US Federal Debt 1776-1940
Quantities and Prices
DRAFT

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Contents

Introduction

We have collected data on prices, quantities, and descriptions of all securities issued by the US government between 1776 and 1940. Between 1776 and 1940, the US confederation (before 1789) or federal (after 1790) government issued 2XX bonds or notes. Before 1920, the US Congress designed each security with

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the outcome that securities varied over time in terms of their coupon rates, denominations, lengths, units of account, tax exemptions, and call features. Between 1776 and 1920, the US Congress designed more than 200 distinct securities and stated the maximum amount and purpose of each that the Treasury could sell. Between 1917 and 1939, Congress gradually delegated all decisions about designing US debt instruments to the Treasury. During that period, the Treasury gradually standardized Federal securities.

This document describes the files that store the data we have collected. It has the following sections:

1. File Organization: describes the file locations and data storage formats
2. File Contents: describes the contents of the data files

JP: This document is intended to explain the minimum that the end user needs to know. Are there additional things that need to be included? For example, should we include data frequency in the table summarising what data is available?

1 File Organization

The data has been organized into four data frames:

1. BondList: contains descriptions of individual Treasury bonds and notes
2. BondQuant: contains times series data on the quantity outstanding for each bond
3. BondPrice: contains times series data on the market price for each bond
4. MacroData: contains time series data on the relevant macroeconomic variables

The DataFrames have been saved into two different file formats: hdf5 and csv. In the case of the hdf5 format, all the data frames have all been saved into one file, named `BondDf.h5`, which has been optimized for use with python and pandas. In the case of the csv format, the data frames have been saved into to four separate files named:

- `BondList.csv`
- `BondQuant.csv`
- `BondPrice.csv`
- `MacroData.csv`

The csv and hdf5 files are located in the folder `Industrial-Suite/DataFrames`. The Juypter notebook `Industrial-Suite/Import_Instructions.ipynb` describes how to import the csv files and the hdf5 file into python and pandas.

2 File Contents

This section describes the contents of each data frame. A high level summary of the information available is provide in table 1. The sequequent sections define and explain all series included in the data frames.

2.1 BondList DataFrame

The BondList DataFrame contains the following columns (with the data type of the column noted in brackets).

- *Categories*: The category columns contain a classification of bonds that we explain in detail in subsection 2.2.
  - *Category L1* (str): level 1 category of the bond (the highest category level)
  - *Category L2* (str): level 2 category of the bond
  - *Category L3* (str): level 3 category of the bond (the deepest category level)
- *Category IDs*: The category ID columns contain the numerical IDs corresponding to the categories. We explain the classification system in detail in subsection 2.2.
  - *Category L1 ID* (int): ID for the level 1 category of the bond
  - *Category L2 ID* (int): ID for the level 2 category of the bond
  - *Category L3 ID* (int): ID for the level 3 category of the bond
- *Issue IDs*: The Issue ID columns contain the bond's issue number when a particular category is used to index the bonds. E.g. If a bond has issue ID equal to 7, then this means that is the 7th bond of its category to be issued.
  - *Issue L1 ID* (int): bond issue number when category L1 is used to index bonds
  - *Issue L2 ID* (int): bond issue number when category L2 is used to index bonds
  - *Issue L3 ID* (int): bond issue number when category L3 is used to index bonds
- *IDs*: The IDs contain the the unique bond ID when a particular category is used to index the bonds:
  - *L1 ID* (int): unique bond ID when category L1 is used to index bonds. It is calculated using the formula:

$$10000 * (\text{Category L1 ID}) + (\text{Issue L1 ID}) \tag{2.1}$$

Data	Series Available	Location	Dates
Bond Category	Category L1-L3; Category ID L1-L3	BondList	Bonds Issued in 1776-1960
Bond ID	Issue ID; ID	BondList	Bonds Issued in 1776-1960
Bond Name	Treasury's Name Of Issue	BondList	Bonds Issued in 1776-1960
Bond Issue and Maturity Dates	Authorising Act; Term of Loan; First Issue Date; First Redemption; Final Redemption; Redeemable After; Payable	Bond List	Bonds Issued in 1776-1960
Bond Coupon Details	Coupon Rate; Coupon Frequency; Coupon Schedule; Coin	Bond List	Bonds Issued in 1776-1960
Other Bond Information	Callable; Price Sold; Authorized Amount; Limit On Issued; Marginal Increase In Total Debt Authorized	Bond List	Bonds Issued in 1776-1960
Bond Quantity Time Series	Total Outstanding; Active Outstanding; Matured Outstanding; Called Outstanding; Public Holdings; Intra-Government Holdings; Coupon; Registered; Issued; In Circulation; In Treasury	BondQuant	1776-1960
Bond Price Time Series	Average; Coupon; Registered	BondPrice	1776-1925
GDP	Nominal GDP; Real GDP; Nominal GDP Growth; Real GDP Growth;	MacroData	1790-1960
Inflation	GDP Deflator; Inflation	MacroData	1790-1960
Population	Population Level; Popluation Growth	MacroData	1790-1960
Precious Metal Prices	Price of Gold; Sterling 60 Days	MacroData	1862-1879

Table 1: Available Information

  - *L2 ID* (int): unique bond ID when category L2 is used to index bonds. It is calculated using the formula:

$$10000 * (\text{Category L2 ID}) + (\text{Issue L2 ID}) \tag{2.2}$$

  - *L3 ID* (int): unique bond ID when category L3 is used to index bonds. It is calculated using the formula:

$$10000 * (\text{Category L3 ID}) + (\text{Issue L3 ID}) \tag{2.3}$$

- *Treasury's Name Of Issue* (str): The US Treasury gave each security a name. Often a name was based on the year that the security was issued. We refer to each security by its official name recorded either by Bayley [1882] or by the Monthly Statement of the Public Debt.

  The financial press and the public often referred to securities using names derived from their coupon rates and maturity dates. For example, the bonds of the "Loan of 1860" were reported in newspapers as the "U. S. Fives of 1871".

- *Authorizing Act* (str): The Act of Congress that authorized the Secretary of the Treasury to issue the security and set the terms of the security (not necessarily a date).

- *Term Of Loan* (str): String describing the length of a loan (not necessarily a number)

- *Authorizing Act Date* (pd.Timestamp): The date of the Act of Congress that authorized the Secretary of the Treasury to issue the security and set the terms of the security.

- *First Issue Date* (pd.Timestamp): End of the first month that the security appears on the Treasury's records.

- *First Redemption* (pd.Timestamp), *Final Redemption* (pd.Timestamp), *Redeemable After* (pd.Timestamp) and *Payable* (pd.Timestamp): Four distinct columns record a maturity date of a bond:

  - If the security has a single fixed maturity date, that date is recorded under *Payable*.
  - If the security is redeemable at the option of the Treasury after a single date, that date is recorded under *Redeemable After*.
  - If the security does not have a fixed maturity or redemption date, or if the repayment of the security is scheduled across multiple dates, the first and last redemption dates are recorded in the *First Redemption* and *Final Redemption* columns, respectively.

- *Coupon Rate* (float), *Coupon Rate : Unique* (float), *Coupon Rate : Min* (float) and *Coupon Rate : Max* (float): For each column, the *Coupon Rate* is the sum of coupon payments promised each year divided by the face value and expressed as a percent. Coupon rates have been included into different columns, depending on information availability:
  - If there is a single coupon rate, then this rate is recorded in the *Coupon Rate : Unique* column,
  - If there is a range of coupon rates, then minimum and maximum of the range are reported in the *Coupon Rate : Min* and *Coupon Rate : Max* columns, and
  - Finally, the *Coupon Rate* column records the unique coupon rate or the average of the minimum and maximum coupon rates if no unique coupon rate exists.
- *Coupon Frequency* (str) and *Coupons Per Year* (float): The *Coupon Frequency* column contains text that describes the frequency, while the *Coupons Per Year* column translates that text into a number. We used the following conventions to translate text to numbers: (the text description from the *Coupon Frequency* column is on the left and the number from the *Coupons Per Year* column is on the right)
  - per contract : 0
  - at maturity : 0
  - annually : 1
  - semi-annually : 2
  - quarterly : 4
  - at conversion : blank
- *Coupon Schedule*: Indicators for whether coupon payment is scheduled in a particular month. An entry of 1 indicates a payment. An entry of 0 indicates no payment.
  - *CF01* (float): Indicator for the first month of the year (January)
  - *CF02* (float): Indicator for the second month of the year (February)
  - *CF03* (float): Indicator for the third month of the year (March)
  - *CF04* (float): Indicator for the fourth month of the year (April)
  - *CF05* (float): Indicator for the fifth month of the year (May)
  - *CF06* (float): Indicator for the sixth month of the year (June)
  - *CF07* (float): Indicator for the seventh month of the year (July)
  - *CF08* (float): Indicator for the eighth month of the year (August)
  - *CF09* (float): Indicator for the ninth month of the year (September)

  - *CF10* (float): Indicator for the tenth month of the year (October)
  - *CF11* (float): Indicator for the eleventh month of the year (November)
  - *CF12* (float): Indicator for the twelfth month of the year (December)
  - *Ambiguous* (float): Indicator for whether the coupon schedule is ambiguous. An entry of 1 indicates ambiguity.

- *Coin* (float): Value equals 1 if payable in gold or silver; value equals 0 if payable in lawful money; value equals 2 if coupons are payable in gold and the authorizing legislation leaves unstated whether payment will be in gold or greenbacks.

- *Callable* (float): If the security is callable after a single date prior to a single maturity date, then there is a 1 in this column. Otherwise the value is 0. If the bond is callable, then the call date is recorded in the *Redeemable* column and the maturity date is recorded in the *Payable* column.

- *Price Sold* (float): Ratio of the initial price of the security to its par value. A value less (more) than one denotes that the bond was initially sold at a discount (premium).

- *Authorized Amount* (float): The total dollar amount that Congress authorized the Treasury to borrow.

- *Limit On Issued* (float): Records a 1 if the statutory limit is on quantity issued and a 0 if the statutory limit is on quantity outstanding.

- *Marginal Increase In Total Debt Authorized* (float): Records the marginal increase to total quantity of debt outstanding.

In all formats, the BondList DataFrame has been saved with the column *L1 ID* as the index.

2.2 Bond Categorization

We have categorized bonds within a hierarchy having three levels. These levels are shown in table 2 and described in the list below:

- Category Level 1 (L1):

  1. *Pre 1790 Domestic Debt*: Debt issued before 1790 (mostly during the revolutionary war).
  2. *Interest Bearing*: Bonds that pay interest.
  3. *Non-Interest Bearing*: Bonds that do not pay interest.
  4. *Other*: Miscellaneous bonds and adjustments
  5. *Asset*: Assets held by treasury: Cash in the Treasury.

Category L1	**Category L2**	**Category L3**
Pre 1790 Domestic Debt	Pre 1790 Domestic Debt	Loan Office Certificates
		Interest In Arrears
Interest Bearing	Marketable	Foreign Loan
		Temporary Loan
		Long Term Bond
		Treasury Note : Pre 1920
		Treasury Note : Post 1920
		Treasury Bond
		Treasury Bill
		Certificates Of Indebtedness
		Navy Pension Fund
		Panama Canal Bond
		Postal Savings Bond
		Liberty Loan
		War Savings Bond
	Marketable	Savings Notes
		Savings Bonds
		Armed Forces Leave Bonds
		Depository Bond
		Treasury Bonds Investment Series
		Special Issues
Non-Interest Bearing	Non-Interest Bearing	Commodity Currency
		Fiat Currency
Other	Other	Old Debt
		Pacific Railroad
		Old Loan
		Prepayments
		Adjustment
		Bounty Land Script
Asset	Asset	Asset

Table 2: Bond Categories

- Category Level 2 (L2):
    1. *Pre 1790 Domestic Debt*: Same as L1
    2. *Marketable*: Interest bearing bonds that are publicly traded.
    3. *Non Marketable*: Interest bearing bonds that are not publicly traded
    4. *Non-Interest Bearing*: Same as L1
    5. *Other*: Same as L1
    6. *Asset*: Same as L1
- Category Level 3 (L3):
    1. *Loan Office Certificates*: Contains certificates sold to by the revolutionary government in order to fund the war of independence
    2. *Interest In Arrears*: Unpaid interest prior to the Funding Act of 1790.
    3. *Foreign Loan*: Contains loans made by foreign governments to the US government. These were mostly made in the period 1776-1840.
    4. *Temporary Loan*: Contains loans made to the US government before 1920 that the treasury called "temporary loans" at the date of issue. These loans typically had lengths of 1-2 years.
    5. *Long Term Bond*: Contains all loans, consols, stocks, refunding certificates other long term bonds issued by the US government. They typically had lengths exceeding 10 years.
    6. *Treasury Note : Pre 1920*: Contains all treasury notes issued under authorizations prior to the Victory Liberty Loan Act.
    7. *Treasury Note : Post 1920*: Contains all treasury notes, a security that pays semi-annual coupons prior to and at maturity and principal at maturity, authorized by the Victory Liberty Loan Act and subsequent amendments. Notes have a maximum maturity of 10 years.
    8. *Treasury Bond*: Contains all Treasury bonds, a security that pays semi-annual coupons prior to and at maturity and principal at maturity, authorized by the Second Liberty Bond Act and subsequent amendments.
    9. *Treasury Bill*: Contains all Treasury bills, a short-term zero-coupon security, first issued in 1929.
    10. *Certificates Of Indebtedness*: Contains certificates of indebtedness, a short-term coupon-bearing security.
    11. *Navy Pension Fund*: Contains Navy pension funds.
    12. *Panama Canal Bond*: Contains all bonds issue to finance construction of the Panama Canal.
    13. *Postal Savings Bond*: Contains bonds issued in lieu of postal savings deposits or certificates in denominations of $20, $100, and $500. Issuing Postal Savings Bonds was discontinued on July 1, 1935. Thereafter, U.S. Savings Bonds replaced Postal Savings Bonds.

14. *Liberty Loan*: Contains all Liberty Loans issued by the US government. These bonds were sold to finance World War I.
15. *War Savings Bond*: Contains savings bonds issued in order to fund the Second World War.
16. *Savings Notes*: Contains all Savings Notes.
17. *Savings Bonds*: Contains all US Saving Bonds issued by the government (not including War Savings Bonds).
18. *Armed Forces Leave Bonds*: Contains bonds issued as compensation for accumulated leave to members and former members of the Armed Forces of World War II.
19. *Depository Bond*: Contains bonds held by banks to collateralise deposits.
20. *Treasury Bonds Investment Series*: Contains non-marketable, non-callable, 18-year Treasury bonds for institutional investors, first issued in October 1947
21. *Special Issues*: Includes a variety of items including: Adjusted Service Series, Adjusted Service Certificate Fund, Unemployment Trust Fund, Fed Old-Age and Survivors Ins. Trust Fund Series, Government Life Insurance Fund Series, Civil Service Retirement Fund Series, Railroad Retirement Account, Foreign Service Retirement Fund Series, Canal Zone Retirement Fund Series, Alaska Railroad Retirement Fund Series, Postal Savings System, Gov.Life Insurance Fund Series, Federal S&L Insurance Corp Series, and National Service Life Insurance Fund.
22. *Commodity Currency*: Certificates issued in exchange for deposits of gold or silver. This includes Certificates of Deposit, Gold Certificates, Silver Certificates, Treasury Notes of 1890
23. *Fiduciary Currency*: Currencies not back by a commodity.
24. *Old Debt*: Matured issues still outstanding
25. *Pacific Railroad*: Bonds issued to subsidize the construction of the trans-continental railroads.
26. *Old Loan*: Includes the series Old Debt, Old Demand Notes and Carry-over from Previous Spreadsheet. These are series summarising (matured) US government liabilities continuing from previous spreadsheets.
27. *Prepayments*: Deposits with the Treasurer of the United States.
28. *Adjustment*: The discrepancy between the aggregate quantity of matured debt outstanding implied by the issues and redemption data reported in Bayley [1882] and quantity outstanding reported in the Treasury's *Annual Reports* from 1837 to 1852.
29. *Bounty Land Script*: Land warrants issued as payment for military service.
30. *Asset*: Cash in the Treasury.

2.3 BondQuant DataFrame

The BondQuant DataFrame contains all quantity series available for each bond. BondQuant columns have two layers (or multi-indexing). The first layer is the identification number of the bond (*L1 ID* from the BondList DataFrame). The second layer is a string describing the series types available for that bond.

In the following subsections, we describe distinct time series possibly available for the following categories of bonds:

- L1 ID 2 (Interest Bearing)
- L1 ID 1 (Pre 1790 Domestic Debt) and L1 ID 4 (Other)
- L1 ID 3 (Non-Interest Bearing)
- L1 ID 5 (Asset)

2.3.1 Series for L1 ID 2 (Interest Bearing)

Interest Bearing bonds have the largest number of associated time series. Figure 1 visualizes how different possible of series fit together. (Please note that not all bonds will have all of these associated series).

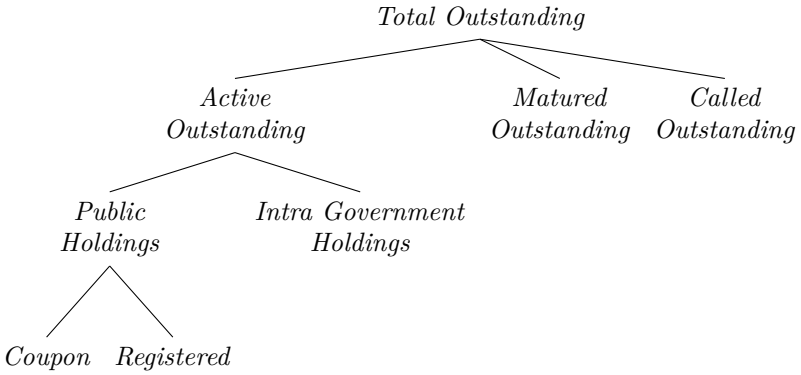

Figure 1: Types of Quantity Series: Interest Bearing Bonds

There are three levels:

- Level 1: The *Total Outstanding* quantities of a particular bond are assigned to the following categories:
  - *Active Outstanding*: Contains the quantity that has not yet been redeemed either because the maturity date has passed or the security has been called
  - *Matured Outstanding*: Contains the quantity that has matured but has not yet been submitted by the bondholder to the Treasury for payment

  - *Called Outstanding*: Contains the quantity that has been called but has not yet been submitted by the bondholder to the Treasury for payment

- Level 2: *Active Outstanding*: is divided into the following categories:
  - *Public Holdings*: Contains the quantity held by the public
  - *Intra Government Holdings*: Contains the quantity held by the Government. The data set only contains information on Intra Government Holdings after the period 1919.

- Level 3: The *Public Holdings* are assigned to the following categories:
  - *Coupon*: contains the sum of all active liabilities outstanding in which the holder of the received interest payments by detaching physical coupons and presenting them to the Treasury
  - *Registered*: contains the sum of all non-matured liabilities outstanding in which the owner of the bond is recorded by the transfer agent of the Treasury.

Starting in July 1919, the Treasury stopped reporting the decomposition of the outstanding debt between coupon and registered securities. Intra-government holdings begin in 1925.

Different spreadsheets pertain to different parts of this tree. Details can be read in the spreadsheets. They record a type of series below the Treasury's Name of Issue.

2.3.2 Series for L1 ID 1 (Pre 1790 Domestic Debt) and L1 ID 4 (Other)

Pre 1790 Domestic Debt and *Other* debt have a simpler series taxonomy shown in figure 2. Descriptions of the series types are the same as in section 2.3.1.

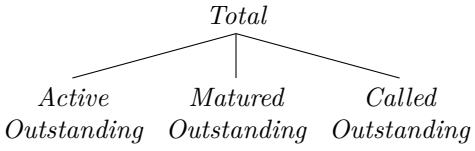

Figure 2: Types of Quantity Series: Pre 1790 Domestic Debt and Other Debt

Pre 1790 Domestic Debt and *Other* debt have been included in the data set only to assure that the total quantity outstanding adds up correctly. They can be excluded from most analysis.

2.3.3 Series for L1 ID 3 (Non-Interest Bearing)

Non-Interest Bearing debt has two L3 categories: *Commodity Currency* and *Fiat Currency*. *Fiat Currency* has only one series type: *In Circulation*. The series types for *Commodity Currency* are shown in figure 3.

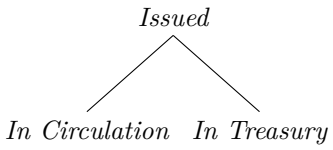

Figure 3: Types of Quantity Series: Non-Interest Bearing Debt

The Treasury issued various denominations of U.S. notes in exchange for deposits of gold and silver bullion and coins. The gold and silver was recorded as cash in the Treasury and held for purposes of redeeming those notes on demand. Quantities of these notes held by the public were recorded as "In Circulation"; quantities of these notes held as cash in the Treasury were recorded as "In Treasury."

2.3.4 Series for L1 ID 5 (Asset)

Bonds in the *Asset* category only have one series: *Total Outstanding*.

2.3.5 Sources

The quantities outstanding from 1790 to 1871 are imputed from the issue and redemption series reported by Bayley [1882]. We cross-checked these quantities against quantity outstanding series reported in Register's Office [1886]. After 1871 our source for quantity outstanding series is the United States Department of the Treasury [1869-2015] *Monthly Statements of the Public Debt*.

The call data are from *Annual Reports of the Secretary of Treasury* for various years.

Data on Treasury securities held in government accounts are from *Banking and Monetary Statistics 1914-1941* prior to 1941 and from *Treasury Bulletin* thereafter.[1]

2.4 BondPrice Data Frame

The BondPrice DataFrame contains all price series available for each bond. BondPrice columns have two layers or multi-indexing. The first layer is the identification number of the bond (*L1 ID* from the BondList DataFrame). The second layer is a string describing the series type.

[1] See Board of Governors of the Federal Reserve System [1943] and United States Department of the Treasury [1939-2015].

Each bond has multiple possible types of price series. Figure 4 visualizes how different types of series relate to each other.

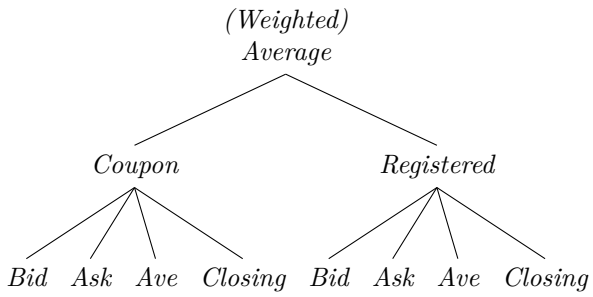

Figure 4: Types of Price Series

Relationships among series are described below:

- The (Weighted) *Average* price is approximated in the following way:
  - If a bond only has one price series, then that series is assigned to be the *Average* price series.
  - If the bond has both Coupon and Registered series, then the *Average* series will be calculated later in Python (not in the spreadsheet) and stored in the final DataFrames. Python calculates it using the following rules:
    - At dates for which there is sufficient information to calculate a quantity weighted average of Coupon and Registered prices, the quantity weighted average is assigned to the *Average* series.
    - At dates for which there is complete price information on both Coupon and Registered series but incomplete quantity information, an evenly weighted average of the Coupon and Registered prices is assigned to the *Average* series.
    - At dates for which there is either a Coupon or a Registered price, but not both, the existing price is assigned to the *Average* series.
- For each Coupon or Registered price, there are at most four types of available prices: *Bid*, *Ask*, *Ave* and *Closing*.[2] Based on the data available in our primary sources, only one of the four types is indicated for each series. We have selected data from our primary sources based on the following order of precedence:
  1. *Closing* price

[2]Primary sources for the prices in the dataset are newspapers. Some newspapers reported bid and ask prices (and sometimes just bid prices); other newspapers reported closing prices. We record the prices as they were reported.

2. *Ave* price
3. *Bid* price
4. *Ask* price (which typically seems to have the least information)

Question for GH from TS: George – we are going to be asked "which newspapers"? Do you have a list that tells which prices when came from which newspapers? If so, let's state it. If not, then we are in some trouble aren't we?

2.4.1 Sources

The prices from 1776 to 1839 are from Razaghian [2002] and Sylla, Wilson, and Wright [2006]. The prices from 1840 to 1899 are from Razaghian [2002] and the *Commercial and Financial Chronicle*. The prices from 1900 to 1918 are from the *Commercial and Financial Chronicle* and from the US Treasury Circulars. When overlap occured, the data was taken from the US Treasury Circulars. The prices from 1919 to 1925 are from "United States Govt. Bonds" tables in the New York *Times*.

Price data after 1925 has not been provided because it can be obtained from the *CRSP US Treasury Database*.[3]

2.5 RawData/Macro Data Folder

The spreadsheet `usvar.xlxs` contains times series data for the following macroeconomic time series:

- `gdpNom` : contains nominal GDP (in millions of dollars)
- `gdpReal` : contains real GDP (in millions of 2009 dollars)
- `gdpDeflator` : contains GDP deflator
- `pop` : contains population (in thousands)
- `gdpNomGrowth` : contains annual growth of nominal GDP
- `gdpRealGrowth` : contain annual growth of real GDP
- `inflation` : contains the annual growth of the GDP Delfator
- `popGrowth` : contains the annual growth in the population

The spreadsheet `goldprice.xlsx` contains time series data for the following series:

- `Price of Gold` : Price of gold in greenbacks from 1862 to 1879. Source: Table 2 of Mitchell [1908]
- `$/Sterling 60 Days` : Source: *Commercial and Financial Chronicle* (various issues) XXX

[3] See `http://www.crsp.com/products/research-products/crsp-us-treasury-database`.

- `$/Sterling 3 Days` : Source: *Commercial and Financial Chronicle* (various issues)XXX

References

Rafael A. Bayley. *National Loans of the United States*. Government Printing Office, Washington, 1882.

Board of Governors of the Federal Reserve System. *Banking and Monetary Statistics, 1914-1941*. Board of Governors of the Federal Reserve System, Washington D.C., 1943.

W.C. Mitchell. *Gold, Prices, and Wages Under the Greenback Standard*. Berkeley. University of California. Publ. in economics. University Press, 1908.

Rose Razaghian. Financial credibility in the united states: The impact of institutions, 1789-1860. Data made available through the International Center for Finance at Yale University., 2002.

U.S. Treasury Register's Office. *Statement of Receipts and Expenditures of the Government (by Warrants) from July 1, 1855, to June 30, 1885 and Statement of Principal of Public Debt from 1791 to 1836 by Issues and Redemptions, and From January 1, 1836, to June 30, 1885 by Warrants.* Government Printing Office, Washington DC, 1886.

Richard E. Sylla, Jack Wilson, and Robert E. Wright. Early u.s. security prices. *http://eh.net/databases/early-us-securities-prices*, 2006.

United States Department of the Treasury. *Monthly Statement of the Public Debt*. U.S. Treasury Department, 1869-2015. URL `https://www.treasurydirect.gov/govt/reports/pd/mspd/mspd.htm`.

United States Department of the Treasury. *Treasury Bulletin*. U.S. Treasury Department, Office of the Secretary., 1939-2015. URL `https://fraser.stlouisfed.org/title/407`.