Experiment 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | AR(7) | AR(6) | AR(2) | ARMA(1,1) | AR((1,2,7)) | ARMA(2,1) | ARMA(2,(1,7)) |
|  | 0.2198  (0.059) | 0.2527  (0.056) | 0.2087  (0.054) | 0.2897  (0.077) | 0.2358  (0.059) | 0.3188  (0.089) | 0.3115  (0.089) |
|  | 1.1057  (0.070) | 1.0856  (0.061) | 1.0407  (0.056) | 0.7572  (0.050) | 1.0307  (0.064) | 0.4131  (0.134) | 0.3380  (0.104) |
|  | -0.4441  (0.105) | -0.4222  (0.096) | -0.2157  (0.054) |  | -0.1987  (0.066) | 0.3188  (0.125) | 0.4007  (0.096) |
|  | 0.3891  (0.086) | 0.3559  (0.085) |  |  |  |  |  |
|  | -0.2899  (0.075) | -0.2412  (0.069) |  |  |  |  |  |
|  | 0.2156  (0.096) | 0.1585  (0.075) |  |  |  |  |  |
|  | -0.2928  (0.108) | -0.1476  (0.055) |  |  |  |  |  |
|  | 0.1328\*  (0.071) |  |  |  | -0.0292  (0.031) |  |  |
|  |  |  |  | 0.3771  (0.065) |  | 0.6979  (0.111) | 0.7847  (0.072) |
|  |  |  |  |  |  |  | -0.1390  (0.037) |
| AIC | 289.321 | 291.144 | 298.020 | 293.497 | 299.360 | 190.201 | 282.760 |
| BIC | 319.531 | 317.997 | 311.446 | 306.923 | 316.143 | 306.984 | 302.899 |
| Q(4) | 0.7531  (0.9799) | 0.2602  (0.9983) | 10.1181  (0.072) | 8.266  (0.1422) | 9.2969  (0.0978) | 1.3991  (0.9244) | 0.8247  (0.9754) |
| Q(8) | 6.2342  (0.7163) | 11.9453  (0.2164) | 22.2343\*  (0.0082) | 18.3012\*  (0.0318) | 23.5503  (0.0051) | 12.1608  (0.2044) | 4.7605  (0.8547) |
| Q(12) | 13.6596  (0.3982) | 16.2382  (0.2365) | 28.8869\*  (0.0068) | 24.094\*  (0.0303) | 28.615  (0.0074) | 19.2279  (0.1162) | 11.3046  (0.5853) |

Experiment 4

|  |  |  |  |
| --- | --- | --- | --- |
|  | ARMA(1,(4)) | ARMA(1,0,0)(1,0,0,4) | ARMA(0,0,1)(0,0,1,4) |
|  | 0.5452  (0.053) | 0.5113  (0.052) |  |
|  |  | -0.5218  (0.058) |  |
|  |  |  | 0.4205  (0.070) |
|  | -0.7582  (0.047) |  | -0.7438  (0.052) |
| AIC | -1261.858 | -1235.258 | -1240.561 |
| BIC | -1248.527 | -1221.927 | -1227.230 |
| Q(4) | 3.3211  (0.6506) | 5.4118  (0.3677) | 28.3627  (0.0) |
| Q(8) | 4.6867  (0.8607) | 16.6012  (0.0553) | 29.8124  (0.0005) |
| Q(12) | 16.2759  (0.2346) | 29.5726  (0.0054) | 40.3588  (0.0001) |
| The intercept term was ignored since all of them weren’t significantly different from 0. | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(Empirical) Critical Value of ADF Tests** | | | | | | |
| Model | Statistic | Sample size | 0.01 | 0.025 | 0.05 | 0.10 |
| Model 1  (no constant, no trend) |  | 25 | -2.66 | -2.26 | -1.95 | -1.60 |
| 50 | -2.62 | -2.25 | -1.95 | -1.61 |
| 100 | -2.60 | -2.24 | -1.95 | -1.61 |
| 250 | -2.58 | -2.23 | -1.95 | -1.61 |
| 500 | -2.58 | -2.23 | -1.95 | -1.61 |
| >500 | -2.58 | -2.23 | -1.95 | -1.61 |
| Model 2  (constant only, no trend) |  | 25 | -3.75 | -3.33 | -3.00 | -2.62 |
| 50 | -3.58 | -3.22 | -2.93 | -2.60 |
| 100 | -3.51 | -3.17 | -2.89 | -2.58 |
| 250 | -3.46 | -3.14 | -2.88 | -2.57 |
| 500 | -3.44 | -3.13 | -2.87 | -2.57 |
| >500 | -3.43 | -3.12 | -2.86 | -2.57 |
|  | 25 | 3.41 | 2.97 | 2.61 | 2.20 |
| 50 | 3.28 | 2.89 | 2.56 | 2.18 |
| 100 | 3.22 | 2.86 | 2.54 | 2.17 |
| 250 | 3.19 | 2.84 | 2.53 | 2.16 |
| 500 | 3.18 | 2.83 | 2.52 | 2.16 |
| >500 | 3.18 | 2.83 | 2.52 | 2. 16 |
| Model 3  (with constant and trend) |  | 25 | -4.38 | -3.95 | -3.60 | -3.24 |
| 50 | -4.15 | -3.80 | -3.50 | -3.18 |
| 100 | -4.04 | -3.73 | -3.45 | -3.15 |
| 250 | -3.99 | -3.69 | -3.43 | -3.13 |
| 500 | -3.98 | -3.68 | -3.42 | -3.13 |
| >500 | -3.96 | -3.66 | -3.4 1 | -3.12 |
|  | 25 | 4.05 | 3.59 | 3.20 | 2.77 |
| 50 | 3.87 | 3.47 | 3.14 | 2.75 |
| 100 | 3.78 | 3.42 | 3.11 | 2.73 |
| 250 | 3.74 | 3.39 | 3.09 | 2.73 |
| 500 | 3.72 | 3.38 | 3.08 | 2.72 |
| >500 | 3.71 | 3.38 | 3.08 | 2.72 |
|  | 25 | 3.74 | 3.25 | 2.85 | 2.39 |
| 50 | 3.60 | 3.18 | 2.81 | 2.38 |
| 100 | 3.53 | 3.14 | 2.79 | 2.38 |
| 250 | 3.49 | 3.12 | 2.79 | 2.38 |
| 500 | 3.48 | 3.11 | 2.78 | 2.38 |
| >500 | 3.46 | 3.11 | 2.78 | 2.38 |
| Source: 李子奈，《计量经济学》第四版 | | | | | | |