The current folder contains all the code and data files that were used for obtaining the results of the paper "Estimates of the Trade and Welfare Effects of NAFTA", by Lorenzo Caliendo and Fernando Parro.

Data

The original data needed to run the counterfactuals are included in the folder Equilibrium. Countries and Sectors are always displayed in the order described in the Appendix "Data Sources and Description". These inputs are contained in the following files:

-B.txt contains the share of value added in gross output across sectors and countries. This is a 40x31 matrix where rows are sectors and columns are countries.
-GO.txt contains gross output by sector and country. This is a 40x31 matrix where rows are sectors and columns are countries.
-IO.txt contains the input-output coefficients for each country. This is a 1240x40 matrix where the first 40x40 submatrix is the input-output matrix for the first country, the second 40x40 submatrix is the input-output matrix for the second country, etc. Columns are the destination sectors and rows are the source sectors.
-tariffs1993.txt contains bilateral tariff data across sectors for the year 1993. This is a 620x31 matrix where the first 31x31 submatrix is the bilateral tariff matrix for the first tradable sector, the second 31x31 submatrix is the bilateral tariff matrix for the second tradable sector, etc. Columns are the source countries and rows are the destination countries.
-tariffs2005.txt contains bilateral tariffs data across sectors for the year 2005. This is a 620x31 matrix where the first 31x31 submatrix is the bilateral tariff matrix for the first tradable sector, the second 31x31 submatrix is the bilateral tariff matrix for the second tradable sector, etc. Columns are the source countries and rows are the destination countries.
-xbilat1993.txt contains the bilateral trade matrices across sectors and countries for the year 1993. This is a 620x31 matrix where the first 31x31 submatrix is the bilateral trade matrix for the first tradable sector, the second 31x31 submatrix is the bilateral trade matrix for the second tradable sector, etc. Columns are the source countries and rows are the destination countries.
-alphas.mat contains the share of each sector in final demand by country. This is a 40x31 matrix where rows are sectors and columns are countries.
-T.txt contains the estimates of the sectoral trade elasticities. This a 20x1 vector.

Equilibrium

Files to compute the equilibrium in relative changes are included in the folder Equilibrium. The matlab function that calculates a counterfactual equilibrium is equilibrium_LC.m. This function solves for the counterfactual equilibrium using the following subfunctions:
-PH.m solves for the relative change in prices (equation 11)
-Dinprime.m solves for the change in bilateral trade shares (equation 12)
-expenditure.m solves for total expenditure (equation 13).
-LMC.m solves for the market clearing condition (equivalent to solving for the trade balance, equation 14).

Counterfactual results to compute the trade and welfare effects from NAFTA

Equilibrium in the base year without aggregate trade deficits:
To compute the results of the paper, we first compute the equilibrium in the base year without aggregate trade deficits. To do so, the following files included in the folder Equilibrium must be run:
-script.m computes the equilibrium in the base year with trade deficits.
-script_eliminating_trade_surplus.m uses the output from script.m and computes the counterfactual equilibrium without aggregate trade deficits.
-script_no_surplus.m uses the output from script_eliminating_trade_surplus.m to construct the base year without aggregate trade deficits. The output of this program is a workspace file called initial_conditions_1993_noS.mat. This workspace contains all the equilibrium variables used to run the counterfactuals without aggregate trade deficits.

Counterfactual results:
The results of the counterfactuals are computed using the programs included in the folder Counterfactuals.
-The file CP_counterfactuals.m runs all the counterfactuals that compute the welfare and trade effects of NAFTA's tariff reductions, world's tariff changes, and NAFTA given world tariff changes. This file uses the workspace initial_conditions_1993_noS.mat as an input.
-The file results_counterfactualsCP.m uses the output from CP_counterfactuals.m to construct and display Table 2 through Table 10, Table A.3, and Table A.8 through Table A.13 in the paper.

Equilibrium in the base year with aggregate trade deficits:
We first compute the equilibrium in the base year with aggregate trade deficits. To do so, the following files included in the folder Equilibrium_with_deficit must be run:
-script.m computes the equilibrium in the base year with trade deficits.
-script_with_surplus.m uses the output from script.m to construct the base year with aggregate trade deficits. The output of this program is a workspace file called initial_conditions_1993_withS.mat. This workspace contains all the equilibrium variables used to run the counterfactuals with aggregate trade deficits.

Results with trade deficits
The results of the paper from a model with aggregate trade deficits are computed in the folder Counterfactuals_with_deficit that uses the workspace initial_conditions_1993_wthS.mat as an input.
-The file CP_counterfactuals_withdeficits.m runs all the counterfactuals that compute the welfare and trade effects from NAFTA in a model with aggregate trade deficits.
-The file results_counterfactualsCP_withdeficits.m uses the output from CP_counterfactuals_withdeficits.m to compute the counterfactual results with aggregate trade deficits displayed in Table A.4 through Table A.7 in the paper.

Counterfactual results across different models

The folder Counterfactuals_across_models contains the programs to compute the trade and welfare effects from NAFTA in a one-sector model, a model without materials, and a model without input-output linkages. The results of these counterfactuals are displayed in Table 11

in the paper. This folder contains three subfolders:

-Counterfactuals_one_sector: This subfolder contains the programs to compute the trade and welfare effects from NAFTA in a one sector model. To compute the results, we first compute the equilibrium in the base year with trade deficits in a one-sector model by running the matlab file script_one_sector.m. After doing so, we use the output of this program and run the matlab file script_eliminating_trade_surplus_one_sector.m which computes the counterfactual equilibrium without aggregate trade deficits in a one-sector model. Finally, we run the matlab file script_no_surplus_one_sector.m to construct the base year without aggregate trade deficits in a one-sector model. The output of this program is a workspace called initial_conditions_1993AGG_noS.mat. This workspace contains all the equilibrium variables used to run the counterfactuals in a one-sector model.

The file CP_counterfactuals_one_sector.m uses initial_conditions_1993AGG_noS.mat. as an input, and runs the counterfactuals that compute the welfare and trade effects from NAFTA in a one-sector model.

-Counterfactuals_no_materials: This subfolder contains the programs to compute the trade and welfare effects from NAFTA in a model without materials. To compute the results, we first compute the equilibrium in the base year with aggregate trade deficits in a model without materials by running the matlab file script_no_materials.m. Second, we use the output of this program and run the matlab file script_eliminating_trade_surplus_no_materials.m which computes the counterfactual equilibrium without aggregate trade deficits in a model without materials. Finally, we run the matlab file script_no_surplus_no_materials.m to construct the base year without aggregate trade deficits in a model without materials. The output of this program is a workspace called initial_conditions_1993_noS_beta_1.mat. This workspace contains all the equilibrium variables used to run the counterfactuals in a model without materials.

The file CP_counterfactuals_no_material.m uses initial_conditions_1993_noS_beta_1.mat as an input and runs the counterfactuals that compute the welfare and trade effects from NAFTA in a model without materials.

-Counterfactuals_no_io: This subfolder contains the programs needed to compute the trade and welfare effects from NAFTA in a model without input-output linkages. To compute the results, we first compute the equilibrium in the base year with aggregate trade deficits in a model without input-output linkages by running the matlab file script_no_io.m. Second, we use the output of this program and run the matlab file script_eliminating_trade_surplus_no_io.m which computes the counterfactual equilibrium without aggregate trade deficits in a model without input-output linkages. Finally, we run the matlab file script_no_surplus_no_io.m to compute the base year without aggregate trade deficits in a model without input-output linkages. The output of this program is a workspace called initial_conditions_1993_noS_NO_IO.mat. This workspace contains all the equilibrium variables used to run the counterfactuals in a model without input-output linkages.

The file CP_counterfactuals_no_io.m uses initial_conditions_1993_noS_no_IO.mat as an input and runs the counterfactuals that compute the welfare and trade effects from NAFTA in a model without input-output linkages.

Estimation of trade elasticities

The folder Elasticities contains all codes and data used for the estimation of the sectoral trade elasticities showed in Table 1 and Table A.2. The matlab file Sample_100.m constructs the data and the statistics that are used for the estimation of the sectoral and aggregate trade elasticities for the full sample. The matlab file Sample_99.m and the matlab file Sample_975.m construct the data and statistics that are used for the estimation of the sectoral and aggregate trade elasticities for the 99% sample and the 97.5% sample, respectively. The Stata do file Estimation.do uses the output of these matlab programs and runs the regressions at the sectoral and aggregate levels for all samples. The matlab program Final_Tables.m. displays the results of the estimations.