

## Overview

The code in this replication package constructs the analysis files and generates the data for eight tables (Tables 1 to 8) and three figures (Figures 3 to 5) in the paper “*The Lost Capital Asset Pricing Model*” (2022), by Daniel Andrei (McGill University), Julien Cujean (University of Bern), and Mungo Wilson (Oxford University).

1. Six main codes generate the data for Tables 1-8 and Figures 3-5. **The replication package provides all the data analysis files necessary to run these six main codes.** The replicator should expect each of these six codes to run in a few seconds.
2. Two additional codes clean the raw data and construct the data analysis files. The replication package provides most of the raw data files (which are publicly available) necessary to run these two codes, except for four raw data files (one I/B/E/S file, one Compustat file, and two CRSP files), which are available under subscription from WRDS (more details below). The replicator should expect each one of these two codes to run in five to ten minutes.

## 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.

### Summary of Availability

- ☐ All data are publicly available.
- ☒ Some data cannot be made publicly available (please refer to section “Dataset List” and Table 1).
- ☐ No data can be made publicly available.

### Details on each Data Source

The empirical analysis in the paper uses data from four main sources:

- (1) Kenneth French’s data library, publicly available and accessible at [https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
- (2) The AQR Datasets Library, publicly available and accessible at <https://www.aqr.com/Insights/Datasets>
- (3) Historical meeting calendars, statements, press conferences, and minutes of the Federal Reserve, publicly available and accessible at <https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm>
- (4) Wharton Research Data Services, “WRDS,” accessible at <https://wrds-www.wharton.upenn.edu/>  
WRDS provides access to a wide variety of databases. Access to these databases requires a subscription. WRDS terms of use: <https://wrds-www.wharton.upenn.edu/users/tou/>

## Dataset List

Table 1 lists all datasets. The majority of these datasets are available in the folders “Data/Raw” and “Data/Merged.” Datasets 13 to 16 in Table 1 are accessible under subscription from WRDS as follows:

- The dataset 13, “Data/Raw/Compustat19.dta,” has been downloaded on 2020-02-07 and contains the list of S&P Index Constituents. The query variables for downloading the data are: “conm” and “co\_cusip).” Note that this dataset has been discontinued in July 2020.

Data file	Source	Notes	Provided
1. Data/Merged/MasterCD.pkl	All listed	Combines multiple data sources, serves as input for Table 1, 4, and 5	Yes
2. Data/Merged/MasterP.pkl	All listed	Combines multiple data sources, serves as input for Table 2, 3, 6, 7, and Figure 4	Yes
3. Data/Merged/10BetaPortf.csv	All listed	Combines multiple data sources, serves as input for Table 8	Yes
4. Data/Merged/DataC2D2.csv	All listed	Combines multiple data sources, serves as input for various numbers provided in the main text	Yes
5. Data/Merged/RvsERindiv.pkl	All listed	Combines multiple data sources, serves as input for various numbers provided in the main text	Yes
6. Data/Merged/RvsERcons.pkl	All listed	Combines multiple data sources, serves as input for various numbers provided in the main text	Yes
7. Data/Raw/FF_daily.csv	(1)	Fama/French 3 Factors (Daily, downloaded 2020-01-24), serves as input for “Build_Analysis_Files.ipynb”	Yes
8. Data/Raw/FF_daily_2.csv	(1)	Fama/French 3 Factors (Daily, downloaded 2021-09-07), serves as input for Table 8	Yes
9. Data/Raw/BABDaily.xlsx	(2)	Betting Against Beta (Daily, downloaded 2020-03-15), serves as input for “Build_Analysis_Files.ipynb”	Yes
10. Data/Raw/BABMonthly.xlsx	(2)	Betting Against Beta (Monthly, downloaded 2020-04-25), serves as input for “Build_Analysis_Files.ipynb”	Yes
11. Data/Raw/FOMCdates.xlsx	(3)	Dates of FOMC announcements, serves as input for Table 8	Yes
12. Data/Raw/PCdates.xlsx	(3)	Dates of FOMC announcements with Press Conferences, serves as input for Table 8	Yes
13. Data/Raw/Compustat19.dta	(4)	List of S&P Index Constituents, downloaded 2020-02-07, serves as input for “Build_Analysis_Files.ipynb”	No
14. Data/Raw/crsp_realized_19.dta	(4)	CRSP Daily stock returns, downloaded 2020-02-07, serves as input for “Build_Analysis_Files.ipynb”	No
15. Data/Raw/crsp_daily.csv	(4)	CRSP Daily stock returns, downloaded 2021-09-09, serves as input for “Build_Analysis_Files.ipynb”	No
16. Data/Raw/ibes.dta	(4)	Analyst unadjusted price targets, downloaded 2020-02-28, serves as input for “Build_Analysis_Files.ipynb”	No

Table 1: Dataset list.

- The dataset 14, “Data/Raw/crsp\_realized\_19.dta,” has been downloaded on 2020-02-07 and contains CRSP Daily stock returns, from 1970-06-01 to 2019-12-31. The query variables for downloading the data are: “permno,” “date,” “cusip,” “distcd,” “divamt,” “prc,” “ret,” and “shrout.”
- The dataset 15, “Data/Raw/crsp\_daily.csv,” has been downloaded on 2021-09-09 and contains CRSP Daily stock returns, from 2009-01-02 to 2019-12-31. The query variables for downloading the data are: “permno,” “date,” “shrcd,” “exchcd,” “siccd,” “dlstcd,” “dlprc,” “dlret,” “prc,” “ret,” and “shrout.”

- The dataset 16, “Data/Raw/ibes.dta,” has been downloaded on 2020-02-28 and contains unadjusted price targets (Detail History Price Target, Unadjusted), from 1999-03-11 to 2019-09-19. The query variables for downloading the data are: “cusip,” “ticker,” “estimid,” “horizon,” “value,” “amaskcd,” “acttims,” “anndats,” and “anntims.”

*Note:* Datasets 13 to 16 in Table 1 have been downloaded in 2020 and 2021. WRDS updates the data regularly (e.g., for a change in cusip), which does not ensure access to the exact same version of the data, but the impact of data updates is expected to be minor.

## Computational requirements

The codes were run mainly on a MacBook Pro, M1 Max, 2021, with Python 3.10.2 and the following dependencies:

- pandas 1.4.0
- numpy 1.22.1
- statsmodels 0.13.1
- matplotlib 0.1.3
- scipy 1.7.3
- pandas\_market\_calendars v4.0

## Description of programs/code

- In the folder “Code,” the six programs whose names start with “Table\_” generate all tables and figures in the main body of the paper.
- In the folder “Code,” the two programs that start with “Build\_” will extract and reformat all datasets referenced above, then generate all the data analysis files in the folder “Data/Merged.”

## Instructions to Replicators

All the codes use relative paths. Thus, no further action is needed on the replicator’s part, with the exception of running the codes as follows (the order does not matter):

- Table 1: The table can be reproduced using the code “Code/Table\_1.ipynb.” It generates the Excel file “Results/Table1.xlsx.”
- Table 2: The table can be reproduced using the code “Code/Table\_2\_3\_Fig\_4.ipynb.” It generates the Excel file “Results/Table2.xlsx.”
- Table 3: The table can be reproduced using the code “Code/Table\_2\_3\_Fig\_4.ipynb.” It generates the Excel file “Results/Table3.xlsx.”
- Table 4: The table can be reproduced using the code “Code/Table\_4\_5.ipynb.” It generates the Excel file “Results/Table4.xlsx.”
- Table 5: The table can be reproduced using the code “Code/Table\_4\_5.ipynb.” It generates the Excel file “Results/Table5.xlsx.”
- Table 6: The table can be reproduced using the code “Code/Table\_6\_7a.ipynb.” It generates the Excel file “Results/Table6.xlsx.”
- Table 7: The table can be reproduced using the codes “Code/Table\_6\_7a.ipynb” for panel (a) and “Code/Table\_7b\_7c.ipynb” for panels (b)-(c). The codes generate each one of the three panels of Table 7, in the Excel files “Results/Table7a.xlsx,” “Results/Table7b.xlsx,” and “Results/Table7c.xlsx.”

- Table 8: The table can be reproduced using the code “Code/Table.8.ipynb.” It generates the Excel file “Results/Table8.xlsx.”
- Figure 3: The numbers needed to generate the Figure are obtained directly in the output of the code “Code/Table.4.5.ipynb.”
- Figure 4: The table can be reproduced using the code “Code/Table.2.3.Fig.4.ipynb.” It generates the pdf file “Results/Figure4.pdf.”
- Figure 5: The figure can be reproduced using the numbers from Table 8.
- There are several numbers provided in the text, in Sections 5.1, 5.2, and 5.3. These numbers can be reproduced using the codes “Results/Table1.xlsx” and “Code/Table.6.7a.ipynb” (numbers obtained directly in the outputs of these two codes).

Alternatively, all the codes’ outputs include  $\text{\LaTeX}$  commands for Tables 1-8. The replicator can copy these  $\text{\LaTeX}$  commands one by one directly into the file “PDF Tables/PDFTables.PAPER.tex.”

## List of tables and programs

The provided code reproduces:

- ☒ All numbers provided in text in the paper
- ☐ All tables and figures in the paper
- ☒ Selected tables and figures in the paper, as summarized in Table 2 below. Exceptions are Figure 1, 2, and 6, which are theoretical illustrations associated with the model described in Section 4 and Section 6.2 and do not need any data to be reproduced.

Figure/Table	Program	Cell Number	Output file
Table 1	Code/Table.1.ipynb	12 cells	Results/Table1.xlsx
Numbers provided in text in the paper	Code/Table.1.ipynb	12 cells	Output directly in the code
Table 2	Code/Table.2.3.Fig.4.ipynb	5 cells	Results/Table2.xlsx
Table 3	Code/Table.2.3.Fig.4.ipynb	5 cells	Results/Table3.xlsx
Figure 4	Code/Table.2.3.Fig.4.ipynb	5 cells	Results/Figure4.pdf
Table 4	Code/Table.4.5.ipynb	5 cells	Results/Table4.xlsx
Table 5	Code/Table.4.5.ipynb	5 cells	Results/Table5.xlsx
Table 6	Code/Table.6.7a.ipynb	6 cells	Results/Table6.xlsx
Table 7, panel (a)	Code/Table.6.7a.ipynb	6 cells	Results/Table7a.xlsx
Table 7, panel (b)	Code/Table.7b.7c.ipynb	5 cells	Results/Table7b.xlsx
Table 7, panel (c)	Code/Table.7b.7c.ipynb	5 cells	Results/Table7c.xlsx
Table 8	Code/Table.8.ipynb	3 cells	Results/Table8b.xlsx

Table 2: List of tables and programs.

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