Overview

This folder contains the code and non-proprietary data for the paper "Falling Rates and Rising Superstars" by Thomas Kroen, Ernest Liu, Atif Mian, and Amir Sufi. The code reproduces the results, figures, and tables presented in the paper.

The code in this replication package constructs a high-frequency FOMC date-level monetary policy shock file, a high-frequency firm-FOMC date file, and a firm-quarter file. The primary data sources are:

- Trade and Quote (TAQ) data on stock prices at 5-minute intervals
- Futures prices data used to compute a monetary policy shock
- Quarterly data on firm fundamentals from Compustat

Two main files, data_construction_KLMS.do and analysis_KLMS.do, run all of the code to generate the data and results for the figures and tables in the paper and its appendix. The replicator should expect the code to run for about 8-16 hours.

The high-frequency and quarterly data processing are largely separate from one another. The data is thus organized as follows. There is a high-frequency folder containing a raw and a processed subfolder and a quarterly folder with the same structure. There is a "proc_analysis" folder which contains only the datasets used in directly producing the tables and figures. import_fred_snapshot contains FRED data collected using Stata's "import fred" command on July 31, 2025. Lastly, there is a separate "bootstrap_calculation" subfolder in the root folder that stores the data and scripts needed to run the bootstrap for Figure A.1.

Data Availability and Provenance Statements

Statement about Rights

- I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.
- I certify that the author(s) of the manuscript have documented permission to redistribute/publish the data contained within this replication package. Appropriate permissions are documented in the LICENSE.txt file.

License for Data

Creative Commons Attribution 4.0 (CC-BY-4.0), except for all data in: highfreq\raw\TickWrite, highfreq\raw\WRDS, quarterly\raw\Bloomberg, quarterly\raw\TickWrite, quarterly\raw\refinitiv_reuters, quarterly\raw\Global_Insight, quarterly\raw\Haver, and quarterly\raw\WRDS, which are proprietary and therefore excluded from this license.

Summary of Availability

- Some data cannot be made publicly available.
- Confidential data used in this paper and not provided as part of the public replication package will be preserved for at least 5 years after publication, in accordance with journal policies.

Details on each Data Source

All data listed below is provided in the "data" subfolder. The * symbol indicates data to which the authors no longer have access.

Data.Name	Data.Files	Location	Provided	Citation
FOMC Dates & Times	fomc_times_2024_temp.dta	highfreq/raw/manual	Yes	
FRED Policy Rates	DFEDTAR.dta, DFEDTARL.dta	import_fred_snapshot	Yes	FRB (2025a, 2025b)
Zero-Coupon Rate	feds200628.csv	highfreq\raw\orig\FRB	Yes	Gürkaynak et al. (2007)
FRED CPI	CPIAUCSL.dta	import_fred_snapshot	Yes	U.S. Bureau of Labor Statistics (2025c)
Gürkaynak et al. shocks	GSSrawdata.xlsx	highfreq\raw\orig\gurkaynak2021	Yes	Gürkaynak et al. (2022)
Eurodollar Futures 1995-	ED[quarter][year].csv (ignore FF)	highfreq\raw\TickWrite\Eurodollars_FF_updated	No	TickWrite LLC. (1995-2025)
SOFR Futures 2022-	SR3[quarter][year]all.csv	highfreq\raw\TickWrite\SOFR_all	No	TickWrite LLC. (1995-2025)
Fed Funds Futures 1995-2019	main_ff.csv	\highfreq\raw\TickWrite\fedfunds_cme_highfreq\unzipped	No	TickWrite LLC. (1995-2025)
Fed Funds Futures 2019-	FF[month][year]_UPDATE.csv	highfreq\raw\TickWrite\FF_futures_dataupdate	No	TickWrite LLC. (1995-2025)
5-minute stock prices	[year]_5min_stocks.csv	highfreq\raw\WRDS\Intraday stocks\Stocks Last Trade (pulled using import_intraday_whole_year.R)	No	NYSE Trade and Quote (1994-2024)
Intraday Long-Term Yields (Old Format)*	[year]hig_freq_[maturity].csv	highfreq\raw\WRDS\us_treasury_govpx\tbills_highfreq	No	GovPX, Inc. (1991-2024)
Intraday Long-Term Yields (New Format)	[Stata-format FOMC date]-GOVPX_NEX_UST_0_0.csv	highfreq\raw\WRDS\us_treasury_govpx	No	GovPX, Inc. (1991-2024)
CRSP Stock/Security Files, 2021-2024	CRSP_Stocks_Daily_2124_update.dta	highfreq\raw\WRDS	No	CRSP (1960-2024)

Data.Name	Data.Files	Location	Provided	Citation
CRSP Stock/Security Files, 1960-2020	CRSP_Stocks_Daily_all.dta	highfreq\raw\WRDS	No	CRSP (1960-2024)
TAQ-CRSP "Old" Crosswalk, 1993-2014	monthly_taq_permno_cw_v2.csv	highfreq\raw\WRDS	No	WRDS (1993-2014)
TAQ-CRSP "New" Crosswalk, 2003-2024	permno_crsp_cw_2024.dta	highfreq\raw\WRDS	No	WRDS (2003-2024)
Compustat Quarterly Firm Fundamentals, 1961-2020	CCM_fundamentals_all.dta	quarterly\raw\WRDS	No	Standard and Poor's (1961-2024)
Compustat Quarterly Firm Fundamentals, 2020-2024	ccm_fundamentals_quarterly_raw_20_24.csv	quarterly\raw\WRDS	No	Standard and Poor's (1961-2024)
Bloomberg Agriculture Subindex	BCOMAG_94_24.xlsx	quarterly\raw\Bloomberg	No	Bloomberg L.P. (2025a)
Bloomberg Commodity Index	BCOM_94_24.xlsx	quarterly\raw\Bloomberg	No	Bloomberg L.P. (2025b)
S&P 500 Daily Closing Prices	SPall_daily.csv	quarterly\raw\TickWrite	No	TickWrite LLC. (1995-2025)
FRED Slope of Treasury Yield Curve	T10Y3M.dta	import_fred_snapshot	Yes	FRB St. Louis (2025)
Refinitiv/Reuters Unemployment, Payroll, Core CPI Forecasts	refinitiv_reuters_[variable]_polls20_25.xlsx	quarterly\raw\refinitiv_reuters	No	LSEG (2025)
Global Insight / Money Market Services Expectations*	MMS Data.xlsx	quarterly\raw\Global_Insight	No	IHS Global Insight (2022)
As-released FRED data on Unemployment, Payroll, etc.	[variable]_asreleased.csv	quarterly\raw (pulled using as_released_data_scriptFRED.R)	Yes	U.S. Bureau of Economic Analysis (2025), U.S. Bureau of Labor Statistics (2025a, 2025b)
FRED Release Dates	release_dates_[releaseID]_[variable].xlsx	quarterly\raw\FRED	Yes	U.S. Bureau of Economic

Data.Name	Data.Files	Location	Provided	Citation
				Analysis (2025), U.S. Bureau of Labor Statistics (2025a, 2025b)
Blue Chip Real GDP Forecasts (New) 2022-2024	bluechipQQannrgdp22_24.xlsx	quarterly\raw\Haver	No	Haver (2025), Wolters Kluwer (2025)
Blue Chip Real GDP Forecasts (Old) 1985-2022	bchip_series_qoq.xlsx	quarterly\raw\Haver	No	Haver (2025), Wolters Kluwer (2025)
FRED Brave-Butters Kelley RGDP Index	fred_bbk_90_25.csv	quarterly\raw\FRED	Yes	Indiana University (2025)
FRED Core CPI Change	CPILFESL.dta	import_fred_snapshot	Yes	U.S. Bureau of Labor Statistics (2025d)
Compustat Revenue 1980-2025	compustat_revenue_80_25.dta	quarterly\raw\WRDS	No	Standard and Poor's (1961-2024)
FRED CPI (OECD)	CPALTT01USQ661S.dta	import_fred_snapshot	Yes	OECD (2025)
CRSP "Beta Suite" 1980-2019	CRSP_Betaj.dta	quarterly\raw\WRDS	No	WRDS (1980-2024)
CRSP "Beta Suite" 2020-2024	b_mkt_20_24.csv	quarterly\raw\WRDS	No	WRDS (1980-2024)
S&P Ratings Data (Old), 1984-2017	SPRatings2.dta	quarterly\raw\WRDS	No	Standard & Poor's, (1984-2017)
S&P Ratings Data (New), 2017-2024	SPcredit_entity_rat_17_24.dta	quarterly\raw\WRDS	No	Standard & Poor's, (2017-2024)
FRED Yield on U.S. Treasury Securities at 5-Year Constant Maturity	DGS5.dta	import_fred_snapshot	Yes	FRB (2025c)

Data.Name	Data.Files	Location	Provided	Citation
FRED Annual Inflation	FPCPITOTLZGUSA.dta	import_fred_snapshot	Yes	World Bank (2025)

How each data source was accessed:

- FOMC dates and times were manually entered from https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.
- The Fed's target rate, and all other FRED series in the "import_fred_snapshot" subfolder, was pulled from FRED using the "import FRED" command in Stata. For all FRED datasets, the name of the .dta file corresponds with the series name.
- The zero-coupon rate was downloaded from the Federal Reserve Board at https://www.federalreserve.gov/data/yield-curve-tables/feds200628.csv.
- The monetary policy shocks from Gürkaynak et al. (2022) can be found in the replication package at https://onlinelibrary.wiley.com/doi/10.1111/jofi.13163. We use the only variables MP1, MP2, ED2, ED3, and ED4 from February 1994 through June 2019. For details on how these variables were constructed, see Appendix A of Nakamura and Steinsson (2018).
- Eurodollar Futures were downloaded on TickWrite 7 on computers located in Firestone Library in Princeton. For all futures data from TickWrite, the name of each dataset refers to the expiration quarter and year. The settings in TickWrite used to download the data were: Time based bars, Granularity 1 minutes, Skip empty intervals, Include all sessions, All contracts, Start Date Jan 1995. For more information on TickWrite see the user guide at https://s3-us-west-2.amazonaws.com/tick-data-s3/pdf/TickWrite7_Manual.pdf. For information about purchasing data from Tick Data, see https://www.tickdata.com/data-delivery/tickweb.
- SOFR Futures were downloaded via the same procedure, but with no start date or end date selected (since the data is only available from 2018). Note that there is an error in the expiration quarter for these contracts which is manually corrected in the data construction code; this can be confirmed by checking the raw data.
- Fed Funds Futures for 1995-2019 were collected as tick-based bars and bound manually into a single comma separated values file in Excel. This data is used only for backtesting the methodology used to compute MP1 and MP2 with the values from Gürkaynak et al. (2022) for dates up through 2018, for which we use MP1 and MP2 from Gürkaynak et al. (2022) directly.
- Fed Funds Futures 2019-present were collected using the same methodology as Eurodollar Futures, selecting Jan 01, 2019 as the start date.
- 5-minute stock prices were collected from WRDS using its native querying capabilities in R. For more information see https://wrds-www.wharton.upenn.edu/pages/about/3-ways-use-wrds/ (requires a WRDS account to view all documentation). The procedure is documented in the .R file which pulls the raw data, import_intraday_whole_year.R in the root folder. Data for 1994-2019 was collected in October 2023; data for 2020-2024 was collected in June 2025. For information about accessing WRDS data, see https://wrds-www.wharton.upenn.edu/pages/about/wrds-faqs/.
- Intraday Long-Term Yields through 2020 were collected from GovPX on Princeton University servers. The original format the data was collected in is no longer available at Princeton, but the data is available in a directory for individual dates at https://dss2.princeton.edu/govpx/ (Princeton login required). Intraday Long-Term Yields from 2021 onward (New Format) were manually downloaded for each FOMC date. To learn more about purchasing GovPX data, visit https://www.cmegroup.com/market-data/browse/files/govpx-us-treasury-fact-sheet.pdf.
- CRSP Stock/Security files for 1960-2020 and 2021-2024 were collected from https://wrds-www.wharton.upenn.edu/pages/get-data/center-research-security-prices-crsp/annual-update/stock-security-files/daily-stock-file/. After selecting the date range, "permno" as identifier, and "search entire database", select the following variables: shrout, prc, naics, cfacpr, cfacshr. (The following table explaining how to link databases in WRDS may be helpful in understanding the various identifiers: https://wrds-www.wharton.upenn.edu/pages/wrds-research/database-linking-matrix/.)

- There are two crosswalks on WRDS corresponding to the Trade and Quote data (5-minute stock prices) that enable merging with CRSP data. The first covers 1993-2014 and is available at https://wrds-www.wharton.upenn.edu/pages/get-data/linking-suite-wrds/taq-crsp-link/. The second covers 2003-2024 and is available at https://wrds-www.wharton.upenn.edu/pages/get-data/linking-suite-wrds/daily-taq-crsp-link/.
- The Compustat firm fundamentals, used primarily to build the dependent variables in the local projection specifactions in the papers, can be found at https://wrds-www.wharton.upenn.edu/pages/get-data/center-research-security-prices-crsp/annual-update/crspcompustat-merged/fundamentals-quarterly/. Choose "search entire database" and select the following variables: prccq, cshoq, xintq, dlcq, dlttq, atq, ppentq, revtq, dpq, oiadpq, ceqq, capxy, aqcy, saleq, gvkey, liid, permno, lpermco, datafqtr, datadate, datacqtr, fic, sic. There are many other options on the page; leave these defaults unchanged.
- The Bloomberg commodity price indices were downloaded from a Bloomberg Terminal in Firestone Library in Princeton. Choose the BCOM index for the total commodity price index and the BCOMAG index for the agriculture subindex. For more information on accessing Bloomberg data, see https://www.bloomberg.com/professional/solution/bloomberg-terminal/.
- S&P 500 daily closing prices were collected from TickWrite 7 from the Indices tab. Choose daily bars from 1990-present.
- Unemployment, payroll, and core CPI forecasts were collected from Refinitiv/Reuters and Money Market Services through Global Insight. Data from Global Insight is no longer provided through Princeton Library and is inaccessible to the authors. The Refinitiv/Reuters data used to update the forecast series was accessed on computers in Firestone Library at princeton. Search up each variable and click the blue highlighted data values in the table under "Reuters forecasts," then export the data to an Excel. (The replicator may need to ensure Excel has the Refinitiv plugin enabled under File -> Options.) For more information about accessing Refinitiv/Reuters data, visit https://www.lseg.com/en/data-analytics/refinitiv?.
- As-released FRED data on the above three variables and GDP is collected using ALFRED: https://alfred.stlouisfed.org/. The R code that pulls this data is as_released_data_scriptFRED.R in the root folder.
- Release dates for the archival FRED data above can be found at https://alfred.stlouisfed.org/release/downloaddates?rid=10 (CPI), https://alfred.stlouisfed.org/release/downloaddates?rid=50 (Payroll and Unemployment), and https://alfred.stlouisfed.org/release/downloaddates?rid=53 (GDP).
- Blue Chip Real GDP Forecasts for 1985-2022 and 2022-2024 were accessed through Haver Analytics on computers in Firestone Library at Princeton. For downloading the data through the Haver interface, it is recommended that replicators follow the procedure documented at https://libguides.princeton.edu/ld.php?content_id=17176779 closely and carefully. For more information about accessing Haver data, visit https://www.haver.com/.
- FRED's Brave-Butters-Kelley (BBK) real GDP index can be found at https://fred.stlouisfed.org/series/BBKMGDP.
- Compustat revenue data can be found at https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/north-america-daily/fundamentals-quarterly/. Proceed as above, selecting the variables gvkey, datafqtr, datadate, datacqtr, and revtq.
- The "Beta Suite by WRDS" data can be found at https://wrds-www.wharton.upenn.edu/pages/get-data/beta-suite-wrds/beta-suite-by-wrds/. After choosing the date range and selecting "permno" as identifier, enabling "search entire database", leaving the frequency selection parameter as "Daily (trading days)", leaving the default estimation and minimum windows, selecting "Market Model" under "Step 4: Risk Model," leaving "Step 5: Return Type" as "Regular Return", and choosing "PERMNO, Date of Observation, Returns, and Ticker" as variables, submit the query.
- The Standard & Poor's Ratings data pre-2017 can be found at the following link: https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/north-america-daily/ratings/. The updated ratings data through 2024 can be found at https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/capital-iq/sp-credit-ratings/security-ratings/. The following guide explains the different S&P ratings data at WRDS: https://wrds-www.wharton.upenn.edu/documents/1849/WRDS_Credit_Rating_Data_Overview.pdf?

alg[…]id=document_1849_2&algolia-index-name=main_search_index. We use "Option 1: Company S&P Credit Ratings" until they are no longer available in 2017, at which point we switch to "Option 3: Capital IQ S&P Credit Ratings", listed as the "current flagship credit rating data on WRDS."

Variable Descriptions

- See the file CODEBOOK.pdf for a codebook of variables.
- All WRDS data is also documented at the links provided in the tab "Variable Descriptions."

Dataset list (for analysis)

The below datasets used in creating the tables and figures in the paper are included in data\proc_analysis.

Data file	Source	Notes	Provided
master_fomc_level_24.dta	Fed Funds Futures, Eurodollar Futures, Treasury Yields, FOMC Dates & Times, FRED Policy Rates, Zero-Coupon Rate, Gürkaynak et al. shocks	Various policy shocks: Fed Funds, Eurodollars, Treasury Yields, PCA shocks of the above	Yes
maintable_data.dta	master_fomc_level_24.dta, TAQ/CRSP Stock Data, CPI	Main high-frequency panel dataset with stock returns and high-frequency shocks	No
estdata_update_ptilec.dta	master_fomc_level_24.dta, Compustat, Bloomberg Indices, S&P 500, FRED Yield Slope/Historical Releases/OECD CPI, Refinitiv/Reuters, Haver Blue Chip, Global Insight/Money Market Survey, FRED BBK, CRSP "Beta Suite", S&P Ratings	Quarterly panel used for estimating LPs	No
LP_baseline_coeffs.dta	analysis do-file	Coefficients from estimating main local projection specification (for plotting in robustness checks)	Yes

Computational requirements

Software Requirements

- Stata packages are in the "ado" subfolder (users do not need to ssc install these).
- R, with packages fredr, readxl, tidyverse, RPostgres, DBI, and data.table. Running R_load_packages.R in the root folder installs these six packages automatically. These packages can also be manually installed by the replicator using install.packages("[packagename]"), e.g. in R or Rstudio.
- Python with packages numpy, pandas, scikit-learn, and scipy installed in the Python environment to which Stata's Python integration points. These packages are **installed automatically** by master_KLMS.do in the code block titled "Python packages setup," which installs the four necessary packages into the correct directory, provided Python is installed. The user can also comment out this section and manually ensure the correct packages are installed.

Controlled Randomness

- Line 48 of bootstrap_calculation\bootstrap_calculation.do sets the seed for the bootstrap that creates the histogram of baseline estimates in Appendix Figure A.1.

Memory, Runtime, Storage Requirements

- With all confidential files included, the replication package is approximately 200 GB. The code requires around 25 GB of additional free SSD storage to store large tempfiles created during the data construction process.

Summary

Approximate time needed to reproduce the analyses on a standard (CURRENT YEAR) desktop machine:

- 8-24 hours

If reproducing the part of the code that pulls R data:

- 14+ days

Details

The code was last run on a 4-core Intel-based laptop running Windows 11 with 50 GB of free space. The versions of software used were StataNow 19.5, R 4.4.1, and Python 3.12.

Description of programs/code

License for Code

The code is licensed under a MIT license. See LICENSE.txt in the root folder for details.

Instructions to Replicators

Details

- Install necessary packages for R as described in the "Software Requirements" section (e.g., by running the file R_load_packages.R).
- Open master_KLMS.do in the root folder. Change the following paths:
  - The path to the root folder on your computer on line 8
  - The path to your computer's R executable on line 10
  - (Optional) Comment out line 53, which pulls the raw 5-minute stock data from WRDS
- Run master_KLMS.do.

Because of the computationally-intensive nature of the file "import_intraday_whole_year.R", it may be desirable to run it in a dedicated IDE such as Rstudio.

List of tables/figures and programs

Tables and figures require confidential data unless otherwise specified.

Figure/Table #	Program	Line Number	Output file	Note
Table 1	analysis_KLMS.do	540	DU_ZLBnonZLB_ptileconsis.tex	
Table 2	analysis_KLMS.do	597	DU_FFRbar.tex	
Table 3	analysis_KLMS.do	656	table4_sum_table_vars.tex	
Table A.1	analysis_KLMS.do	767	BC_none_gk_alt.tex	
Table A.2	analysis_KLMS.do	1684	DU_ZLBnonZLB_ptileconsis_WL907550.tex	
Table A.3	analysis_KLMS.do	1906	DU_ZLBnonZLB_ptileconsisIND.tex	
Table A.4	analysis_KLMS.do	1762	test5_proc_analysis_estdata_update_ptilec7.tex	
Figure 1	analysis_KLMS.do	292	fig1_rate_response_omega.pdf	Requires only master_fomc_level_24.dta, provided in data\proc_analysis.
Figure 2	analysis_KLMS.do	336	fig1_rate_response_omega_combine.pdf	Requires only master_fomc_level_24.dta, provided in data\proc_analysis.
Figure 3	analysis_KLMS.do	472	fig2_coeffs_by_year.pdf	
Figure 4	analysis_KLMS.do	490	fig3_coeffs_by_quintile_splitpost.pdf, fig4_dollarduration_by_xtile.pdf	
Figure 5	analysis_KLMS.do	723	test_avg_borrowing_cost_gk_updated.pdf	
Figure 6	analysis_KLMS.do	816	all8_IRFs_baseline.pdf	
Figure 7	analysis_KLMS.do	910	news_controls_All_double_gk_alt.pdf	
Figure 8	analysis_KLMS.do	1039	controls_All_gk_alt.pdf.pdf	
Figure A.1	analysis_KLMS.do, bootstrap_calculation\bootstrap_calculation.do	1190, 1 (resp.)	placebo_duration.pdf	
Figure A.2	analysis_KLMS.do	1214, 1300	appendix_all8_IRFs_IND5_FFRBAR.pdf	
Figure A.3	analysis_KLMS.do	1214, 1333	appendix_all8_IRFs_IND5_WIDESHOCK.pdf	
Figure A.4	analysis_KLMS.do	1361	rob8ahead_all.pdf	
Figure A.5	analysis_KLMS.do	1577	appendix_all8_IRFs_FFRbaseline_lvls.pdf	

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