Online Appendix:

Table 10. Tail risk measures

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Weight Constraints | | | | | | | | |
|  |  | [0%; +35%] | | [-35%; +35%] | | | | [-50%; +50%] | | |
|  |  | (1) (2) | | (3) (4) | | | | (5) (6) | | |
| Optimization  Method | Forecast  Length | FI | SI | | FI | SI | FI | | SI |
| Panel A: Skewness of portfolio returns | | | | | | | | |  |
|  | 1/N | -0.76 | -0.58 | |  |  |  | |  |
|  | RP | -0.80 | -0.67 | |  |  |  | |  |
|  | Min Var | -0.80 | -0.78 | | -0.79 | -0.84 | -0.82 | | -0.65 |
| BL | CA | -0.86 | -0.78 | | -0.86 | -0.83 | -0.84 | | -0.75 |
|  | 12 | **-0.85** | **-0.91** | | **-0.87** | **-0.96** | **-0.84** | | **-1.07** |
|  | 36 | **-0.85** | **-0.87** | | **-0.88** | **-0.99** | **-0.85** | | **-0.90** |
|  | 60 | -0.85 | -0.84 | | **-0.85** | **-0.88** | **-0.82** | | **-0.82** |
| MV | CA | -0.81 | -0.62 | | -0.79 | -0.69 | -1.04 | | -0.79 |
| 12 | **-0.58** | **-0.69** | | -0.75 | -0.41 | -0.49 | | -0.42 |
| 36 | **-0.65** | **-0.81** | | -0.64 | -0.60 | **-0.42** | | **-0.68** |
| 60 | **-0.64** | **-0.89** | | **-0.54** | **-0.57** | **-0.30** | | **-0.71** |
| BS | CA | -0.81 | -0.75 | | **-0.88** | **-0.95** | **-0.94** | | **-1.01** |
| 12 | **-0.59** | **-0.79** | | -0.67 | -0.48 | **-0.53** | | **-0.54** |
| 36 | **-0.65** | **-0.73** | | -0.63 | -0.52 | **-0.42** | | **-0.47** |
| 60 | **-0.74** | **-0.77** | | **-0.62** | **-0.73** | **-0.47** | | **-0.66** |
| Panel B: Kurtosis of portfolio returns | | | | | | | | | |
|  | 1/N | 5.10 | 4.42 | |  |  |  | |  |
|  | RP | 5.28 | 4.63 | |  |  |  | |  |
|  | Min Var | 5.08 | 4.28 | | **4.72** | **5.31** | 4.76 | | 4.19 |
| BL | CA | 5.24 | 4.81 | | 5.16 | 5.07 | 5.09 | | 4.79 |
| 12 | 4.89 | 4.35 | | 4.80 | 4.46 | **4.67** | | **5.04** |
|  | 36 | 5.06 | 4.79 | | **5.04** | **5.28** | 4.99 | | 4.83 |
|  | 60 | 5.09 | 4.97 | | **5.04** | **5.13** | 4.99 | | 4.91 |
| MV | CA | 4.92 | 3.79 | | 5.18 | 4.93 | 6.12 | | 5.43 |
| 12 | 4.06 | 3.61 | | 4.64 | 3.25 | **3.50** | | **3.53** |
| 36 | 4.32 | 3.92 | | 4.00 | 3.33 | **3.31** | | **3.82** |
| 60 | **4.37** | **4.52** | | 3.77 | 3.50 | **3.21** | | **4.22** |
| BS | CA | 4.98 | 4.20 | | **5.05** | **6.17** | **5.25** | | **6.52** |
| 12 | 4.10 | 3.85 | | 4.27 | 3.46 | **3.70** | | **4.03** |
| 36 | 4.49 | 3.91 | | 4.10 | 3.71 | **3.49** | | **3.58** |
| 60 | 4.82 | 4.03 | | **4.02** | **4.71** | 3.57 | | 4.64 |

This table reports the monthly skewness and kurtosis for each constructed portfolio. The results cover the full portfolio period between May 2007 and November 2020. The bold marked pairs indicate the cases in which the factor optimization achieved lower kurtosis.