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%Reference and Collaborated with Ritwik Srivastava

data = readtable("Assignment 4.xlsx");

% Computing continuously compounded returns and log dividend-price ratio:
prices = data.P_real;
dividends = data.D_real;
price_prev = data.P_real(1:end-1);
Rt = ((prices(2:end) + dividends(2:end))./price_prev) - 1;
ret = log(1 + Rt);
DPt = dividends(1:end-1)./price_prev;
dpt = log(DPt);


% T-stat for Horizon-3 (ta_3)
arr = [];
arr(end+1) = Rt(2)+Rt(3)+Rt(4);
for i=3:68
   temp_rt = Rt(i)+Rt(i+1)+Rt(i+2);
   arr(end+1) = temp_rt;
end
arr = reshape(arr, [67,1]);
n = length(Rt);
res_3 = ols(arr(1:end),[ones(n-3,1) dpt(1:end-3)]);
ta_3 = res_3.tstat(2)
beta_3 = res_3.beta(2)


% T-stat for Horizon-7 (ta_7)
arr = [];
arr(end+1) = Rt(2)+Rt(3)+Rt(4)+Rt(5)+Rt(6)+Rt(7)+Rt(8);
for i=3:64
   temp_rt = Rt(i)+Rt(i+1)+Rt(i+2)+Rt(i+3)+Rt(i+4)+Rt(i+5)+Rt(i+6);
   arr(end+1) = temp_rt;
end
arr = reshape(arr, [63,1]);
n = length(Rt);
res_7 = ols(arr(1:end),[ones(n-7,1) dpt(1:end-7)]);
ta_7 = res_7.tstat(2)
beta_7 = res_7.beta(2)
```