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## Table of Contents

Housekeeping .....	1
Set up the Import Options and import the data .....	1
Data cleaning .....	2
LOG RETURN .....	3
SORTING BY INDUSTRY .....	3
Average return per month per industry .....	16
TABLE CONTAINING ALL RETURNS .....	18
SEMIRET .....	19
finding the best ones ONE .....	19
finding the best ones ONE .....	21
finding the best ones TWO .....	23
finding the best ones THREE .....	26
finding the best ones THREE .....	30
finding the best ones THREE .....	34
finding the best ones THREE .....	37
mean log per month .....	41
mean per month .....	41
cleanup .....	41
Trading mean .....	43
Data import .....	43
Descriptive statistics .....	43
General Momentum - Maximum Drawdown (data + plots) .....	46
Descriptive statistics .....	47
mean and std down .....	57

## Housekeeping

```
clear all;
close all;
clc;
```

## Set up the Import Options and import the data

```
opts = delimitedTextImportOptions("NumVariables", 14);

% Specify range and delimiter
opts.DataLines = [2, Inf];
opts.Delimiter = ",";

% Specify column names and types
opts.VariableNames =
    ["PERMNO", "date", "SHRCD", "EXHCD", "SICCD", "TICKER", "COMNAM", "SHRCLS", "NSDI"];
opts.VariableTypes =
    ["double", "datetime", "double", "double", "double", "categorical", "categorical"];

% Specify file level properties
opts.ExtraColumnsRule = "ignore";
```

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```

opts.EmptyLineRule = "read";

% Specify variable properties
opts = setvaropts(opts,
    ["TICKER", "COMNAM", "SHRCLS"], "EmptyFieldRule", "auto");
opts = setvaropts(opts, "date", "InputFormat", "");

% Import the data
MTDATA = readtable("/Users/nicolasthorkildsen/Documents/Skole/MASTER
    THESIS/Data/MTDATA.csv", opts);

% Clear temporary variables
clear opts

MTDATA = movevars(MTDATA, 'RET', 'Before', 'RETX');
MTDATA = movevars(MTDATA, 'SHROUT', 'Before', 'VOL');

```

## Data cleaning

```

% Removes share price below 5
MTDATA = MTDATA(MTDATA.PRC >= 5, :);

% Removes bottom 5 % MCAP
MCAP = times(MTDATA.SHROUT, MTDATA.PRC);
MCAP = array2table(MCAP);
MTDATA = [MTDATA MCAP];
clear MCAP
CAP = prctile(MTDATA.MCAP, [5]);
MTDATA = MTDATA(MTDATA.MCAP >= CAP, :);
clear CAP

% Removes top 1% return
CAP = prctile(MTDATA.RET, [99]);
MTDATA = MTDATA(MTDATA.RET <= CAP, :);
clear CAP

% Removes bottom 1% return
CAPP = prctile(MTDATA.RET, [1]);
MTDATA = MTDATA(MTDATA.RET >= CAPP, :);
clear CAPP

% Removes companies not from stock exchanges
MTDATAO = MTDATA(MTDATA.EXHCD == 1, :);
MTDATAT = MTDATA(MTDATA.EXHCD == 2, :);
MTDATATT = MTDATA(MTDATA.EXHCD == 3, :);

MTDATA = [MTDATAO; MTDATAT; MTDATATT];

clear MTDATAO
clear MTDATAT
clear MTDATATT

```

---

# LOG RETURN

```
MTDATA.RET = log(1+MTDATA.RET);
```

# SORTING BY INDUSTRY

```
MINING          = MTDATA(MTDATA.SICCD<1500 & MTDATA.SICCD>999,:);
MINING.PERMNO = [];
MINING = table2timetable(MINING);
infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = MINING(isbetween(MINING.date, starttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttime1 = datenum(starttime1);
    starttime1 = addtodate(starttime1, 1, 'month');
    starttime1 = datestr(starttime1);
    endtime1 = datenum(starttime1);
    endtime1 = addtodate(endtime1, 1, 'month');
    endtime1 = datestr(endtime1);
    F = MINING(isbetween(MINING.date, starttime1, endtime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

MINING = E;

FOOD          = MTDATA(MTDATA.SICCD<2100 & MTDATA.SICCD>1999,:);
FOOD.PERMNO = [];
FOOD = table2timetable(FOOD);
infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = FOOD(isbetween(FOOD.date, starttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];
```

---

```

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = FOOD(isbetween(FOOD.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

FOOD = E;

APPAREL          = MTDATA(MTDATA.SICCD<2400 & MTDATA.SICCD>2199,:);
APPAREL.PERMNO = [];
APPAREL = table2timetable(APPAREL);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = APPAREL(isbetween(APPAREL.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = APPAREL(isbetween(APPAREL.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

APPAREL = E;

PAPER          = MTDATA(MTDATA.SICCD<2700 & MTDATA.SICCD>2599,:);
PAPER.PERMNO = [];
PAPER = table2timetable(PAPER);
infmt = 'dd-MM-yyyy';

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```

starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = PAPER(isbetween(PAPER.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
starttimel = datenum(starttimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
F = PAPER(isbetween(PAPER.date, starttimel, endtimel),:);
X = times(F.SHROUT,F.PRC);
XX = sum(X);
VW = array2table(X/XX);
F = [F VW];
E = [E;F];
end

PAPER = E;

CHEMICALS = MTDATA(MTDATA.SICCD<2900 & MTDATA.SICCD>2799,:);
CHEMICALS.PERMNO = [];
CHEMICALS = table2timetable(CHEMICALS);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = CHEMICALS(isbetween(CHEMICALS.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
starttimel = datenum(starttimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
F = CHEMICALS(isbetween(CHEMICALS.date, starttimel, endtimel),:);
X = times(F.SHROUT,F.PRC);
XX = sum(X);
VW = array2table(X/XX);

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```

F = [F VW];
E = [E;F];
end

CHEMICALS = E;

PETROLEUM      = MTDATA(MTDATA.SICCD<3000 & MTDATA.SICCD>2899,:);
PETROLEUM.PERMNO = [];
PETROLEUM = table2timetable(PETROLEUM);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = PETROLEUM(isbetween(PETROLEUM.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = PETROLEUM(isbetween(PETROLEUM.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

PETROLEUM = E;

CONSTRUCTION    = MTDATA(MTDATA.SICCD<3300 & MTDATA.SICCD>3199,:);
CONSTRUCTION.PERMNO = [];
CONSTRUCTION = table2timetable(CONSTRUCTION);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = CONSTRUCTION(isbetween(CONSTRUCTION.date, starttimel,
    endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

```

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```

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endttime1 = datenum(startttime1);
    endttime1 = addtodate(endttime1, 1, 'month');
    endttime1 = datestr(endttime1);
    F = CONSTRUCTION(isbetween(CONSTRUCTION.date, startttime1,
        endttime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

CONSTRUCTION = E;

PRIMMETALS      = MTDATA(MTDATA.SICCD<3400 & MTDATA.SICCD>3299,:);
PRIMMETALS.PERMNO = [];
PRIMMETALS = table2timetable(PRIMMETALS);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endttime1 = datenum(startttime1);
endttime1 = addtodate(endttime1, 1, 'month');
endttime1 = datestr(endttime1);
E = PRIMMETALS(isbetween(PRIMMETALS.date, startttime1, endttime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endttime1 = datenum(startttime1);
    endttime1 = addtodate(endttime1, 1, 'month');
    endttime1 = datestr(endttime1);
    F = PRIMMETALS(isbetween(PRIMMETALS.date, startttime1, endttime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

PRIMMETALS = E;

```

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```

FABMETALS      = MTDATA(MTDATA.SICCD<3500 & MTDATA.SICCD>3399,:);
FABMETALS.PERMNO = [];
FABMETALS = table2timetable(FABMETALS);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(startttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = FABMETALS(isbetween(FABMETALS.date, startttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endtime1 = datenum(startttime1);
    endtime1 = addtodate(endtime1, 1, 'month');
    endtime1 = datestr(endtime1);
    F = FABMETALS(isbetween(FABMETALS.date, startttime1, endtime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

FABMETALS = E;

MACHINERY      = MTDATA(MTDATA.SICCD<3600 & MTDATA.SICCD>3499,:);
MACHINERY.PERMNO = [];
MACHINERY = table2timetable(MACHINERY);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(startttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = MACHINERY(isbetween(MACHINERY.date, startttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endtime1 = datenum(startttime1);
    endtime1 = addtodate(endtime1, 1, 'month');

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```

endtimel = datestr(endtimel);
F = MACHINERY(isbetween(MACHINERY.date, starttimel, endtimel),:);
X = times(F.SHROUT,F.PRC);
XX = sum(X);
VW = array2table(X/XX);
F = [F VW];
E = [E;F];
end

MACHINERY = E;

ELECTRICALAQ = MTDATA(MTDATA.SICCD<3700 & MTDATA.SICCD>3599,:);
ELECTRICALAQ.PERMNO = [];
ELECTRICALAQ = table2timetable(ELECTRICALAQ);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = ELECTRICALAQ(isbetween(ELECTRICALAQ.date, starttimel,
    endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = ELECTRICALAQ(isbetween(ELECTRICALAQ.date, starttimel,
        endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

ELECTRICALAQ = E;

TRANSPORTEQ = MTDATA(MTDATA.SICCD<3800 & MTDATA.SICCD>3699,:);
TRANSPORTEQ.PERMNO = [];
TRANSPORTEQ = table2timetable(TRANSPORTEQ);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);

```

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---

```

E = TRANSPORTEQ(isbetween(TRANSPORTEQ.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = TRANSPORTEQ(isbetween(TRANSPORTEQ.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

TRANSPORTEQ = E;

```

```

MANUFACTURING = MTDATA(MTDATA.SICCD<4000 & MTDATA.SICCD>3799,:);
MANUFACTURING.PERMNO = [];
MANUFACTURING = table2timetable(MANUFACTURING);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = MANUFACTURING(isbetween(MANUFACTURING.date, starttimel,
    endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = MANUFACTURING(isbetween(MANUFACTURING.date, starttimel,
    endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];

```

---

```

E = [E;F];
end

MANUFACTURING = E;

RAILROADS      = MTDATA(MTDATA.SICCD<4100 & MTDATA.SICCD>3999,:);
RAILROADS.PERMNO = [];
RAILROADS = table2timetable(RAILROADS);
infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = RAILROADS(isbetween(RAILROADS.date, starttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttime1 = datenum(starttime1);
    starttime1 = addtodate(starttime1, 1, 'month');
    starttime1 = datestr(starttime1);
    endtime1 = datenum(starttime1);
    endtime1 = addtodate(endtime1, 1, 'month');
    endtime1 = datestr(endtime1);
    F = RAILROADS(isbetween(RAILROADS.date, starttime1, endtime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

RAILROADS = E;

OTHERTRANSPORT = MTDATA(MTDATA.SICCD<4700 & MTDATA.SICCD>4099,:);
OTHERTRANSPORT.PERMNO = [];
OTHERTRANSPORT = table2timetable(OTHERTRANSPORT);
infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = OTHERTRANSPORT(isbetween(OTHERTRANSPORT.date, starttime1,
    endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

```

---

---

```

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = OTHERTRANSPORT(isbetween(OTHERTRANSPORT.date, starttimel,
        endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

OTHERTRANSPORT = E;

UTILITIES          = MTDATA(MTDATA.SICCD<5000 & MTDATA.SICCD>4899,:);
UTILITIES.PERMNO = [];
UTILITIES = table2timetable(UTILITIES);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = UTILITIES(isbetween(UTILITIES.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = UTILITIES(isbetween(UTILITIES.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

UTILITIES = E;

DEPTSTORES        = MTDATA(MTDATA.SICCD<5400 & MTDATA.SICCD>5299,:);

```

---

---

```

DEPTSTORES.PERMNO = [];
DEPTSTORES = table2timetable(DEPTSTORES);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(startttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = DEPTSTORES(isbetween(DEPTSTORES.date, startttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endtime1 = datenum(startttime1);
    endtime1 = addtodate(endtime1, 1, 'month');
    endtime1 = datestr(endtime1);
    F = DEPTSTORES(isbetween(DEPTSTORES.date, startttime1, endtime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

DEPTSTORES = E;

RETAILONE = MTDATA(MTDATA.SICCD<5300 & MTDATA.SICCD>4999,:);
RETAILTWO = MTDATA(MTDATA.SICCD<6000 & MTDATA.SICCD>5399,:);
RETAIL = [RETAILONE; RETAILTWO];
RETAIL.PERMNO = [];
RETAIL = table2timetable(RETAIL);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endtime1 = datenum(startttime1);
endtime1 = addtodate(endtime1, 1, 'month');
endtime1 = datestr(endtime1);
E = RETAIL(isbetween(RETAIL.date, startttime1, endtime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endtime1 = datenum(startttime1);

```

---

---

```

endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
F = RETAIL(isbetween(RETAIL.date, starttimel, endtimel),:);
X = times(F.SHROUT,F.PRC);
XX = sum(X);
VW = array2table(X/XX);
F = [F VW];
E = [E;F];
end

RETAIL = E;

HOTELSERV      = MTDATA(MTDATA.SICCD<8000 & MTDATA.SICCD>6999,:);
HOTELSERV.PERMNO = [];
HOTELSERV = table2timetable(HOTELSERV);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);
E = HOTELSERV(isbetween(HOTELSERV.date, starttimel, endtimel),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    starttimel = datenum(starttimel);
    starttimel = addtodate(starttimel, 1, 'month');
    starttimel = datestr(starttimel);
    endtimel = datenum(starttimel);
    endtimel = addtodate(endtimel, 1, 'month');
    endtimel = datestr(endtimel);
    F = HOTELSERV(isbetween(HOTELSERV.date, starttimel, endtimel),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

HOTELSERV = E;

HEALTHMEMBER   = MTDATA(MTDATA.SICCD<8700 & MTDATA.SICCD>7999,:);
HEALTHMEMBER.PERMNO = [];
HEALTHMEMBER = table2timetable(HEALTHMEMBER);
infmt = 'dd-MM-yyyy';
starttimel = datetime('1-1-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 1, 'month');
endtimel = datestr(endtimel);

```

---

---

```

E = HEALTHMEMBER(isbetween(HEALTHMEMBER.date, startttime1,
    endttime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endttime1 = datenum(startttime1);
    endttime1 = addtodate(endttime1, 1, 'month');
    endttime1 = datestr(endttime1);
    F = HEALTHMEMBER(isbetween(HEALTHMEMBER.date, startttime1,
        endttime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];
    E = [E;F];
end

HEALTHMEMBER = E;

OTHER          = MTDATA(MTDATA.SICCD<10000 & MTDATA.SICCD>8699,:);
OTHER.PERMNO = [];
OTHER = table2timetable(OTHER);
infmt = 'dd-MM-yyyy';
startttime1 = datetime('1-1-1980', 'InputFormat', infmt);
endttime1 = datenum(startttime1);
endttime1 = addtodate(endttime1, 1, 'month');
endttime1 = datestr(endttime1);
E = OTHER(isbetween(OTHER.date, startttime1, endttime1),:);
X = times(E.SHROUT,E.PRC);
XX = sum(X);
VW = array2table(X/XX);
E = [E VW];

for K = 1:505
    infmt = 'dd-MM-yyyy';
    startttime1 = datenum(startttime1);
    startttime1 = addtodate(startttime1, 1, 'month');
    startttime1 = datestr(startttime1);
    endttime1 = datenum(startttime1);
    endttime1 = addtodate(endttime1, 1, 'month');
    endttime1 = datestr(endttime1);
    F = OTHER(isbetween(OTHER.date, startttime1, endttime1),:);
    X = times(F.SHROUT,F.PRC);
    XX = sum(X);
    VW = array2table(X/XX);
    F = [F VW];

```

---

---

```
E = [E;F];
end

OTHER = E;
clear RETAILONE
clear RETAILTWO
```

## Average return per month per industry

```
MININGRET =
    table(MINING.date,times(MINING.Var1,MINING.RET));
MININGRET = table2timetable(MININGRET);
MININGRET = retime(MININGRET,'monthly','sum');
MININGRET = timetable2table(MININGRET);
MININGRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

FOODRET = table(FOOD.date,times(FOOD.Var1,FOOD.RET));
FOODRET = table2timetable(FOODRET);
FOODRET = retime(FOODRET,'monthly','sum');
FOODRET = timetable2table(FOODRET);
FOODRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

APPARELRET =
    table(APPAREL.date,times(APPAREL.Var1,APPAREL.RET));
APPARELRET = table2timetable(APPARELRET);
APPARELRET = retime(APPARELRET,'monthly','sum');
APPARELRET = timetable2table(APPARELRET);
APPARELRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

PAPERRET = table(PAPER.date,times(PAPER.Var1,PAPER.RET));
PAPERRET = table2timetable(PAPERRET);
PAPERRET = retime(PAPERRET,'monthly','sum');
PAPERRET = timetable2table(PAPERRET);
PAPERRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

CHEMICALSRET =
    table(CHEMICALS.date,times(CHEMICALS.Var1,CHEMICALS.RET));
CHEMICALSRET = table2timetable(CHEMICALSRET);
CHEMICALSRET = retime(CHEMICALSRET,'monthly','sum');
CHEMICALSRET = timetable2table(CHEMICALSRET);
CHEMICALSRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

PETROLEUMRET =
    table(PETROLEUM.date,times(PETROLEUM.Var1,PETROLEUM.RET));
PETROLEUMRET = table2timetable(PETROLEUMRET);
PETROLEUMRET = retime(PETROLEUMRET,'monthly','sum');
PETROLEUMRET = timetable2table(PETROLEUMRET);
PETROLEUMRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

CONSTRUCTIONRET =
    table(CONSTRUCTION.date,times(CONSTRUCTION.Var1,CONSTRUCTION.RET));
CONSTRUCTIONRET = table2timetable(CONSTRUCTIONRET);
CONSTRUCTIONRET = retime(CONSTRUCTIONRET,'monthly','sum');
```



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```

CONSTRUCTIONRET      = timetable2table(CONSTRUCTIONRET);
CONSTRUCTIONRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

PRIMMETALSRET        =
    table(PRIMMETALS.date,times(PRIMMETALS.Var1,PRIMMETALS.RET));
PRIMMETALSRET        = table2timetable(PRIMMETALSRET);
PRIMMETALSRET        = retime(PRIMMETALSRET,'monthly','sum');
PRIMMETALSRET        = timetable2table(PRIMMETALSRET);
PRIMMETALSRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

FABMETALSRET         =
    table(FABMETALS.date,times(FABMETALS.Var1,FABMETALS.RET));
FABMETALSRET         = table2timetable(FABMETALSRET);
FABMETALSRET         = retime(FABMETALSRET,'monthly','sum');
FABMETALSRET         = timetable2table(FABMETALSRET);
FABMETALSRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

MACHINERYRET         =
    table(MACHINERY.date,times(MACHINERY.Var1,MACHINERY.RET));
MACHINERYRET         = table2timetable(MACHINERYRET);
MACHINERYRET         = retime(MACHINERYRET,'monthly','sum');
MACHINERYRET         = timetable2table(MACHINERYRET);
MACHINERYRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

ELECTRICALQRET      =
    table(ELECTRICALQ.date,times(ELECTRICALQ.Var1,ELECTRICALQ.RET));
ELECTRICALQRET      = table2timetable(ELECTRICALQRET);
ELECTRICALQRET      = retime(ELECTRICALQRET,'monthly','sum');
ELECTRICALQRET      = timetable2table(ELECTRICALQRET);
ELECTRICALQRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

TRANSPORTEQRET      =
    table(TRANSPORTEQ.date,times(TRANSPORTEQ.Var1,TRANSPORTEQ.RET));
TRANSPORTEQRET      = table2timetable(TRANSPORTEQRET);
TRANSPORTEQRET      = retime(TRANSPORTEQRET,'monthly','sum');
TRANSPORTEQRET      = timetable2table(TRANSPORTEQRET);
TRANSPORTEQRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

MANUFACTURINGRET    =
    table(MANUFACTURING.date,times(MANUFACTURING.Var1,MANUFACTURING.RET));
MANUFACTURINGRET    = table2timetable(MANUFACTURINGRET);
MANUFACTURINGRET    = retime(MANUFACTURINGRET,'monthly','sum');
MANUFACTURINGRET    = timetable2table(MANUFACTURINGRET);
MANUFACTURINGRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

RAILROADSRET        =
    table(RAILROADS.date,times(RAILROADS.Var1,RAILROADS.RET));
RAILROADSRET        = table2timetable(RAILROADSRET);
RAILROADSRET        = retime(RAILROADSRET,'monthly','sum');
RAILROADSRET        = timetable2table(RAILROADSRET);
RAILROADSRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

OTHERTRANSPORTRET   =
    table(OTHERTRANSPORT.date,times(OTHERTRANSPORT.Var1,OTHERTRANSPORT.RET));

```

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---

```

OTHERTRANSPORTRET          = table2timetable(OTHERTRANSPORTRET);
OTHERTRANSPORTRET          = retime(OTHERTRANSPORTRET, 'monthly', 'sum');
OTHERTRANSPORTRET          = timetable2table(OTHERTRANSPORTRET);
OTHERTRANSPORTRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

UTILITIESRET                =
    table(UTILITIES.date,times(UTILITIES.Var1,UTILITIES.RET));
UTILITIESRET                = table2timetable(UTILITIESRET);
UTILITIESRET                = retime(UTILITIESRET, 'monthly', 'sum');
UTILITIESRET                = timetable2table(UTILITIESRET);
UTILITIESRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

DEPTSTORESRET              =
    table(DEPTSTORES.date,times(DEPTSTORES.Var1,DEPTSTORES.RET));
DEPTSTORESRET              = table2timetable(DEPTSTORESRET);
DEPTSTORESRET              = retime(DEPTSTORESRET, 'monthly', 'sum');
DEPTSTORESRET              = timetable2table(DEPTSTORESRET);
DEPTSTORESRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

RETAILRET                  =
    table(RETAIL.date,times(RETAIL.Var1,RETAIL.RET));
RETAILRET                  = table2timetable(RETAILRET);
RETAILRET                  = retime(RETAILRET, 'monthly', 'sum');
RETAILRET                  = timetable2table(RETAILRET);
RETAILRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

HOTELSERVRET               =
    table(HOTELSERV.date,times(HOTELSERV.Var1,HOTELSERV.RET));
HOTELSERVRET               = table2timetable(HOTELSERVRET);
HOTELSERVRET               = retime(HOTELSERVRET, 'monthly', 'sum');
HOTELSERVRET               = timetable2table(HOTELSERVRET);
HOTELSERVRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

HEALTHMEMBERRET           =
    table(HEALTHMEMBER.date,times(HEALTHMEMBER.Var1,HEALTHMEMBER.RET));
HEALTHMEMBERRET           = table2timetable(HEALTHMEMBERRET);
HEALTHMEMBERRET           = retime(HEALTHMEMBERRET, 'monthly', 'sum');
HEALTHMEMBERRET           = timetable2table(HEALTHMEMBERRET);
HEALTHMEMBERRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

OTHERRET                   = table(OTHER.date,times(OTHER.Var1,OTHER.RET));
OTHERRET                   = table2timetable(OTHERRET);
OTHERRET                   = retime(OTHERRET, 'monthly', 'sum');
OTHERRET                   = timetable2table(OTHERRET);
OTHERRET.Properties.VariableNames = {'MONTH' 'AVGRETURN'};

```

## TABLE CONTAINING ALL RETURNS

```

DATES = OTHERRET.MONTH;
RETURNS = table([DATES],[MININGRET.AVGRETURN],
    [FOODRET.AVGRETURN],[APPARELRET.AVGRETURN],[PAPERRET.AVGRETURN],
    [CHEMICALSRET.AVGRETURN],[PETROLEUMRET.AVGRETURN],

```

---

```

[CONSTRUCTIONRET.AVGRETURN],[PRIMMETALSRET.AVGRETURN],
[FABMETALSRET.AVGRETURN],[MACHINERYRET.AVGRETURN],
[ELECTRICALREQRET.AVGRETURN],[TRANSPORTEQRET.AVGRETURN],
[MANUFACTURINGRET.AVGRETURN],[RAILROADSRET.AVGRETURN],
[OTHERTRANSPORTRET.AVGRETURN],[UTILITIESRET.AVGRETURN],
[DEPTSTORESRET.AVGRETURN],[RETAILRET.AVGRETURN],
[HOTELSERVRET.AVGRETURN],[HEALTHMEMBERRET.AVGRETURN],
[OTHERRET.AVGRETURN]);
RETURNS.Properties.VariableNames =
    {'MONTH' 'MINING' 'FOOD' 'APPAREL' 'PAPER' 'CHEMICALS' 'PETROLEUM' 'CONSTRUCTION'}

RETURNS = table2timetable(RETURNS);

```

## SEMIRET

```

dt = calmonths(6);
SEMIRETONE = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

RETURNS(1,:) = [];
SEMIRETTWO = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

RETURNS(1,:) = [];
SEMIRETTTHREE = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

RETURNS(1,:) = [];
SEMIRETFOUR = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

RETURNS(1,:) = [];
SEMIRETFIVE = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

RETURNS(1,:) = [];
SEMIRETSIX = retime(RETURNS, 'regular', 'sum', 'timestep', dt);

ALLSEMI =
    [SEMIRETONE; SEMIRETTWO; SEMIRETTTHREE; SEMIRETFOUR; SEMIRETFIVE; SEMIRETSIX];

SEMIRETONE = timetable2table(SEMIRETONE);
SEMIRETONE(:,1) = [];

SEMIRETONE = table2array(SEMIRETONE);

```

## finding the best ones ONE

```

MAX = maxk(SEMIRETONE, 3, 2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,:)==SEMIRETONE(1,:));
colA = col;
[row,col] = find(MAXB(1,:)==SEMIRETONE(1,:));
colB = col;

```

---

```

[row,col] = find(MAXC(1,:)==SEMIRETONE(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VONEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VONEA.Properties.VariableNames = ["BEST"];
MONTH = VONEA.MONTH;
VONEA = timetable2table(VONEA);
VONEA = table2array(table(VONEA.BEST));

VONEB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
VONEB.Properties.VariableNames = ["BEST"];
VONEB = timetable2table(VONEB);
VONEB = table2array(table(VONEB.BEST));

VONEC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
VONEC.Properties.VariableNames = ["BEST"];
VONEC = timetable2table(VONEC);
VONEC = table2array(table(VONEC.BEST));

A = table2array(table(VONEA,VONEB,VONEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
VONE = table(MONTH,BEST);

INDMAXA = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETONE,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,:)==SEMIRETONE(K,:));
colA = col;
[row,col] = find(MAXB(K,:)==SEMIRETONE(K,:));
colB = col;
[row,col] = find(MAXC(K,:)==SEMIRETONE(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VONEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VONEA.Properties.VariableNames = ["BEST"];
MONTH = VONEA.MONTH;

```

---

---

```

VONEA = timetable2table(VONEA);
VONEA = table2array(table(VONEA.BEST));

VONEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colB);
VONEB.Properties.VariableNames = ["BEST"];
VONEB = timetable2table(VONEB);
VONEB = table2array(table(VONEB.BEST));

VONEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colC);
VONEC.Properties.VariableNames = ["BEST"];
VONEC = timetable2table(VONEC);
VONEC = table2array(table(VONEC.BEST));

A = table2array(table(VONEA,VONEB,VONEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXA = [INDMAXA;IND];
VONE = [VONE;V2];
end

```

## finding the best ones ONE

```

MIN = mink(SEMIRETONE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,)==SEMIRETONE(1,));
colA = col;
[row,col] = find(MINB(1,)==SEMIRETONE(1,));
colB = col;
[row,col] = find(MINC(1,)==SEMIRETONE(1,));
colC = col;

infmt = 'dd-MM-yyyy';
starttimel = datetime('1-8-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LONEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colA);
LONEA.Properties.VariableNames = ["BEST"];
MONTH = LONEA.MONTH;
LONEA = timetable2table(LONEA);
LONEA = table2array(table(LONEA.BEST));

LONEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colB);
LONEB.Properties.VariableNames = ["BEST"];
LONEB = timetable2table(LONEB);

```

---

```

LONEB = table2array(table(LONEB.BEST));

LONEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colC);
LONEC.Properties.VariableNames = ["BEST"];
LONEC = timetable2table(LONEC);
LONEC = table2array(table(LONEC.BEST));

A = table2array(table(LONEA,LONEB,LONEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LONE = table(MONTH,WORST);

INDMINA = table(colA,colB,colC);

for K = 2 : 84
MIN = mink(SEMIRETONE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,)==SEMIRETONE(K,));
colA = col;
[row,col] = find(MINB(K,)==SEMIRETONE(K,));
colB = col;
[row,col] = find(MINC(K,)==SEMIRETONE(K,));
colC = col;

starttimel = datenum(endtimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LONEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colA);
LONEA.Properties.VariableNames = ["BEST"];
MONTH = LONEA.MONTH;
LONEA = timetable2table(LONEA);
LONEA = table2array(table(LONEA.BEST));

LONEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colB);
LONEB.Properties.VariableNames = ["BEST"];
LONEB = timetable2table(LONEB);
LONEB = table2array(table(LONEB.BEST));

LONEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colC);
LONEC.Properties.VariableNames = ["BEST"];
LONEC = timetable2table(LONEC);
LONEC = table2array(table(LONEC.BEST));

A = table2array(table(LONEA,LONEB,LONEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);

```

---

---

```

V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMINA = [INDMINA;IND];
LONE = [LONE;V2];
end

ONE = timetable(VONE.MONTH,VONE.BEST,LONE.WORST);

SEMIRETTWO = timetable2table(SEMIRETTWO);
SEMIRETTWO(:,1) = [];

SEMIRETTWO = table2array(SEMIRETTWO);

```

## finding the best ones TWO

```

MAX = maxk(SEMIRETTWO,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,)==SEMIRETTWO(1,:));
colA = col;
[row,col] = find(MAXB(1,)==SEMIRETTWO(1,:));
colB = col;
[row,col] = find(MAXC(1,)==SEMIRETTWO(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VTWOA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VTWOA.Properties.VariableNames = ["BEST"];
MONTH = VTWOA.MONTH;
VTWOA = timetable2table(VTWOA);
VTWOA = table2array(table(VTWOA.BEST));

VTWOB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
VTWOB.Properties.VariableNames = ["BEST"];
VTWOB = timetable2table(VTWOB);
VTWOB = table2array(table(VTWOB.BEST));

VTWOC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
VTWOC.Properties.VariableNames = ["BEST"];
VTWOC = timetable2table(VTWOC);
VTWOC = table2array(table(VTWOC.BEST));

A = table2array(table(VTWOA,VTWOB,VTWOC));
A = transpose(A);
BEST = mean(A);

```

---

```

BEST = transpose(BEST);
VTWO = table(MONTH,BEST);

INDMAXB = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETTWO,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,)==SEMIRETTWO(K,:));
colA = col;
[row,col] = find(MAXB(K,)==SEMIRETTWO(K,:));
colB = col;
[row,col] = find(MAXC(K,)==SEMIRETTWO(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VTWOA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VTWOA.Properties.VariableNames = ["BEST"];
MONTH = VTWOA.MONTH;
VTWOA = timetable2table(VTWOA);
VTWOA = table2array(table(VTWOA.BEST));

VTWOB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
VTWOB.Properties.VariableNames = ["BEST"];
VTWOB = timetable2table(VTWOB);
VTWOB = table2array(table(VTWOB.BEST));

VTWOC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
VTWOC.Properties.VariableNames = ["BEST"];
VTWOC = timetable2table(VTWOC);
VTWOC = table2array(table(VTWOC.BEST));

A = table2array(table(VTWOA,VTWOB,VTWOC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXB = [INDMAXB;IND];
VTWO = [VTWO;V2];
end

MIN = mink(SEMIRETTWO,3,2);
MIN = array2table(MIN);

```

---



---

```

MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,:)==SEMIRETTWO(1,:));
colA = col;
[row,col] = find(MINB(1,:)==SEMIRETTWO(1,:));
colB = col;
[row,col] = find(MINC(1,:)==SEMIRETTWO(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
LTWOA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
LTWOA.Properties.VariableNames = ["BEST"];
MONTH = LTWOA.MONTH;
LTWOA = timetable2table(LTWOA);
LTWOA = table2array(table(LTWOA.BEST));

LTWOB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
LTWOB.Properties.VariableNames = ["BEST"];
LTWOB = timetable2table(LTWOB);
LTWOB = table2array(table(LTWOB.BEST));

LTWOC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
LTWOC.Properties.VariableNames = ["BEST"];
LTWOC = timetable2table(LTWOC);
LTWOC = table2array(table(LTWOC.BEST));

A = table2array(table(LTWOA,LTWOB,LTWOC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LTWO = table(MONTH,WORST);

INDMINB = table(colA,colB,colC);

for K = 2 : 84
MIN = mink(SEMIRETTWO,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,:)==SEMIRETTWO(K,:));
colA = col;
[row,col] = find(MINB(K,:)==SEMIRETTWO(K,:));
colB = col;
[row,col] = find(MINC(K,:)==SEMIRETTWO(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');

```

---

---

```

starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
LTWOA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
LTWOA.Properties.VariableNames = ["BEST"];
MONTH = LTWOA.MONTH;
LTWOA = timetable2table(LTWOA);
LTWOA = table2array(table(LTWOA.BEST));

LTWOB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
LTWOB.Properties.VariableNames = ["BEST"];
LTWOB = timetable2table(LTWOB);
LTWOB = table2array(table(LTWOB.BEST));

LTWOC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
LTWOC.Properties.VariableNames = ["BEST"];
LTWOC = timetable2table(LTWOC);
LTWOC = table2array(table(LTWOC.BEST));

A = table2array(table(LTWOA,LTWOB,LTWOC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMINB = [INDMINB;IND];
LTWO = [LTWO;V2];
end

TWO = timetable(VTWO.MONTH,VTWO.BEST,LTWO.WORST);

SEMIRETTHREE = timetable2table(SEMIRETTHREE);
SEMIRETTHREE(:,1) = [];

SEMIRETTHREE = table2array(SEMIRETTHREE);

```

## finding the best ones THREE

```

MAX = maxk(SEMIRETTHREE,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,:)==SEMIRETTHREE(1,:));
colA = col;
[row,col] = find(MAXB(1,:)==SEMIRETTHREE(1,:));
colB = col;
[row,col] = find(MAXC(1,:)==SEMIRETTHREE(1,:));
colC = col;

```

---

```

infmt = 'dd-MM-yyyy';
starttimel = datetime('1-8-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
VTHREEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
VTHREEA.Properties.VariableNames = ["BEST"];
MONTH = VTHREEA.MONTH;
VTHREEA = timetable2table(VTHREEA);
VTHREEA = table2array(table(VTHREEA.BEST));

VTHREEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);
VTHREEB.Properties.VariableNames = ["BEST"];
VTHREEB = timetable2table(VTHREEB);
VTHREEB = table2array(table(VTHREEB.BEST));

VTHREEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
VTHREEC.Properties.VariableNames = ["BEST"];
VTHREEC = timetable2table(VTHREEC);
VTHREEC = table2array(table(VTHREEC.BEST));

A = table2array(table(VTHREEA,VTHREEB,VTHREEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
VTHREE = table(MONTH,BEST);

INDMAXC = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETTHREE,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,)==SEMIRETTHREE(K,:));
colA = col;
[row,col] = find(MAXB(K,)==SEMIRETTHREE(K,:));
colB = col;
[row,col] = find(MAXC(K,)==SEMIRETTHREE(K,:));
colC = col;

starttimel = datenum(endtimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
VTHREEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
VTHREEA.Properties.VariableNames = ["BEST"];

```

---

---

```

MONTH = VTHREEA.MONTH;
VTHREEA = timetable2table(VTHREEA);
VTHREEA = table2array(table(VTHREEA.BEST));

VTHREEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);
VTHREEB.Properties.VariableNames = ["BEST"];
VTHREEB = timetable2table(VTHREEB);
VTHREEB = table2array(table(VTHREEB.BEST));

VTHREEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
VTHREEC.Properties.VariableNames = ["BEST"];
VTHREEC = timetable2table(VTHREEC);
VTHREEC = table2array(table(VTHREEC.BEST));

A = table2array(table(VTHREEA,VTHREEB,VTHREEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXC = [INDMAXC;IND];
VTHREE = [VTHREE;V2];
end

MIN = mink(SEMIRETTHREE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,:)==SEMIRETTHREE(1,:));
colA = col;
[row,col] = find(MINB(1,:)==SEMIRETTHREE(1,:));
colB = col;
[row,col] = find(MINC(1,:)==SEMIRETTHREE(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttimel = datetime('1-8-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LTHREEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
LTHREEA.Properties.VariableNames = ["BEST"];
MONTH = LTHREEA.MONTH;
LTHREEA = timetable2table(LTHREEA);
LTHREEA = table2array(table(LTHREEA.BEST));

LTHREEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);

```

---

---

```

LTHREEB.Properties.VariableNames = ["BEST"];
LTHREEB = timetable2table(LTHREEB);
LTHREEB = table2array(table(LTHREEB.BEST));

LTHREEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
LTHREEC.Properties.VariableNames = ["BEST"];
LTHREEC = timetable2table(LTHREEC);
LTHREEC = table2array(table(LTHREEC.BEST));

A = table2array(table(LTHREEA,LTHREEB,LTHREEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LTHREE = table(MONTH,WORST);

INDMINC = table(colA,colB,colC);

for K = 2 : 84
MIN = mink(SEMIRETTHREE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,)==SEMIRETTHREE(K,:));
colA = col;
[row,col] = find(MINB(K,)==SEMIRETTHREE(K,:));
colB = col;
[row,col] = find(MINC(K,)==SEMIRETTHREE(K,:));
colC = col;

starttimel = datenum(endtimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LTHREEA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
LTHREEA.Properties.VariableNames = ["BEST"];
MONTH = LTHREEA.MONTH;
LTHREEA = timetable2table(LTHREEA);
LTHREEA = table2array(table(LTHREEA.BEST));

LTHREEB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);
LTHREEB.Properties.VariableNames = ["BEST"];
LTHREEB = timetable2table(LTHREEB);
LTHREEB = table2array(table(LTHREEB.BEST));

LTHREEC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
LTHREEC.Properties.VariableNames = ["BEST"];
LTHREEC = timetable2table(LTHREEC);

```

---

---

```

LTHREEC = table2array(table(LTHREEC.BEST));

A = table2array(table(LTHREEA,LTHREEB,LTHREEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMINC = [INDMINC;IND];
LTHREE = [LTHREE;V2];
end

THREE = timetable(VTHREE.MONTH,VTHREE.BEST,LTHREE.WORST);

SEMIRETFOUR = timetable2table(SEMIRETFOUR);
SEMIRETFOUR(:,1) = [];

SEMIRETFOUR = table2array(SEMIRETFOUR);

```

## finding the best ones THREE

```

MAX = maxk(SEMIRETFOUR,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,:)==SEMIRETFOUR(1,:));
colA = col;
[row,col] = find(MAXB(1,:)==SEMIRETFOUR(1,:));
colB = col;
[row,col] = find(MAXC(1,:)==SEMIRETFOUR(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980','InputFormat',infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1,5,'month');
endtime1 = datestr(endtime1);
VFOURA = RETURNS(isbetween(RETURNS.MONTH,starttime1,endtime1),
colA);
VFOURA.Properties.VariableNames = ["BEST"];
MONTH = VFOURA.MONTH;
VFOURA = timetable2table(VFOURA);
VFOURA = table2array(table(VFOURA.BEST));

VFOURB = RETURNS(isbetween(RETURNS.MONTH,starttime1,endtime1),
colB);
VFOURB.Properties.VariableNames = ["BEST"];
VFOURB = timetable2table(VFOURB);
VFOURB = table2array(table(VFOURB.BEST));

```

---

```

VFOURC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
VFOURC.Properties.VariableNames = ["BEST"];
VFOURC = timetable2table(VFOURC);
VFOURC = table2array(table(VFOURC.BEST));

A = table2array(table(VFOURA,VFOURB,VFOURC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
VFOUR = table(MONTH,BEST);

INDMAXD = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETFOUR,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,)==SEMIRETFOUR(K,:));
colA = col;
[row,col] = find(MAXB(K,)==SEMIRETFOUR(K,:));
colB = col;
[row,col] = find(MAXC(K,)==SEMIRETFOUR(K,:));
colC = col;

starttimel = datenum(endtimel);
starttimel = addtodate(starttimel, 1, 'month');
starttimel = datestr(starttimel);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
VFOURA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
VFOURA.Properties.VariableNames = ["BEST"];
MONTH = VFOURA.MONTH;
VFOURA = timetable2table(VFOURA);
VFOURA = table2array(table(VFOURA.BEST));

VFOURB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);
VFOURB.Properties.VariableNames = ["BEST"];
VFOURB = timetable2table(VFOURB);
VFOURB = table2array(table(VFOURB.BEST));

VFOURC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
VFOURC.Properties.VariableNames = ["BEST"];
VFOURC = timetable2table(VFOURC);
VFOURC = table2array(table(VFOURC.BEST));

A = table2array(table(VFOURA,VFOURB,VFOURC));
A = transpose(A);

```

---

---

```

BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXD = [INDMAXD;IND];
VFOUR = [VFOUR;V2];
end

MIN = mink(SEMIRETFOUR,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,:)==SEMIRETFOUR(1,:));
colA = col;
[row,col] = find(MINB(1,:)==SEMIRETFOUR(1,:));
colB = col;
[row,col] = find(MINC(1,:)==SEMIRETFOUR(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttimel = datetime('1-8-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LFOURA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colA);
LFOURA.Properties.VariableNames = ["BEST"];
MONTH = LFOURA.MONTH;
LFOURA = timetable2table(LFOURA);
LFOURA = table2array(table(LFOURA.BEST));

LFOURB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colB);
LFOURB.Properties.VariableNames = ["BEST"];
LFOURB = timetable2table(LFOURB);
LFOURB = table2array(table(LFOURB.BEST));

LFOURC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel),
    colC);
LFOURC.Properties.VariableNames = ["BEST"];
LFOURC = timetable2table(LFOURC);
LFOURC = table2array(table(LFOURC.BEST));

A = table2array(table(LFOURA,LFOURB,LFOURC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LFOUR = table(MONTH,WORST);

INDMIND = table(colA,colB,colC);

```

---



---

```

for K = 2 : 84
MIN = mink(SEMIRETFOUR,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,)==SEMIRETFOUR(K,:));
colA = col;
[row,col] = find(MINB(K,)==SEMIRETFOUR(K,:));
colB = col;
[row,col] = find(MINC(K,)==SEMIRETFOUR(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
LFOURA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
colA);
LFOURA.Properties.VariableNames = ["BEST"];
MONTH = LFOURA.MONTH;
LFOURA = timetable2table(LFOURA);
LFOURA = table2array(table(LFOURA.BEST));

LFOURB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
colB);
LFOURB.Properties.VariableNames = ["BEST"];
LFOURB = timetable2table(LFOURB);
LFOURB = table2array(table(LFOURB.BEST));

LFOURC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
colC);
LFOURC.Properties.VariableNames = ["BEST"];
LFOURC = timetable2table(LFOURC);
LFOURC = table2array(table(LFOURC.BEST));

A = table2array(table(LFOURA,LFOURB,LFOURC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMIND = [INDMIND;IND];
LFOUR = [LFOUR;V2];
end

FOUR = timetable(VFOUR.MONTH,VFOUR.BEST,LFOUR.WORST);

SEMIRETFIVE = timetable2table(SEMIRETFIVE);
SEMIRETFIVE(:,1) = [];

```

---

---

```
SEMIRETFIVE = table2array(SEMIRETFIVE);
```

## finding the best ones THREE

```
MAX = maxk(SEMIRETFIVE,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,:)==SEMIRETFIVE(1,:));
colA = col;
[row,col] = find(MAXB(1,:)==SEMIRETFIVE(1,:));
colB = col;
[row,col] = find(MAXC(1,:)==SEMIRETFIVE(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VFIVEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colA);
VFIVEA.Properties.VariableNames = ["BEST"];
MONTH = VFIVEA.MONTH;
VFIVEA = timetable2table(VFIVEA);
VFIVEA = table2array(table(VFIVEA.BEST));

VFIVEB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colB);
VFIVEB.Properties.VariableNames = ["BEST"];
VFIVEB = timetable2table(VFIVEB);
VFIVEB = table2array(table(VFIVEB.BEST));

VFIVEC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colC);
VFIVEC.Properties.VariableNames = ["BEST"];
VFIVEC = timetable2table(VFIVEC);
VFIVEC = table2array(table(VFIVEC.BEST));

A = table2array(table(VFIVEA,VFIVEB,VFIVEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
VFIVE = table(MONTH,BEST);

INDMAXE = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETFIVE,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
```

---

```

MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,')==SEMIRETFIVE(K,:));
colA = col;
[row,col] = find(MAXB(K,')==SEMIRETFIVE(K,:));
colB = col;
[row,col] = find(MAXC(K,')==SEMIRETFIVE(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VFIVEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colA);
VFIVEA.Properties.VariableNames = ["BEST"];
MONTH = VFIVEA.MONTH;
VFIVEA = timetable2table(VFIVEA);
VFIVEA = table2array(table(VFIVEA.BEST));

VFIVEB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colB);
VFIVEB.Properties.VariableNames = ["BEST"];
VFIVEB = timetable2table(VFIVEB);
VFIVEB = table2array(table(VFIVEB.BEST));

VFIVEC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colC);
VFIVEC.Properties.VariableNames = ["BEST"];
VFIVEC = timetable2table(VFIVEC);
VFIVEC = table2array(table(VFIVEC.BEST));

A = table2array(table(VFIVEA,VFIVEB,VFIVEC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXE = [INDMAXE;IND];
VFIVE = [VFIVE;V2];
end

MIN = mink(SEMIRETFIVE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,')==SEMIRETFIVE(1,:));
colA = col;
[row,col] = find(MINB(1,')==SEMIRETFIVE(1,:));

```

---

---

```

colB = col;
[row,col] = find(MINC(1,')==SEMIRETFIVE(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
LFIVEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colA);
LFIVEA.Properties.VariableNames = ["BEST"];
MONTH = LFIVEA.MONTH;
LFIVEA = timetable2table(LFIVEA);
LFIVEA = table2array(table(LFIVEA.BEST));

LFIVEB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colB);
LFIVEB.Properties.VariableNames = ["BEST"];
LFIVEB = timetable2table(LFIVEB);
LFIVEB = table2array(table(LFIVEB.BEST));

LFIVEC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colC);
LFIVEC.Properties.VariableNames = ["BEST"];
LFIVEC = timetable2table(LFIVEC);
LFIVEC = table2array(table(LFIVEC.BEST));

A = table2array(table(LFIVEA,LFIVEB,LFIVEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LFIVE = table(MONTH,WORST);

INDMINE = table(colA,colB,colC);

for K = 2 : 84
MIN = mink(SEMIRETFIVE,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,')==SEMIRETFIVE(K,:));
colA = col;
[row,col] = find(MINB(K,')==SEMIRETFIVE(K,:));
colB = col;
[row,col] = find(MINC(K,')==SEMIRETFIVE(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');

```

---

---

```

endtime1 = datestr(endtime1);
LFIVEA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colA);
LFIVEA.Properties.VariableNames = ["BEST"];
MONTH = LFIVEA.MONTH;
LFIVEA = timetable2table(LFIVEA);
LFIVEA = table2array(table(LFIVEA.BEST));

LFIVEB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colB);
LFIVEB.Properties.VariableNames = ["BEST"];
LFIVEB = timetable2table(LFIVEB);
LFIVEB = table2array(table(LFIVEB.BEST));

LFIVEC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1),
    colC);
LFIVEC.Properties.VariableNames = ["BEST"];
LFIVEC = timetable2table(LFIVEC);
LFIVEC = table2array(table(LFIVEC.BEST));

A = table2array(table(LFIVEA,LFIVEB,LFIVEC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMINE = [INDMINE;IND];
LFIVE = [LFIVE;V2];
end

FIVE = timetable(VFIVE.MONTH,VFIVE.BEST,LFIVE.WORST);

SEMIRETSIX = timetable2table(SEMIRETSIX);
SEMIRETSIX(:,1) = [];

SEMIRETSIX = table2array(SEMIRETSIX);

```

## finding the best ones THREE

```

MAX = maxk(SEMIRETSIX,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(1,)==SEMIRETSIX(1,:));
colA = col;
[row,col] = find(MAXB(1,)==SEMIRETSIX(1,:));
colB = col;
[row,col] = find(MAXC(1,)==SEMIRETSIX(1,:));
colC = col;

```

---

```

infmt = 'dd-MM-yyyy';
starttime1 = datetime('1-8-1980', 'InputFormat', infmt);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VSIXA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VSIXA.Properties.VariableNames = ["BEST"];
MONTH = VSIXA.MONTH;
VSIXA = timetable2table(VSIXA);
VSIXA = table2array(table(VSIXA.BEST));

VSIXB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
VSIXB.Properties.VariableNames = ["BEST"];
VSIXB = timetable2table(VSIXB);
VSIXB = table2array(table(VSIXB.BEST));

VSIXC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
VSIXC.Properties.VariableNames = ["BEST"];
VSIXC = timetable2table(VSIXC);
VSIXC = table2array(table(VSIXC.BEST));

A = table2array(table(VSIXA,VSIXB,VSIXC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
VSIX = table(MONTH,BEST);

INDMAXF = table(colA,colB,colC);

for K = 2 : 84
MAX = maxk(SEMIRETSIX,3,2);
MAX = array2table(MAX);
MAXA = MAX.MAX1;
MAXB = MAX.MAX2;
MAXC = MAX.MAX3;
[row,col] = find(MAXA(K,)==SEMIRETSIX(K,:));
colA = col;
[row,col] = find(MAXB(K,)==SEMIRETSIX(K,:));
colB = col;
[row,col] = find(MAXC(K,)==SEMIRETSIX(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
VSIXA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
VSIXA.Properties.VariableNames = ["BEST"];
MONTH = VSIXA.MONTH;
VSIXA = timetable2table(VSIXA);
VSIXA = table2array(table(VSIXA.BEST));

```

---

---

```

VSIXB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colB);
VSIXB.Properties.VariableNames = ["BEST"];
VSIXB = timetable2table(VSIXB);
VSIXB = table2array(table(VSIXB.BEST));

VSIXC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colC);
VSIXC.Properties.VariableNames = ["BEST"];
VSIXC = timetable2table(VSIXC);
VSIXC = table2array(table(VSIXC.BEST));

A = table2array(table(VSIXA,VSIXB,VSIXC));
A = transpose(A);
BEST = mean(A);
BEST = transpose(BEST);
V2 = table(MONTH,BEST);

IND = table(colA,colB,colC);

INDMAXF = [INDMAXF;IND];
VSIX = [VSIX;V2];
end

MIN = mink(SEMIRETSIX,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(1,)==SEMIRETSIX(1,:));
colA = col;
[row,col] = find(MINB(1,)==SEMIRETSIX(1,:));
colB = col;
[row,col] = find(MINC(1,)==SEMIRETSIX(1,:));
colC = col;

infmt = 'dd-MM-yyyy';
starttimel = datetime('1-8-1980', 'InputFormat', infmt);
endtimel = datenum(starttimel);
endtimel = addtodate(endtimel, 5, 'month');
endtimel = datestr(endtimel);
LSIXA = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colA);
LSIXA.Properties.VariableNames = ["BEST"];
MONTH = LSIXA.MONTH;
LSIXA = timetable2table(LSIXA);
LSIXA = table2array(table(LSIXA.BEST));

LSIXB = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colB);
LSIXB.Properties.VariableNames = ["BEST"];
LSIXB = timetable2table(LSIXB);
LSIXB = table2array(table(LSIXB.BEST));

LSIXC = RETURNS(isbetween(RETURNS.MONTH, starttimel, endtimel), colC);
LSIXC.Properties.VariableNames = ["BEST"];
LSIXC = timetable2table(LSIXC);
LSIXC = table2array(table(LSIXC.BEST));

```

---

---

```

A = table2array(table(LSIXA,LSIXB,LSIXC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
LSIX = table(MONTH,WORST);

INDMINF = table(colA,colB,colC);

for K = 2 : 84
MIN = mink(SEMIRETSIX,3,2);
MIN = array2table(MIN);
MINA = MIN.MIN1;
MINB = MIN.MIN2;
MINC = MIN.MIN3;
[row,col] = find(MINA(K,)==SEMIRETSIX(K,:));
colA = col;
[row,col] = find(MINB(K,)==SEMIRETSIX(K,:));
colB = col;
[row,col] = find(MINC(K,)==SEMIRETSIX(K,:));
colC = col;

starttime1 = datenum(endtime1);
starttime1 = addtodate(starttime1, 1, 'month');
starttime1 = datestr(starttime1);
endtime1 = datenum(starttime1);
endtime1 = addtodate(endtime1, 5, 'month');
endtime1 = datestr(endtime1);
LSIXA = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colA);
LSIXA.Properties.VariableNames = ["BEST"];
MONTH = LSIXA.MONTH;
LSIXA = timetable2table(LSIXA);
LSIXA = table2array(table(LSIXA.BEST));

LSIXB = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colB);
LSIXB.Properties.VariableNames = ["BEST"];
LSIXB = timetable2table(LSIXB);
LSIXB = table2array(table(LSIXB.BEST));

LSIXC = RETURNS(isbetween(RETURNS.MONTH, starttime1, endtime1), colC);
LSIXC.Properties.VariableNames = ["BEST"];
LSIXC = timetable2table(LSIXC);
LSIXC = table2array(table(LSIXC.BEST));

A = table2array(table(LSIXA,LSIXB,LSIXC));
A = transpose(A);
WORST = mean(A);
WORST = transpose(WORST);
V2 = table(MONTH,WORST);

IND = table(colA,colB,colC);

INDMINF = [INDMINF;IND];
LSIX = [LSIX;V2];

```

---



---

```
end
```

```
SIX = timetable(VSIX.MONTH,VSIX.BEST,LSIX.WORST);
```

## mean log per month

```
INDUSTRYMONTHLYLOG = [ONE;TWO;THREE;FOUR;FIVE;SIX];
```

```
INDUSTRYMONTHLYLOG = retime(INDUSTRYMONTHLYLOG,'monthly','mean');
```

```
INDUSTRYMONTHLYLOG =
```

```
    timetable(INDUSTRYMONTHLYLOG.Time,INDUSTRYMONTHLYLOG.Var1,INDUSTRYMONTHLYLOG.Var2  
(INDUSTRYMONTHLYLOG.Var1-INDUSTRYMONTHLYLOG.Var2));
```

```
INDUSTRYMONTHLYLOG.Properties.VariableNames =  
    {'P1' 'P10' 'TRADINGRET'};
```

```
INDUSTRYANNUALLOG = retime(INDUSTRYMONTHLYLOG,'yearly','sum');
```

## mean per month

```
MONTH = INDUSTRYMONTHLYLOG.Time;
```

```
INDUSTRYMONTHLYMEAN = table(MONTH,(exp(INDUSTRYMONTHLYLOG.P1)-1),  
(exp(INDUSTRYMONTHLYLOG.P10)-1),((exp(INDUSTRYMONTHLYLOG.P1)-1)-  
(exp(INDUSTRYMONTHLYLOG.P10)-1)));
```

```
INDUSTRYMONTHLYMEAN.Properties.VariableNames =  
    {'MONTH' 'P1' 'P10' 'TRADINGRET'};
```

```
INDUSTRYMONTHLYMEAN = table2timetable(INDUSTRYMONTHLYMEAN);
```

```
YEAR = INDUSTRYANNUALLOG.Time;
```

```
INDUSTRYANNUALMEAN = table(YEAR,(exp(INDUSTRYANNUALLOG.P1)-1),  
(exp(INDUSTRYANNUALLOG.P10)-1),((exp(INDUSTRYANNUALLOG.P1)-1)-  
(exp(INDUSTRYANNUALLOG.P10)-1)));
```

```
INDUSTRYANNUALMEAN.Properties.VariableNames =  
    {'YEAR' 'P1' 'P10' 'TRADINGRET'};
```

```
INDUSTRYANNUALMEAN = table2timetable(INDUSTRYANNUALMEAN);
```

## cleanup

```
clear ALLSEMI
```

```
clear APPAREL
```

```
clear APPARELRET
```

```
clear CHEMICALS
```

```
clear CHEMICALSRET
```

```
clear col
```

```
clear CONSTRUCTION
```

```
clear CONSTRUCTIONRET
```

```
clear DATES
```

```
clear DEPTSTORES
```

```
clear DEPTSTORESRET
```

---

```
clear dt
clear ELECTRICALQ
clear ELECTRICALQRET
clear endtime1
clear FABMETALS
clear FABMETALSRET
clear FINANCIAL
clear FINANCIALRET
clear FIVE
clear FOOD
clear FOODRET
clear FOUR
clear HEALTHMEMBER
clear HEALTHMEMBERRET
clear HOTELSERV
clear HOTELSERVRET
clear infmt
clear L2
clear K
clear LFIVE
clear LFOUR
clear LONE
clear LSIX
clear LTHREE
clear LTWO
clear MACHINERY
clear MACHINERYRET
clear MANUFACTURING
clear MANUFACTURINGRET
clear MAX
clear MIN
clear MINING
clear MININGRET
clear MONTH
clear ONE
clear OTHER
clear OTHERRET
clear OTHERTRANSPORT
clear OTHERTRANSPORTRET
clear PAPER
clear PAPERRET
clear PETROLEUM
clear PETROLEUMRET
clear PRIMMETALS
clear PRIMMETALSRET
clear RAILROADS
clear RAILROADSRET
clear RETAIL
clear RETAILRET
clear row
clear SEMIRETFIVE
clear SEMIRETFOUR
clear SEMIRETONE
clear SEMIRETSIX
```

---

```
clear SEMIRETTTHREE
clear SEMIRETTWO
clear SIX
clear starttime1
clear THREE
clear TRANSPORTEQ
clear TRANSPORTEQRET
clear TWO
clear UTILITIES
clear UTILITIESRET
clear V2
clear VFIVE
clear VFOUR
clear VONE
clear VSIX
clear VTHREE
clear VTWO
clear YEAR
clear A
clear BEST
clear cola
```

## Trading mean

```
Tradingmean = mean(INDUSTRYANNUALMEAN.TRADINGRET)
```

```
Tradingmean =
```

```
0.1782
```

## Data import

```
load('/Users/nicolasthorkildsen/Documents/Skole/MASTER THESIS/Data/
BENCH.mat')
```

## Descriptive statistics

```
MON = timetable2table(INDUSTRYMONTHLYMEAN);
RF = BENCH.RF/100;
MON.P1 = MON.P1-RF;
MON.P10 = MON.P10-RF;
MON.TRADINGRET = MON.P1-MON.P10;

MON(:,1) = [];
MKT = BENCH.MktRF/100;
MKT = table(MKT);
MON = [MON MKT];
MONN = table2array(MON);
STATS = mean(MONN);
```

---

```

STATS = [STATS;std(MONN)];

P1 = fitlm(BENCH.MktRF/100,MON.P1);
P10 = fitlm(BENCH.MktRF/100,MON.P10);
PT = fitlm(BENCH.MktRF/100,MON.TRADINGRET);
PM = fitlm(BENCH.MktRF/100,BENCH.MktRF/100);

P1A = P1.Coefficients.Estimate;
P1A(2,:) = [];
P10A = P10.Coefficients.Estimate;
P10A(2,:) = [];
PTA = PT.Coefficients.Estimate;
PTA(2,:) = [];
PMA = PM.Coefficients.Estimate;
PMA(2,:) = [];

ALPHA = [P1A P10A PTA PMA];
STATS = [STATS;ALPHA];

P1AT = P1.Coefficients.tStat;
P1AT(2,:) = [];
P10AT = P10.Coefficients.tStat;
P10AT(2,:) = [];
PTAT = PT.Coefficients.tStat;
PTAT(2,:) = [];
PMAT = PM.Coefficients.tStat;
PMAT(2,:) = [];

ALPHATSTAT = [P1AT P10AT PTAT PMAT];
STATS = [STATS;ALPHATSTAT];

P1B = P1.Coefficients.Estimate;
P1B(1,:) = [];
P10B = P10.Coefficients.Estimate;
P10B(1,:) = [];
PTB = PT.Coefficients.Estimate;
PTB(1,:) = [];
PMB = PM.Coefficients.Estimate;
PMB(1,:) = [];

BETA = [P1B P10B PTB PMB];
STATS = [STATS;BETA];

P1BT = P1.Coefficients.tStat;
P1BT(1,:) = [];
P10BT = P10.Coefficients.tStat;
P10BT(1,:) = [];
PTBT = PT.Coefficients.tStat;
PTBT(1,:) = [];
PMBT = PM.Coefficients.tStat;
PMBT(1,:) = [];

BETATSTAT = [P1BT P10BT PTBT PMBT];
STATS = [STATS;BETATSTAT];

```

---

---

```

MEAN = array2table((mean(MONN)));
STD = array2table((std(MONN)));
SHARPE = [MEAN.Var1/STD.Var1 MEAN.Var2/STD.Var2 MEAN.Var3/STD.Var3
  MEAN.Var4/STD.Var4];
STATS = [STATS;SHARPE];

```

```

MEAN = array2table((mean(MONN)));
BETA = array2table(BETA);
TREYNOR = [MEAN.Var1/BETA.BETA1 MEAN.Var2/BETA.BETA2 MEAN.Var3/
  BETA.BETA3 MEAN.Var4/BETA.BETA4];
STATS = [STATS;TREYNOR];

```

```

MMMM = ret2price(MONN);
[MaxDD, MaxDDIndex] = maxdrawdown(MMMM);
STATS = [STATS;MaxDD];

```

```

DDM = [11 23 6 18];
STATS = [STATS;DDM];

```

```

SKEW = skewness(MONN);
STATS = [STATS;SKEW];

```

```

KURT = kurtosis(MONN);
STATS = [STATS;KURT];

```

```

[h,p,jbstat,critval] = jbtest(LOSWINWINLOS.P1,[],0.0001);
JBSTAT1 = jbstat;
JBP1 = p;
[h,p,jbstat,critval] = jbtest(LOSWINWINLOS.P10,[],0.0001);
JBSTAT10 = jbstat;
JBP10 = p;
[h,p,jbstat,critval] = jbtest(LOSWINWINLOS.TRADINGRET,[],0.0001);
JBSTAT10 = jbstat;
JBPT = p;
[h,p,jbstat,critval] = jbtest(MKT.MKT,[],0.0001);
JBSTATM = jbstat;
JBPM = p;

```

```

JBSTAT = [JBSTAT1 JBSTAT10 JBSTAT10 JBSTATM];
JBP = [JBP1 JBP10 JBPT JBPM];

```

```

STATS = [STATS;JBSTAT;JBP];

```

*Unable to resolve the name LOSWINWINLOS.P1.*

*Error in INDUSTRYMOSKOWITZLAST (line 2255)*

```

[h,p,jbstat,critval] = jbtest(LOSWINWINLOS.P1,[],0.0001);

```

```

STATS = array2table(STATS);
STATS.Properties.VariableNames = {'P1' 'P10' 'TRADINGRET' 'MARKET'};

```

```

STATS.Properties.RowNames =
  {'RETURN'; 'STDD'; 'ALPHA'; 'ATSTAT'; 'BETA'; 'BTSTAT'; 'SHARPE'; 'TREYNOR'; 'MDD'; 'MDDMO

```

---

## General Momentum - Maximum Drawdown (data + plots)

```
MON = 1

for K = 2:497
    MONN = MON(K-1, :)*(1+INDUSTRYMONTHLYMEAN.TRADINGRET(K, :));
    if MONN > 1
        MONN = 1
    end
    MON = [MON;MONN];
end

MON = MON-1

BMKT = BENCH.MktRF/100
MKT = 1

for K = 2:497
    MKTT = MKT(K-1, :)*(1+BMKT(K, :));
    if MKTT > 1
        MKTT = 1
    end
    MKT = [MKT;MKTT];
end

MKT = MKT-1

Drawdown = table(INDUSTRYMONTHLYMEAN.MONTH, MON, MKT);
Drawdown.Properties.VariableNames = {'TIME' 'ZEROCOST' 'MARKET'};

DD = [Drawdown.ZEROCOST Drawdown.MARKET];

plot(Drawdown.TIME, Drawdown.ZEROCOST, '-k', Drawdown.TIME, Drawdown.MARKET, '--k') % Drawdowns
hold on
legend('Zerocost', 'Market')
title('PANEL X')
ylabel('DD in %')
xlabel('Time')
hold off

MIN = 1

for K = 2:497
    MONN = MIN(K-1, :)*(1+INDUSTRYMONTHLYMEAN.TRADINGRET(K, :));
    if MONN < 1
        MONN = 1
    end
    MIN = [MIN;MONN];
end
```

---

```

MIN = MIN-1

BMKT = BENCH.MktRF/100
MIT = 1

for K = 2:497
    MKTT = MIT(K-1,:)*(1+BMKT(K,:));
    if MKTT < 1
        MKTT = 1
    end
    MIT = [MIT;MKTT];
end

MIT = MIT-1

plot(Drawdown.TIME,MIT,'-k',Drawdown.TIME,MIN,'--k')
hold on
legend('Zerocost','Market')
title('PANEL X')
ylabel('Return in %')
xlabel('Time')
hold off

```

## Descriptive statistics

```

BASIC =
    table(INUSTRYMONTHLYMEAN.MONTH,INDUSTRYMONTHLYMEAN.TRADINGRET,MKT);
BASIC = table2timetable(BASIC);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-12-1980','InputFormat',infmt);
endtime = datetime('2-6-1982','InputFormat',infmt);
T1 = BASIC(isbetween(BASIC.Var1,starttime,endtime),:);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-7-1982','InputFormat',infmt);
endtime = datetime('2-3-1983','InputFormat',infmt);
T2 = BASIC(isbetween(BASIC.Var1,starttime,endtime),:);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-4-1983','InputFormat',infmt);
endtime = datetime('2-8-1987','InputFormat',infmt);
T3 = BASIC(isbetween(BASIC.Var1,starttime,endtime),:);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-09-1987','InputFormat',infmt);
endtime = datetime('2-11-1987','InputFormat',infmt);
T4 = BASIC(isbetween(BASIC.Var1,starttime,endtime),:);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-12-1987','InputFormat',infmt);
endtime = datetime('2-8-1989','InputFormat',infmt);
T5 = BASIC(isbetween(BASIC.Var1,starttime,endtime),:);

```

---

```

infmt = 'dd-MM-yyyy';
starttime = datetime('1-09-1989', 'InputFormat', infmt);
endtime = datetime('2-10-1990', 'InputFormat', infmt);
T6 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-11-1990', 'InputFormat', infmt);
endtime = datetime('2-5-1991', 'InputFormat', infmt);
T7 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-06-1991', 'InputFormat', infmt);
endtime = datetime('2-03-2000', 'InputFormat', infmt);
T8 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-4-2000', 'InputFormat', infmt);
endtime = datetime('2-9-2002', 'InputFormat', infmt);
T9 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-10-2002', 'InputFormat', infmt);
endtime = datetime('2-5-2007', 'InputFormat', infmt);
T10 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-6-2007', 'InputFormat', infmt);
endtime = datetime('2-2-2009', 'InputFormat', infmt);
T11 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-3-2009', 'InputFormat', infmt);
endtime = datetime('2-12-2012', 'InputFormat', infmt);
T12 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-1-2013', 'InputFormat', infmt);
endtime = datetime('2-12-2019', 'InputFormat', infmt);
T13 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-1-2020', 'InputFormat', infmt);
endtime = datetime('2-3-2020', 'InputFormat', infmt);
T14 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-4-2020', 'InputFormat', infmt);
endtime = datetime('2-6-2020', 'InputFormat', infmt);
T15 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

infmt = 'dd-MM-yyyy';
starttime = datetime('1-7-2020', 'InputFormat', infmt);
endtime = datetime('2-12-2021', 'InputFormat', infmt);

```



---

```

T16 = BASIC(isbetween(BASIC.Var1, starttime, endtime), :);

P1 = timetable2table(T1)
P1(:,1) = [];
P2 = timetable2table(T2)
P2(:,1) = [];
P3 = timetable2table(T3)
P3(:,1) = [];
P4 = timetable2table(T4)
P4(:,1) = [];
P5 = timetable2table(T5)
P5(:,1) = [];
P6 = timetable2table(T6)
P6(:,1) = [];
P7 = timetable2table(T7)
P7(:,1) = [];
P8 = timetable2table(T8)
P8(:,1) = [];
P9 = timetable2table(T9)
P9(:,1) = [];
P10 = timetable2table(T10)
P10(:,1) = [];
P11 = timetable2table(T11)
P11(:,1) = [];
P12 = timetable2table(T12)
P12(:,1) = [];
P13 = timetable2table(T13)
P13(:,1) = [];
P14 = timetable2table(T14)
P14(:,1) = [];
P15 = timetable2table(T15)
P15(:,1) = [];
P16 = timetable2table(T16)
P16(:,1) = [];

STATS = [mean(P1.Var2) mean(P1.Var3) mean(P2.Var2) mean(P2.Var3)
mean(P3.Var2) mean(P3.Var3) mean(P4.Var2) mean(P4.Var3)
mean(P5.Var2) mean(P5.Var3) mean(P6.Var2) mean(P6.Var3) mean(P7.Var2)
mean(P7.Var3) mean(P8.Var2) mean(P8.Var3) mean(P9.Var2) mean(P9.Var3)
mean(P10.Var2) mean(P10.Var3) mean(P11.Var2) mean(P11.Var3)
mean(P12.Var2) mean(P12.Var3) mean(P13.Var2) mean(P13.Var3)
mean(P14.Var2) mean(P14.Var3) mean(P15.Var2) mean(P15.Var3)
mean(P16.Var2) mean(P16.Var3);std(P1.Var2) std(P1.Var3) std(P2.Var2)
std(P2.Var3) std(P3.Var2) std(P3.Var3) std(P4.Var2) std(P4.Var3)
std(P5.Var2) std(P5.Var3) std(P6.Var2) std(P6.Var3) std(P7.Var2)
std(P7.Var3) std(P8.Var2) std(P8.Var3) std(P9.Var2) std(P9.Var3)
std(P10.Var2) std(P10.Var3) std(P11.Var2) std(P11.Var3) std(P12.Var2)
std(P12.Var3) std(P13.Var2) std(P13.Var3) std(P14.Var2) std(P14.Var3)
std(P15.Var2) std(P15.Var3) std(P16.Var2) std(P16.Var3)];

R1 = fitlm(T1.Var3,T1.Var2);
R2 = fitlm(T1.Var3,T1.Var3);
R3 = fitlm(T2.Var3,T2.Var2);

```

---

---

```
R4 = fitlm(T2.Var3,T2.Var3);
R5 = fitlm(T3.Var3,T3.Var2);
R6 = fitlm(T3.Var3,T3.Var3);
R7 = fitlm(T4.Var3,T4.Var2);
R8 = fitlm(T4.Var3,T4.Var3);
R9 = fitlm(T5.Var3,T5.Var2);
R10 = fitlm(T5.Var3,T5.Var3);
R11 = fitlm(T6.Var3,T6.Var2);
R12 = fitlm(T6.Var3,T6.Var3);
R13 = fitlm(T7.Var3,T7.Var2);
R14 = fitlm(T7.Var3,T7.Var3);
R15 = fitlm(T8.Var3,T8.Var2);
R16 = fitlm(T8.Var3,T8.Var3);
R17 = fitlm(T9.Var3,T9.Var2);
R18 = fitlm(T9.Var3,T9.Var3);
R19 = fitlm(T10.Var3,T10.Var2);
R20 = fitlm(T10.Var3,T10.Var3);
R21 = fitlm(T11.Var3,T11.Var2);
R22 = fitlm(T11.Var3,T11.Var3);
R23 = fitlm(T12.Var3,T12.Var2);
R24 = fitlm(T12.Var3,T12.Var3);
R25 = fitlm(T13.Var3,T13.Var2);
R26 = fitlm(T13.Var3,T13.Var3);
R27 = fitlm(T14.Var3,T14.Var2);
R28 = fitlm(T14.Var3,T14.Var3);
R29 = fitlm(T15.Var3,T15.Var2);
R30 = fitlm(T15.Var3,T15.Var3);
R31 = fitlm(T16.Var3,T16.Var2);
R32 = fitlm(T16.Var3,T16.Var3);

R1A = R1.Coefficients.Estimate;
R1A(2,:) = [];
R2A = R2.Coefficients.Estimate;
R2A(2,:) = [];
R3A = R3.Coefficients.Estimate;
R3A(2,:) = [];
R4A = R4.Coefficients.Estimate;
R4A(2,:) = [];
R5A = R5.Coefficients.Estimate;
R5A(2,:) = [];
R6A = R6.Coefficients.Estimate;
R6A(2,:) = [];
R7A = R7.Coefficients.Estimate;
R7A(2,:) = [];
R8A = R8.Coefficients.Estimate;
R8A(2,:) = [];
R9A = R9.Coefficients.Estimate;
R9A(2,:) = [];
R10A = R10.Coefficients.Estimate;
R10A(2,:) = [];
R11A = R11.Coefficients.Estimate;
R11A(2,:) = [];
R12A = R12.Coefficients.Estimate;
R12A(2,:) = [];
```

---

```

R13A = R13.Coefficients.Estimate;
R13A(2,:) = [];
R14A = R14.Coefficients.Estimate;
R14A(2,:) = [];
R15A = R15.Coefficients.Estimate;
R15A(2,:) = [];
R16A = R16.Coefficients.Estimate;
R16A(2,:) = [];
R17A = R17.Coefficients.Estimate;
R17A(2,:) = [];
R18A = R18.Coefficients.Estimate;
R18A(2,:) = [];
R19A = R19.Coefficients.Estimate;
R19A(2,:) = [];
R20A = R20.Coefficients.Estimate;
R20A(2,:) = [];
R21A = R21.Coefficients.Estimate;
R21A(2,:) = [];
R22A = R22.Coefficients.Estimate;
R22A(2,:) = [];
R23A = R23.Coefficients.Estimate;
R23A(2,:) = [];
R24A = R24.Coefficients.Estimate;
R24A(2,:) = [];
R25A = R25.Coefficients.Estimate;
R25A(2,:) = [];
R26A = R26.Coefficients.Estimate;
R26A(2,:) = [];
R27A = R27.Coefficients.Estimate;
R27A(2,:) = [];
R28A = R28.Coefficients.Estimate;
R28A(2,:) = [];
R29A = R29.Coefficients.Estimate;
R29A(2,:) = [];
R30A = R30.Coefficients.Estimate;
R30A(2,:) = [];
R31A = R31.Coefficients.Estimate;
R31A(2,:) = [];
R32A = R32.Coefficients.Estimate;
R32A(2,:) = [];

```

```

ALPHA = [R1A R2A R3A R4A R5A R6A R7A R8A R9A R10A R11A R12A R13A R14A
R15A R16A R17A R18A R19A R20A R21A R22A R23A R24A R25A R26A R27A R28A
R29A R30A R31A R32A];
STATS = [STATS;ALPHA];

```

```

R1A = R1.Coefficients.tStat;
R1A(2,:) = [];
R2A = R2.Coefficients.tStat;
R2A(2,:) = [];
R3A = R3.Coefficients.tStat;
R3A(2,:) = [];
R4A = R4.Coefficients.tStat;
R4A(2,:) = [];

```

---

```
R5A = R5.Coefficients.tStat;  
R5A(2,:) = [];  
R6A = R6.Coefficients.tStat;  
R6A(2,:) = [];  
R7A = R7.Coefficients.tStat;  
R7A(2,:) = [];  
R8A = R8.Coefficients.tStat;  
R8A(2,:) = [];  
R9A = R9.Coefficients.tStat;  
R9A(2,:) = [];  
R10A = R10.Coefficients.tStat;  
R10A(2,:) = [];  
R11A = R11.Coefficients.tStat;  
R11A(2,:) = [];  
R12A = R12.Coefficients.tStat;  
R12A(2,:) = [];  
R13A = R13.Coefficients.tStat;  
R13A(2,:) = [];  
R14A = R14.Coefficients.tStat;  
R14A(2,:) = [];  
R15A = R15.Coefficients.tStat;  
R15A(2,:) = [];  
R16A = R16.Coefficients.tStat;  
R16A(2,:) = [];  
R17A = R17.Coefficients.tStat;  
R17A(2,:) = [];  
R18A = R18.Coefficients.tStat;  
R18A(2,:) = [];  
R19A = R19.Coefficients.tStat;  
R19A(2,:) = [];  
R20A = R20.Coefficients.tStat;  
R20A(2,:) = [];  
R21A = R21.Coefficients.tStat;  
R21A(2,:) = [];  
R22A = R22.Coefficients.tStat;  
R22A(2,:) = [];  
R23A = R23.Coefficients.tStat;  
R23A(2,:) = [];  
R24A = R24.Coefficients.tStat;  
R24A(2,:) = [];  
R25A = R25.Coefficients.tStat;  
R25A(2,:) = [];  
R26A = R26.Coefficients.tStat;  
R26A(2,:) = [];  
R27A = R27.Coefficients.tStat;  
R27A(2,:) = [];  
R28A = R28.Coefficients.tStat;  
R28A(2,:) = [];  
R29A = R29.Coefficients.tStat;  
R29A(2,:) = [];  
R30A = R30.Coefficients.tStat;  
R30A(2,:) = [];  
R31A = R31.Coefficients.tStat;  
R31A(2,:) = [];
```

---

```

R32A = R32.Coefficients.tStat;
R32A(2,:) = [];

ALPHAT = [R1A R2A R3A R4A R5A R6A R7A R8A R9A R10A R11A R12A R13A R14A
R15A R16A R17A R18A R19A R20A R21A R22A R23A R24A R25A R26A R27A R28A
R29A R30A R31A R32A];
STATS = [STATS;ALPHAT];

R1A = R1.Coefficients.Estimate;
R1A(1,:) = [];
R2A = R2.Coefficients.Estimate;
R2A(1,:) = [];
R3A = R3.Coefficients.Estimate;
R3A(1,:) = [];
R4A = R4.Coefficients.Estimate;
R4A(1,:) = [];
R5A = R5.Coefficients.Estimate;
R5A(1,:) = [];
R6A = R6.Coefficients.Estimate;
R6A(1,:) = [];
R7A = R7.Coefficients.Estimate;
R7A(1,:) = [];
R8A = R8.Coefficients.Estimate;
R8A(1,:) = [];
R9A = R9.Coefficients.Estimate;
R9A(1,:) = [];
R10A = R10.Coefficients.Estimate;
R10A(1,:) = [];
R11A = R11.Coefficients.Estimate;
R11A(1,:) = [];
R12A = R12.Coefficients.Estimate;
R12A(1,:) = [];
R13A = R13.Coefficients.Estimate;
R13A(1,:) = [];
R14A = R14.Coefficients.Estimate;
R14A(1,:) = [];
R15A = R15.Coefficients.Estimate;
R15A(1,:) = [];
R16A = R16.Coefficients.Estimate;
R16A(1,:) = [];
R17A = R17.Coefficients.Estimate;
R17A(1,:) = [];
R18A = R18.Coefficients.Estimate;
R18A(1,:) = [];
R19A = R19.Coefficients.Estimate;
R19A(1,:) = [];
R20A = R20.Coefficients.Estimate;
R20A(1,:) = [];
R21A = R21.Coefficients.Estimate;
R21A(1,:) = [];
R22A = R22.Coefficients.Estimate;
R22A(1,:) = [];
R23A = R23.Coefficients.Estimate;
R23A(1,:) = [];

```

---

```

R24A = R24.Coefficients.Estimate;
R24A(1,:) = [];
R25A = R25.Coefficients.Estimate;
R25A(1,:) = [];
R26A = R26.Coefficients.Estimate;
R26A(1,:) = [];
R27A = R27.Coefficients.Estimate;
R27A(1,:) = [];
R28A = R28.Coefficients.Estimate;
R28A(1,:) = [];
R29A = R29.Coefficients.Estimate;
R29A(1,:) = [];
R30A = R30.Coefficients.Estimate;
R30A(1,:) = [];
R31A = R31.Coefficients.Estimate;
R31A(1,:) = [];
R32A = R32.Coefficients.Estimate;
R32A(1,:) = [];

BETA = [R1A R2A R3A R4A R5A R6A R7A R8A R9A R10A R11A R12A R13A R14A
        R15A R16A R17A R18A R19A R20A R21A R22A R23A R24A R25A R26A R27A R28A
        R29A R30A R31A R32A];
STATS = [STATS;BETA];

R1A = R1.Coefficients.tStat;
R1A(1,:) = [];
R2A = R2.Coefficients.tStat;
R2A(1,:) = [];
R3A = R3.Coefficients.tStat;
R3A(1,:) = [];
R4A = R4.Coefficients.tStat;
R4A(1,:) = [];
R5A = R5.Coefficients.tStat;
R5A(1,:) = [];
R6A = R6.Coefficients.tStat;
R6A(1,:) = [];
R7A = R7.Coefficients.tStat;
R7A(1,:) = [];
R8A = R8.Coefficients.tStat;
R8A(1,:) = [];
R9A = R9.Coefficients.tStat;
R9A(1,:) = [];
R10A = R10.Coefficients.tStat;
R10A(1,:) = [];
R11A = R11.Coefficients.tStat;
R11A(1,:) = [];
R12A = R12.Coefficients.tStat;
R12A(1,:) = [];
R13A = R13.Coefficients.tStat;
R13A(1,:) = [];
R14A = R14.Coefficients.tStat;
R14A(1,:) = [];
R15A = R15.Coefficients.tStat;
R15A(1,:) = [];

```

---

---

```

R16A = R16.Coefficients.tStat;
R16A(1,:) = [];
R17A = R17.Coefficients.tStat;
R17A(1,:) = [];
R18A = R18.Coefficients.tStat;
R18A(1,:) = [];
R19A = R19.Coefficients.tStat;
R19A(1,:) = [];
R20A = R20.Coefficients.tStat;
R20A(1,:) = [];
R21A = R21.Coefficients.tStat;
R21A(1,:) = [];
R22A = R22.Coefficients.tStat;
R22A(1,:) = [];
R23A = R23.Coefficients.tStat;
R23A(1,:) = [];
R24A = R24.Coefficients.tStat;
R24A(1,:) = [];
R25A = R25.Coefficients.tStat;
R25A(1,:) = [];
R26A = R26.Coefficients.tStat;
R26A(1,:) = [];
R27A = R27.Coefficients.tStat;
R27A(1,:) = [];
R28A = R28.Coefficients.tStat;
R28A(1,:) = [];
R29A = R29.Coefficients.tStat;
R29A(1,:) = [];
R30A = R30.Coefficients.tStat;
R30A(1,:) = [];
R31A = R31.Coefficients.tStat;
R31A(1,:) = [];
R32A = R32.Coefficients.tStat;
R32A(1,:) = [];

BETAT = [R1A R2A R3A R4A R5A R6A R7A R8A R9A R10A R11A R12A R13A R14A
R15A R16A R17A R18A R19A R20A R21A R22A R23A R24A R25A R26A R27A R28A
R29A R30A R31A R32A];
STATS = [STATS;BETAT];

SHARPE = [(mean(P1.Var2)/std(P1.Var2)) (mean(P1.Var3)/std(P1.Var3))
(mean(P2.Var2)/std(P2.Var2)) (mean(P2.Var3)/std(P2.Var3))
(mean(P3.Var2)/std(P3.Var2)) (mean(P3.Var3)/std(P3.Var3))
(mean(P4.Var2)/std(P4.Var2)) (mean(P4.Var3)/std(P4.Var3))
(mean(P5.Var2)/std(P5.Var2)) (mean(P5.Var3)/std(P5.Var3))
(mean(P6.Var2)/std(P6.Var2)) (mean(P6.Var3)/std(P6.Var3))
(mean(P7.Var2)/std(P7.Var2)) (mean(P7.Var3)/std(P7.Var3))
(mean(P8.Var2)/std(P8.Var2)) (mean(P8.Var3)/std(P8.Var3))
(mean(P9.Var2)/std(P9.Var2)) (mean(P9.Var3)/std(P9.Var3))
(mean(P10.Var2)/std(P10.Var2)) (mean(P10.Var3)/std(P10.Var3))
(mean(P11.Var2)/std(P11.Var2)) (mean(P11.Var3)/std(P11.Var3))
(mean(P12.Var2)/std(P12.Var2)) (mean(P12.Var3)/std(P12.Var3))
(mean(P13.Var2)/std(P13.Var2)) (mean(P13.Var3)/std(P13.Var3))
(mean(P14.Var2)/std(P14.Var2)) (mean(P14.Var3)/std(P14.Var3))

```

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---

```

    (mean(P15.Var2)/std(P15.Var2)) (mean(P15.Var3)/std(P15.Var3))
    (mean(P16.Var2)/std(P16.Var2)) (mean(P16.Var3)/std(P16.Var3))];
STATS = [STATS;SHARPE];

```

```

BETA = array2table(BETA);
TREYNOR = [(mean(P1.Var2)/BETA.BETA1) (mean(P1.Var3)/BETA.BETA2)
    (mean(P2.Var2)/BETA.BETA3) (mean(P2.Var3)/BETA.BETA4) (mean(P3.Var2)/
BETA.BETA5) (mean(P3.Var3)/BETA.BETA6) (mean(P4.Var2)/BETA.BETA7)
    (mean(P4.Var3)/BETA.BETA8) (mean(P5.Var2)/BETA.BETA9) (mean(P5.Var3)/
BETA.BETA10) (mean(P6.Var2)/BETA.BETA11) (mean(P6.Var3)/BETA.BETA12)
    (mean(P7.Var2)/BETA.BETA13) (mean(P7.Var3)/BETA.BETA14)
    (mean(P8.Var2)/BETA.BETA15) (mean(P8.Var3)/BETA.BETA16)
    (mean(P9.Var2)/BETA.BETA17) (mean(P9.Var3)/BETA.BETA18)
    (mean(P10.Var2)/BETA.BETA19) (mean(P10.Var3)/BETA.BETA20)
    (mean(P11.Var2)/BETA.BETA21) (mean(P11.Var3)/BETA.BETA22)
    (mean(P12.Var2)/BETA.BETA23) (mean(P12.Var3)/BETA.BETA24)
    (mean(P13.Var2)/BETA.BETA25) (mean(P13.Var3)/BETA.BETA26)
    (mean(P14.Var2)/BETA.BETA27) (mean(P14.Var3)/BETA.BETA28)
    (mean(P15.Var2)/BETA.BETA29) (mean(P15.Var3)/BETA.BETA30)
    (mean(P16.Var2)/BETA.BETA31) (mean(P16.Var3)/BETA.BETA32)];
STATS = [STATS;TREYNOR];

```

```

SKEW = [skewness(P1.Var2) skewness(P1.Var3) skewness(P2.Var2)
    skewness(P2.Var3) skewness(P3.Var2) skewness(P3.Var3)
    skewness(P4.Var2) skewness(P4.Var3) skewness(P5.Var2)
    skewness(P5.Var3) skewness(P6.Var2) skewness(P6.Var3)
    skewness(P7.Var2) skewness(P7.Var3) skewness(P8.Var2)
    skewness(P8.Var3) skewness(P9.Var2) skewness(P9.Var3)
    skewness(P10.Var2) skewness(P10.Var3) skewness(P11.Var2)
    skewness(P11.Var3) skewness(P12.Var2) skewness(P12.Var3)
    skewness(P13.Var2) skewness(P13.Var3) skewness(P14.Var2)
    skewness(P14.Var3) skewness(P15.Var2) skewness(P15.Var3)
    skewness(P16.Var2) skewness(P16.Var3)];
STATS = [STATS;SKEW];

```

```

KURT = [kurtosis(P1.Var2) kurtosis(P1.Var3) kurtosis(P2.Var2)
    kurtosis(P2.Var3) kurtosis(P3.Var2) kurtosis(P3.Var3)
    kurtosis(P4.Var2) kurtosis(P4.Var3) kurtosis(P5.Var2)
    kurtosis(P5.Var3) kurtosis(P6.Var2) kurtosis(P6.Var3)
    kurtosis(P7.Var2) kurtosis(P7.Var3) kurtosis(P8.Var2)
    kurtosis(P8.Var3) kurtosis(P9.Var2) kurtosis(P9.Var3)
    kurtosis(P10.Var2) kurtosis(P10.Var3) kurtosis(P11.Var2)
    kurtosis(P11.Var3) kurtosis(P12.Var2) kurtosis(P12.Var3)
    kurtosis(P13.Var2) kurtosis(P13.Var3) kurtosis(P14.Var2)
    kurtosis(P14.Var3) kurtosis(P15.Var2) kurtosis(P15.Var3)
    kurtosis(P16.Var2) kurtosis(P16.Var3)];
STATS = [STATS;KURT];

```

```

STATS = array2table(STATS);
STATS.Properties.VariableNames =
    {'ZC1' 'MKT1' 'ZC2' 'MKT2' 'ZC3' 'MKT3' 'ZC4' 'MKT4' 'ZC5' 'MKT5' 'ZC6' 'MKT6' 'Z
STATS.Properties.RowNames =
    {'RETURN'; 'STDD'; 'ALPHA'; 'ATSTAT'; 'BETA'; 'BTSTAT'; 'SHARPE'; 'TREYNOR'; 'SKEW'; 'KURT

```



---

## mean and std down

```
Down = [T1;T4;T6;T9;T11];  
DOWN = [mean(Down.Var2);std(Down.Var2)]  
  
Recovery = [T2;T5;T7;T10;T12];  
RECOVERY = [mean(Recovery.Var2);std(Recovery.Var2)]  
  
Steady = [T3;T8;T13];  
STEADY = [mean(Steady.Var2);std(Steady.Var2)]
```

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