Reproducible Research Repository

Taxes, Spending and Equity : International Patterns and Lessons for Developing Countries

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This review verifies the reproducibility of the exhibits included in the paper *"Taxes, Spending and Equity : International Patterns and Lessons for Developing Countries"*.

Contents in this review:

Main findings

- **Every exhibit has been reproduced accurately.**
- The code was successfully executed on a new computer after:
  1. Changing the path in the main do file and running the script
- The output demonstrates consistent stability across multiple runs. Specifically, executing the code two times consecutively yielded identical results.
- The code takes approximately 15 minutes to run.
- We conducted our reproducibility analysis based on the paper shared by the authors by email on October 13th.
- **Verification Process and Data Handling**:
  - The reproducibility package relies on 2 types of data: open and restricted data (available only from the authors).
  - Open data is included in the public reproducibility package.
  - Reviewers used data provided directly by the authors to conduct the reproducibility verification, and this is not included in the public reproducibility package.
  - *data_hash_report.csv* lists the SHA256 hashes of all files in the Data folder to support data integrity checks. Users who acquire the restricted data can use this file to verify that the data has not been altered.
- **Reproducibility Summary**:

- **Data**: Some data is restricted and has not been included in the reproducibility package. For more details, please refer to the README file.
- **Code**: All code files (from cleaning to analysis) are included in the reproducibility package.
- **Outputs**: All outputs are generated by code included in the reproducibility package.
- **Reproducibility verification**: Reviewers had access to the same materials in the public reproducibility package. The reviewers did not verify if publicly available data matches the data in the reproducibility package.
- **Dependencies environment**: The reviewers created a new environment using the latest versions of dependencies available at the moment of the review.

List of exhibits and reproducibility status

Results in the Main Section of the Paper

- **Table 1.1** Reproduced. Includes manual changes Table was copied manually from the Stata console, and verified from the file WSB_figures sheet t1.1.
- **Figure 1.1** Does not show analysis results.
- **Figure 1.2** Does not show analysis results.
- **Figure 2.1, Panel A** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f2.1". The underlying data matched so this is considered reproducible.
- **Figure 2.1, Panel B** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f2.1". The underlying data matches so this is considered reproducible.
- **Figure 2.2** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f2.2". The underlying data matches so this is considered reproducible.
- **Figure 2.3** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f2.3". The underlying data matches so this is considered reproducible.
- **Figure 2.4** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f2.4". The underlying data matches so this is considered reproducible.
- **Figure 3.1** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.1". The underlying data matches so this is considered reproducible.
- **Figure 3.2a** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.2a". The underlying data matches so this is considered reproducible.

- **Figure 3.2b** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.2b". The underlying data matches so this is considered reproducible.
- **Figure 3.2c** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.2c". The underlying data matches so this is considered reproducible.
- **Figure 3.2d** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.2d". The underlying data matches so this is considered reproducible.
- **Figure 3.3a** Results are sourced from another paper. According to the README file Figure 3.3 Panel A shows unpublished results from World Bank. Indonesia Poverty Assessment: Pathways towards Economic Security.
- **Figure 3.3b** Results are sourced from another paper. According to the README file Figure 3.3 Panel B shows unpublished results from Amjad, Beenish; Carassco, Haydeeliz; Meyer, Moritz. 2025. The Effects of Taxes and Transfers on Inequality and Poverty in Pakistan. World Bank
- **Figure 3.4** Results are sourced from another paper. Results are sources from Pierre Bachas, Lucie Gadenne, Anders Jensen, Informality, Consumption Taxes, and Redistribution, The Review of Economic Studies, Volume 91, Issue 5, October 2024, Pages 2604–2634, https://doi.org/10.1093/restud/rdad095
- **Figure 3.5** Results are sourced from another paper. According to the README file Figure 3.5 are unpublished results from Thailand Public Spending and Revenue Assessment: Promoting an inclusive and sustainable future.
- **Figure 3.6** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.6". The underlying data (f3.6_data) matches so this is considered reproducible.
- **Figure 3.7** Results are sourced from another paper. Figure sourced from Thomas, A. (2022), Reassessing the regressivity of the VAT. Fiscal Studies, 43, 23–38. https://doi.org/10.1111/1475-5890.12290
- **Table 3.1** Reproduced. Includes manual changes This table is based on data from f3.6 formulas to compute it are included in the WBS_Figures.xlsx file.
- **Figure 3.8a** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.8a". The underlying data (3.8.a_kk_dir) matches so this is considered reproducible.
- **Figure 3.8b** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f3.8b". The underlying data (3.8.b_kk_indtax) matches so this is considered reproducible.
- **Figure 4.1, Panel A** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.1a". The underlying data (f4.1a) matches so this is considered reproducible.

- **Figure 4.1, Panel B** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.1b". The underlying data (f4.1a) matches so this is considered reproducible.
- **Figure 4.2, Panel A, B, C, D**Reproduced. Includes manual changes Figure was created using Excel. Underlying data comes from the Poverty and Shared Prosperity 2022 and Fossil Fuel Subsidies Tracker.
- **Figure 4.2, Panel B** Reproduced. Includes manual changes. There are minimal differences introduced during the copyediting of the figure. However, since these differences are almost imperceptible, the result is considered reproducible.
- **Figure 4.3, Panel A** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.3a". The underlying data (f4.3a_cs_tra) matches so this is considered reproducible.
- **Figure 4.3, Panel B** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.3b". The underlying data (f4.3b_in_tra) matches so this is considered reproducible. The columns used to create the graph are identical and for this reason this is considered reproducible, but the count column has some differences. (24 vs 1 for instance).
- **Figure 4.3, Panel C** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.3c". The underlying data (f4.3c_cs_sub) matches so this is considered reproducible.
- **Figure 4.3, Panel D** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.3d". The underlying data (f4.3d_in_sub) matches so this is considered reproducible.
- **Figure 4.4, Panel A** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.4a". The underlying data (4.4.a_kk_trans) matches so this is considered reproducible.
- **Figure 4.4, Panel B** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f4.4b". The underlying data (4.4.b_kk_sub) matches so this is considered reproducible.
- **Figure 4.5** Results are sourced from another paper. According to the README file Figure 4.5 shows unpublished results from 2023a. Thailand Public Spending and Revenue Assessment: Promoting an inclusive and sustainable future
- **Table 5.1** Does not show analysis results.

- **Figure 5.1, Panel A** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f5.1". The underlying data (f5.1) matches so this is considered reproducible.
- **Figure 5.1, Panel B** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f5.1". The underlying data (f5.1) matches so this is considered reproducible.
- **Figure 5.1, Panel C** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f5.1". The underlying data (f5.1) matches so this is considered reproducible.
- **Figure 5.1, Panel D** Reproduced. Includes manual changes Figure was created using Excel. The code produces the output WSB_stata_outputs.xlsx, which then is used to create the figure in the file WSB_figures sheet "f5.1". The underlying data (f5.1) matches so this is considered reproducible.

Reproduction Environment

Paper exhibits were reproduced on a computer with the following specifications:

- OS: Windows 11 Enterprise
- Processor: Intel(R) Core(TM) i5-1145G7 CPU @ 2.60GHz
- Memory available: 15.7 GB
- Software version: Stata 18.0 MP