Fast and Slow Technological Transitions
Replication package

This file describes the codes that generate the results in the paper. The codes in the folder "Codes" should be run in the following order. All primary data sources are included in the folder "Raw_data." Outputs from the code are saved in "Clean_data" or "Output."

data_exposure_measures.do: Creates industry-level exposure measures for ICT and electricity

(Input)
/Raw_data/
- *ICT_share/NAICSUseSummary_ICT.xlsx*
- *Electricity share/industry-crosswalk-90-00-02-07-12.xls*
- *Electricity share/Crosswalk.xlsx*
- *Electricity share/1947_IO_Table/Electricity_shares.xlsx*

(Output)
/Clean_data/
- *ICT_shares_final.dta*
- *electricity_shares.dta*

data_cleaning_Manuf.do: Cleans data for 1900-1940 and prepares it for the regressions in the *facts_tables_Manuf.do*

(Input)
/Raw_data/
- *raw_data_impus_Manuf.dta*
- *occ1990_occ1990dd.dta*
- *occ1990dd_task_alm.dta*

/Clean_data/
- *electricity_shares.dta*

(Output)
/Clean_data/
- *data_clean_1900_1940.dta*
- *exposureManuf.dta*
- *data_occ_1900_1940_s`spec'_a`age'.dta*, where *spec* in {1, 2, 3}, and *age* in [25, 35] if *spec* = 1 and *age* = 29 otherwise
- *temp_distance_all_early.dta*
- *data_occ_1900_1940_s`spec'_a29distance.dta*, where *spec* in {1, 2, 3}

data_cleaning_ICT.do: Cleans data for 1980-2019 and prepares it for the regressions in the *facts_tables_ICT.do*

(Input)
/Raw_data/
- *raw_data_impus_ICT.dta*
- *occ1990_occ1990dd.dta*
- *occ1990dd_task_alm.dta*

/Clean_data/
- *ICT_shares_final.dta*

(Output)
/Clean_data/
- *data_clean_1980_2010.dta*
- *exposureICT.dta*
- *data_occ_1980_2010_s`spec'_a`age'.dta*, where *spec* in {1, 2, 3}, and *age* in [25, 35] if *spec* = 1 and *age* = 29 otherwise
- *temp_distance_all_later.dta*
- *data_occ_1980_2010_s`spec'_a29distance.dta*, where *spec* in {1, 2, 3}

estimation_ICT.do: Creates the following tables and figures in Section 2 and Appendix A2 (only relative to ICT): Table A2, as well as csv files used in the creation of Figure 1, Figure 2 (right graph), Table A1, and Figure A3.

(Input)
/Raw_data/
- *occ1990dd_desciption.dta*

/Clean_data/
- *data_occ_1980_2010_s`spec'_a29distance.dta*, where *spec* = 1
- *data_occ_1980_2010_s`spec'_a`Y'.dta*, where *spec* in {2, 3} and *Y* = 29
- *data_occ_1980_2010_s`spec'_a`Y'.dta*, where *spec* = 1 and *Y* in [25, 35]

(Output)
/Clean_data/
- *exp_dist_plotICT.dta*
- *temp_high_exp_late.dta*
- *FigA3_multiplecutoff_late.csv*
- *late_ict_`spec'.csv*, where *spec* is one of *emp*, *inc*, *group_emp*, *group_inc, dgroup_inc_base, dgroup_emp_base*

/Output/
- *TableA2_robust.tex*

estimation_Manuf.do: Creates the following tables and figures in Section 2 and Appendix A2 (only relative to manufacturing): Figure A2, Table A2, as well as csv files used in the creation of Figure 1, Figure 2 (right graph), Table A1, and Figure A3.

(Input)
/Raw_data/
- *wage_early.xlsx*

/Clean_data/
- *data_occ_1900_1940_s`spec'_a29distance.dta*, where *spec* = 1
- *data_occ_1900_1940_s`spec'_a`Y'.dta*, where *spec* in {2, 3} and *Y* = 29
- *data_occ_1900_1940_s`spec'_a`Y'.dta*, where *spec* = 1 and *Y* in [25, 35]

(Output)
/Clean_data/
- *exp_dist_plotManuf.dta*
- *temp_high_exp_early.dta*
- *FigA3_multiplecutoff_early.csv*
- *early_manuf_`spec'.csv*, where *spec* is either *emp*, *group_emp, dgroup_emp_base*
- *early_wage.csv*

/Output/
- *TableA2_robust.tex*
- *figA2_wage_manuf.png*

create_figs1_A1_A3.do: Generates figure 1, A1 and A3

(Input)
/Raw_data/
- *occ1990dd_desciption.dta*

/Clean_data/
- early_manuf_emp.csv
- early_manuf_group_emp.csv
- late_ict_emp.csv
- late_ict_group_emp.csv
- late_ict_inc.csv
- late_ict_group_inc.csv
- FigA3_multiplecutoff_early.csv
- FigA3_multiplecutoff_lat.csv
- *data_occ_1900_1940_s1_a29distance.dta*
- *data_occ_1980_2010_s1_a29distance.dta*

(Output)
/Output/
- *Fig1_final.png*
- *FigA3_mult_cutoff_age.png*

- *occupation_percentage_1900.png*
- *occupation_percentage_1980.png*

estimation_tab1.do: Generates the results in Table 1

(Input)
/Clean_data/
- *data_occ_1980_2010_s1_a29distance.dta*
- *data_occ_1900_1940_s1_a29distance.dta*

(Output)
/Output/
- *Table1_distance.tex*

create_figs_task_distance.do: Produces histograms showing deviations of expanding occupations in different ways (left graph of Figure 2 and all the panels of Figure A5)

(Input)
/Clean_data/
- *temp_distance_all_early.dta*
- *temp_distance_all_later.dta*
- *data_occ_1900_1940_s1_a29.dta*
- *data_occ_1980_2010_s1_a29.dta*

(Output)
/Output/
- *Fig2_hist_ent_wavg.png*
- *FigA5_A_alt_cutoff*
- *FigA5_B_bilateral_dist.png*
- *FigA5_C_alt_exp.png*
- *FigA5_D_uwavg.png*

estimation_cohort_decomposition.do: Produces the decomposition of employment reallocation across cohorts displayed in Table A3

(Input)
/Clean_data/
- *data_clean_1980_2010.dta*
- *temp_high_exp_late.dta*
- *data_clean_1900_1940.dta*
- *temp_high_exp_early.dta*

(Output)
/Output/

- *tabA3_decomposition.tex*

create_bar_plot_Fig2.ipynb: produces final versions of Figure 2 (two bar graphs on the right)

(Input)
/Clean_data/
- *exp_dist_plotManuf.dta*
- *exp_dist_plotICT.dta*

(Output)
/Output/
- *Fig2_barh_dist_exp_emp.jpg*

create_FigA4_crosscountryICT.do: produces data on cross-country employment growth across occupation differentially exposed to ICT that will be used in Fig A4

(Input)
/Raw_data/
- *lfsa_egais_1_Data.csv*
- *data_ipums_can.dta*

(Output)
/Output/
- *dataFigA4.xlsx*

FigA4.xlsx: produces figure A4

code_Section_6_7.m: Produces figures 5, 6, and 7 in the paper

(Input)
/Clean_data/
- *late_ict_temp.csv*
- *late_ict_inc.csv*
- *late_ict_group_emp.csv*
- *late_ict_dgroup_emp_base.csv*
- *early_manuf_emp.csv*
- *early_wage.csv*
- *early_manuf_group_emp.csv*
- *early_manuf_dgroup_emp_base.csv*

(Output)
/Output/
- *Figure_5.png*
- *Figure_6.png*

- *Figure_7.png*

create_figA6_tech_usage.do: produces plots of internet and computer job usage across occupations ranked by cognitive intensity (figure A6)

(Input)
/Raw_data/
- *beruf_task_data_Germany.dta*
- *2012_BIBB.dta*

(Output)
/Clean_data/
- *beruf_data.dta*
- *BIBB_for_regs.dta*
- *BIBB_for_regs_age.dta*

/Output/
- *technology_use.png*