Read-Me Replication Material: How technological change affects regional voting patterns

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1 Introduction

The data and code provided here enables the replication of all results in "How technological change affects regional voting patterns", Nikolas Schöll and Thomas Kurer.

2 Folder structure and files

- `data` contains all raw data (except for sensitive and proprietary data) and three final data sets used for the analysis:
  - `sample.RDS`: main data set used to replicate most of the analysis
  - `sample_SOEP.RDS`: data set to produce Figure 8 which builds on SOEP data.
  - `sample_CHES.RDS`: data set on ideological positioning of German parties used in Figure A.1
  - `sample_mechanisms.RDS` additional variables used in Figure A.3 in the appendix on mechanisms
- `results` contains all tables and figures present in the paper and the appendix
- `sample_construction_IAB` contains code and data sets and scripts used at the IAB where we worked with German social security data to construct the shift share instrument for robots, ICT and trade (see below)

  - `prepare_IAB.Rmd` is an R-notebook with code which prepares data to be uploaded to the IAB servers.
  - `orig` contains the data set we uploaded to the IAB server
  - `prog` contains STATA do-files that need to be executed on the IAB server to produce the data set `aggregated_data.dta` It was exported from the IAB server and now can be found in the folder `data/IAB`.

- `scripts` contains R-notebooks to re-create the final data sets and code to replicate all results
  - `01_prepare_data.Rmd` contains code to recreate the data sets `sample.RDS`, `sample_CHES.RDS` and `sample_mechanisms.RDS`
  - `02_analysis.Rmd` contains code to replicate most results
  - `03_SOEP_preperation_and_analysis.Rmd` contains code to recreate the data set `sample_SOEP.RDS` and create Figure 8 of the manuscript. There is an auxiliary stata script `STATA_extract_vars_from_SOEP_pl.do` which can be used to extract the relevant variables from the raw data set which is in stata format. This can be useful if you run into memory capacity issues.

3 Data sources

This section describes different raw data sources used to create the data sets.

3.1 Voting data

Voting data freely available at the Federal Returning Officer (Bundeswahlleiter) and German Statistics Office (destatis). All election results are included in the replication files or can be freely downloaded at:

- Federal Elections 1994 - 2017 (link)
- EU Elections 1994 - 2019 (link)
- State Elections 1994 - 2017 (link)

3.2 International Federation of Robotics

Data on on number of robots per year/industry taken from the International Federation of Robotics (IFR). Data is proprietary and needs to be purchased (link)

3.3 EU-KLEMS

ICT capital investment data comes from EU-KLEMS (2019 release). `Statistical_Capital_EUKLEMS_2019.rds` is included in the replication files or can be freely downloaded (link).

3.4 Institute for Employment Research (IAB)

We obtained county-level employment shares for the shift-share instrument taken from the German Institute of Employment Research (IAB). In particular we used the Sample of integrated labour market biographies (SIAB) 1975-2017 (link)

Since this is highly sensitive social security data from the German employment agency, the data can only be accessed on-site. Therefore, we had to prepare industry-level data on robots, ICT and trade and send it to

the IAB before we could create a county-level within the system of the IAB which was then exported and made available to us to execute our analysis in R. Since the IAB server only works in STATA, we prepared necessary input data sets and crosswalks as STATA data sets (.dta).

These files can be found in the folder "orig". Furthermore, the scripts that create the sample on the servers of the IAB can be found in the folder "prog" (folder names mirror the structure on the IAB server).

3.5 Socio-Economic Panel (SOEP)

We obtain party support for different groups of workers from SOEP-Core v35 (1984-2018). Data is available free of charge but the depositors have specified that registration is required and standard conditions of use apply (link).

3.6 Other data sources

- `trade_flow_list_5d.RDS` Data on trade exposure by industry/year. Can be downloaded from COMTRADE API (link)
- `replication_data_DFS.dta` Precise number of employees registered in social security by county in 1994 (base-year for shift-share instrument) from replication files of Dauth, Findeisen and Suedekum (2017) "Trade and Manufacturing Jobs in Germany" (link)
- `Population Gemeindeverzeichnis 1994.xlsx - Population Gemeindeverzeichnis 2017.xlsx` Population by county/year from German statistical office (link)
- `VGRDL.xlsx` GDP by county/year from Statistische Ämter des Bundes und der Länder (link)
- `commuting zones from IAB.xlsx` Commuting zones in Germany from Kropp and Schwengler (2011) (link)
- `Referenzschlüssel Kreise von 1990 bis 2016.xlsx` Crosswalk between historic and modern county definitions from the Bundesamt für Bauwesen und Raumordnung (link)
- `tasks_kldb2010_3.dta` Crosswalk main task by occupation from Dengler, Matthes and Paulus (2014). Berufliche Tasks auf dem deutschen Arbeitsmarkt. Eine alternative Messung auf Basis einer Expertendatenbank. FDZ Methodenreport 12/2014. (link)
- `Umsteigeschluessel-KldB1992-4-Steller-KldB2010-5-Steller.xlsx` Crosswalk between German occupation codes (Klassifizierung der Berufe) from Bundesagentur für Arbeit (link). This is used for the SOEP analysis.
- `ert_bil_eur_a_1_Data.csv` Conversion national currencies to Euros (before introduction of common currency) from EUROSTAT (link)
- CPI data from FRED (link)
- `manufacturing share across countries.csv`, `total employment across countries.csv` Manufacturing share and total employment by country/year from the International Labor Organization Labor force survey (link)
- `1999-2014_CHES_dataset_means.csv`, `CHES2019V3.csv` 2-dimensional party positions from the Chapel Hill Expert Surveys (link)
- `mechanisms_data_wwk.csv` contains further further socio-demographic information on the county level. Obtained from Wegweiser Kommune (link)