Readme File for Data Replication: Debt-Maturity Management with Liquidity Costs

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The following ReadMe file guides the user of this folder to replicate the data work in the paper: "Debt-Maturity Management with Liquidity Costs" by Saki Bigio, Galo Nuño, and Juan Passadore.

Content. After you downloaded the data folder, you should run state directly from the main folder. In the main folder, you will find a set of 9 Stata©.do files that you can run to reconstruct the data and the analysis:

1.Yields_Data.do
2.Yields_Merge.do
3.Core_Stats_Data.do
4.Outstanding_Debt.do
5.Auctions_Data.do
6.Issuances_Data.do
7.Issuances_Data_Construction.do
8.Aggregation_Dataset.do
9.CleanSpainMarketPricesMidClose.do
10.CleanSpainMarketPricesOpen.do
11.CleanSpainAuction.do
12.MergeAuctionsPrices.do
13.CleanOutstanding.do
14.MergeAuctionsPricesOutstanding.do And the Stand Alone Master File we used for the Analysis.

Master.Analysis_Tables&Graphs.do

The functionality of these codes is described below. The main folder has three subfolders:

- Data file: A folder containing the raw data used in the project.
  - all data is contained in this folder. We also copy the files in orginal format as they were given to us.
- Dta - Intermediate: A folder containing DTA files after initial processing, before merging the datasource.
- Dta - Final file: Final DTA files saved after mergers.
- Graphs: graphs found in the paper
- Tables: tables found in the paper

Operationability. To reconstruct the that 9 DO files must be run in order. They are named with a number in front referrering to the sequence in which they must be run. For example, 2.Yields_Merge.do is the second file that must be run only after 1.Yields_Data.do, but prior to other files that start with a higher number. The file Master.Analysis_Tables&Graphs.do is a standalone file that runs the regressions and produces the tables in the paper. We describe the codes by the set of tasks they perform. The code is very documented, so actual operations can be read directly from the code.

The following sections describe the different codes by group of topics.

1 Main Regression Analysis

Main Regression Analysis found in paper as well as other regressions are found in

- Do File: Master.Analysis_Tables&Graphs.do
  - Location: BNP Replication Files\
  - Input: \Data\Dta - Intermediate\AuctionsData.dta transformed daily data set with auctions amounts by date to produce scatter plots
  - Input: \Data\Dta - Intermediate\PricesAuctionsMerged_New.dta merged data including auctions, secondary prices and outstanding amounts
  - Input: \Data\Dta - Intermediate\Master_QuarterlyData.dta file that contains data on fiscal variables
  - Functionality: regression and graphical anaylisis of data
  - Output: all files contained in Graph and Table folders, the files that are reported in the draft

2 Yield Curve Data and Macro Economic Variables

1. Interest Rate Data. The yield curve for Spain and France is used to produce market valuations. The yield curves must be constructed from factor models, to produce yield curves at all poitns of the curve. We use factors estimated through the Dynamic Nelson Siegel Model provided by Jens Christensen (SF Fed) for Spain and France.
   - Do File: 1.Yields_Data.do
     - Location: BNP Replication Files\
     - Functionality: constructs yields and aggregates daily to monthly and quarterly data
     - Input: \Data\Christensen_DNSSModel.xlsx, Christensen_DNSS.France.xlsx data contains the estimated 4 factors for the Spanish and French yield curve
     - Output: \Data\Dta - Intermediate\ESP_DNSS_RawData.dta transformed daily data set to stata format with reconstructed yields
     - Output: \Data\Dta - Intermediate\ESP_DNSS_MonthlyData.dta.dta monthly average aggregation to stata format
     - Output: \Data\Dta - Intermediate\ESP_DNSS_QuarterlyData.dta quarterly average aggregation to stata format
     - Output: \Data\Dta - Intermediate\FR_DNSS_RawData.dta transformed daily data set to stata format with reconstructed yields
     - Output: \Data\Dta - Intermediate\FR_DNSS_MonthlyData.dta monthly average aggregation to stata format
     - Output: \Data\Dta - Intermediate\FR_DNSS_QuarterlyData.dta quarterly average aggregation to stata format
   - Do File: 2.Yields_Merge.do
     - Input: all the .dta files produced by 1.Yields_Data.do. Merges the data and produces spreads.
     - Functionality: merges .dta files
     - Output: \Dta - Intermediate\DNSS_MonthlyData_FranceSpain.dta merged monthly data for Spain and France yield curve
     - Output: \Dta - Intermediate\DNSS_QuarterlyData_FranceSpain.dta merged quarterly data for Spain and France yield curve
2. Spanish Macro Economic Data
   - Do File: 3.Core_Stats_Data.do
     - Location: BNP Replication Files
     - Functionality: translates files into merged files
     - Input: \Data\GDP_Interpolation.xlsx data on Interpolated Spanish Nominal GDP (interpolation from quarters to months)
     - Output: \Dta - Intermediate\Spain_NominalGDP.dta monthly GDP in Spain

3 Outstanding Debt Data

1. Outstanding Debt Amounts

   - Do File: 4.Outstanding_Debt.do
     - Location: BNP Replication Files
     - Functionality: saves monthly issuances and principal repayments into monthly and quarterly data, to be save in stata format.
     - Input: \Data\Outstanding_MonthlyAggregation.xlsx
     - Input: \Data\Outstanding_MonthlyAggregation.xlsx
     - Output: \Dta - Intermediate\Oustanding_MonthlyAggregation.dta
     - Output: \Dta - Intermediate\Oustanding_QuarterlyAggregation.dta
     - Note: we were given data on outstanding bonds per ISIN. We computed the maturity of outstanding amounts and aggregate across maturities. To Process the Data on Outstanding Total Amounts, we use the file OutstandinMAT.mat constructed by Saki using the OutstandingDebt_Spain_Clean.xlsx file provided by the Bank of Spain and formatted by (Saki) to be read by Matlab. The data is monthly data by oustanding ISIN bond (ISIN) and the code aggregates by month/quarter all summing across all bond group (in level and relative to gdp)constructs aggregates for monthly issuances and principal repayments in totals per month. Obtains an excel transformed monthly data by bond into sum of issuances by bond group (in level and relative to gdp). This step produced the data files. Raw data by ISIN is available upon request by the auhtors.

4 Merging Auctions Data with Macroeconomic Data

- Location: BNP Replication Files
- Do File: 5.Auctions_Data.do
  - Location: BNP Replication Files
  - Functionality: Data housekeeping and creation of variables: prices, allotments, etc by auction
  - Input: \Data\Subastas.Summary.0216.ToStata.csv.xls containing auction results provided to us by the Spanish Treasury
  - Output: \Dta - Intermediate\AuctionsData.dta
- Do File: 6.Issuances_Data.do
  - Location: BNP Replication Files
  - Functionality: In this do file, we import and prepare the data on issuances, aggregating by maturity group (3 month, 6 month, etc) and aggregating auctions by month. We also use the data to measure average maturity of issuances
  - Input: \Dta - Intermediate\Input: AuctionsData.dta
  - Output: \Dta - Intermediate\AuctionsMonthlyAggregation.dta, AuctionsQuarterlyAggregation.dta, AuctionsYearlyAggregation.dta
  - Note: We use this aggregation in the time series analyis, not in the auction analysis
- Do File: 7.Issuances_Data.do
  - Location: BNP Replication Files
  - Functionality: In this do file, we import and prepare the data on issuances relative to GDP by auction. This is the main data in the regression analysis.
  - Input: \Dta - Intermediate\Input: AuctionsData.dta
  - Output: \Dta - Intermediate\AuctionsMonthlyAggregation.dta, AuctionsQuarterlyAggregation.dta, AuctionsYearlyAggregation.dta
  - Note: We use this aggregation in the time series analyis, not in the auction analysis

- Do File: 7.Issuances_Data.do
  - Location: BNP Replication Files
  - Functionality: In this do file, we import and prepare the data on issuances relative to GDP by auction. This is the main data in the regression analysis.
  - Input: \Dta - Intermediate\AuctionsData.dta, ESP_DNSS_QuarterlyData.dta
  - Output: \\Dta - Intermediate\AuctionsMonthlyAggregation.dta, AuctionsQuarterlyAggregation.dta, AuctionsYearlyAggregation.dta
  - Note: We use this aggregation in the time series analyis, not in the auction analysis
- Do File: 8.Aggregation_Dataset.do
  - Location: BNP Replication Files
  - Functionality: In this do file, we prepare the final dataset used to produce all the analysis (graphs and tables) and final results.
  - Input: \Dta - Intermediate\SpainCoreStats_Quarterly.dta
  - Output: \Dta - Intermediate\AuctionsMonthlyAggregation.dta, AuctionsQuarterlyAggregation.dta, AuctionsYearlyAggregation.dta
  - Note: We use this data for the final analysis

5 Construction of Auctions Data and Merger with Prices and Outstanding Amounts

14.MergeAuctionsPricesOutstanding.do

- Do Files 9 and 10: CleanSpainMarketPricesMidClose and CleanSpainMarketPricesOpen
  - Location:
  - Input: \Data\MarketPrices.ToStata.Open.csv MarketPrices.ToStata.MidClose.csv raw data on secondary prices available on Bloomberg
  - Functionality: cleans price data
  - Ouput: \Dta - Intermediate\SpainMarketPricePanelOpen.dta SpainMarketPricePanelMidClose.dta
- Do File: 11.CleanSpainAuction.do
  - Location: BNP Replication Files
  - Functionality: Data housekeeping and creation of variables: prices, allotments, etc by auction
  - Input: \Data\Subastas.Summary.0216.ToStata.csv.xls containing auction results provided to us by the Spanish Treasury
  - Output: \Dta - Intermediate\AuctionsReady4Merge.dta Different format than file 5, in order to fit purpose of statistical analysis
- Do File: 12.MergeAuctionsPrices.do
  - Location: BNP Replication Files
  - Functionality: merges price and auction data
  - Input: dta. files of previous code.
  - Output: \Dta - Intermediate\PricesAuctionsMerged_New.dta data with merged prices
- Do Files 13.CleanOutstanding.do
  - Location: BNP Replication Files
  - Input: \Data\OutstandingsCSV raw data on outstanding amounts by ISIN, provided by Spanish Treasury

  - Functionality: cleans and reformats outstanding data
  - Ouput: \Dta - Intermediate\Outstandings_Monthly.dta outstanding amounts by ISIN by month and outstanding amounts at category

- Do Files 14: CleanSpainMarketPricesMidClose and CleanSpainMarketPricesOpen
  - Location:
    * Input: \Dta - Intermediate\Outstandings_Monthly.dta and PricesAuctionsMerged_New.dt data
    * Functionality: merges auction price and outstanding amounts
    * Ouput: \Dta - Intermediate\SpainMarketPricePanelOpen.dta PricesAuctionsMerged_New.dta