

Results Summary

Anastasios Panagiotelis

19 June 2020

Four methods are used to generate base forecasts. Either base forecasts are drawn from an independent distribution or dependent distribution (all DGPs actually have dependence). Also base forecasts are Gaussian or use bootstrapping (the DGPs may be Gaussian or non-Gaussian). The following reconciliation methods are considered

- Base: Not a reconciliation method, just the base forecasts.
- BottomUp: Bottom up
- BTTH: Ben Taieb, Taylor Hyndman (2020). This is like bottom up but reorders a sample from probabilistic forecast to match the empirical copula. Also the mean is adjusted to be the same as that from MinT reconciliation.
- JPP: Jeon Panagiotelis Petropoulos (2019). This reorders a sample from the probabilistic forecast to be perfectly dependent, i.e. it reconciles quantiles. Reconciliation is done by WLS (structural)
- MinTSam: MinT with the usual sample covariance estimator
- MinTShr: MinT with shrinkage covariance estimator
- OLS: OLS reconciliation
- ScoreOptE: Energy score Optimisation by stochastic gradient descent.
- ScoreOptEIn: Energy score Optimisation by stochastic gradient descent but with predicted values (in-sample) used instead of rolling window forecasts.
- ScoreOptV: Variogram score Optimisation by stochastic gradient descent.
- ScoreOptVIn: Variogram score Optimisation by stochastic gradient descent but with predicted values (in-sample) used instead of rolling window forecasts.
- WLS: Weighted least squares using structural scaling.

Table 1: Mean score for arima modelling with a gaussian stationary DGP

Method	independent_bootstrap	independent_gaussian	joint_bootstrap	joint_gaussian
Base	11.3256	11.3176	11.0652	11.0542
BottomUp	11.9802	11.9620	11.6430	11.6190
BTTH	21.7502	21.7620	21.8745	21.8842
JPP	22.8683	22.8895	22.8528	22.8575
MinTSam	10.9124	10.9084	10.7625	10.7568
MinTShr	10.8959	10.8916	10.7468	10.7410
OLS	11.1309	11.1198	10.8388	10.8280
ScoreOpt	10.8041	10.8231	10.8429	10.8420
WLS	11.2311	11.2177	10.9988	10.9861

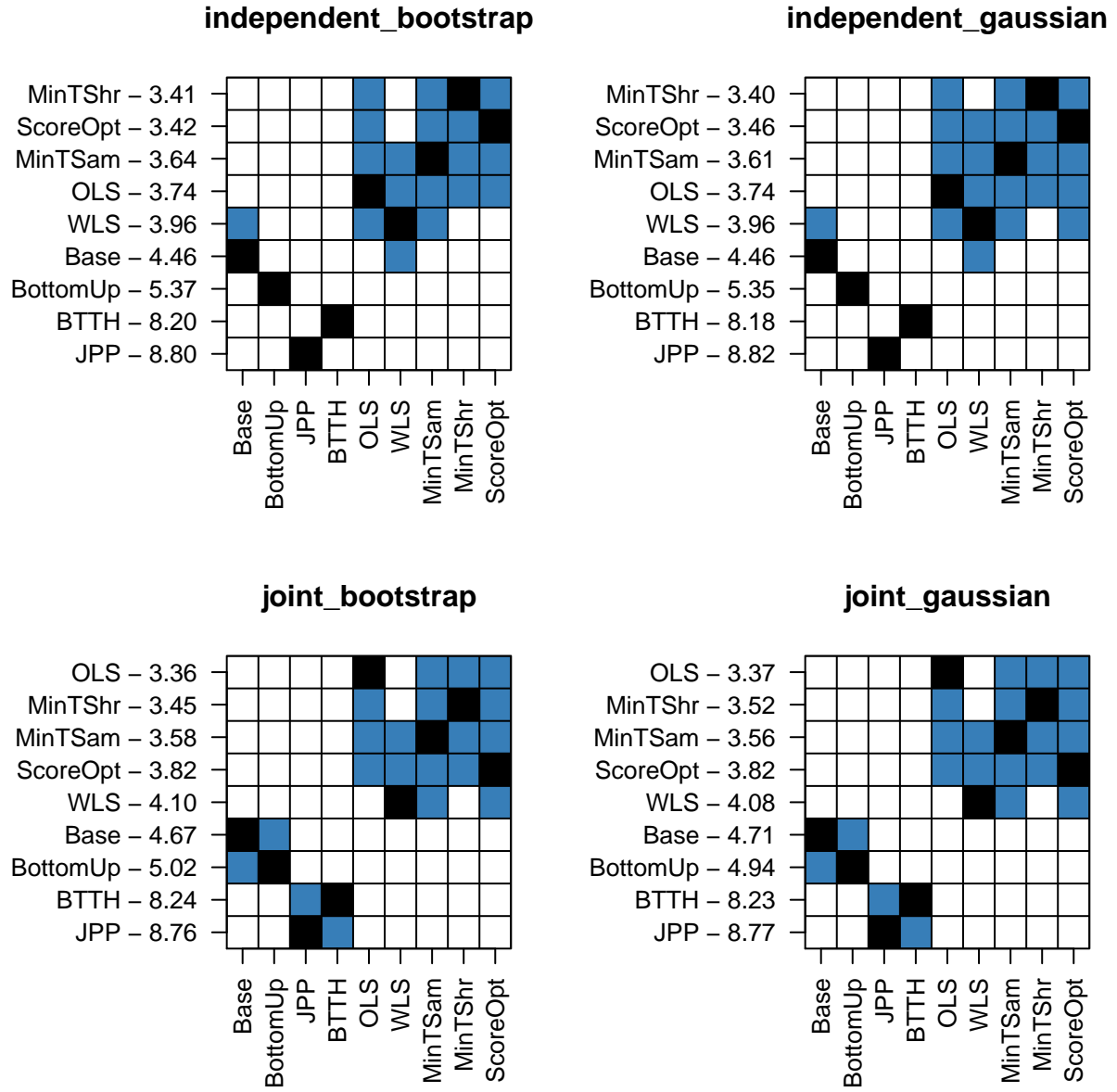


Figure 1: Nemenyi matrix for arima modelling with a gaussian stationary DGP

Table 2: Mean score for arima modelling with a gaussian stationary DGP

Method	independent_bootstrap	independent_gaussian	joint_bootstrap	joint_gaussian
Base	694.8036	694.6559	694.5874	694.1735
BottomUp	889.5964	891.9895	697.5498	697.3861
BTTH	631.1220	630.3539	632.1176	629.4520
JPP	1033.1352	1038.6284	1032.6200	1038.4049
MinTSam	690.6528	690.9180	677.4739	677.2388
MinTShr	683.6150	683.2676	677.5343	677.2141
OLS	713.9262	713.3568	680.0098	679.8048
ScoreOpt	686.4109	686.7451	683.1717	684.0071
WLS	707.5707	707.1800	683.3707	683.2800

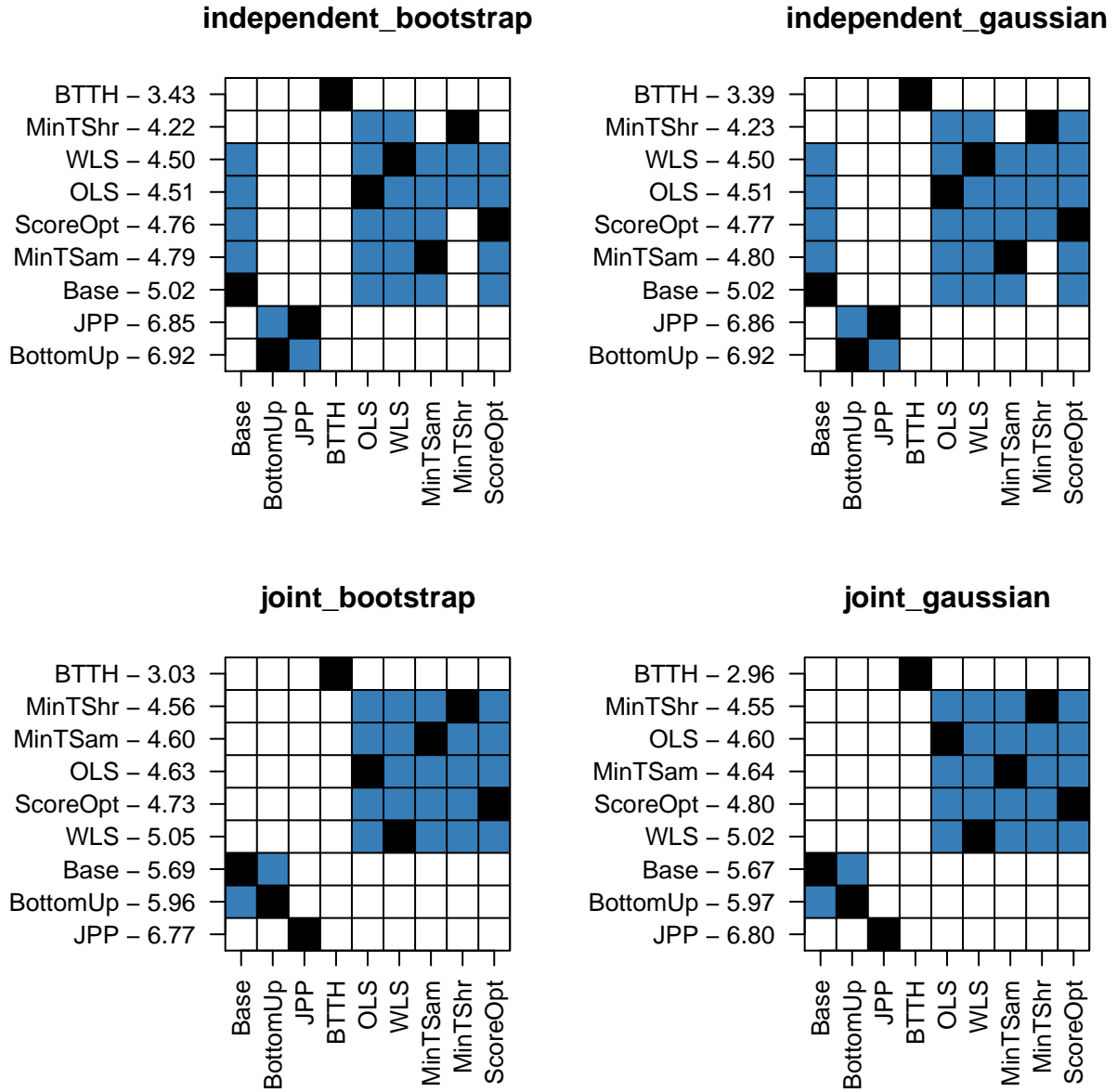


Figure 2: Nemenyi matrix for arima modelling with a gaussian stationary DGP