

README: Replication Files for Leccese, Sweeting and Tao “Should We Expect Merger Synergies to Be Passed Through to Consumers?”, Journal of Industrial Economics , 2024

This archive contains the MATLAB code used to produce the results in the published paper & the online appendix.

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Organization

The archive is divided into folders that contain the code required to replicate different results in the paper, as we detail below.

Beer Application

The code will replicate the example and simulation results. The analysis of beer data relies on using the IRI Academic Dataset scanner data for beer, the code used by Miller and Weinberg (2017a,b)¹ to prepare that data, and the estimates from their paper. You can download their code from the Econometrica website.

The main data used is the Information Resources Inc. Academic Research Dataset, described in Bronnenberg et al. (2008).² This dataset can be purchased from IRI for academic use. For more information see: <https://www.iriworldwide.com/en-us/solutions/academic-data-set>. The version used in this study was purchased in September 2020.

This archive does contain the MATLAB code used to perform our simulations using the estimates, and the STATA code used to analyze pass-through (Appendix C).

System Requirements

The code was last run on a Dell Precision 7865 AMD Ryzen Threadripper Pro 5975WX with 32 cores 3.6GHz, 256GB RAM, Windows 11 Enterprise 64 Bit (version 22H2).

MATLAB version used for generation of results in the paper: MATLAB 2023a (update 4, 9.14.0.2306882), 64-bit (win64). Toolboxes: curve fitting toolbox (version 9.14), data acquisition toolbox (3.9), deep learning HDL toolbox (4.7), deep learning toolbox (1.5), econometrics toolbox (6.2), financial instruments toolbox (3.6), financial toolbox (6.5), GPU coder (2.5), global optimization toolbox (4.8.1), matlab coder (5.6, with access to MinGW64 C and C++ compilers), matlab compiler (8.6), matlab

¹ Miller, Nathan H and Matthew C Weinberg (2017a), “Understanding the Price Effects of the MillerCoors Joint Venture,” *Econometrica*, 85(6): 1763-1791.

Miller, Nathan H and Matthew C Weinberg (2017b), “Supplement to ‘Understanding the Price Effects of the MillerCoors Joint Venture’,” *Econometric Society* [distributor], <https://doi.org/10.3982/ECTA13333> [link accessed December 3, 2023; downloaded March 9, 2019].

² Information Resources Inc. (n.d.), “IRI Academic Data Set 2001-2012”, <https://www.iriworldwide.com/en-us/solutions/academic-data-set> (link accessed December 3, 2023; data purchased September 2020), Bronnnenberg, Bart J, Michael W Kruger and Carl F Mela (2008), “Database Paper: The IRI Marketing Dataset”, *Marketing Science*, 27(4), 745-748. Note we use data from 2001-2011, following Miller, Nathan H and Matthew C Weinberg (2017a), “Understanding the Price Effects of the MillerCoors Joint Venture,” *Econometrica*, 85(6): 1763-1791.

compiler (sdk), optimization toolbox (9.5), parallel computing toolbox (7.8), partial differential equation toolbox (3.10), statistics and machine learning toolbox (12.5), symbolic math toolbox (9.3), test analytics toolbox (1.10).

STATA: Windows STATA MP 16.1 (4 core).

List of folders

1. Example (section 3.1)

In MATLAB, run `reaction_function_example_jie.m` to generate figure 1 and the results in paper section 3.1.

2. Simulation (section 3.2 and appendix A)

We perform simulations for 3 demand systems (multinomial logit, linear and AIDS). The simulations themselves take some time to run. We include the simulation results files, so that shorter scripts can generate the results.

`script_summary.m` generates text figure 2(a)-(c), appendix figure A1(a)-(c), appendix figure A2, table A1 and the pairwise comparisons reported in the text. It uses `results_logit_price_corrected.mat`, `results_linear_corrected.mat` and `results_aids_corrected.mat` as inputs. If you want to generate the simulated data, run the `main_script_logit.m` (etc.) files.

`script_summary_vary_merger.m` generates the results for symmetric mergers discussed in Appendix A2, using `results_MNL_vary_merger.mat`, `results_linear_vary_merger.mat` and `results_aids_vary_merger.mat` as inputs. To generate the simulated datasets use the `main_script_vary_merging_logit.m` (etc.) files.

`script_summary_vary_merger_asym.m` generates the results for asymmetric mergers discussed in Appendix A2, using `results_MNL_vary_merger_asym.mat`, `results_linear_vary_merger_asym.mat` and `results_aids_vary_merger_asym.mat` as inputs. To generate the simulated datasets use the `main_script_vary_merging_asym_logit.m` (etc.) files.

`script_summary_vary_outside.m` generates appendix Figure A3(a)-(c) where the share of the outside good can vary across the simulations using `results_MNL_outside_vary.mat`, `results_linear_vary_outside.mat` and `results_aids_vary_outside.mat` as inputs. If you want to generate the simulated data, run the `main_script_vary_outside_logit.m` (etc.) files.

3. Vertical

In MATLAB, run `vertical_code.m` to generate the results in Appendix D.

4. Beer code

In MATLAB, `beer_simulations_script.m` performs steps 1-4 of the procedure described in Appendix B for the hypothetical merger simulations.

The market-merger level data generated are then processed in STATA with `main.do` to generate the results in Table 2 and Figure 3. In these analyses, we also use pre-merger statistics generated via the MATLAB script `beer_simulations_script_pre.m`.

The functions necessary to run the MATLAB code are archived in the folder `matlab_functions`.

Figure B.1 in the Appendix is generated by running the script `mc_cdpot.m` in MATLAB.

5. Empirical beer pass through

Appendix table C1 presents reduced-form price regressions using the beer data. Six of the columns are identical to columns in Sweeting, Tao and Yao (American Economic Journal: Microeconomics, 2024 forthcoming) Tables C.5 and C.6. Therefore, if the IRI data is available, the results can be recreated by setting up the code archive of the Sweeting, Tao and Yao paper (which can be found at <https://doi.org/10.3886/E192405V1> or <http://hdl.handle.net/1903/33124>), but replacing the `passthrough_regressions.do` file with the `passthrough_regressions.do` file in the current archive. Running `stata_main.do` will then generate the results.