

Web-based supporting materials for  
“RNN-Based Counterfactual Time-Series Prediction” by  
Jason Poulos

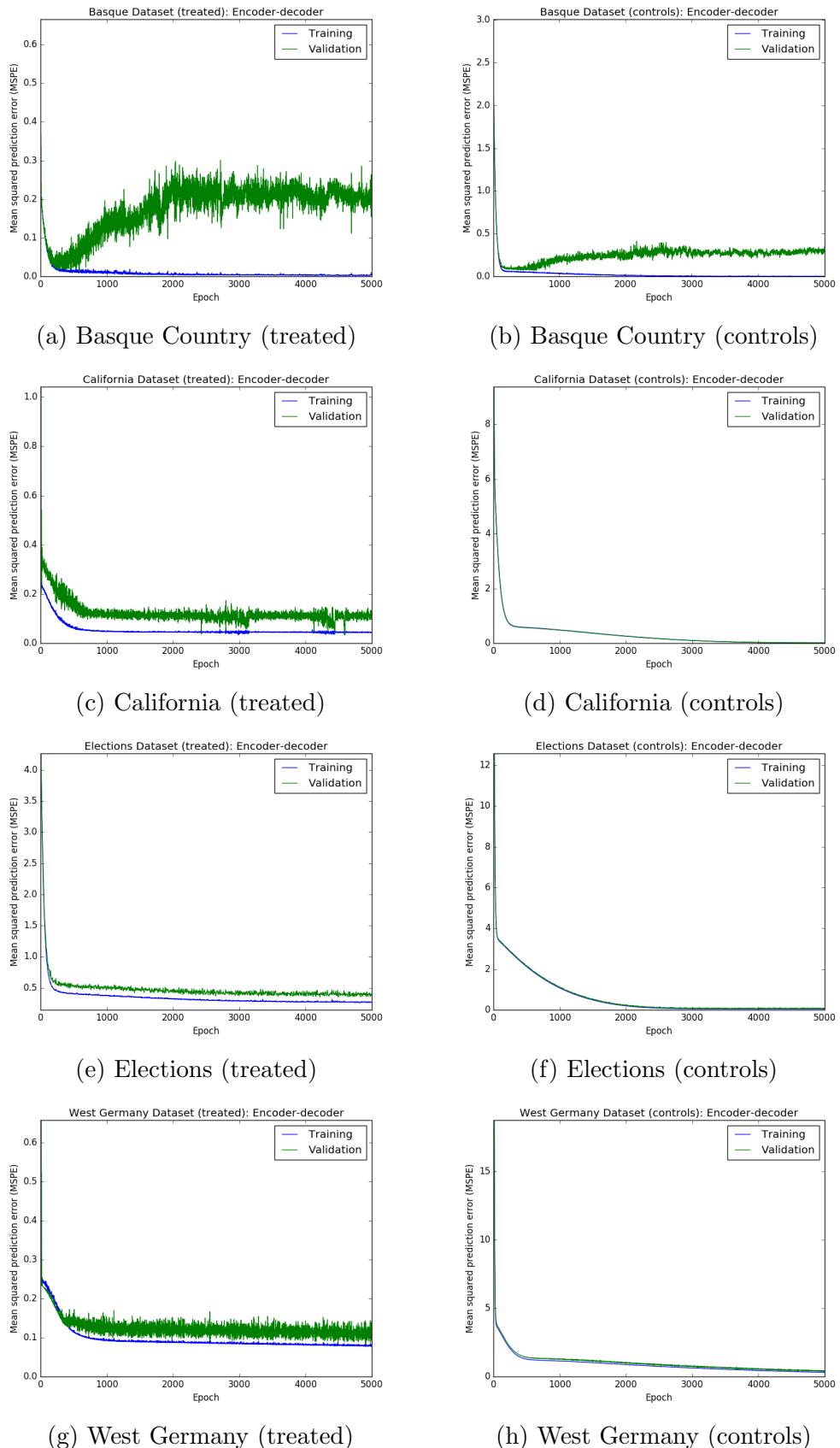


Figure 1: Evolution of encoder-decoder networks training and validation loss in terms of MSPE.

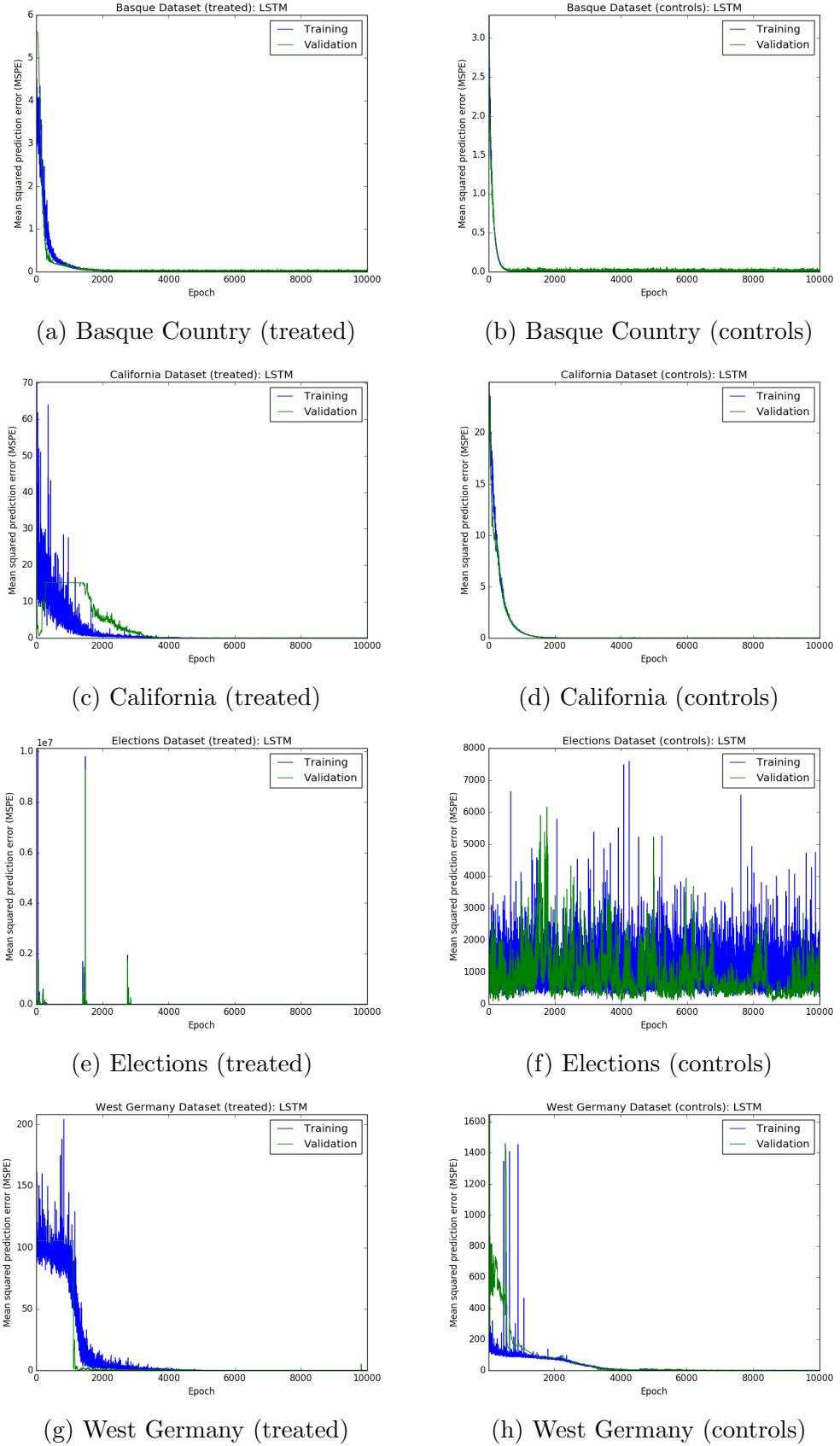
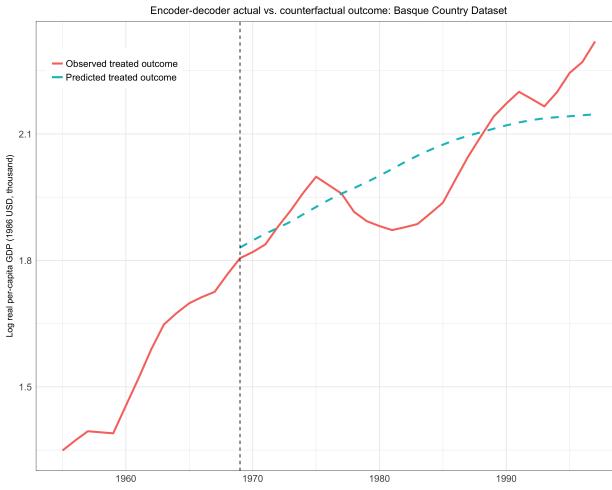
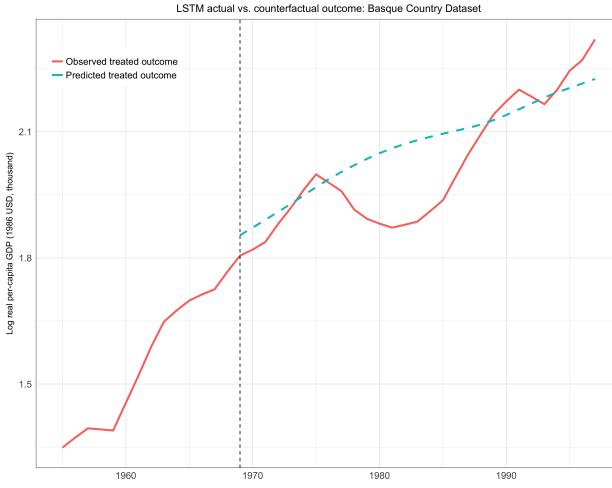


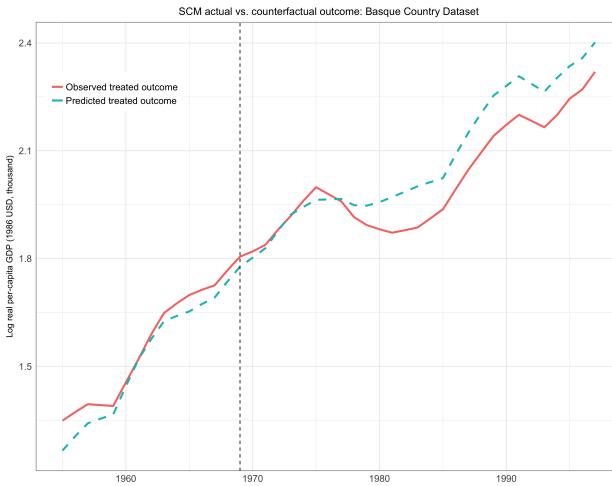
Figure 2: Evolution of baseline LSTM training and validation loss in terms of MSPE.



(a) Encoder-decoder

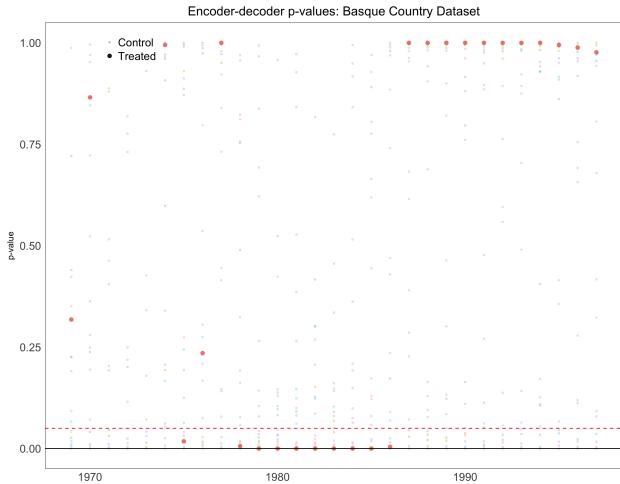


(b) LSTM (baseline)

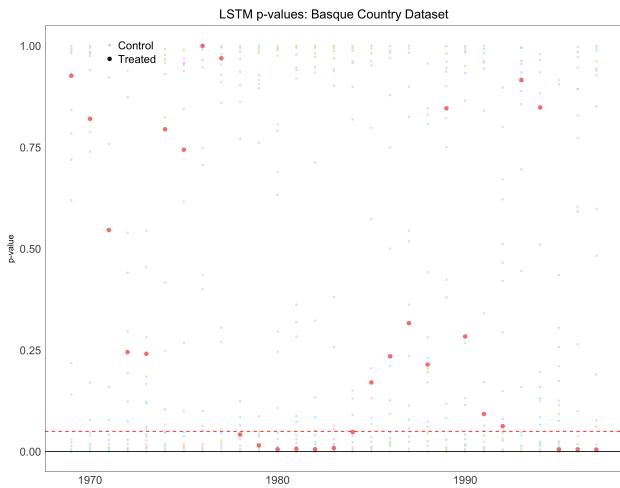


(c) SCM

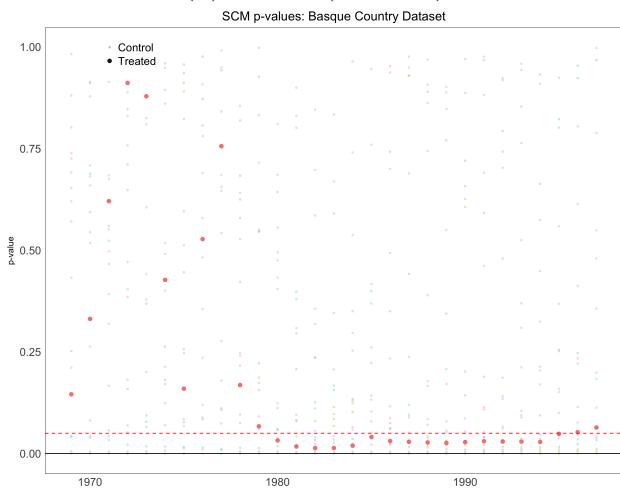
Figure 3: Observed and counterfactual predicted outcomes for treated unit in Basque Country dataset.



(a) Encoder-decoder

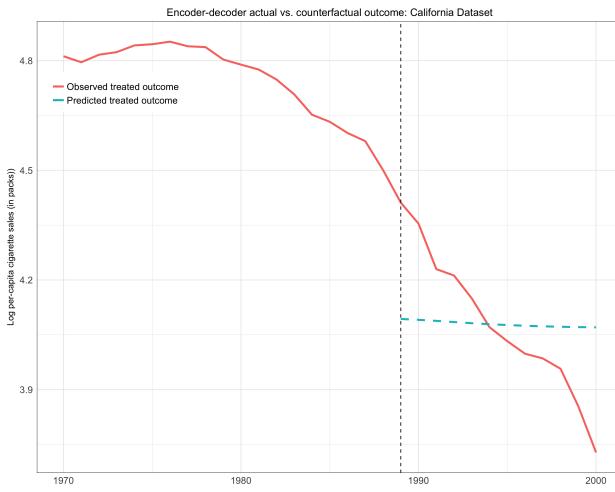


(b) LSTM (baseline)

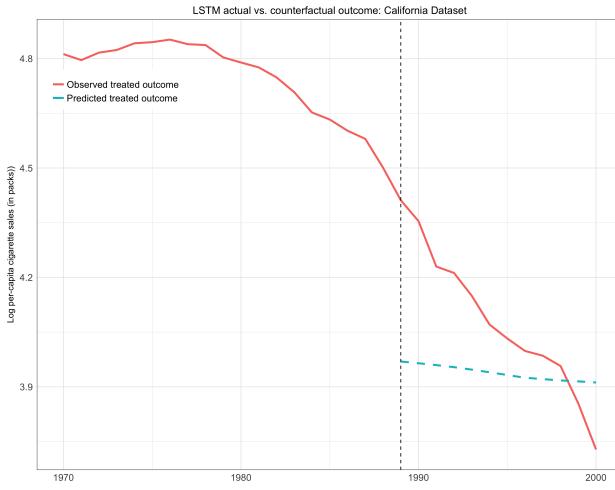


(c) SCM

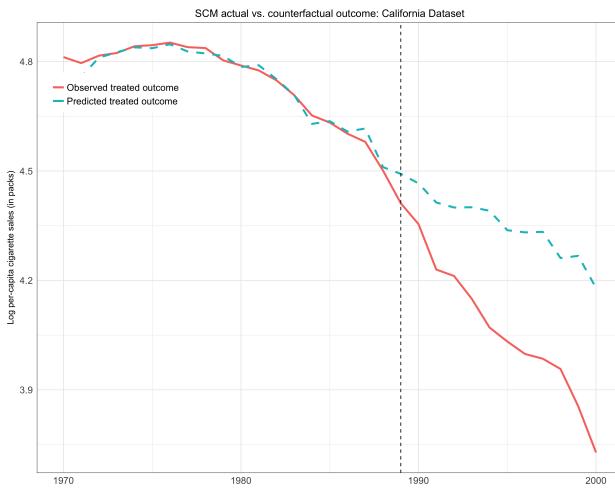
Figure 4: Per-period randomization  $p$ -values corresponding to treatment effects on treated and control units in Basque Country dataset.



(a) Encoder-decoder



(b) LSTM (baseline)



(c) SCM

Figure 5: Observed and counterfactual predicted outcomes for treated unit in California dataset.

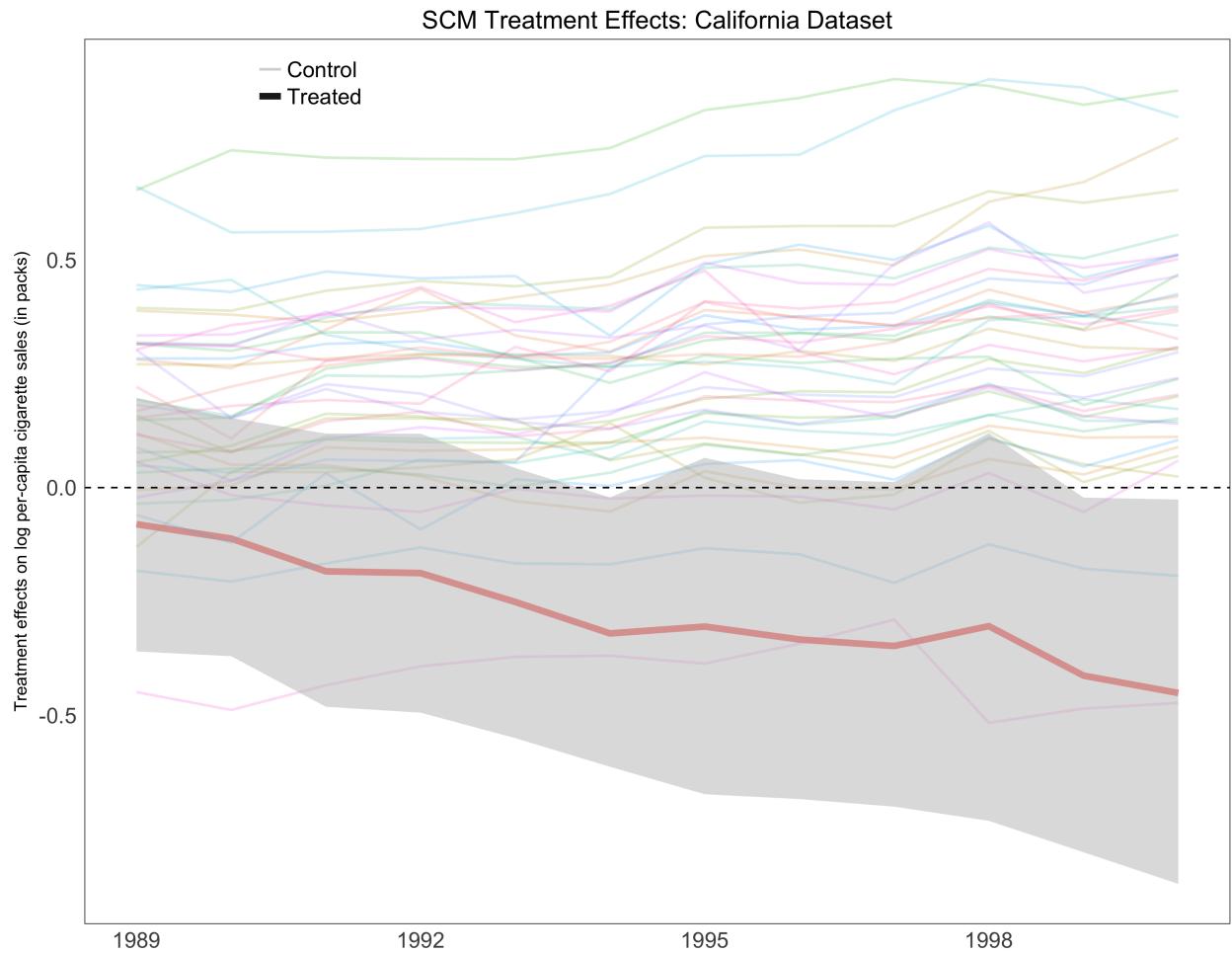
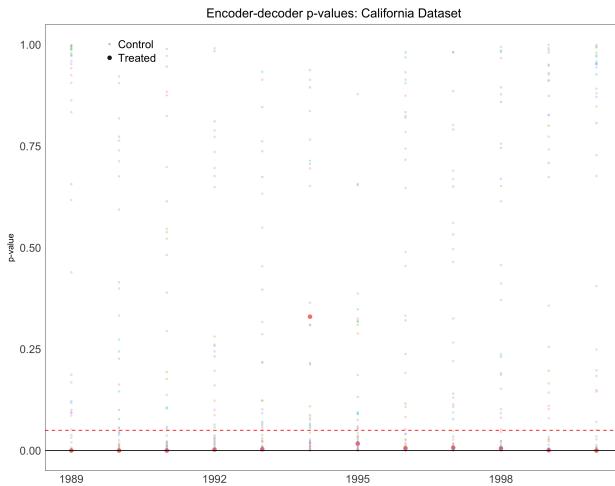
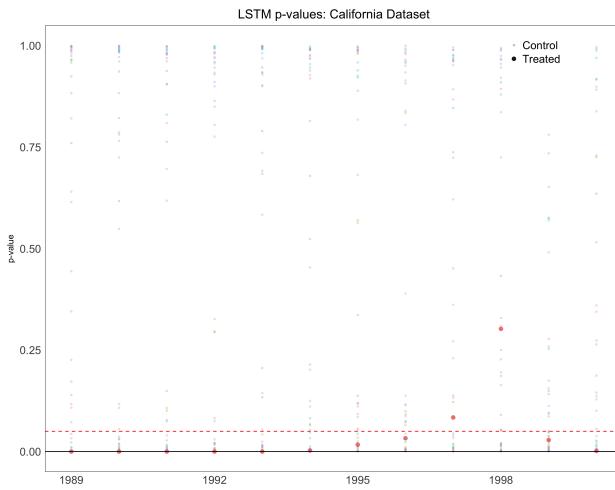


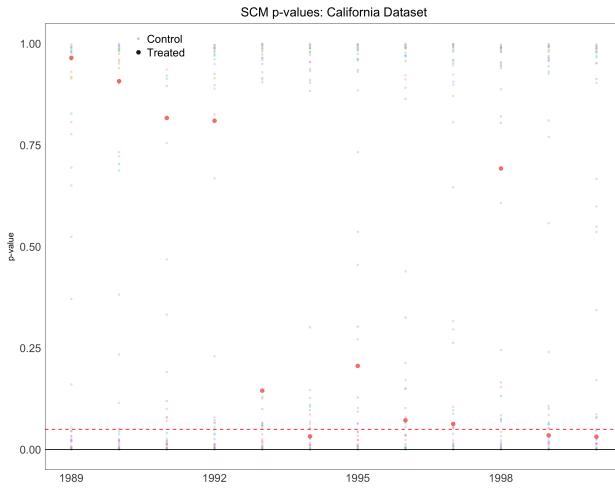
Figure 6: Synthetic control method estimates of post-period treatment effects in California dataset. See notes to Fig. 1.



(a) Encoder-decoder



(b) LSTM (baseline)



(c) SCM

Figure 7: Per-period randomization  $p$ -values corresponding to treatment effects on treated and control units in California dataset.

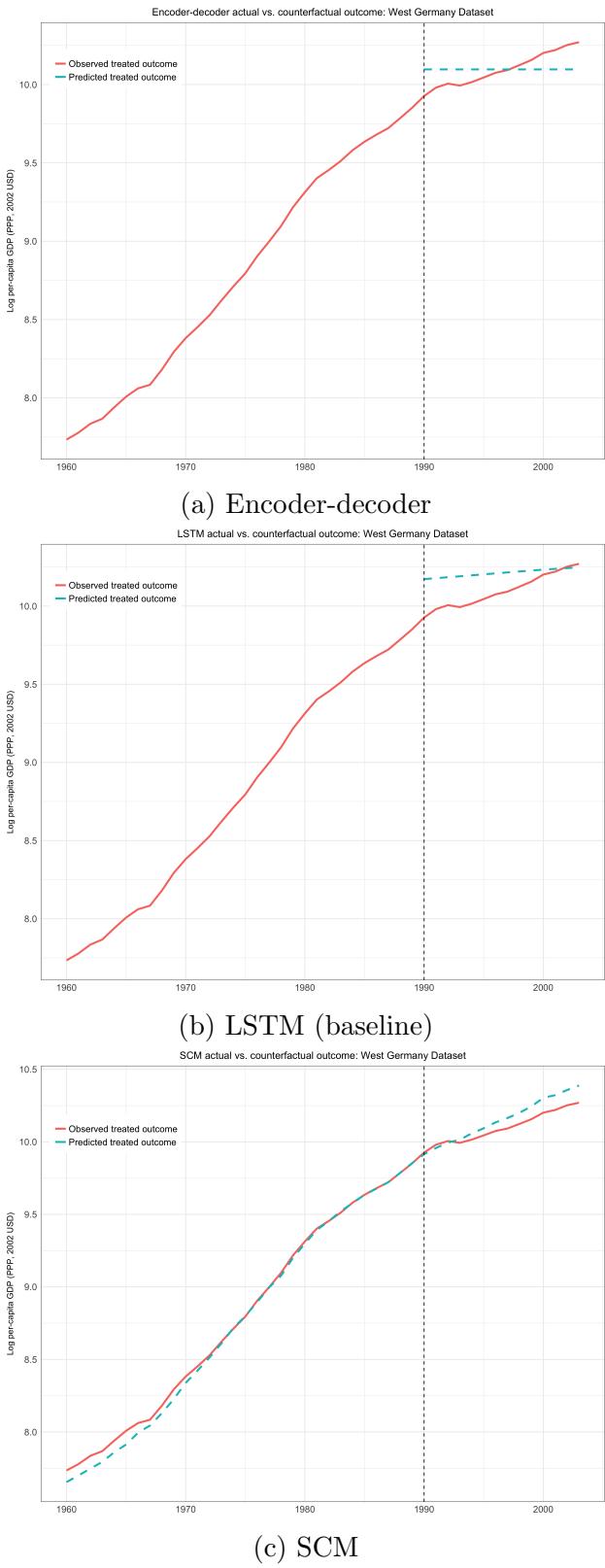


Figure 8: Observed and counterfactual predicted outcomes for treated unit in West Germany dataset.

SCM Treatment Effects: California Dataset

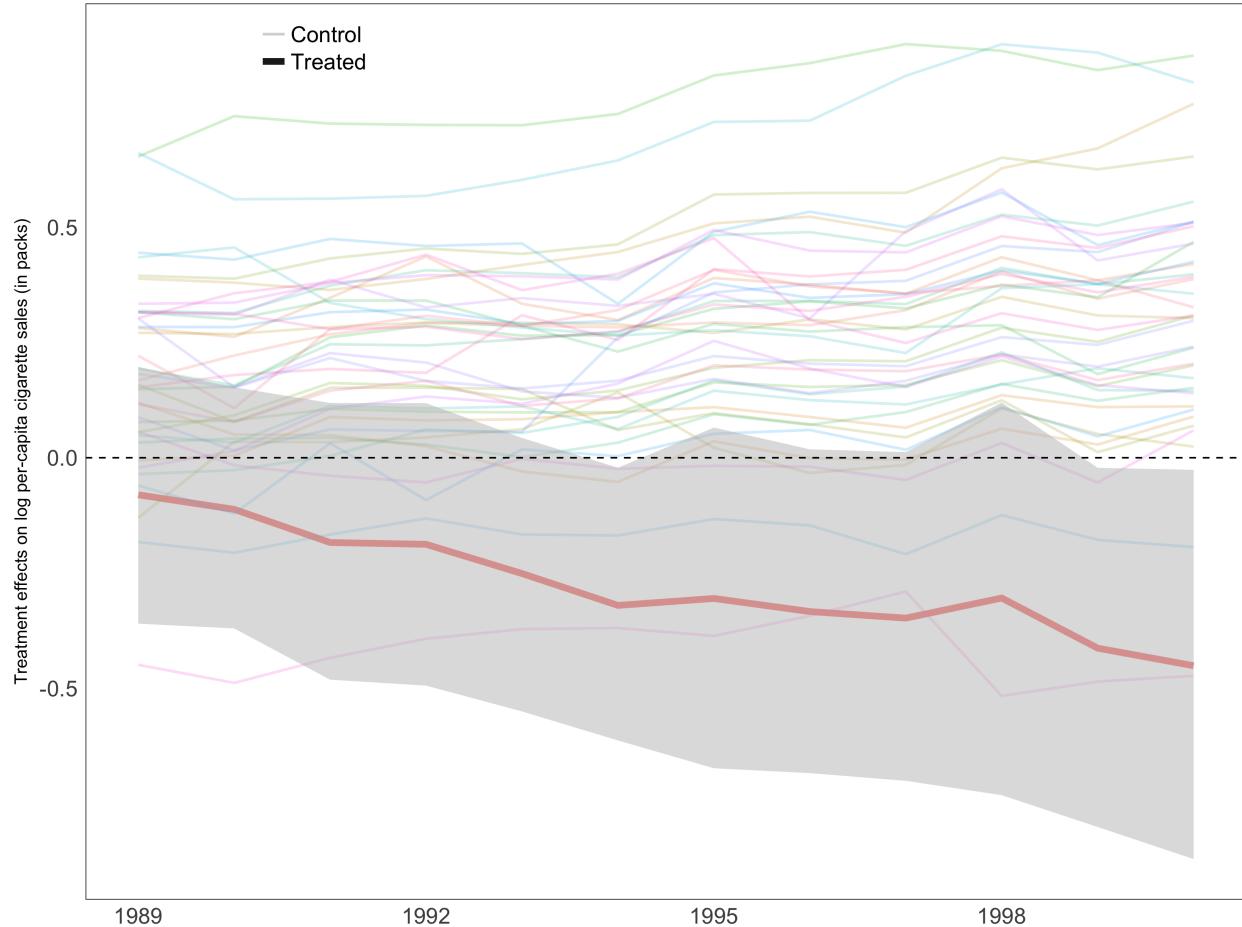
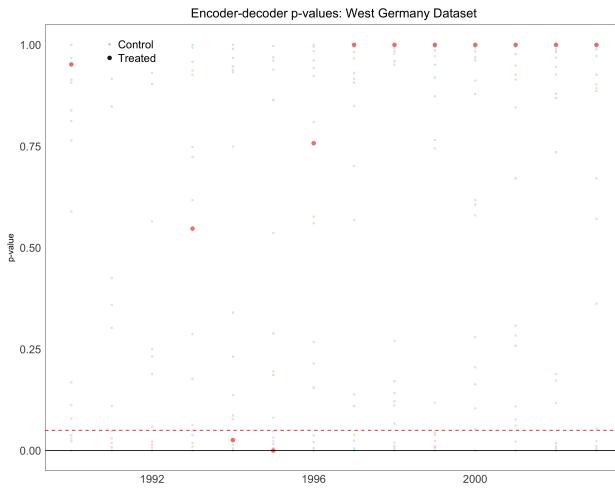
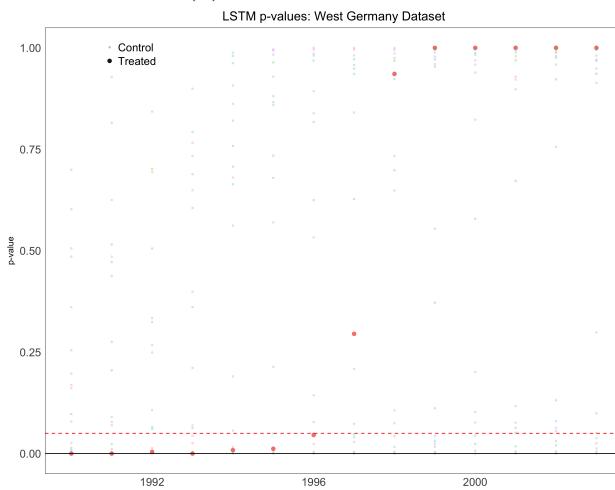


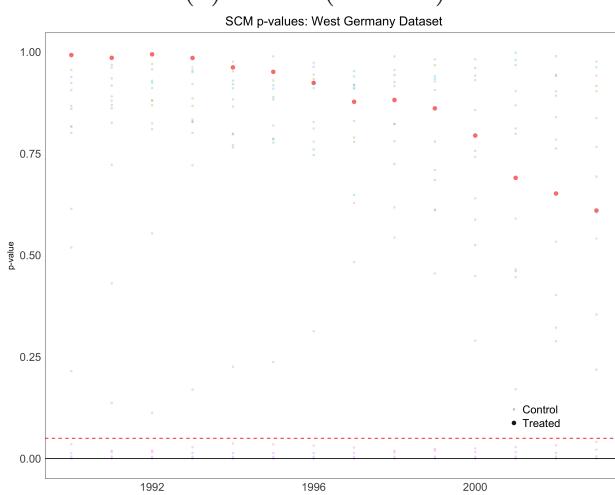
Figure 9: Synthetic control method estimates of post-period treatment effects in West Germany dataset. See notes to Fig. 1.



(a) Encoder-decoder



(b) LSTM (baseline)



(c) SCM

Figure 10: Per-period randomization  $p$ -values corresponding to treatment effects on treated and control units in West Germany dataset.