

README for the Reproducibility Package for Procyclical fiscal policy in Argentina: Drivers and channels of a long-lasting marriage

Instructions

The reproducibility package consists of a set of Excel files that compile all the graphs included in the paper. No other program besides Excel was used throughout the work; therefore, everything is supported in this set of files. In almost all the files, there is an initial Excel sheet that contains the table of contents of the file, followed by a sheet with the main results and graphs from the paper. This is complemented by additional spreadsheets for each graph.

There are three main folders: Chapter 1, Chapter 2 and ANNEX, each containing the figures and tables used accordingly. All figures (by their numbers) are indicated in the name of the excel files, as well as in the name of the sheets inside each excel file.

The methodology for calculating the cyclical components of the variables, which are repeated throughout the paper, involves using the HP filter to remove the trend from the series (whether it's real GDP, real expenditure, or any other variable). In this regard, to run the HP filter in Excel, it is first necessary to open the HPfilter.xla file. Once this file is opened, the function "+HP(XX, 100)" is enabled, where we use a lambda of 100 for annual series. This will provide the trend of the series, and by subtracting the trend from the original series, we obtain the cyclical component of each variable. Then, the simple correlation between the series/cyclical components of each variable is calculated. The HP filter Add-on is part of my files for years now, since September 2015 as part of my previous job.

Data availability statement

We list the raw data sources here. Each excel file has also the link or the route to the data source for each chart.

1. IMF World Economic Outlook (WEO) database

We use the WEO Database to get nominal public spending, inflation, and GDP. It may be the case that there is a new updated version of the WEO database compared to the one we used for the paper (end of 2022). This is the URL: <https://www.imf.org/en/Publications/WEO/weo-database/2024/April/select-country-group> . Data is publicly available and free to download. The data was accessed using a custom query for the indicators public spending, inflation, and GDP for advanced and emerging market countries. All countries included in the paper are covered in the IMF WEO Database, but not all countries in the WEO Database are covered in the paper. The data downloaded was compiled in the sheets "EM Data Base" and "AE database" of "Figures 1 to 4.xlsx", and was used to construct a real GDP index and a real public spending index using the nominal series and the inflation as deflator. Figures 1 to 4 are done using these databases.

2. IMF Government Finance Statistics (GFS) Database

We use the GFS database to build the public wage bill panel data. (URL: <https://data.imf.org/?sk=3c005430-5fdc-4a07-9474-64d64f1fb3dc>). Data is free and easily to download. The indicator used is compensation of employees for the general government as a percentage of the GDP, from 1991-2021, for the 95 countries covered. Data was accessed in June 2023. The data downloaded was manually compiled in the sheet "Expense" of "Figure 8.xlsx".

Figure 8 is done using this database. Since the end-goal is to get fiscal series in real terms and the raw data is expressed as percent of GDP, we need to get nominal GDP panel data, in order to the public spending panel data in nominal terms and the deflate by CPI to get the constant prices series, so that we can run the cyclical test (as in the first figures, HP filter both for the fiscal series and the GDP, etc).

3. Data from the Oficina Nacional de Presupuesto (Secretary of Treasury) of Argentina

We use the official data from the Ministry of Economy, Secretary of Treasury (Oficina Nacional de Presupuesto) to build long term fiscal series for Argentina. Link: <https://www.economia.gob.ar/onp/estadisticas/>. Data was accessed in August 2023.

- To track aggregate fiscal data (central government + provinces) we use the "SECTOR PUBLICO ARGENTINO - CUENTA AIF BASER DEVENGADO", including "Cajas previsionales provinciales", for the years 2007 until 2022. Please note that the second section below "SECTOR PUBLICO ARGENTINO - CUENTA AIF BASER DEVENGADO", titled "Excluye [excludes] cajas previsionales provinciales", actually includes cajas previsionales provinciales when downloading the data. The site has a typo in the section title that has not been corrected as of September 2024. The data was manually compiled in the sheet "Figure 6" of the file "Figure 6 and 7".
- In addition, to build long term series we used the historical data under the pdf named "SECTOR PUBLICO ARGENTINO - CUENTA AIF 1961-2004). There you will find tables expressed in constant 2004 AR\$ PESOS. Then from 2004 to 2022 we just used the nominal spending (using the previous site "SECTOR PUBLICO ARGENTINO - CUENTA AIF BASER DEVENGADO", excluding "Cajas Previsionales provinciales") deflated by CPI. For long term series we just track Total and primary public spending, wage bill ("gasto en personal" or "gasto en remuneraciones"), Social Security or pensions and Capital spending (Gasto de Capital). The data was manually compiled in the sheet "Figure 6" of the file "Figure 6 and 7".
- We also used the "Boletin Fiscal IV trimestre" since 2018 onwards to get the public sector Staff (cargos administracion nacional). (<https://www.economia.gob.ar/onp/ejecucion/2024#bf>). Data was accessed in April 2023. Data was manually compiled in the sheet "CG Staff and Wage bill" of the file "Figure 9.xlsx".

4. Dos Siglos de Economia Argentina

We use this site to complement historical series for ARGENTINA (<https://dossiglos.fundacionnorteysur.org.ar/>). For example, to build a real GDP index ("Cuentas Nacionales") from 1960 to 2004 and then just merge the series with real GDP growth rates published by INDEC. Data was accessed in January 2023. Data was manually compiled in the sheet "ARG long series" of the file "Figure 1 to 4.xlsx".

We also used this database to get Central Government (Nacion) public sector staff (cargos Administracion Nacional), until 2018.

5. INDEC (Cuentas Nacionales)

We use INDEC, the official national statistics office, to get national income accounts. In particular we use real GDP data from 2004 to 2022 (<https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-9-47>). Data was accessed in April 2023. Data was manually compiled in the sheet "ARG long series" of the file "Figure 1 to 4.xlsx".

6. Ejecucion Presupuestaria Provincial de Argentina (Budget Execution by Province of Argentina)

We use provincial data from <https://www.economia.gob.ar/dnap/ejecuciones.html>.

Here we use the APNF for wage bill spending and "Ocupacion y Salarios/PROVINCIAS Y CABA" to get the number of staff by province. All these for Figure 9 and Annex Figures on provincial wage bill cyclicalilty. Data was accessed in April 2023. The data was manually compiled in the sheet "Provinces Staff and Wage bill" of the file "Figure 9.xlsx".

7. OECD Social Expenditure Database

To get pensions data for advanced countries we use the following URL: <https://stats.oecd.org/index.aspx?queryid=30197>. Here we filtered by public social spending, program type: old age and survivor or old age (depending on availability). Data was accessed in August 2023. Similar to IMF data, figures may change, due to updated versions of the database. Data was manually compiled in the sheet "Database OECD" of the file "Figure 10 11.xlsx". Data is as expressed as % of GDP. So we used the database we built for the first charts to get nominal public spending on "pensions" (or old age) by using the nominal GDP. Then we deflated by CPI deflator of each country and get the real spending in pensions.

8. Data on pensions expenditures of Latin American countries from CEPAL

For data on pensions in LAC, we used this CEPAL paper: <https://repositorio.cepal.org/server/api/core/bitstreams/ef2286b9-b700-45e9-ac66-e343faa75211/content>. Data was accessed in December 2022. Data was manually compiled in the sheet "Pensions Constant LCU" of the file "Figure 10 11.xlsx". Data is expressed as % of GDP so we did the same process as before to transform it into real expenditure (nominal GDP, CPI deflator, etc).

9. Data on pensions expenditures of Argentina from the Ministry of Economy of Argentina

To build the series on public spending on pensions and the series of number of benefits we used the official central government annual statements, called CUENTA DE INVERSION. We downloaded one file per year for the past 2 decades, from 1998 until 2022. En each annual "Cuenta de inversion" we tracked the public spending on each of all the pensions subsystem (e.g. general regime under Ministerio de Trabajo/ANSES, Army Forces under Ministerio de Defensa, Police regime under Ministerio de Seguridad, and so on). In each regime, for each year you can find the data on how much nominal spending ("Gasto devengado") as well as how many benefits were granted ("Meta Final").

This is the URL: <https://www.argentina.gob.ar/economia/sechacienda/cgn/cuentainversion> . There you need to go to TOMO II and find "Resultados por Programas y Proyectos en Orden Institucional" and go Ministry by Ministry tracking each pensions subsystem (mainly Ministerio de Trabajo, Ministerio de Defensa, Ministerio de Seguridad, Ministerio de Desarrollo Social). Data was accessed in August 2023. Data was manually compiled in the sheet "Figure 11-ARG Pensions" of the file "Figure 10 11.xlsx".

10. Argentina tax data

Tax data comes from Ministerio de Economia, Subsecretaria de Ingresos Publicos. URL: <https://www.argentina.gob.ar/economia/ingresospublicos/recaudacion> . Data was accessed in August 2023. Data was manually compiled in the sheet "Figure 12" of the file "Figure 12 13".

Data can be easily downloaded for each year and is expressed in nominal AR\$. So we deflated by CPI and get the real tax series. For Figures 12 and 13, given that the objective was to see how the pensions indexation formula behaved through time, we just tracked those specific taxes that affected this formula (those taxes that are totally or partially earmarked to Social Security).

VAT, CIT and PIT are revenue shared taxes. So here we need to estimate how much of these taxes ends at the Central Government. To do so, we use the calculations using the different Tax laws in sheet "Central Gov Tax" in the excel file called "Figure 18 to 25.xlsx" under folder Chapter 2 in the Reproducibility Package. Source: Secretaria de Hacienda. Data was accessed in August 2023. Data was manually compiled in the sheet "Central Gov Tax" of the file "Figure 18 to 25.xlsx".

11. Minimum pension benefit value of Argentina

To get the evolution of Minimum pension benefit in real terms we used the nominal data that comes from <https://www.economia.gob.ar/datos/> .

There you need to download "Empleo e Ingresos" and find in that file the sheet "Haber minimo". Data was deflated using the CPI for Figure 13. Data was accessed in March 2024. Data was manually compiled in the sheet "Figure 13" of the file "Figure 12 13.xlsx".

12. OECD Global Revenue Statistics Database

For Figure 14 we used this site: [https://data-explorer.oecd.org/vis?tenant=archive&df\[ds\]=DisseminateArchiveDMZ&df\[id\]=DF_RS_GBL&df\[ag\]=OECD&dq=...&lom=LASTNPERIODS&lo=5&to\[TIME_PERIOD\]=false](https://data-explorer.oecd.org/vis?tenant=archive&df[ds]=DisseminateArchiveDMZ&df[id]=DF_RS_GBL&df[ag]=OECD&dq=...&lom=LASTNPERIODS&lo=5&to[TIME_PERIOD]=false) .

We just filtered tax as % of GDP by main taxes. Data in the paper refers to 2021 or closest year. We grouped taxes into 4 categories: Income and property, VAT and Excise, Social Security and the rest is called "Unconventional Taxes". Data was accessed in August 2023. Data was manually compiled in the sheet "Figure 14" of the file "Figure 14 15.xlsx".

13. Global tax rates

Data URL: <https://openknowledge.worldbank.org/handle/10986/29303> (go to the link "English Microsoft Excel XML in the left column).

We used the database built by Carlos Vegh and Guillermo Vuletin, (2015), "How is tax policy conducted over the business cycle?," American Economic Journal: Economic Policy, Vol 7 (August). Data was collected in March 2023 and manually compiled in the sheet "Tax rates" of the file "Figure 16-17.xlsx".

You can download the database for all countries in the sample and the series of CIT, PIT, VAT tax rates historical series. The to build Figure 16 and others, we just created a new series of "change in percentage points of the tax rate" and used that as our variable to analyze against the business cycle. The paper describes how to build the TAX INDEX.

14. Export duties by type of product

The composition of Export Duties by type of product, comes from the AFIP annual reports (<https://www.afip.gob.ar/estudios/anuario-estadisticas-tributarias/>). You need to download each annual report and search for tables that show Export duties per type of product. Data was accessed in August 2023. Data was manually compiled in the sheet "Figure 19-20-22" of the file "Figure 18 to 25.xls".

15. IMF Commodity terms of trade

Data is used to calculate the trend of commodities prices. Data comes from <https://data.imf.org/?sk=2CDDCCB8-0B59-43E9-B6A0-59210D5605D2> for all countries included in the paper. Data was accessed in August 2023. Data was manually compiled in the sheet "Figure 21. TOT" of the file "Figure 18 to 25.xls".