Replication Package for " Factor Models for Conditional Asset Pricing"

This replication package contains the code required to reproduce the tables, figures, and estimation for "Factor Models for Conditional Asset Pricing" by Paolo Zaffaroni in the Journal of Political Economy. Following the instructions in this README will generate all the results in the main text and online appendix of the paper.

I provide additional details below. The code for the empirical exercises is an "all-in-one" script that can run all steps in the correct order. Please contact Paolo Zaffaroni at pz@ic.ac.uk with additional questions.

Directory map

The directory contains the following subdirectories:

code: contains the R codes used to create the results.

data: contains the raw data used for the estimation and motivating plots.

list of figures: contains the figures used in the paper (online appendix - manuscript has no figures).

list of tables: contains the tables used in the paper.

Data sources

The data directory contains all data sources used in the paper, described in detail in the paper. The mapping from these data sources to our data directory is as follows:

data/crsp: Center for Research in Securities Prices, or "CRSP". These data comprises the single stock returns data both for the large-cap case (S&P 500) and for the mixture of large- and small-caps. These data can be most easily accessed via Wharton Research Data Services (WRDS).

data/nipa: data from the National Income and Product Accounts, or "NIPA". This is our main data source for firm net value added and profits, used to compute factor shares. The data are created by the Bureau of Economic Analysis and are publicly available.

data/fred: data from Federal Reserve Economic Data, or "FRED". This contains the NBER recession indicator. These data are publicly available from the Federal Reserve's FRED portal.

data/FF: data from French's website. This contains the five Fama French risk factors. miscellaneous data. These data are publicly available from Kenneth French's website.

martin_epbound: SVIX lower bound on the risk premium from "What is the Expected Return on the Market?" by Ian Martin in the 2017 Quarterly Journal of Economics, available from Ian Martin's website.

data/Shiller: Shiller's Irrational Exuberance data, including S&P prices, dividends, earnings, and the

CAPE, from the website of Robert Shiller.

data/intermediary: He, Z., B. Kelly, and A. Manela, 2017, Intermediary asset pricing: New evidence from many asset classes, Journal of Financial Economics 126, 1–35.

data/dividend: Dividend Yield from Naranjo, Nimalendran, Ryngaert (1998)

data/bm: Book-to-market equity from Rosenberg, Reid, Lanstein (1985)

data/activityindex: coincident economic-activity index and its first-order differences from https: // fred.stlouisfed.org/series/USPHCI.

data/nber: NBER recession index from https://fred.stlouisfed.org/series/USREC.

data/ted: TED spread from https://fred.stlouisfed.org/series/TEDRATE.

data/busconf: U.S. business-confidence index, the U.S. consumer-confidence index, and the U.S. composite leading indicator from the OECD library.

data/unemp: Unemployment rate (Gertler and Grinols (1982).

data/finunc: Financial Uncertainty Index (Jurado et al. (2015)

data/ts: Term structure (Chen et al. (1986))

data/sent: Sentiment Index (Baker and Wurgler (2006))

data/vix: VIX The Chicago Board Options Exchange (CBOE).

data/macrounc: Macro Uncertainty Index (Ludvigson et al. (2021

data/credit: Credit Index (Chen et al. (1986)

data/ind: industrial production (Chen et al. (1986)

data/fincond: Chicago FED National Financial Condition Index.

R setup

The code runs in R using the following packages:

```
library(Rfast)

library(matrixcalc)
```

library(psych)

library(MASS)

library(car)

library(ggplot2)

library(expm)

library("parallel")

Instructions: main estimation and Monte Carlo

The file Instructions_JPE_MS20210421.R contains all the instructions line-by-line for the various Monte Carlo experiments and the empirical applications, in the manuscript and the online appendix, and for producing all the tables and plots. The code follows the order of the tables and plots as reported in the paper and online appendix. In turn, this file refers to the following codes:

Empirics_JPE_MS20210421.R contains all the codes required for all the empirical exercises of the manuscript (first part) and the online appendix (second part).

Montecarlo_JPE_MS20210421.R contains all the codes required for the main Monte Carlo exercises in Table I of the manuscript and Section OA16 of the online appendix, except for Sections OA16.1.1 and OA16.3.1.

Montecarlo_locallyweak_JPE_MS20210421.R contains all the codes required for the main Monte Carlo exercises in Table II of the manuscript.

Montecarlo_numberoffactors_JPE_MS20210421 contains all the codes required for the main Monte Carlo exercises for Sections OA16.1.1 OA16.3.1.

List of Tables (Tex files) from the manuscript and online appendix

Table1_JPE_MS20210421

Table2_JPE_MS20210421

Table3_JPE_MS20210421

TableOA1_JPE_MS20210421

TableOA2_JPE_MS20210421

TableOA3_JPE_MS20210421

TableOA4_JPE_MS20210421

TableOA5_JPE_MS20210421

TableOA6_JPE_MS20210421

TableOA7_JPE_MS20210421

TableOA8_JPE_MS20210421

TableOA9_JPE_MS20210421

TableOA10_JPE_MS20210421

TableOA11_OA15_JPE_MS20210421

TableOA16_JPE_MS20210421

TableOA17_OA19_JPE_MS20210421

TableOA20_OA22_JPE_MS20210421

List of Figures (pdf files) from the online appendix - no figures in the manuscript.

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T120_numberofstocksK7_9Jan23
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gcload24upd
gcload120upd
gcall24upd
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gcfac24
gcfac120
gcFF24upd
gcFF120upd
SDFT24
SDFT120
T24_SDF_spectral_opt_7Feb23
T120_SDF_spectral_opt_7Feb23
SDFT24COR
SDFT120COR
Rs24upd
Rs120upd
con24totupd

con120totupd
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T24_SP500_SR_K3_9Jan23
T24_SP500_SR_K7_9Jan23
T24_SP500_SR_K10_9Jan23
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Fig2corrT100N100
FigT2N10
FigT2N1000
FigT5N10
FigT5N1000
FigT50N10
FigT50N1000
figT50N1000allthreecases
T100N1000allthreecases
CIT5N10
CIT5N1000
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myplot_oos_ipcaN15T25load1

END OF README