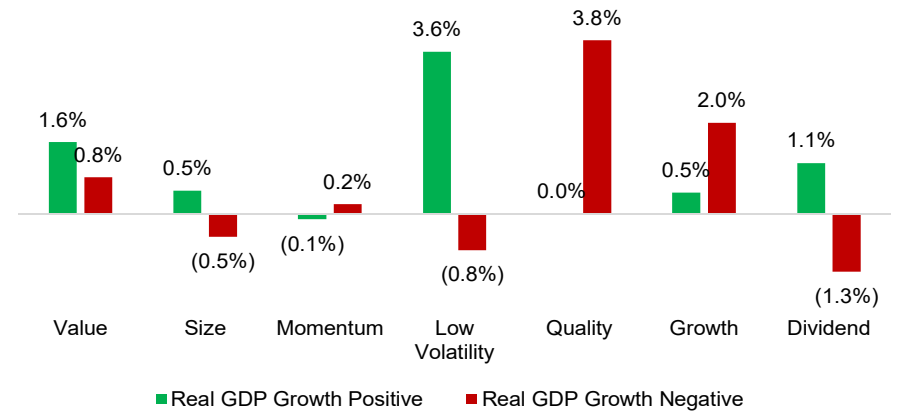
# Equity Factors & GDP Growth (II / II)

## Some factors are pro-cyclical, others anti-cyclical

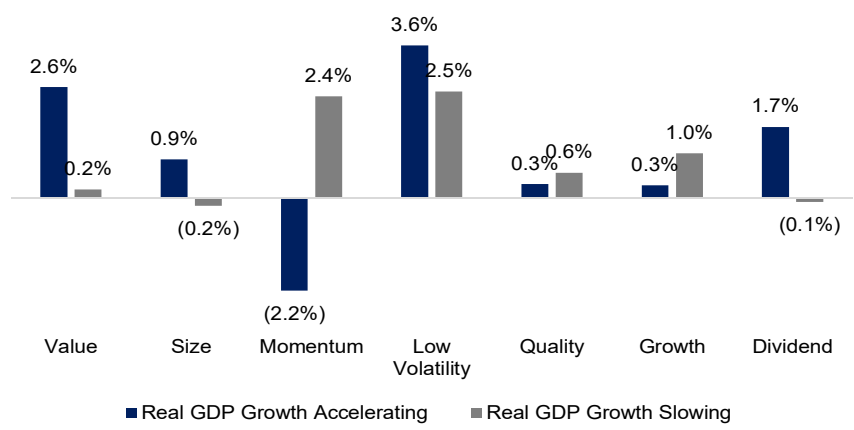
### Comment

- Some factors show pro-cyclical while others highlight anti-cyclical characteristics
- Given the pro-cyclical nature of the Value & Size factors, these are less attractive from a maximum drawdown perspective compared to the Quality & Growth factors

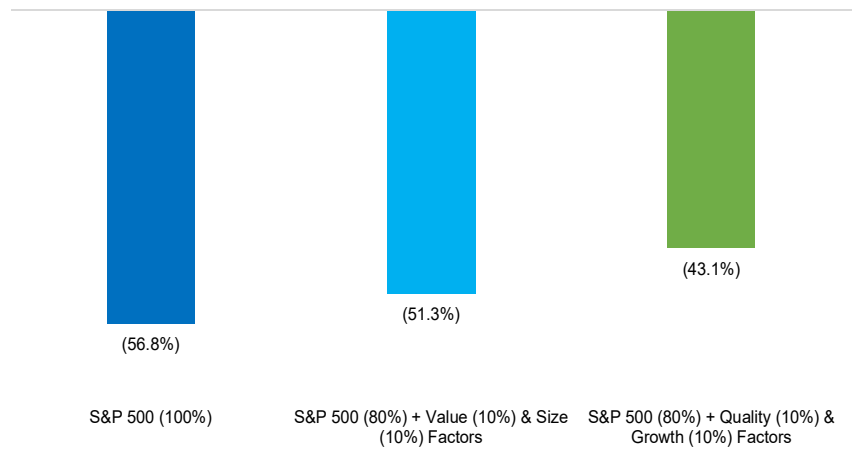
### Returns (L/S) & GDP Growth: Positive or Negative (2000 - 2017)



### Returns & GDP Growth: Accelerating or Slowing (2000 - 2017)



### Portfolio Scenarios: Max Drawdowns (2000 - 2017)



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Research Topic 2:  
Sequential Model: Sorting by 5 Factors

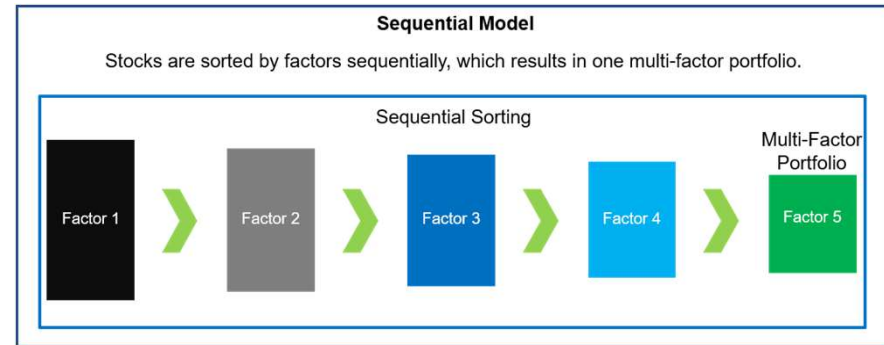
# Sequential Model: Sorting by 5 Factors (I / II)

## Prioritising Factor Exposure

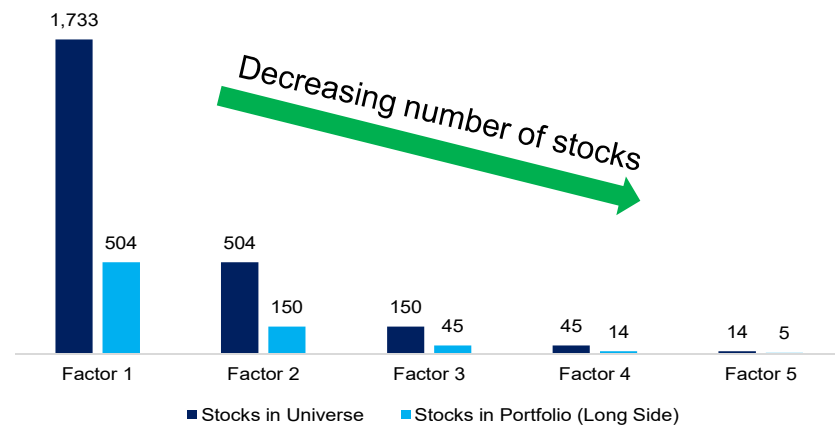
### Comment

- The sequential model ranks stocks by factors sequentially
- Allows investors to prioritise factors and results in concentrated portfolios
  - However, the portfolio shrinks after each sorting and may have too few stocks for a diversified portfolio after several sorting iterations
- The factor sequence has a significant impact on the results

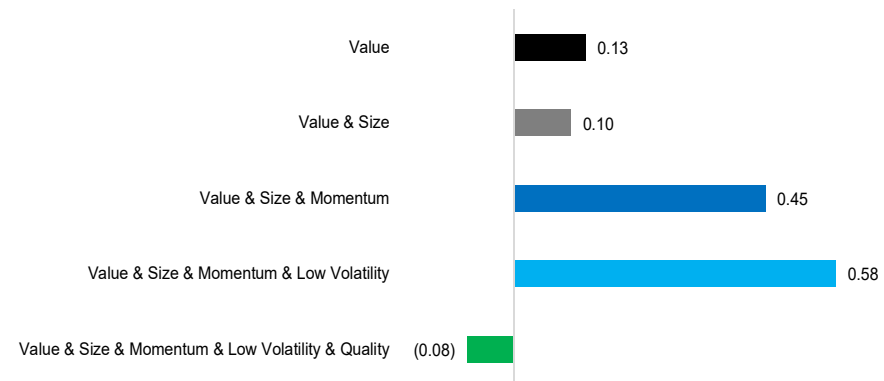
### Sequential Model Overview



### Sequential Model: Universe in US vs Portfolio (Long Side)



### Risk-Return Ratios (2000 - 2018)





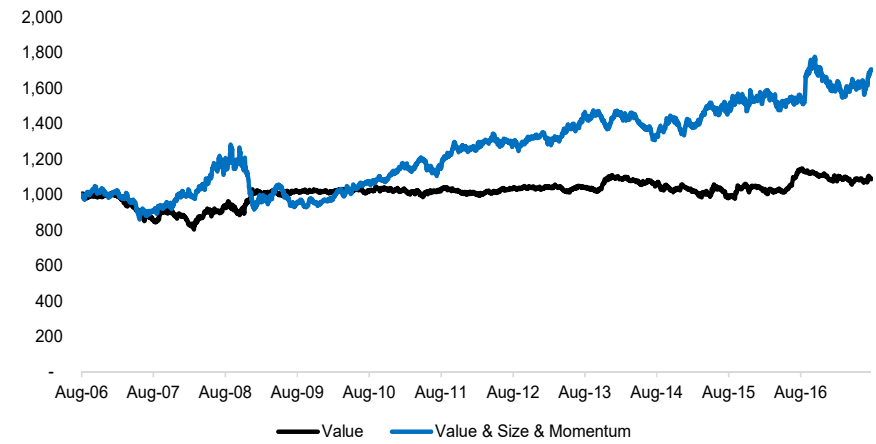
# Sequential Model: Sorting by 5 Factors (II / II)

## Factor Returns vs Firm-Risks

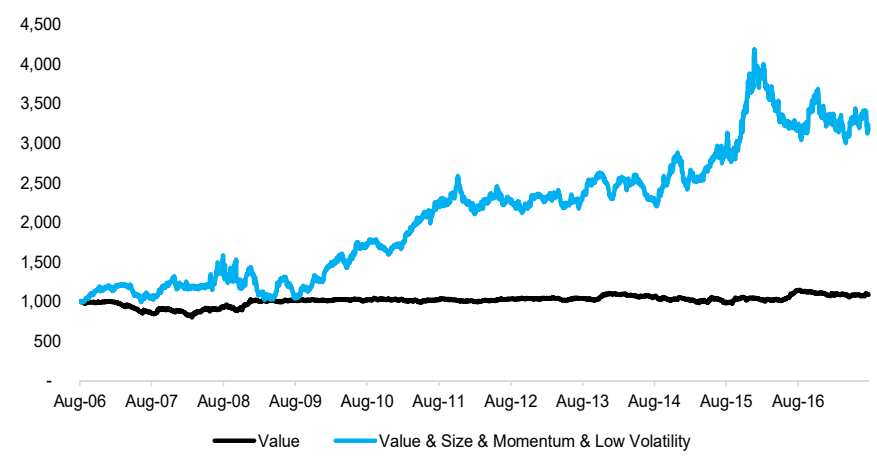
### Comment

- Adding factors to a Value factor portfolio improves the returns
  - Especially factors with a low or negative correlation, e.g. Momentum
  - However, after too many sorting iterations the portfolio has few stocks left and firm-risk starts dominating factor returns

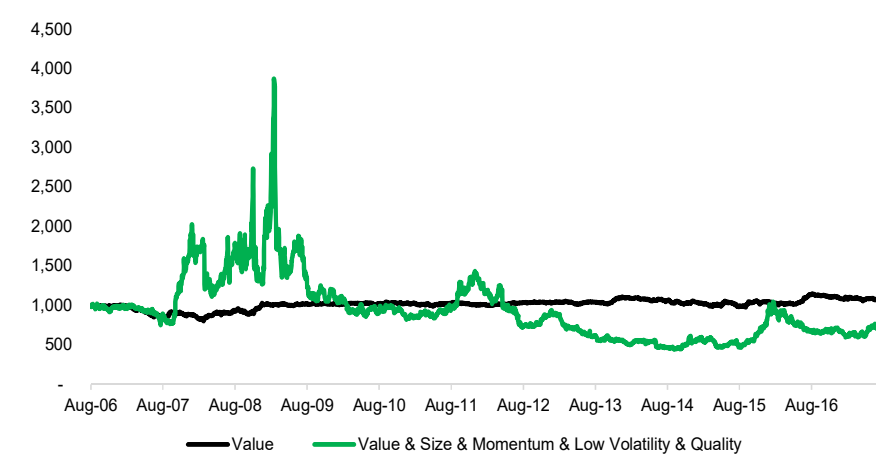
### Value vs Value & Size & Momentum



### Value vs Value & Size & Momentum & Low Volatility



### Value vs Value & Size & Momentum & Low Volatility & Quality



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Research Topic 3:  
Factor Construction: Portfolio Rebalancing

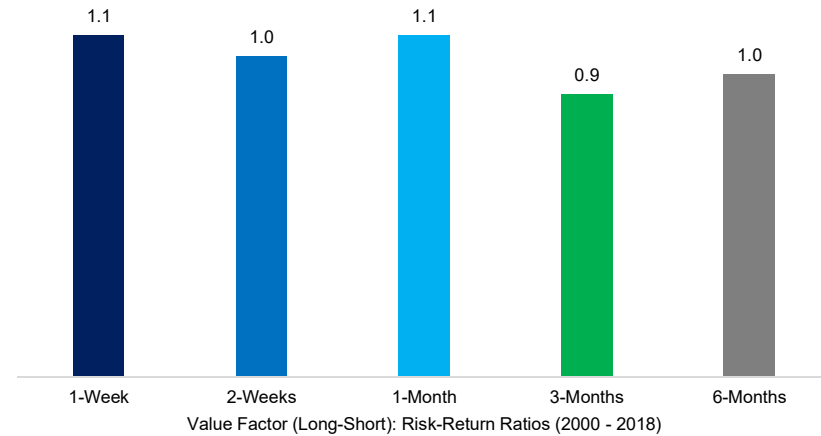
# Factor Construction: Portfolio Rebalancing (I / II)

## Weekly, monthly or quarterly?

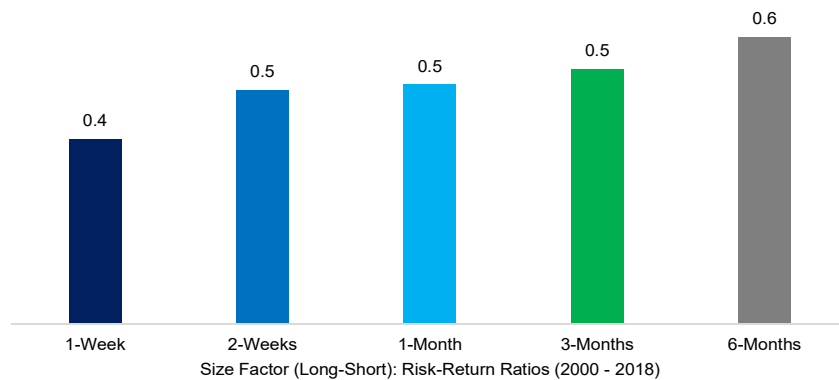
### Comment

- Investors can rebalance factor portfolios more or less frequently
  - The shorter the rebalancing periods, the higher the transaction costs
- Factor portfolios do not benefit significantly from intra-month rebalancing
- Factor calculation assumes 10 bps of transaction costs

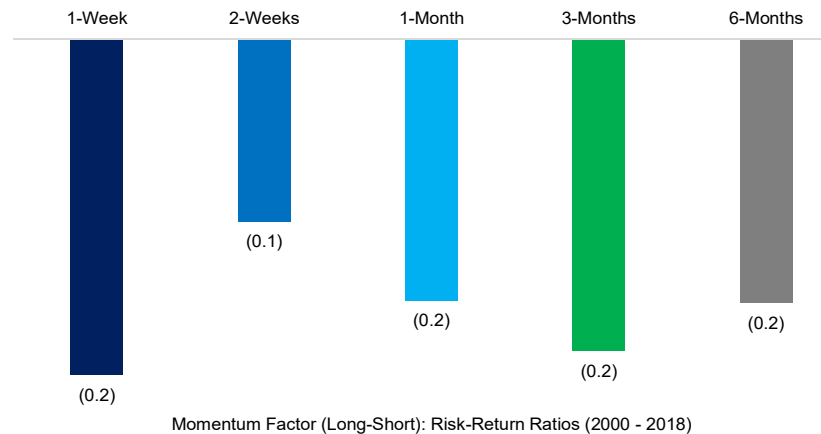
### Value Factor: Portfolio Rebalancing Periods: Risk-Return Ratios



### Size Factor: Portfolio Rebalancing Periods: Risk-Return Ratios



### Momentum: Portfolio Rebalancing Periods: Risk-Return Ratios



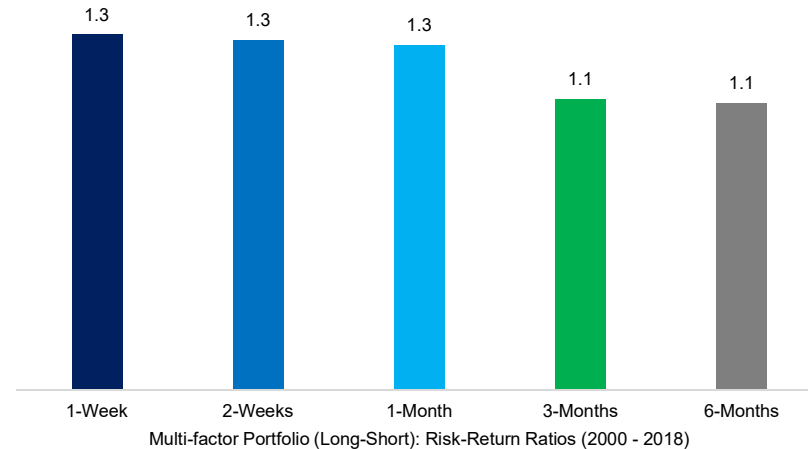
# Factor Construction: Portfolio Rebalancing (II / II)

## Results highlight robustness of factor investing

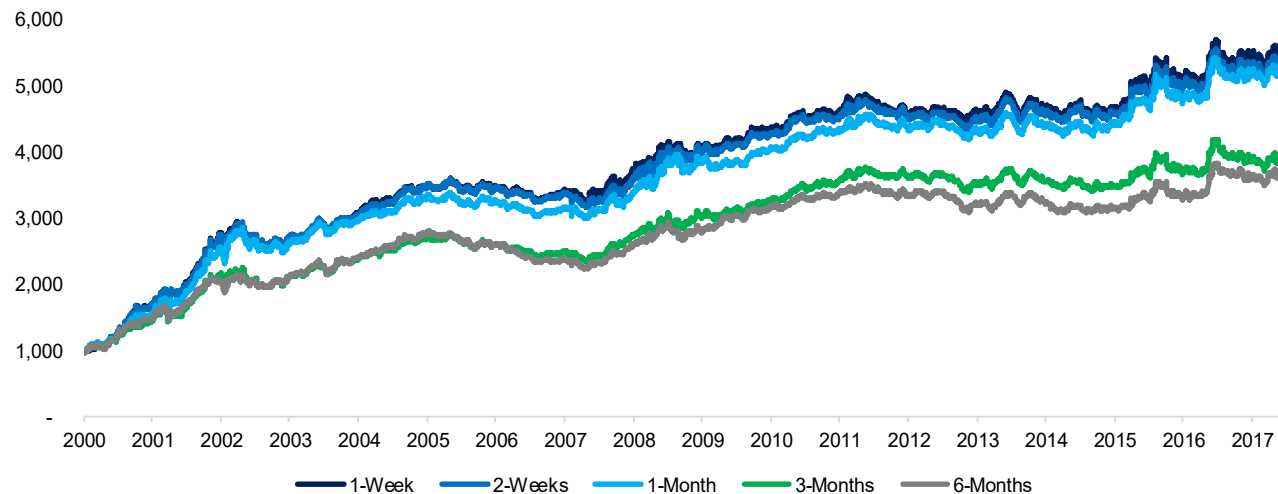
### Comment

- Multi-factor portfolio combines Value, Size, Momentum and Quality factors
- Results highlight that weekly to monthly rebalancing generates higher risk-return ratios than quarterly or semi-annually rebalancing
- The robustness of factor performance at different rebalancing periods is one of the advantages of factor investing

### Multi-Factor Portfolio: Rebalancing Periods: Risk-Return Ratios



### Multi-Factor Portfolio: Impact of Different Rebalancing Frequencies




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Q&A

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