

Forecast reconciliation

2. The geometry of forecast reconciliation

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Outline

Notation reminder

- Data: $\mathbf{y}_t = \mathbf{S}\mathbf{b}_t$ where \mathbf{S} is a summing matrix and \mathbf{b}_t is a vector of disaggregated time series
- Base forecasts: $\hat{\mathbf{y}}_{T+h|T}$
- Reconciled forecasts: $\tilde{\mathbf{y}}_{T+h|T} = \mathbf{S}\mathbf{G}\hat{\mathbf{y}}_{T+h|T}$
- MinT: $\mathbf{G} = (\mathbf{S}'\mathbf{W}_h^{-1}\mathbf{S})^{-1}\mathbf{S}'\mathbf{W}_h^{-1}$ where \mathbf{W}_h is covariance matrix of base forecast errors.

Zero-constraint representation

The coherent subspaces

Least squares reconciliation of data

Game theory perspectives






Adding optimization constraints

ML and regularization

Bayesian versions

In-built coherence

References

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