
ECONOMICS 628 : ASSIGNMENT 2

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ECONOMICS 326



Problem 1: In this problem, you'll reproduce and extend the analysis of Qin, Strömberg, and Wu (2018). Begin by reading the paper.

- (1) What is the exogeneity assumption in equation (1) of section IV.B? How does the use of controls affect the plausibility of this assumption?
- (2) Reproduce the results in Table 2. The authors' data and Stata code is on the AER website. `qsw-dataPrep.R` downloads and prepares the data for analysis.¹ `qsw-table2.R` estimates the model in column 3 of table 2.
- (3) Next, we will use Lasso to allow for a more flexible specification of controls in equation (1). However, with panel data and a model with fixed effects, the Lasso must be modified slightly. Explain how the cluster-Lasso estimator of Belloni et al. (2016) differs from the Lasso estimator for independent observations referenced in the notes. Alternatively, write code that calculates the cluster Lasso estimate.
- (4) `rlassoEffectsPanel.R` implements the cluster Lasso estimator with fixed effects. Use it to estimate equation (1) while including many more controls. Discuss the results. Did using Lasso add anything to this example?

REFERENCES

- Belloni, Alexandre, Victor Chernozhukov, Christian Hansen, and Damian Kozbur. 2016. "Inference in High-Dimensional Panel Models With an Application to Gun Control." *Journal of Business & Economic Statistics* 34 (4):590–605. URL <https://doi.org/10.1080/07350015.2015.1102733>.
- Qin, Bei, David Strömberg, and Yanhui Wu. 2018. "Media Bias in China." *American Economic Review* 108 (9):2442–76. URL <http://www.aeaweb.org/articles?id=10.1257/aer.20170947>.

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¹This is mostly a direct translation of the authors' Stata code into R. As such, it's not written in an idiomatic R style.

²If you run on this on a non-Linux system you will have to change lines 13-15 or just manually rename the "data" folder to "qsw2018."