

# Examples using the Ken French global data

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## 1 Introduction

On his homepage, Ken French provides a data library very useful for understanding asset returns. In these notes we concentrate on his data for global asset returns.

The following contains examples where this data is used. The notes are primarily in the form of exercises, where an exercise involving the Ken French data is given, and then a solution is given, with code in R. The solution is focused on showing the R code, and the generated numbers, they are not complete lectures.

## 2 Reading Data

The data, as downloaded from Ken French data library page, needs to be split into separate files, since the original data mixes value weighted, equally weighted, monthly, annual data into one file.

The easiest is to split it into separate files for each dataset one want.

The following R code reads the pricing factors.

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```
library(zoo)
datadir <- "/home/bernt/data/2016/french_data/"
# read Fama French 3 factors from file
# returns are percentage returns, divide by 100 to get actual returns

filename <- paste0(datadir,"Global_3_Factors.csv")

FF <- read.table(filename,
  header=TRUE,
  na.strings=c("-99.99","-999"),
  sep="," ,
  skip=4)
head(FF)
dates <- as.yearmon(as.character(FF$X),format="%Y%m")
head(dates)

FF <- zoo(coredata(FF), order.by=dates)
RMRF <- FF$Mkt.RF/100.0
names(RMRF) <- "RMRF"
SMB <- FF$SMB/100.0
HML <- FF$HML/100.0
RF <- FF$RF/100.0
RM <- RF + RMRF

head(RMRF)
head(SMB)
head(HML)
```

```

head(RF)
head(RM)
# now read the momentum factor
filename <- paste0(datadir,"Global_MOM_Factor.csv")

FF <- read.table(filename, header=TRUE,
  na.strings=c("-99.99","-999"),
  sep=",",
  skip=4)
head(FF)
dates <- as.yearmon(as.character(FF[,1]),format="%Y%m")
head(dates)

FF <- zoo(coredata(FF), order.by=dates)
WML <- FF$WML/100.0
head(WML)

```

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The next read the size-bm portfolios

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```

library(zoo)
datadir <- "/home/bernt/data/2016/french_data/"

# Global_25_Portfolios_ME_BE-ME_ew.csv
# Japan_25_Portfolios_ME_BE-ME_ew.csv
# North_America_25_Portfolios_ME_BE-ME_ew.csv
# Asia_Pacific_ex_Japan_25_Portfolios_ME_BE-ME_ew.csv
# Europe_25_Portfolios_ME_BE-ME_ew.csv
filename <- paste0(datadir,"Global_25_Portfolios_ME_BE-ME_ew.csv")
Global <- read.table(filename,
  header=TRUE,skip=18,
  na.strings=c("-99.99","-999"),
  sep=",")
dates <- as.yearmon(as.character(Global[,1]),format="%Y%m")
GlobalMEBE <- zoo(coredata(Global[,2:26]), order.by=dates)/100.0
head(GlobalMEBE)

filename <- paste0(datadir,"Japan_25_Portfolios_ME_BE-ME_ew.csv")
Japan <- read.table(filename,
  header=TRUE,skip=18,
  na.strings=c("-99.99","-999"),
  sep=",")
dates <- as.yearmon(as.character(Japan[,1]),format="%Y%m")
JapanMEBE <- zoo(coredata(Japan[,2:26]), order.by=dates)/100.0
head(JapanMEBE)

filename <- paste0(datadir,"Europe_25_Portfolios_ME_BE-ME_ew.csv")
Europe <- read.table(filename,
  header=TRUE,skip=18,
  na.strings=c("-99.99","-999"),
  sep=",")
dates <- as.yearmon(as.character(Europe[,1]),format="%Y%m")
EuropeMEBE <- zoo(coredata(Europe[,2:26]), order.by=dates)/100.0
head(EuropeMEBE)

filename <- paste0(datadir,"Asia_Pacific_ex_Japan_25_Portfolios_ME_BE-ME_ew.csv")
Asia <- read.table(filename,

```

```

header=TRUE,skip=18,
na.strings=c("-99.99","-999"),
sep=",")
dates <- as.yearmon(as.character(Asia[,1]),format="%Y%m")
AsiaMEBE <- zoo(coredata(Asia[,2:26]), order.by=dates)/100.0
head(AsiaMEBE)

```

```

filename <- paste0(datadir,"North_America_25_Portfolios_ME_BE-ME_ew.csv")
NorthAmerica <- read.table(filename,
header=TRUE,skip=18,
na.strings=c("-99.99","-999"),
sep=",")
dates <- as.yearmon(as.character(NorthAmerica[,1]),format="%Y%m")
NorthAmericaMEBE <- zoo(coredata(NorthAmerica[,2:26]), order.by=dates)/100.0
head(NorthAmericaMEBE)

```

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### 3 Descriptives

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```

library(zoo)
library(stargazer)
outdir <- ". ././results/2016_04_descriptive/"

source("./2016_04_read_data/read_global_me_be_portfolios.R")
source("./2016_04_read_data/read_global_5_factors.R")

filename <- paste0(outdir,"descriptive_5_factors.tex")
stargazer(merge(RMRF,SMB,HML,RMW,CMA),summary=TRUE,float=FALSE,out=filename)

filename <- paste0(outdir,"descriptive_global_size_bm_portfolios.tex")
stargazer(GlobalMEBE,summary=TRUE,float=FALSE,out=filename)

```

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Statistic	N	Mean	St. Dev.	Min	Max
RMRF	308	0.004	0.044	-0.195	0.114
SMB	308	0.0004	0.021	-0.096	0.103
HML	308	0.003	0.023	-0.096	0.112
RMW	308	0.004	0.015	-0.064	0.064
CMA	308	0.003	0.019	-0.065	0.097

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Statistic	N	Mean	St. Dev.	Min	Max
SMALL.LoBM	307	0.006	0.058	-0.263	0.222
ME1.BM2	307	0.008	0.057	-0.276	0.218
ME1.BM3	307	0.010	0.052	-0.260	0.212
ME1.BM4	307	0.011	0.050	-0.246	0.198
SMALL.HiBM	307	0.015	0.046	-0.224	0.184
ME2.BM1	307	0.003	0.060	-0.266	0.219
ME2.BM2	307	0.006	0.054	-0.266	0.207
ME2.BM3	307	0.007	0.048	-0.216	0.210
ME2.BM4	307	0.008	0.046	-0.228	0.182
ME2.BM5	307	0.009	0.048	-0.212	0.203
ME3.BM1	307	0.005	0.059	-0.256	0.177
ME3.BM2	307	0.006	0.053	-0.248	0.200
ME3.BM3	307	0.008	0.050	-0.238	0.233
ME3.BM4	307	0.008	0.048	-0.223	0.225
ME3.BM5	307	0.009	0.051	-0.231	0.210
ME4.BM1	307	0.006	0.057	-0.253	0.179
ME4.BM2	307	0.007	0.050	-0.239	0.180
ME4.BM3	307	0.008	0.048	-0.217	0.175
ME4.BM4	307	0.008	0.048	-0.226	0.198
ME4.BM5	307	0.008	0.052	-0.240	0.235
BIG.LoBM	307	0.006	0.050	-0.200	0.167
ME5.BM2	307	0.007	0.046	-0.207	0.147
ME5.BM3	307	0.008	0.046	-0.230	0.153
ME5.BM4	307	0.008	0.048	-0.228	0.192
BIG.HiBM	307	0.008	0.055	-0.257	0.255