README for "The Laffer Curve for Rules of Origin"

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1 JIE instructions

(a) a readme file in PDF or plain text format with detailed instructions relevant for replication

(b) all relevant code and data required to replicate all empirical and quantitative results (as well as computer simulations) included in the paper and its appendices, which includes your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

The replication package should be user friendly and put together in such a way that a graduate student trying to replicate your paper would have an easy time doing so. The readme file should include with simple and transparent directions; for example, each figure or table should have its own short replication instruction, such as "Figure 3, run script xxxx.xxx."

2 Construction of figures and tables

The Data folder has the following subfolders with the following contents:

1. **AALA**: a raw csv file assembled manually from PDFs from the American Automobile Labelling Act website. The PDFs are available at `https://www.nhtsa.gov/part-583-american-automobile-labeling-act-reports`

2. **Gravdata**: R data set (rds) for Gravity data (we just used distances) from 2021. `http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=8`

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3. **MfgSurveys/USA**: downloaded xlsx files from the US Bureau of Labor Statistics containing employment numbers used in the calibration. `https://data.bls.g ov/timeseries/CEU3133600101?amp%253bdata_tool=XGtable&output _view=data&include_graphs=true`

4. **RDS_JIE_rev**: all files here are created by running R code drawing on simulations and data from the above data sets. The files are then used later in other parts of the code.

Tables 1 and 2 list the files containing each figure or table included in the paper (including the online appendix). They show the scripts and line numbers (where relevant). R scripts are shown in blue and scripts in other software languages are shown in green.

3   Computation

- Code run in R (version 4.2.1, 2022-06-23, "Funny-Looking Kid"), Julia (version 1.10), and Mathematica (version 14.0).

- Key packages are **data.table** (1.14.3, built 2022-07-20), and **fixest** (0.10.4),

- Most scripts library() the **HeadR** package of functions created by the authors. It is available for installation from Github using the **remotes** package:

  ```
  remotes::install_github("ckhead/HeadR")
  ```

  It should be cited as

  Charles Keith Head. (2021, April 22). ckhead/HeadR: HeadR Free4 (Version v0.2). Zenodo. `http://doi.org/10.5281/zenodo.4711059`

- All required packages are installed by `_cars_parts_packages.R`.

- The data construction and estimation and table and figure creation can (in principle) be replicated by running the files in `master_JIE.R` in order. In practice, we recommend opening each `.R` file and executing the code in smaller chunks to be able to identify and solve any problems with missing packages.

- Lines 9–10 of `master_JIE.R` work with data that is confidential (from the IHS automotive consultancy) and not included in the publicly available replication. You should not try to run those lines but you can use the underlying R files to understand the construction of the τ index. `tau_index_DFR.R` outputs an anonymized version of the τ index to the **Data/RDS_JIE_rev/** folder as `tau_index_DRF.rds`. This R data set is used in the rest of the code without violation of our confidentiality agreement.

Table 1: Figures

#	Program	Line #	Output file
1(a)	Basic Figs.m		CostPenalty.pdf
1(b)	Basic Figs.m		PartShares.pdf
2(a)	continuum_plots.R	20–36	C_tilde_delta.pdf
2(b)	continuum_plots.R	43–59	lambda_delta.pdf
3	continuum_plots.R	72–83	shares_roo.pdf
4	continuum_plots.R	93–103	roo_laffer_noAC.pdf
5(a)	Basic Figs.m		CostPenalty_SinglePart.pdf
5(b)	Basic Figs.m		PartShares_SinglePart.pdf
6(a)	Assembly Figs.m		AssemblyCostPenalty_ChiR.pdf
6(b)	Assembly Figs.m		AssemblyPartShare_ChiR.pdf
7	roo6.m		roo6v3_laffer_2.pdf
8	AALA_calibration_plots.R	62–102	AALA_calib_model_data.pdf
9	tau_index.jl		tau_index_densities.pdf
10(a)	AALA_calibration_density	32–52	AALA_calib_bf_con_alpha15_theta4.pdf
10(b)	_laffer_curves.R	76–87	roo_laffer_calib_bf_con_alpha15_theta4.pdf
11(a)	AALA_calibration_density	123–138	roo_laffer_cars_3ctry_calib_bf_con_alpha15_theta4.pdf
11(b)	_laffer_curves.R	123–138	roo_laffer_trucks_3ctry_calib_bf_con_alpha15_theta4.pdf
12(a)	XL_laffer.R	138–255	XLT_laffer_CAN_HS8703.pdf
12(a)	XL_laffer.R	138–255	XLT_laffer_MEX_HS8703.pdf
12(a)	XL_laffer.R	138–255	XLT_laffer_USA_HS8703.pdf
12(b)	XL_laffer.R	138–255	XLT_laffer_CAN_HS8704.pdf
12(b)	XL_laffer.R	138–255	XLT_laffer_MEX_HS8704.pdf
12(b)	XL_laffer.R	138–255	XLT_laffer_USA_HS8704.pdf
13(a)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_CAN_HS8703_DRF.pdf
13(a)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_MEX_HS8703_DRF.pdf
13(a)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_USA_HS8703_DRF.pdf
13(b)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_CAN_HS8704_DRF.pdf
13(b)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_MEX_HS8704_DRF.pdf
13(b)	XL_figures_DRF.R	9–64	kappa20/XLT_laffer_USA_HS8704_DRF.pdf
14(a)	LT_laffer.R	11–38	LT_laffer_HS8703_fixed_endo.pdf
14(b)	LT_laffer.R	11–38	LT_laffer_HS8704_fixed_endo.pdf
C.1(a)	continuum_plots.R	117–129	roo_laffer_mu.pdf
C.1(b)	continuum_plots.R	135–146	roo_laffer_sigma.pdf
C.1(c)	continuum_plots.R	152–163	roo_laffer_theta.pdf
C.1(d)	continuum_plots.R	170–183	roo_laffer_tau.pdf
G.1(a)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_CAN_HS8703_DRF.pdf
G.1(a)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_MEX_HS8703_DRF.pdf
G.1(a)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_USA_HS8703_DRF.pdf
G.1(b)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_CAN_HS8704_DRF.pdf
G.1(b)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_MEX_HS8704_DRF.pdf
G.1(b)	XL_figures_DRF.R	9–64	kappa10/XLT_laffer_USA_HS8704_DRF.pdf
G.2(a)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_CAN_HS8703_DRF.pdf
G.2(a)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_MEX_HS8703_DRF.pdf
G.2(a)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_USA_HS8703_DRF.pdf
G.2(b)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_CAN_HS8704_DRF.pdf
G.2(b)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_MEX_HS8704_DRF.pdf
G.2(b)	XL_figures_DRF.R	9–64	kappa30/XLT_laffer_USA_HS8704_DRF.pdf

Table 2: Tables

#	Program	Line #	Output file
1	AALA_IHS_table.R	35–38	AALA_IHS_table.tex
2	XL_tables_DRF.R	115–122	Phat_USMCA_HS8703.tex
2	XL_tables_DRF.R	115–122	Phat_USMCA_HS8704.tex
G.1	XL_tables_DRF.R	115–122	XL_USMCA_HS8703.tex
G.1	LT_laffer.R	80–84	XL_USMCA_NAFTA_HS8703.tex
G.1	XL_tables_DRF.R	115–122	XL_USMCA_HS8704.tex
G.1	LT_laffer.R	80–84	XL_USMCA_NAFTA_HS8704.tex
G.2	XL_tables_DRF.R	140–144	XL_USMCA_lohi_HS8703.tex
G.2	XL_tables_DRF.R	140–144	XL_USMCA_lohi_HS8704.tex