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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);

n = length(Rt);
res = ols(Rt(2:end), [ones(n-1,1) dpt(1:end-1)]);
res.rsqr;
b_ols = res.beta;
res.tstat;
n1 = fix(n/3);
res_jk1 = ols(Rt(2:n1), [ones(n1-1,1) dpt(1:(n1-1))]);
res_jk2 = ols(Rt((n1+2):2*n1), [ones(2*n1-n1-1,1) dpt((n1+1):(2*n1-1))]);
res_jk3 = ols(Rt((2*n1+2):n), [ones(n-2*n1-1,1) dpt((2*n1+1):(n-1))]);
b_jk = (3/2)*b_ols - (res_jk1.beta + res_jk2.beta + res_jk3.beta)/6;

u0 = res.resid;

t_ols = res.tstat(2);
res_2 = ols(dpt(2:end), [ones(n-1,1) dpt(1:(end-1))]);
rho_0 = res_2.beta(1);
rho = res_2.beta(2);
ux = res_2.resid;
u=[u0 ux];

bt_m = 500;
b_boot=zeros(1,bt_m);
t_boot=zeros(1,bt_m);

for bt=1:bt_m
    u_boot=zeros(n-1,2);
    for i=1:(n-1)
        u_boot(i,:)=u(randperm(n - 1, 1), :);
    end
    x_boot=zeros(n,1);
    x_boot(1)=dpt(1);
    for i=2:n
        x_boot(i)=rho_0+rho*x_boot(i-1)+u_boot(i-1,2);
    end
    r_boot=zeros(n,1);
    r_boot(1)=ret(1);
    for i=2:n
        r_boot(i)=b_ols(1)+x_boot(i-1,:)*b_ols(2)+u_boot(i-1,1);
    end

    res=ols(r_boot(2:end), [ones(n-1,1) x_boot(1:(end-1))]);
    b_boot(bt)=res.beta(2);
    sde=res.beta(2)/res.tstat(2);

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t_boot(bt)=(res.beta(2)-b_ols(2))/sde;  
end  
level = 0.1;  
cv = quantile(t_boot,1-level);  
su=0;for i=1:bt_m; if (t_boot(i)>t_ols);su=su+1;end;end;pv_boot=su/bt_m;
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