## Results are obtained with $\boldsymbol{h}_0^P$ estimated

| ESTIMATED PARAMETERS ON WEDNESDAYS MLE UNDER P (10 YEARS), $h_0^P$ IS ESTIMATED, $r$ IS TAKEN FROM DAY TBILL |                |                |                |                |                |                |                |                |                |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| $\theta$   | 2010           | 2011           | 2012           | 2013           | 2014           | 2015           | 2016           | 2017           | 2018           |
|  |                |                |                |                |                |                |                |                |                |
| $\omega$   | 4.2664e - 12   | 6.2594e - 12   | 3.8059e - 12   | 2.1664e - 12   | 5.8573e - 12   | 2.5329e - 12   | 5.2587e - 08   | 9.7218e - 09   | 2.5862e - 08   |
| std  | (2.2671e - 12) | (5.8527e - 12) | (2.9760e - 12) | (1.1675e - 12) | (5.2520e - 12) | (1.4998e - 12) | (7.3296e - 08) | (4.0339e - 08) | (5.3392e - 08) |
|  |                |                |                |                |                |                |                |                |                |
| $\alpha$   | 2.8652e - 06   | 3.0235e - 06   | 3.3305e - 06   | 3.4413e - 06   | 3.2358e - 06   | 3.8377e - 06   | 5.0495e - 06   | 4.7412e - 06   | 4.2854e - 06   |
| std  | (1.6237e - 07) | (1.3518e - 07) | (6.7382e - 08) | (7.2756e - 08) | (1.0167e - 07) | (4.3403e - 07) | (1.9966e - 07) | (5.0068e - 07) | (6.2614e - 07) |
|  |                |                |                |                |                |                |                |                |                |
| $\beta$  | 0.7559         | 0.7819         | 0.7782         | 0.7762         | 0.7518         | 0.7359         | 0.7177         | 0.7196         | 0.7333         |
| std  | (0.0085)       | (0.0082)       | (0.0037)       | (0.0031)       | (0.0073)       | (0.0066)       | (0.0054)       | (0.0044)       | (0.0122)       |
|  |                |                |                |                |                |                |                |                |                |
| $\gamma$   | 280.9523       | 255.8608       | 244.0068       | 239.1640       | 262.5323       | 248.4121       | 220.6560       | 228.3411       | 232.5084       |
| $\operatorname{\mathbf{std}}$  | (13.8482)      | (8.2209)       | (3.4884)       | (3.0953)       | (5.2038)       | (12.3780)      | (4.1439)       | (15.1106)      | (19.4113)      |
|  |                |                |                |                |                |                |                |                |                |
| $\lambda$  | -0.6562        | 0.1071         | 0.8657         | 1.6125         | 1.6327         | 1.5321         | 1.1771         | 1.1544         | 1.8070         |
| $\operatorname{\mathbf{std}}$  | (0.1901)       | (0.1644)       | (0.4155)       | (0.1267)       | (0.1335)       | (0.1582)       | (0.1311)       | (0.1038)       | (0.5481)       |
|  |                |                |                |                |                |                |                |                |                |
| $h_0^P$  | 1.8692e - 04   | 1.5304e - 04   | 2.9050e - 04   | 1.6191e - 04   | 4.7426e - 05   | 4.3776e - 05   | 3.5418e - 05   | 1.2325e - 04   | 1.8893e - 03   |
| $\operatorname{\mathbf{std}}$  | (1.0502e - 04) | (9.1359e - 05) | (2.0067e - 04) | (1.2818e - 04) | (2.6581e - 05) | (3.5338e - 05) | (3.0059e - 05) | (7.4806e - 05) | (2.1190e - 03) |
|  |                |                |                |                |                |                |                |                |                |
| persistency  | 0.9813         | 0.9796         | 0.9765         | 0.9730         | 0.9747         | 0.9708         | 0.9633         | 0.9644         | 0.9614         |
| $\operatorname{std}$   | (0.0010)       | (0.0008)       | (0.0014)       | (0.0007)       | (0.0007)       | (0.0029)       | (0.0017)       | (0.0028)       | (0.0057)       |
|  |                |                |                |                |                |                |                |                |                |
| logLikValue  | 3.1134         | 3.1392         | 3.1548         | 3.2165         | 3.2371         | 3.2313         | 3.2016         | 3.2190         | 3.2948         |