Supplemental Materials for "Minimizing post shock forecasting error using disparate information"

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June 1, 2020

Algorithm 1: Parametric bootstrap for approximation for mean and variance of shock-effect estimators of α_1.

Input: B – the number of parametric bootstraps
$\{(y_{i,t}, \mathbf{x}_{i,t}) \colon i = 2, \ldots, n+1, t = 0, \ldots, T_i\}$ – the data
$\{T_i^* \colon i = 1, \ldots, n+1\}$ – the time point just before the shock
$\{\hat{\varepsilon}_{i,t} \colon t = 1, \ldots, T_i\}$ – the collection of residuals for $t = 1, \ldots, T_i$
$\{\hat{\eta}_i, \hat{\alpha}_i, \hat{\phi}_i, \hat{\theta}_i, \hat{\beta}_i \colon i = 2, \ldots, n+1\}$ – the OLS estimates

Result: The sample mean, and sample variance of bootstrapped adjustment estimator, inverse-variance weighted estimator, and weighted-adjustment estimator.

for $b = 1 : B$ **do**
  for $i = 2, \ldots, n+1$ **do**
    Sample with replacement from $\{\hat{\varepsilon}_{i,t} \colon t = 1, \ldots, T_i\}$ to obtain $\{\hat{\varepsilon}_{i,t}^{(b)} \colon t = 1, \ldots, T_i\}$
    Define $y_{i,0}^{(b)} = y_{i,0}$
    for $t = 1, \ldots, T_i$ **do**
      Compute $y_{i,t}^{(b)} = \hat{\eta}_i + \hat{\alpha}_i 1(t = T_i^* + 1) + \hat{\phi}_i y_{i,t-1}^{(b)} + \theta_i' \mathbf{x}_{i,t} + \beta_i' \mathbf{x}_{i,t-1} + \hat{\varepsilon}_{i,t}^{(b)}$
    end
    Compute $\hat{\alpha}_i^{(b)}$ based on OLS estimation of the parameters in $\mathcal{M}_1$ (**does this work for the other models?**) with $\{(y_{i,t}^{(b)}, \mathbf{x}_{i,t}) \colon t = 0, \ldots, T_i\}$
  end
  Compute the bth shock-effect estimate $\hat{\alpha}_{\text{est}}^{(b)}$ for est $\in \{\text{adj}, \text{wadj}, \text{IVW}\}$
end
Compute the sample mean, and sample variance of $\{\hat{\alpha}_{\text{est}}^{(b)} \colon b = 1, \ldots, B\}$ for est $\in \{\text{adj}, \text{wadj}, \text{IVW}\}$

References

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