**Computer Code**

**Program : Matlab**

**Version: Matlab R2017b**

%% Data set

stockreturn1=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kodex200.csv');

stockreturn2=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kosef200.csv');

stockreturn3=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\tiger200.csv');

stockreturn4=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kindex200.csv');

stockreturn=stockreturn1; % KODEX200

date = stockreturn(:,1);

yesterday\_close = stockreturn(:,2);

open = stockreturn(:,3);

high = stockreturn(:,4);

low = stockreturn(:,5);

close = stockreturn(:,6);

volume = stockreturn(:,7);

money = stockreturn(:,8);

outstanding = stockreturn(:,9);

foreignhodings = stockreturn(:,10);

short\_sale = stockreturn(:,11);

short\_sale\_money = stockreturn(:,12);

short\_sale\_cost = stockreturn(:,13);

buy\_institution = stockreturn(:,14);

sale\_institution = stockreturn(:,15);

buy\_individual = stockreturn(:,16);

sale\_individual = stockreturn(:,17);

buy\_foreign = stockreturn(:,18);

sale\_foreign = stockreturn(:,19);

navclose = stockreturn(:,20);

price\_differential = stockreturn(:,21);

sale\_lp = stockreturn(:,22);

buy\_lp = stockreturn(:,23);

aum = stockreturn(:,24);

navclose\_differential = stockreturn(:,25);

nav\_increase = stockreturn(:,26);

cu\_money = stockreturn(:,27);

kospi200close = stockreturn(:,28);

kospi200open = stockreturn(:,29);

cd = stockreturn(:,30);

navopen = stockreturn(:,31);

difference = stockreturn(:,6)-stockreturn(:,2);

closediff=close(:,1)-(kospi200close(:,1)\*100);

opendiff=open(:,1)-(kospi200open(:,1)\*100);

navclose\_etf=navclose(:,1)-close(:,1);

navopen\_etf=navopen(:,1)-open(:,1);

%% cto, otc, ctc, oto

for k=3:1234

ctc(k-2,1)=log(close(k,1))-log(close(k-1,1));

oto(k-2,1)=log(open(k,1))-log(open(k-1,1));

otc(k-2,1)=log(close(k,1))-log(open(k,1));

cto(k-2,1)=log(open(k,1))-log(close(k-1,1));

kospi200ctc(k-2,1)=log(kospi200close(k,1))-log(kospi200close(k-1,1));

kospi200oto(k-2,1)=log(kospi200open(k,1))-log(kospi200open(k-1,1));

kospi200otc(k-2,1)=log(kospi200close(k,1))-log(kospi200open(k,1));

kospi200cto(k-2,1)=log(kospi200open(k,1))-log(kospi200close(k-1,1));

end

%% first Attention

for k=2:1234

ctc2(k-1,1)=log(close(k,1))-log(close(k-1,1));

kospi200ctc2(k-1,1)=log(kospi200close(k,1))-log(kospi200close(k-1,1));

end

for k=2:1233

vol(k-1,1)=(ctc2(k-1,1).^2); % 1st attention variable, volatility = (ctc\_t-1)^2

kospi200vol(k-1,1)=(kospi200ctc2(k-1,1)^2);

end

%% ETF average, median

for tt=1:1232;

a2(tt,1)=mean(cto(tt,:));

b2(tt,1)=mean(otc(tt,:));

diff(tt,1)=a2(tt,1)-b2(tt,1);

e2(tt,1)=mean(ctc(tt,:));

f2(tt,1)=mean(oto(tt,:));

v2(tt,1)=mean(vol(tt,1));

end

a3=mean(a2(:,1));

b3=mean(b2(:,1));

d3=mean(diff(:,1));

e3=mean(e2(:,1));

f3=mean(f2(:,1));

v3=mean(v2(:,1));

a4=median(a2(:,1));

b4=median(b2(:,1));

d4=median(diff(:,1));

e4=median(e2(:,1));

f4=median(f2(:,1));

v4=median(v2(:,1));

%% KOSPI200 average, median

for tt=1:1232;

kospi200a2(tt,1)=mean(kospi200cto(tt,:));

kospi200b2(tt,1)=mean(kospi200otc(tt,:));

kospi200diff(tt,1)=kospi200a2(tt,1)-kospi200b2(tt,1);

kospi200e2(tt,1)=mean(kospi200ctc(tt,:));

kospi200f2(tt,1)=mean(kospi200oto(tt,:));

end

kospi200a3=mean(kospi200a2(:,1));

kospi200b3=mean(kospi200b2(:,1));

kospi200d3=mean(kospi200diff(:,1));

kospi200e3=mean(kospi200e2(:,1));

kospi200f3=mean(kospi200f2(:,1));

kospi200a4=median(kospi200a2(:,1));

kospi200b4=median(kospi200b2(:,1));

kospi200d4=median(kospi200diff(:,1));

kospi200e4=median(kospi200e2(:,1));

kospi200f4=median(kospi200f2(:,1));

%% t-test (ETF)

[h,p,ci,stats]=ttest(a2)

[h,p,ci,stats]=ttest(b2)

[h,p,ci,stats]=ttest(diff)

[h,p,ci,stats]=ttest(e2)

[h,p,ci,stats]=ttest(f2)

[h,p,ci,stats]=ttest(v2) % first attention variable

%% t-test (KOSPI 200)

[h,p,ci,stats]=ttest(kospi200a2)

[h,p,ci,stats]=ttest(kospi200b2)

[h,p,ci,stats]=ttest(kospi200diff)

[h,p,ci,stats]=ttest(kospi200e2)

[h,p,ci,stats]=ttest(kospi200f2)

%% KOSPI 200 futures

futures\_stockreturn=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\futures.csv');

futuresdate = futures\_stockreturn(:,1);

futuresopen = futures\_stockreturn(:,2);

futuresclose = futures\_stockreturn(:,3);

% futures cto, otc, ctc, oto

for k=3:1234

futuresctc(k-2,1)=log(futuresclose(k,1))-log(futuresclose(k-1,1));

futuresoto(k-2,1)=log(futuresopen(k,1))-log(futuresopen(k-1,1));

futuresotc(k-2,1)=log(futuresclose(k,1))-log(futuresopen(k,1));

futurescto(k-2,1)=log(futuresopen(k,1))-log(futuresclose(k-1,1));

end

% futures average, median

for tt=1:1232;

futuresa2(tt,1)=mean(futurescto(tt,:));

futuresb2(tt,1)=mean(futuresotc(tt,:));

futuresdiff(tt,1)=futuresa2(tt,1)-futuresb2(tt,1);

futurese2(tt,1)=mean(futuresctc(tt,:));

futuresf2(tt,1)=mean(futuresoto(tt,:));

end

futuresa3=mean(futuresa2(:,1));

futuresb3=mean(futuresb2(:,1));

futuresd3=mean(futuresdiff(:,1));

futurese3=mean(futurese2(:,1));

futuresf3=mean(futuresf2(:,1));

futuresa4=median(futuresa2(:,1));

futuresb4=median(futuresb2(:,1));

futuresd4=median(futuresdiff(:,1));

futurese4=median(futurese2(:,1));

futuresf4=median(futuresf2(:,1));

% futures t-test

[h,p,ci,stats]=ttest(futuresa2)

[h,p,ci,stats]=ttest(futuresb2)

[h,p,ci,stats]=ttest(futuresdiff)

[h,p,ci,stats]=ttest(futurese2)

[h,p,ci,stats]=ttest(futuresf2)

%% Second attention proxy

dailyinvestor1=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kodex200\_investors\_daily.csv');

dailyinvestor2=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kosef200\_investors\_daily.csv');

dailyinvestor3=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\tiger200\_investors\_daily.csv');

dailyinvestor4=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kindex200\_investors\_daily.csv');

dailyinvestor=dailyinvestor1; % KODEX 200

date3 = dailyinvestor(:,1);

volume3 = dailyinvestor(:,2);

dailynetbuy\_institutional= dailyinvestor(:,3);

dailynetbuy\_individual= dailyinvestor(:,4);

dailynetbuy\_foreign= dailyinvestor(:,5);

outstanding= dailyinvestor(:,6);

shortsale= dailyinvestor(:,7);

retail\_dailynetbuy=dailynetbuy\_individual(:,1)./outstanding(:,1);

RSI=shortsale(:,1)./outstanding(:,1);

for m=2:1233

w2(m-1,1)=retail\_dailynetbuy(m,1);

end

for m=3:1234

x2(m-2,1)=RSI(m,1);

end

w3=mean(w2(:,1))

x3=mean(x2(:,1))

w4=median(w2(:,1))

x4=median(x2(:,1))

[h,p,ci,stats]=ttest(w2)

[h,p,ci,stats]=ttest(x2)

%% Netbuying by investor type at the open

openinvestor1=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kodex200\_investors\_open.csv');

openinvestor2=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kosef200\_investors\_open.csv');

openinvestor3=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\tiger200\_investors\_open.csv');

openinvestor4=xlsread('C:\Users\SSU\Dropbox\11\_Data\etf\kindex200\_investors\_open.csv');

openinvestor=openinvestor1; % KODEX 200

date2 = openinvestor(:,1);

code2 = openinvestor(:,2);

name2= openinvestor(:,3);

sell1= openinvestor(:,4); %institution sell

buy1= openinvestor(:,5); % institution buy

sell2=openinvestor(:,6); % retail sell

buy2=openinvestor(:,7); %retail buy

sell3=openinvestor(:,8); %foreign sell

buy3=openinvestor(:,9); %foreign buy

for m=3:1234

retail\_opennetbuy(m-2,1)=((buy2(m,1))-(sell2(m,1)))./((buy2(m,1))+(sell2(m,1)));

foreign\_opennetbuy(m-2,1)=((buy3(m,1))-(sell3(m,1)))./((buy3(m,1))+(sell3(m,1)));

institution\_opennetbuy(m-2,1)=((buy1(m,1))-(sell1(m,1)))./((buy1(m,1))+(sell1(m,1)));

end

y3=mean(retail\_opennetbuy(:,1))

y4=median(retail\_opennetbuy(:,1))

[h,p,ci,stats]=ttest(retail\_opennetbuy)

%% 3 group by the magnitude by first attention proxy

vol\_sort=sortrows(vol);

low\_boundary=vol\_sort(411,1);

upper\_boundary=vol\_sort(822,1);

Istop=find(vol(:,1)<=low\_boundary(1,1)); % low group

Istop2=find(low\_boundary(1,1)<vol(:,1) & vol(:,1)<=upper\_boundary(1,1)); %medium group

Istop3=find(vol(:,1)>=upper\_boundary(1,1)); %high group

for i=1:411;

cto\_low(i,1)=cto(Istop(i,1),1);

cto\_medium(i,1)=cto(Istop2(i,1),1);

cto\_high(i,1)=cto(Istop3(i,1),1);

cto\_highminuslow(i,1)=cto\_high(i,1)-cto\_low(i,1);

otc\_low(i,1)=otc(Istop(i,1),1);

otc\_medium(i,1)=otc(Istop2(i,1),1);

otc\_high(i,1)=otc(Istop3(i,1),1);

otc\_highminuslow(i,1)=otc\_high(i,1)-otc\_low(i,1);

ctc\_low(i,1)=ctc(Istop(i,1),1);

ctc\_medium(i,1)=ctc(Istop2(i,1),1);

ctc\_high(i,1)=ctc(Istop3(i,1),1);

ctc\_highminuslow(i,1)=ctc\_high(i,1)-ctc\_low(i,1);

opennetbuy\_low(i,1)=retail\_opennetbuy(Istop(i,1),1);

opennetbuy\_medium(i,1)=retail\_opennetbuy(Istop2(i,1),1);

opennetbuy\_high(i,1)=retail\_opennetbuy(Istop3(i,1),1);

opennetbuy\_highminuslow(i,1)=opennetbuy\_high(i,1)-opennetbuy\_low(i,1);

end

%% cto t-test

a5=mean(cto\_low(:,1))

a6=mean(cto\_medium(:,1))

a7=mean(cto\_high(:,1))

a8=mean(cto\_highminuslow(:,1))

[h,p,ci,stats]=ttest(cto\_low)

[h,p,ci,stats]=ttest(cto\_medium)

[h,p,ci,stats]=ttest(cto\_high)

[h,p,ci,stats]=ttest(cto\_highminuslow)

%% otc t-test

b5=mean(otc\_low(:,1))

b6=mean(otc\_medium(:,1))

b7=mean(otc\_high(:,1))

b8=mean(otc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(otc\_low)

[h,p,ci,stats]=ttest(otc\_medium)

[h,p,ci,stats]=ttest(otc\_high)

[h,p,ci,stats]=ttest(otc\_highminuslow)

%% ctc t-test

c5=mean(ctc\_low(:,1))

c6=mean(ctc\_medium(:,1))

c7=mean(ctc\_high(:,1))

c8=mean(ctc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(ctc\_low)

[h,p,ci,stats]=ttest(ctc\_medium)

[h,p,ci,stats]=ttest(ctc\_high)

[h,p,ci,stats]=ttest(ctc\_highminuslow)

%% individual net buying at the open

d5=mean(opennetbuy\_low(:,1))

d6=mean(opennetbuy\_medium(:,1))

d7=mean(opennetbuy\_high(:,1))

d8=mean(opennetbuy\_highminuslow(:,1))

[h,p,ci,stats]=ttest(opennetbuy\_low)

[h,p,ci,stats]=ttest(opennetbuy\_medium)

[h,p,ci,stats]=ttest(opennetbuy\_high)

[h,p,ci,stats]=ttest(opennetbuy\_highminuslow)

%% 3 group by the magnitude by second attention proxy

w2\_sort=sortrows(w2);

w2\_low\_boundary=w2\_sort(411,1);

w2\_upper\_boundary=w2\_sort(822,1);

w2\_Istop=find(w2(:,1)<=w2\_low\_boundary(1,1)); % low group

w2\_Istop2=find(w2\_low\_boundary(1,1)<w2(:,1) & w2(:,1)<=w2\_upper\_boundary(1,1)); % medium group

w2\_Istop3=find(w2(:,1)>=w2\_upper\_boundary(1,1)); % high group

for i=1:411;

w2\_cto\_low(i,1)=cto(w2\_Istop(i,1),1);

w2\_cto\_medium(i,1)=cto(w2\_Istop2(i,1),1);

w2\_cto\_high(i,1)=cto(w2\_Istop3(i,1),1);

w2\_cto\_highminuslow(i,1)=w2\_cto\_high(i,1)-w2\_cto\_low(i,1);

w2\_otc\_low(i,1)=otc(w2\_Istop(i,1),1);

w2\_otc\_medium(i,1)=otc(w2\_Istop2(i,1),1);

w2\_otc\_high(i,1)=otc(w2\_Istop3(i,1),1);

w2\_otc\_highminuslow(i,1)=w2\_otc\_high(i,1)-w2\_otc\_low(i,1);

w2\_ctc\_low(i,1)=ctc(w2\_Istop(i,1),1);

w2\_ctc\_medium(i,1)=ctc(w2\_Istop2(i,1),1);

w2\_ctc\_high(i,1)=ctc(w2\_Istop3(i,1),1);

w2\_ctc\_highminuslow(i,1)=w2\_ctc\_high(i,1)-w2\_ctc\_low(i,1);

dailynetbuy\_low(i,1)=retail\_opennetbuy(w2\_Istop(i,1),1);

dailynetbuy\_medium(i,1)=retail\_opennetbuy(w2\_Istop2(i,1),1);

dailynetbuy\_high(i,1)=retail\_opennetbuy(w2\_Istop3(i,1),1);

dailynetbuy\_highminuslow(i,1)=dailynetbuy\_high(i,1)-dailynetbuy\_low(i,1);

end

%% cto t-test

a5=mean(w2\_cto\_low(:,1))

a6=mean(w2\_cto\_medium(:,1))

a7=mean(w2\_cto\_high(:,1))

a8=mean(w2\_cto\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_cto\_low)

[h,p,ci,stats]=ttest(w2\_cto\_medium)

[h,p,ci,stats]=ttest(w2\_cto\_high)

[h,p,ci,stats]=ttest(w2\_cto\_highminuslow)

%% otc t-test

b5=mean(w2\_otc\_low(:,1))

b6=mean(w2\_otc\_medium(:,1))

b7=mean(w2\_otc\_high(:,1))

b8=mean(w2\_otc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_otc\_low)

[h,p,ci,stats]=ttest(w2\_otc\_medium)

[h,p,ci,stats]=ttest(w2\_otc\_high)

[h,p,ci,stats]=ttest(w2\_otc\_highminuslow)

%% ctc t-test

c5=mean(w2\_ctc\_low(:,1))

c6=mean(w2\_ctc\_medium(:,1))

c7=mean(w2\_ctc\_high(:,1))

c8=mean(w2\_ctc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_ctc\_low)

[h,p,ci,stats]=ttest(w2\_ctc\_medium)

[h,p,ci,stats]=ttest(w2\_ctc\_high)

[h,p,ci,stats]=ttest(w2\_ctc\_highminuslow)

%% individual net buying at the open

d5=mean(dailynetbuy\_low(:,1))

d6=mean(dailynetbuy\_medium(:,1))

d7=mean(dailynetbuy\_high(:,1))

d8=mean(dailynetbuy\_highminuslow(:,1))

[h,p,ci,stats]=ttest(dailynetbuy\_low)

[h,p,ci,stats]=ttest(dailynetbuy\_medium)

[h,p,ci,stats]=ttest(dailynetbuy\_high)

[h,p,ci,stats]=ttest(dailynetbuy\_highminuslow)

%% 4 ETF

for t=1:1234

stockreturn1(t,14)=1;

end

for t=1:1234

stockreturn2(t,14)=2;

end

for t=1:1234

stockreturn3(t,14)=3;

end

for t=1:1234

stockreturn4(t,14)=4;

end

stockreturn5=[stockreturn1; stockreturn2; stockreturn3; stockreturn4];

stockreturn=sortrows(stockreturn5,1);

date = stockreturn(:,1);

open = stockreturn(:,3);

high = stockreturn(:,4);

low = stockreturn(:,5);

close = stockreturn(:,6);

for i=1:4;

for t=1:1234

c(t,i)=close(i+(t-1)\*4,1);

o(t,i)=open(i+(t-1)\*4,1);

end

for k=3:1234

ctc(k-2,i)=log(c(k,i))-log(c(k-1,i));

oto(k-2,i)=log(o(k,i))-log(o(k-1,i));

otc(k-2,i)=log(c(k,i))-log(o(k,i));

cto(k-2,i)=log(o(k,i))-log(c(k-1,i));

end

end

%% first Attention Proxy

for k=2:1234

ctc2(k-1,1)=log(c(k,1))-log(c(k-1,1));

end

for k=2:1233

vol(k-1,1)=(ctc2(k-1,1).^2); % 1st attention variable, volatility = (ctc\_t-1)^2

end

%% ETF average, median

for tt=1:1232;

a2(tt,1)=mean(cto(tt,:));

b2(tt,1)=mean(otc(tt,:));

diff(tt,1)=a2(tt,1)-b2(tt,1);

e2(tt,1)=mean(ctc(tt,:));

f2(tt,1)=mean(oto(tt,:));

v2(tt,1)=mean(vol(tt,1));

end

a3=mean(a2(:,1));

b3=mean(b2(:,1));

d3=mean(diff(:,1));

e3=mean(e2(:,1));

f3=mean(f2(:,1));

v3=mean(v2(:,1));

a4=median(a2(:,1));

b4=median(b2(:,1));

d4=median(diff(:,1));

e4=median(e2(:,1));

f4=median(f2(:,1));

v4=median(v2(:,1));

%% t-test

[h,p,ci,stats]=ttest(a2)

[h,p,ci,stats]=ttest(b2)

[h,p,ci,stats]=ttest(diff)

[h,p,ci,stats]=ttest(e2)

[h,p,ci,stats]=ttest(f2)

[h,p,ci,stats]=ttest(v2)

%% 2nd Attention Proxy

for t=1:1234

dailyinvestor1(t,8)=1;

end

for t=1:1234

dailyinvestor2(t,8)=2;

end

for t=1:1234

dailyinvestor3(t,8)=3;

end

for t=1:1234

dailyinvestor4(t,8)=4;

end

dailyinvestor5=[dailyinvestor1; dailyinvestor2; dailyinvestor3; dailyinvestor4];

dailyinvestor=sortrows(dailyinvestor5,1);

date3 = dailyinvestor(:,1);

volume3 = dailyinvestor(:,2);

dailynetbuy\_institutional= dailyinvestor(:,3);

dailynetbuy\_individual= dailyinvestor(:,4);

dailynetbuy\_foreign= dailyinvestor(:,5);

outstanding= dailyinvestor(:,6);

shortsale= dailyinvestor(:,7);

code12=dailyinvestor(:,8);

for i=1:4;

for t=1:1234

dailynetbuy\_individual2(t,i)=dailynetbuy\_individual(i+(t-1)\*4,1);

outstanding2(t,i)=outstanding(i+(t-1)\*4,1);

shortsale2(t,i)=shortsale(i+(t-1)\*4,1);

end

end

for tt=1:1234;

dailynetbuy\_individual3(tt,1)=mean(dailynetbuy\_individual2(tt,:));

outstanding3(tt,1)=mean(outstanding2(tt,:));

shortsale3(tt,1)=mean(shortsale2(tt,:));

end

retail\_dailynetbuy=dailynetbuy\_individual3(:,1)./outstanding3(:,1);

RSI=shortsale3(:,1)./outstanding3(:,1); % Relative Short Interest

for m=2:1233

w2(m-1,1)=retail\_dailynetbuy(m,1);

end

for m=3:1234

x2(m-2,1)=RSI(m,1);

end

w3=mean(w2(:,1)) % second attention variable mean

x3=mean(x2(:,1)) % Relative Short Interest median

w4=median(w2(:,1)) % second attention variable mean

x4=median(x2(:,1)) % Relative Short Interest median

[h,p,ci,stats]=ttest(w2)

[h,p,ci,stats]=ttest(x2)

%% Netbuying by investor type at the open

for t=1:1234

openinvestor1(t,10)=1;

end

for t=1:1234

openinvestor2(t,10)=2;

end

for t=1:1234

openinvestor3(t,10)=3;

end

for t=1:1234

openinvestor4(t,10)=4;

end

openinvestor5=[openinvestor1; openinvestor2; openinvestor3; openinvestor4];

openinvestor=sortrows(openinvestor5,1);

date2 = openinvestor(:,1);

code2 = openinvestor(:,2);

name2= openinvestor(:,3);

sell1= openinvestor(:,4); %institution sell

buy1= openinvestor(:,5); % institution buy

sell2=openinvestor(:,6); % retail sell

buy2=openinvestor(:,7); %retail buy

sell3=openinvestor(:,8); %foreign sell

buy3=openinvestor(:,9); %foreign buy

code13=openinvestor(:,10);

for i=1:4;

for t=1:1234

retail\_opensell(t,i)=sell2(i+(t-1)\*4,1);

retail\_openbuy(t,i)=buy2(i+(t-1)\*4,1);

end

end

for tt=1:1234;

retail\_opensell2(tt,1)=mean(retail\_opensell(tt,:));

retail\_openbuy2(tt,1)=mean(retail\_openbuy(tt,:));

end

for m=3:1234

retail\_opennetbuy(m-2,1)=((retail\_openbuy2(m,1))-(retail\_opensell2(m,1)))./((retail\_openbuy2(m,1))+(retail\_opensell2(m,1)));

end

y3=mean(retail\_opennetbuy(:,1))

y4=median(retail\_opennetbuy(:,1))

[h,p,ci,stats]=ttest(retail\_opennetbuy)

%% 3 group by the magnitude by first attention proxy

vol\_sort=sortrows(vol);

low\_boundary=vol\_sort(411,1);

upper\_boundary=vol\_sort(822,1);

Istop=find(vol(:,1)<=low\_boundary(1,1)); % Low Group

Istop2=find(low\_boundary(1,1)<vol(:,1) & vol(:,1)<=upper\_boundary(1,1)); % Medium Group

Istop3=find(vol(:,1)>=upper\_boundary(1,1)); % High Group

for i=1:411;

cto\_low(i,1)=a2(Istop(i,1),1);

cto\_medium(i,1)=a2(Istop2(i,1),1);

cto\_high(i,1)=a2(Istop3(i,1),1);

cto\_highminuslow(i,1)=cto\_high(i,1)-cto\_low(i,1);

otc\_low(i,1)=b2(Istop(i,1),1);

otc\_medium(i,1)=b2(Istop2(i,1),1);

otc\_high(i,1)=b2(Istop3(i,1),1);

otc\_highminuslow(i,1)=otc\_high(i,1)-otc\_low(i,1);

ctc\_low(i,1)=e2(Istop(i,1),1);

ctc\_medium(i,1)=e2(Istop2(i,1),1);

ctc\_high(i,1)=e2(Istop3(i,1),1);

ctc\_highminuslow(i,1)=ctc\_high(i,1)-ctc\_low(i,1);

opennetbuy\_low(i,1)=retail\_opennetbuy(Istop(i,1),1);

opennetbuy\_medium(i,1)=retail\_opennetbuy(Istop2(i,1),1);

opennetbuy\_high(i,1)=retail\_opennetbuy(Istop3(i,1),1);

opennetbuy\_highminuslow(i,1)=opennetbuy\_high(i,1)-opennetbuy\_low(i,1);

end

%% cto t-test

a5=mean(cto\_low(:,1))

a6=mean(cto\_medium(:,1))

a7=mean(cto\_high(:,1))

a8=mean(cto\_highminuslow(:,1))

[h,p,ci,stats]=ttest(cto\_low)

[h,p,ci,stats]=ttest(cto\_medium)

[h,p,ci,stats]=ttest(cto\_high)

[h,p,ci,stats]=ttest(cto\_highminuslow)

%% otc t-test

b5=mean(otc\_low(:,1))

b6=mean(otc\_medium(:,1))

b7=mean(otc\_high(:,1))

b8=mean(otc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(otc\_low)

[h,p,ci,stats]=ttest(otc\_medium)

[h,p,ci,stats]=ttest(otc\_high)

[h,p,ci,stats]=ttest(otc\_highminuslow)

%% ctc t-test

c5=mean(ctc\_low(:,1))

c6=mean(ctc\_medium(:,1))

c7=mean(ctc\_high(:,1))

c8=mean(ctc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(ctc\_low)

[h,p,ci,stats]=ttest(ctc\_medium)

[h,p,ci,stats]=ttest(ctc\_high)

[h,p,ci,stats]=ttest(ctc\_highminuslow)

%% individual net buying at the open

d5=mean(opennetbuy\_low(:,1))

d6=mean(opennetbuy\_medium(:,1))

d7=mean(opennetbuy\_high(:,1))

d8=mean(opennetbuy\_highminuslow(:,1))

[h,p,ci,stats]=ttest(opennetbuy\_low)

[h,p,ci,stats]=ttest(opennetbuy\_medium)

[h,p,ci,stats]=ttest(opennetbuy\_high)

[h,p,ci,stats]=ttest(opennetbuy\_highminuslow)

%% 3 group by the magnitude by second attention proxy

w2\_sort=sortrows(w2);

w2\_low\_boundary=w2\_sort(411,1);

w2\_upper\_boundary=w2\_sort(822,1);

w2\_Istop=find(w2(:,1)<=w2\_low\_boundary(1,1));

w2\_Istop2=find(w2\_low\_boundary(1,1)<w2(:,1) & w2(:,1)<=w2\_upper\_boundary(1,1));

w2\_Istop3=find(w2(:,1)>=w2\_upper\_boundary(1,1));

for i=1:411;

w2\_cto\_low(i,1)=a2(w2\_Istop(i,1),1);

w2\_cto\_medium(i,1)=a2(w2\_Istop2(i,1),1);

w2\_cto\_high(i,1)=a2(w2\_Istop3(i,1),1);

w2\_cto\_highminuslow(i,1)=w2\_cto\_high(i,1)-w2\_cto\_low(i,1);

w2\_otc\_low(i,1)=b2(w2\_Istop(i,1),1);

w2\_otc\_medium(i,1)=b2(w2\_Istop2(i,1),1);

w2\_otc\_high(i,1)=b2(w2\_Istop3(i,1),1);

w2\_otc\_highminuslow(i,1)=w2\_otc\_high(i,1)-w2\_otc\_low(i,1);

w2\_ctc\_low(i,1)=e2(w2\_Istop(i,1),1);

w2\_ctc\_medium(i,1)=e2(w2\_Istop2(i,1),1);

w2\_ctc\_high(i,1)=e2(w2\_Istop3(i,1),1);

w2\_ctc\_highminuslow(i,1)=w2\_ctc\_high(i,1)-w2\_ctc\_low(i,1);

dailynetbuy\_low(i,1)=retail\_opennetbuy(w2\_Istop(i,1),1);

dailynetbuy\_medium(i,1)=retail\_opennetbuy(w2\_Istop2(i,1),1);

dailynetbuy\_high(i,1)=retail\_opennetbuy(w2\_Istop3(i,1),1);

dailynetbuy\_highminuslow(i,1)=dailynetbuy\_high(i,1)-dailynetbuy\_low(i,1);

end

%% cto t-test

a9=mean(w2\_cto\_low(:,1))

a10=mean(w2\_cto\_medium(:,1))

a11=mean(w2\_cto\_high(:,1))

a12=mean(w2\_cto\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_cto\_low)

[h,p,ci,stats]=ttest(w2\_cto\_medium)

[h,p,ci,stats]=ttest(w2\_cto\_high)

[h,p,ci,stats]=ttest(w2\_cto\_highminuslow)

%% otc t-test

b9=mean(w2\_otc\_low(:,1))

b10=mean(w2\_otc\_medium(:,1))

b11=mean(w2\_otc\_high(:,1))

b12=mean(w2\_otc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_otc\_low)

[h,p,ci,stats]=ttest(w2\_otc\_medium)

[h,p,ci,stats]=ttest(w2\_otc\_high)

[h,p,ci,stats]=ttest(w2\_otc\_highminuslow)

%% ctc t-test

c9=mean(w2\_ctc\_low(:,1))

c10=mean(w2\_ctc\_medium(:,1))

c11=mean(w2\_ctc\_high(:,1))

c12=mean(w2\_ctc\_highminuslow(:,1))

[h,p,ci,stats]=ttest(w2\_ctc\_low)

[h,p,ci,stats]=ttest(w2\_ctc\_medium)

[h,p,ci,stats]=ttest(w2\_ctc\_high)

[h,p,ci,stats]=ttest(w2\_ctc\_highminuslow)

%% individual net buying at the open

d9=mean(dailynetbuy\_low(:,1))

d10=mean(dailynetbuy\_medium(:,1))

d11=mean(dailynetbuy\_high(:,1))

d12=mean(dailynetbuy\_highminuslow(:,1))

[h,p,ci,stats]=ttest(dailynetbuy\_low)

[h,p,ci,stats]=ttest(dailynetbuy\_medium)

[h,p,ci,stats]=ttest(dailynetbuy\_high)

[h,p,ci,stats]=ttest(dailynetbuy\_highminuslow)