

# The Cross-Section of Risk and Return

## Data Description

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## 1 DMRS Hedge Portfolio

*dmrs\_hedge\_portfolios\_daily.txt*

*dmrs\_hedge\_portfolios\_monthly.txt*

Hedge-portfolios are constructed using 18 ( $h_{HML}$ ,  $h_{RMW}$ ,  $h_{CMA}$ ) or 54 ( $h_{SMB}$ ,  $h_{MktRF}$ ) value-weighted portfolios from a  $3 \times 3 \times 3$  sort on size (ME), industry-adjusted characteristic (book-to-market (BEME), operating profitability (OP), investment (INV)) and pre-formation loading. Portfolios are rebalanced once a year on June 30th. Details about the estimation of pre-formation loadings can be found in Section 4.1. of the paper.

- $h_{HML}$

1. Stocks are sorted into  $3 \times 3$  portfolios based on ME and industry-adjusted BEME. For these sorts NYSE breakpoints are used.
2. Within each of the 9 resulting portfolios, stocks are sorted into 3 pre-formation HML-beta ( $\hat{\beta}_{HML}$ ) portfolios.
3. For each of the  $9 \times 3$  portfolios, portfolio returns are value-weighted (by market capitalization).
4.  $h_{HML}$  is the return of buying, with equal weights, the 9 low  $\hat{\beta}_{HML}$  portfolios and selling the 9 high  $\hat{\beta}_{HML}$  portfolios.

- $h_{RMW}$

1. Stocks are sorted into  $3 \times 3$  portfolios based on ME and industry-adjusted OP. For these sorts NYSE breakpoints are used.
2. Within each of the 9 resulting portfolios, stocks are sorted into 3 pre-formation RMW-beta ( $\hat{\beta}_{RMW}$ ) portfolios.
3. For each of the  $9 \times 3$  portfolios, portfolio returns are value-weighted (by market capitalization).
4.  $h_{RMW}$  is the return of buying, with equal weights, the 9 low  $\hat{\beta}_{RMW}$  portfolios and selling the 9 high  $\hat{\beta}_{RMW}$  portfolios.

- $h_{CMA}$

1. Stocks are sorted into  $3 \times 3$  portfolios based on ME and industry adjusted INV. For these sorts NYSE breakpoints are used.
2. Within each of the 9 resulting portfolios, stocks are sorted into 3 pre-formation CMA-beta ( $\hat{\beta}_{CMA}$ ) portfolios.

3. For each of the  $9 \times 3$  portfolios, portfolio returns are value-weighted (by market capitalization).
  4.  $h_{CMA}$  is the return of buying, with equal weights, the 9 low  $\hat{\beta}_{CMA}$  portfolios and selling the 9 high  $\hat{\beta}_{CMA}$  portfolios.
- $h_{SMB}$ 
    1. Stocks are independently sorted into  $3 \times 3$  portfolios based on: 1. ME and industry-adjusted BEME; 2. ME and industry-adjusted OP and; 3. ME and industry-adjusted INV. For these sorts NYSE breakpoints are used.
    2. Within each of the 27 resulting portfolios, stocks are sorted into 3 pre-formation SMB-beta ( $\hat{\beta}_{SMB}$ ) portfolios.
    3. For each of the  $27 \times 3$  portfolios, portfolio returns are value-weighted (by market capitalization).
    4.  $h_{SMB}$  is the return of buying, with equal weights, the 27 low  $\hat{\beta}_{SMB}$  portfolios and selling the 27 high  $\hat{\beta}_{SMB}$  portfolios.
  - $h_{MktRF}$ 
    1. Stocks are independently sorted into  $3 \times 3$  portfolios based on: 1. ME and industry-adjusted BEME; 2. ME and industry-adjusted OP and; 3. ME and industry-adjusted INV. For these sorts NYSE breakpoints are used.
    2. Within each of the 27 resulting portfolios, stocks are sorted into 3 pre-formation MktRF-beta ( $\hat{\beta}_{MktRF}$ ) portfolios.
    3. For each of the  $27 \times 3$  portfolios, portfolio returns are value-weighted (by market capitalization).
    4.  $h_{MktRF}$  is the return of buying, with equal weights, the 27 low  $\hat{\beta}_{MktRF}$  portfolios and selling the 27 high  $\hat{\beta}_{MktRF}$  portfolios.

## 2 DMRS Factors

*dmrs\_factor\_portfolios\_daily.txt*  
*dmrs\_factor\_portfolios\_monthly.txt*

DMRS 5 factor-portfolios are a combination of each of the Fama and French (2015) factor-portfolios with the 5 hedge-portfolios. The hedge ratio is calculated each June 30th, as the best forecast of the multivariate regression coefficient  $\hat{\gamma}_{k,t-1}$ :

$$R_{k,t}^* = R_{k,t}^c - \hat{\gamma}'_{k,t-1} \mathbf{h}_t$$

where  $k \in \{HML, RMW, CMA, SMB, MktRF\}$

Details about the estimation of the pre-formation hedge ratio  $\hat{\gamma}_{k,t-1}$  can be found in Section 4.4.2 of the paper.

## References

Fama, Eugene F., and Kenneth R. French, 2015, A five-factor asset pricing model, *Journal of Financial Economics* 116, 1–22.