Discussion of

"The Impact of Structural Reforms on Employment: A Country-Centric Assessment"

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Conference on
"Modelling with Big Data and Machine Learning: Interpretability and Model Uncertainty"

Summary

- Modelling of structural policies from macroeconomic panel data
- Double post-lasso approach (Belloni, Chernozhukov, and Hansen, 2014)
- Effect of structural policies on employment rate in 22 OECD countries using the SPIDER database
- Positive long-term impact of employment protection reduction on employment
- ALMP spendings have an immediate positive effect on employment, with large cross-country differences

Five Problems Addressed Simultaneously

1. Causal heterogeneity:
   $\rightarrow$ interactions of country fixed effects and policy variables
2. Policy interactions:
   $\rightarrow$ interactions between different policy variables
3. Non-linear shape of the relationship between a policy and the outcome:
   $\rightarrow$ squared terms of policy variables
4. Unknown timing of policy effect:
   $\rightarrow$ include lags of policy variables
5. Omitted variable bias:
   $\rightarrow$ country-fixed effects to model mostly time-invariant policies

Critical Discussion

- Original approach (Belloni, Chernozhukov, and Hansen, 2014):
  1. Lasso of Z on X to capture "treatment confounders"
  2. Lasso of Y on X (excluding Z) to capture "outcome confounders"
  3. OLS of Y on Z and the union of selected X in 1. or 2.
- Adapted approach:
  1. Lasso of Z on X to capture "treatment confounders"
  2. Lasso of Y on X and interactions, lags, etc. $f(Z, X)$ (excluding the level variable Z) to capture "outcome confounders"
  3. OLS of Y on Z and the union of selected X in 1. or 2. and selected $f(Z, X)$ in 2.
- Country fixed effects:
  Fused lasso (Tibshirani et al., 2004):

$$\sum_{i=1}^{N}\sum_{t=1}^{T}(Y_{it} - Xit\beta - \phi_i)^2 + \lambda_1\|\beta\|_1 + \lambda_2\sum_{p=1}^{N}\sum_{j=1}^{N}|\phi_p - \phi_j|$$

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