Replication instructions: Gold's Value as an Investment

Urban J. Jermann*

August 18, 2024

This document details the replication procedure for *Gold's Value as an Investment*, published in the Review of Financial Studies. The code used to create the graphs and tables in the paper is written in Matlab 2020a and executed on Intel(R) Core(TM) i9-10980XE CPU @ 3.00GHz with 18 cores. Approximate run times are given below.

1 Data Sources

I use several sources of data to conduct the empirical analysis:

1. `GoldBB.xlsx` daily gold prices (GOLDLNAM Index) form Bloomberg. Pseudo data is provided.
2. `SilverBB.xlsx` daily silver prices (SLVRLND Index) form Bloomberg. Pseudo data is provided.
3. `PlatinumBBXPT.xlsx` daily platinum prices (XPT BGN Curncy) form Bloomberg. Pseudo data is provided.
4. `CopperBB.xlsx` daily copper prices (LOCADY LME Comdty) form Bloomberg. Pseudo data is provided.
5. `NickelBB.xlsx` daily nickel prices (LONIDY LME Comdty) form Bloomberg. Pseudo data is provided.
6. `CPIAUCSL.xls` is the Consumer Price Index for All Urban Consumers: All Items in U.S. City Average, Index 1982-1984=100, Monthly, Seasonally Adjusted from https://fred.stlouisfed.org

*Wharton School of the University of Pennsylvania jermann@wharton.upenn.edu.

7. `GS1.xls` is the Market Yield on U.S. Treasury Securities at 1-Year Constant Maturity, Quoted on an Investment Basis, Percent, Monthly, Not Seasonally Adjusted from https://fred.stlouisfed.org

8. `GS10.xls` is the Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity, Quoted on an Investment Basis, Percent, Monthly, Not Seasonally Adjusted from https://fred.stlouisfed.org

9. `FII10.xls` is the Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity, Quoted on an Investment Basis, Inflation-Indexed, Percent, Monthly, Not Seasonally Adjusted from https://fred.stlouisfed.org

10. `inflation24.xlsx` includes (i) One year inflation forecast from Survery of Professional Forecasters (SPF) (75-80 GDPdef, after CPI), (ii) 10-Year Inflation expectation starting SPF 1991.Q4. Source: https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/inflation-forecasts

11. `additional-CPIE10.xlsx` has 10-year CPI inflation expectations from the Philadelphia Fed's Livingston Survey and from the Blue Chip Economic Indicators for early part of the sample. Source: https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/inflation-forecasts

12. `MERmove.xlsx` contains the MOVE index from Refinitv. Pseudo data is provided.

13. `GoldFut.xlsx` contains COMEX Gold Futures prices from Refinitiv. Pseudo data is provided.

14. `CRSP26wkTermStr.xlsx` contains the CRSP TREASURIES - 26-Week Term Structure from WRDS. Pseudo data is provided.

15. `GoldBBXAU.xlsx` daily gold prices (XAU BGN Curncy) form Bloomberg. Pseudo data is provided.

16. `SilverBBXAG.xlsx` daily silver prices (XAG BGN Curncy) form Bloomberg. Pseudo data is provided.

17. `TIPS10BB.xlsx` daily 10-year TIPS yields (H15X10YR Index) from Bloomberg. Pseudo data is provided.

18. `FRED-RTWEXBGS.xls` contains real broad dollar index TWEXBPA and RTWEXBGS from https://fred.stlouisfed.org.

19. `GoldResInternational_Financial_Statistics.xlsx` total central bank gold holdings from IFS IMF.

2 Replication procedure

The steps below outline the procedure which needs to be followed to replicate the figures and tables in the paper. **Note: Most of the data included is pseudo data (not the actual data). Therefore, the outputs of these replications do not match the results in the paper. To exactly reproduce the results in the paper, the pseudo data in the underlying spreadsheets described above must be replaced with data from Bloomberg, Refinitiv and CRSP.**

1. Run `DASOV24.m` to create Figure 1, 2 and 3, Table 1 and the tables in Appendix B except for the table for gold. The table for gold in Appendix B is identical to Table 1 in the text except for the sample length. To produce the table for gold in the appendix change `longsamgold=1` to `longsamgold=0` in `DASOV24.m` on line 24. Some data is saved to .mat files to be uploaded by `SuffN24MONTHLY.m`. Run time is about 30 seconds.

2. Run `DASOV24daily.m` to create Table 2. Run time is about 10 seconds.

3. Run `SuffN24MONTHLY.m` to create Figure 4, 5, 6 & 7, and Table 3, 4, 5 & 6. For Table 4, the output of the program is one line of the table. To produce the entire table, model parameters have to be entered manually and the program is run for each parameterization. For Table 5, the output of the program is for one cutoff level, 50% or 33%. To produce the entire table, the code has to be run by adjusting the cutoff manually on line 312. The program also produces the calibration targets for the parameter γ and the two target moments for the real exchange rate. Run time is about 20 seconds if the model for the real exchange rate is solved with only 12 grid points (`Nsti=12`, on line 159) and the output for the model with the real exchange rate is therefore not very accurate. The results in the paper for the model with the real exchange rate included in Figure 5 and Table 6 line 2 are produced with `Nsti=100` and have a run time of about 5 hours; for `Nsti=50`, run time is about 18 minutes and for the given calibration the reported results are not significantly different from `Nsti=100`.