| 1 | Example 1. Hastie et al. (2009, Section 2.9) discuss in general terms how fitting many sta- |
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| 2 | tistical models can be viewed as choosing a smoothing or complexity parameter to balance the |
| 3 | tradeoff between high/low variability on the one hand and low/high bias on the other. In some |
| 4 | cases it may be convenient to use q as a such a smoothing parameter in situations. In Figure 1, |
| 5 | the estimated spectral density function is shown for the monthly sunspots numbers 1749 to 1983. |
| 6 | For reference in the top left-corner the result is shown for the best fitting autoregression using |
| 7 | the BIC. The other three show possible subset autoregressive models. The subset model selected |
| 8 | using BIC is equivalent to using $q = 0.5$ in the BIC _q and the UBIC model is the BIC _{γ} with $\gamma = 1$. |
| 9 | In this case it turns out the BIC_q with $q \in (0.06, 0.21)$ will select the same model as the UBIC. |
| 10 | It is interesting that the model $q = 0.05$, with fewer still parameters, resolves the peak around |
| 11 | the radial frequency 0.23 better than the other subset models. Comparing this subset model with |
| 12 | the full AR model selected by the BIC we find that this subset model has only 8 autoregressive |
| 13 | coefficients as compared with 18. Moreover, the subset model increases the value of maximized |
| | log-likelihood by about 15.5. A script to reproduce the figure below is included with our package |
| 14 | log-likelihood by about 15.5. A script to reproduce the light below is included with our package |
| 14 15 | available on CRAN (McLeod & Zhang, 2008). |
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| 15 | |
| 15 16 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining</i> , |
| 15 16 17 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. |
| 15 16 17 18 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining</i> , |
| 15 16 17 18 19 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |
| 15 16 17 18 19 20 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |
| 15 16 17 18 19 20 21 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |
| 15 16 17 18 19 20 21 22 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |
| 15 16 17 18 19 20 21 22 23 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |
| 15 16 17 18 19 20 21 22 23 24 | available on CRAN (McLeod & Zhang, 2008). REFERENCES HASTIE, T., TIBSHIRANI, R. & FRIEDMAN, J. H. (2009). <i>The Elements of Statistical Learning: Data Mining,</i> <i>Inference and Prediction.</i> New York: Springer-Verlag, 2nd ed. MCLEOD, A. I. & ZHANG, Y. (2008). Improved subset autoregression: With R package. <i>Journal of Statistical</i> |

