README file for the replication of the paper: "Language Barriers, Technology Adoption and Productivity: Evidence from Agriculture in India"

Apoorv Gupta Jacopo Ponticelli Andrea Tesei

July 30, 2024

This readme file explains the data and code that can be used for the replication of the paper: "Language Barriers, Technology Adoption and Productivity: Evidence from Agriculture in India," forthcoming in the Review of Economics and Statistics.

1. Introduction

This replication package is made of seven folders: "ado", "gis", "raw", "proc", "data", "code", and "results". The "ado" folder contains user-written programs. The "gis" folder contains shapefiles that are used to generate maps. The "raw" folder contains raw data. The "proc" data saves intermediate and processed datasets. The "data" folder contains final datasets that are used as inputs of cell, subdistrict, and district-crop analysis in the main paper. The "code" folder contains the Stata do-files and R script necessary to replicate the figures and tables in the main paper. The scripts will load the final datasets contained in the "gis", "raw", "proc" and "data" folder and save the output in the "results" folder. Below we describe in detail the original datasets and how to run the code.

2. Software Version

- Stata 17
- R 4.3.0

3. Replication code

To run the replication package, the following packages or user-written ado files are needed:

- Stata
  - reghdfe
  - ols_spatial_HAC: included in the ado folder, downloaded from Fight Entropy – Hsiang (PNAS 2010)
  - shp2dta
  - spmap
  - palettes
  - estout
  - outreg2
  - regsave
  - texsave
- R
  - ggplot2

- ggpattern
- sf
- dplyr
- magick

The global variable of the root directory should be set corrrectly in script `00_run.do` (line 14) and `figure_1a.r` (line 11). The global variable of subdirecroties should be set properly as in `00_run.do` (line 34-38)

Master file

- `00_run.do`: creates globals for directories, add user-written ado files to the ado-path, and can be used to run other scripts. To run the R script from the master file, you need to correctly specify the directory of the Rscript executable (will be "/usr/local/bin/Rscript" for MacOS/Linux and "C:\Program Files\R\R-x.x.x\bin\Rscript.exe" for Windows)

Cell-level analysis

- `table_1.do`: creates summary statistics of technology adoption, the number of KCC calls, yield, and other cell-level covariates in **Table I**
- `table_2.do`: creates **Table II** Share of Non-State Language Speakers and Cell Characteristic Balance Test
- `table_3.do`: creates cell-level regressions in Table III (main panel) and **Table C.1** (alternative productivity measures), **Table C.3** (alternative clustering for Conley standard errors), and **Table C.4** (robustness to controlling for religion groups and majority language)
- `table_C2.do`: creates **Table C.2** (robustness to alternative to border)

Sub-district level analysis

- `table_C5_district_crop`: creates subdistrict level analysis in **Table C.5** Panel A

District (crop) level analysis

- `table_C5_subdistrict.do`: creates district-crop level analysis in **Table C.5** Panel B

Figures and maps

- `figure_1a.r`: creates **Figure I(a)** (map for the distribution of official state languages across India)
- `figure_1.do`: creates **Figure I(b)**, **I(c)** (maps for the share of non-state official language speakers) and **I(d)** (gap in non-state official language speakers across border cells)
- `figure_2.do`: creates event study figures of calls, HYV seeds adoption, and yields in **Figure II**
- `figure_A1.do`: creates **Figure A.1**
- `figure_A3_A4.do`: creates **Figure A.3** and **Figure A.4**
- `figure_C1.do`: creates **Figure C.1** of KCC calls
- `figure_C2.do`: creates **Figure C.2** (share of non-state language speakers out of the official language speakers across Indian districts)

4. Conclusion

We hope this read-me file provides sufficient information on how to replicate the results in our paper. If you have any questions, please email the authors directly. Thank you for your interest in our paper.

The authors