

```

%This program reads in data from Trefler's article, sorted by factor and
%country. (The first nc observations are for factor 1 all nc countries;
% the next nc observations are for factor 2, all nc countries, etc.

% The program then constructs predicted factor content of consumption, and
% sets the stage for examination of the factor content predictions of the
% HO model. You do the rest!

global s v nc nv at wgt;
diary('ex1.txt') % send output to file ex1.txt

nc = 33; % number of countries in the data set
nv = 9; % number of factors in the data set

% Break columns of the data matrix into individual column vectors

at = data(:,1);
v = data(:,2);
y = data(:,3);
b = data(:,4);
ypc = data(:,5);
pop = data(:,6);

yw = sum(y)./nv % Construct world income. Since income is repeated nv
                % times in the data set (once for each factor), divide by
nv
bw = sum(b)./nv; % Construct global trade balance
s = (y-b)./(yw-bw); % construct country shares
% s = y./yw;
check = sum(s(1:nc)); % make sure country shares sum to one

if check ~= 1;
    'Income shares do not sum to one'
end;

% The following loop creates global totals for each factor stock.

vw = zeros(nv,1);
i = 1;
while i <= nv;
    n1 = (i-1)*nc + 1;
    n2 = i*nc;
    vw(i) = sum(v(n1:n2));
    i = i + 1;
end;
vw = kron(vw,ones(nc,1));

hov_v = v - s.*vw; % Construct predicted factor content
epsilon = at - hov_v; % Construct discrepancy between actual
                    % and predicted factor content.
scatter(epsilon, hov_v); % Plot predicted factor content against discrepancy,
                    % pooling all factors.

i = 1;
while i <= nv;

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n1 = (i-1)*nc + 1;
n2 = i*nc;
scatter(epsilon(n1:n2),hov_v(n1:n2)) % Plot actual factor content against
discrepancy,
i % factor by factor
corrcoef(epsilon(n1:n2),hov_v(n1:n2))
cat(2,epsilon(n1:n2),at(n1:n2)) % write file to ex1.txt
subplot(4,3,i);
plot(epsilon, hov_v);
title(' ');
xlabel(' ');
ylabel(' ');
i = i + 1;
end;

% Construct standard deviations of prediction errors, factor by factor

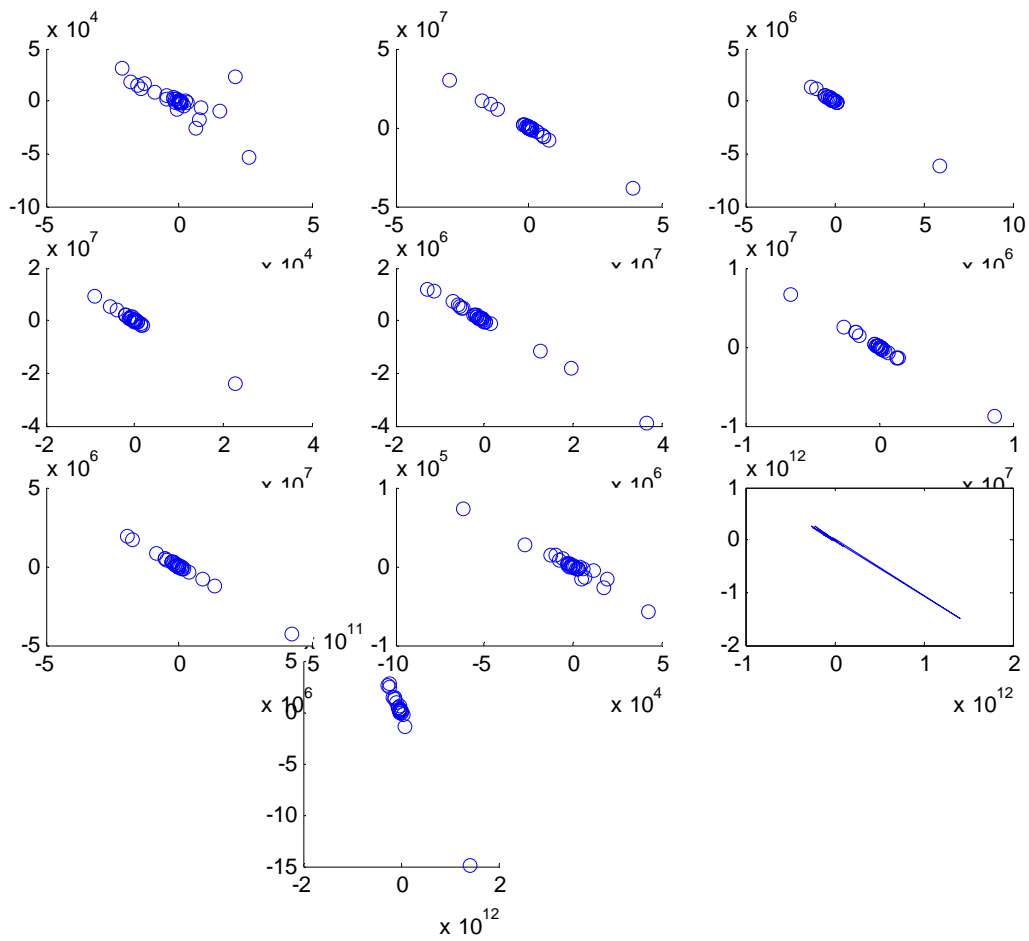
epsig = zeros(nv,1);
i = 1;
while i <= nv;
n1 = (i-1)*nc + 1;
n2 = i*nc;
epmean = sum(epsilon(n1:n2))/nc;
epsig(i) = sum((epsilon(n1:n2) - epmean).^2)/(nc-1);
i = i + 1;
end;

epsig = sqrt(epsig);
epsig = kron(epsig,ones(nc,1));
wgt = 1./(epsig.*sqrt(s));

options=optimset('Display', 'off');
delta0 = zeros(nc-1,1);
delta = lsqnonlin(@effic, delta0);
delta = cat(1,delta,1) % add the U.S. (which has a delta of 1)
% to the end of delta vector

corrcoef(delta,s(1:nc)) % look at correlation of productivity and country
size
diary off;

```



yw =

8.5420e+012

ans =

Country shares

ans =

- 0.0018
- 0.0039
- 0.0104
- 0.0007
- 0.0051
- 0.0048
- 0.0006
- 0.0072
- 0.0030
- 0.0008
- 0.0051
- 0.0021

0.0218
0.0036
0.0040
0.0030
0.0086
0.0027
0.0504
0.0611
0.1399
0.0109
0.0009
0.0163
0.0062
0.0068
0.0795
0.0690
0.0119
0.0063
0.0127
0.0360
0.4028

i =

1

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.7146
0.7146	1.0000

ans =

1.0e+012 *

0.0052	-0.0019
-0.0213	-0.0032
-0.2401	-0.0048
-0.0305	-0.0016
-0.0469	-0.0057
-0.0266	-0.0035
-0.0060	-0.0018
-0.1230	-0.0045
-0.0421	-0.0061
-0.0092	0.0007
-0.0331	-0.0074
-0.0133	-0.0007
-0.1026	-0.0084
-0.0158	-0.0043
-0.0126	-0.0087
-0.0067	0.0005
-0.0336	-0.0040
-0.0230	-0.0102
-0.2661	-0.0023
0.1006	-0.0328
-0.2240	0.0479

-0.0154	-0.0021
-0.0058	-0.0018
0.0038	0.0146
-0.0109	0.0027
-0.0013	-0.0021
-0.1078	0.0339
-0.1484	-0.0104
0.0364	0.0079
-0.0159	0.0043
-0.0266	-0.0065
-0.0069	0.0461
1.4197	-0.0740

i =

2

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.7302
0.7302	1.0000

ans =

1.0e+004 *

-0.8784	-0.0410
-1.8015	0.0649
-1.5589	-0.0304
-0.1622	0.0272
-1.2887	0.3966
-0.1926	0.1764
-0.0196	0.0134
-0.4786	0.0050
-0.4679	-0.2388
-0.0559	0.0552
-0.1154	0.0655
0.0630	0.0716
-1.3978	-0.2539
0.0911	-0.0157
-0.1535	-0.3189
0.3294	0.2515
0.0918	-0.1019
0.0050	-0.1082
-0.0590	-0.9129
0.7995	-1.0407
2.6590	-2.6692
0.0383	-0.3321
-0.0233	-0.0444
0.8222	0.2307
-0.0283	-0.0499
0.2535	0.2357
0.6477	-1.9068
1.5681	0.5627
0.0634	-0.1334
0.1162	-0.0596

0.2097	-0.2764
-2.1549	0.9690
2.1602	4.4905

i =

3

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.1034
0.1034	1.0000

ans =

1.0e+007 *

-1.4476	0.0000
-1.1554	0.0008
-2.9537	0.0039
-0.1825	0.0005
-1.7154	0.0062
-0.1422	0.0019
-0.0082	0.0003
-0.1801	0.0003
-0.0442	-0.0015
-0.0070	0.0010
-0.0454	-0.0000
0.0037	0.0016
0.0363	-0.0029
0.0315	-0.0003
0.0317	-0.0045
0.0210	0.0048
0.0587	-0.0008
0.0258	-0.0005
0.2913	-0.0146
0.5844	-0.0145
0.7881	-0.0462
0.0979	-0.0037
0.0056	-0.0006
0.1490	0.0075
0.0368	0.0008
0.0571	0.0053
0.5890	-0.0214
0.5356	0.0009
0.1005	-0.0003
0.0519	0.0016
0.1082	-0.0035
0.3245	0.0155
3.9033	0.0122

i =

4

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.7168
0.7168	1.0000

ans =

1.0e+006 *

-0.5010	-0.0019
-0.5071	-0.0043
-1.3120	-0.0088
-0.2285	-0.0029
-0.1269	-0.0051
-0.1592	-0.0083
-0.0273	-0.0036
-0.4814	0.0007
-0.3441	-0.0080
-0.0895	0.0026
-0.0603	-0.0188
-0.0152	0.0022
-0.2156	-0.0130
-0.0455	-0.0105
-0.0767	-0.0013
-0.0402	0.0045
-0.0985	-0.0123
-0.0348	-0.0211
-0.2801	0.0462
-0.4618	-0.0775
-1.0071	0.2134
-0.0677	-0.0031
-0.0058	-0.0065
0.0247	0.0337
0.1024	0.0097
-0.0116	0.0115
0.0520	0.1207
-0.0941	-0.0243
0.1403	0.0159
0.1698	0.0022
0.1024	-0.0091
-0.1434	0.0467
5.8786	-0.2346

i =

5

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.6322
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0.6322 1.0000

ans =

1.0e+007 *

-0.3833	-0.0008
-0.5414	-0.0004
-0.9064	-0.0050
-0.1037	-0.0009
-0.2150	-0.0030
-0.0861	-0.0030
-0.0064	-0.0014
-0.1963	0.0035
-0.1039	0.0003
-0.0210	0.0007
-0.0482	-0.0052
-0.0186	-0.0012
-0.1913	0.0025
0.0082	-0.0031
-0.0672	0.0083
-0.0057	-0.0001
-0.0113	-0.0031
-0.0152	-0.0078
-0.0816	0.0425
0.0085	-0.0301
-0.0547	0.1003
0.0222	-0.0002
-0.0060	-0.0025
0.0720	-0.0013
0.0131	0.0061
0.0213	0.0014
0.1677	0.0404
0.2020	-0.0058
0.0523	0.0075
0.0168	-0.0034
0.0618	-0.0056
0.1633	0.0105
2.2803	-0.1139

i =

6

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.1903
0.1903	1.0000

ans =

1.0e+006 *

-0.5379	-0.0010
-0.7111	-0.0043

-1.1169	0.0011
-0.2236	-0.0024
-0.4994	-0.0035
-0.1046	-0.0079
-0.0308	-0.0027
-0.5904	-0.0019
-0.1432	-0.0079
-0.0632	0.0020
-0.1078	-0.0172
-0.0497	0.0041
-0.0955	-0.0214
-0.1429	-0.0103
0.0357	-0.0060
-0.0405	0.0037
0.0123	-0.0118
0.0155	-0.0175
-0.1831	0.0110
-1.2700	-0.0637
1.9682	0.1522
-0.1068	-0.0077
0.0002	-0.0048
-0.1931	0.0309
-0.0822	0.0043
-0.0625	0.0106
1.2667	0.0926
-0.1057	-0.0338
-0.4652	0.0120
-0.0681	0.0059
0.1336	-0.0056
-0.1709	0.0406
3.6903	-0.1825

i =

7

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.5549
0.5549	1.0000

ans =

1.0e+006 *

-2.6023	-0.0008
-1.7488	-0.0014
-6.5786	-0.0001
-0.2941	-0.0007
-1.4656	-0.0016
-0.3148	-0.0014
-0.0095	-0.0010
-0.1475	-0.0005
-0.1776	-0.0029
-0.0784	0.0005
-0.0704	-0.0042

-0.0340	0.0005
-0.1184	-0.0056
0.0661	-0.0027
-0.0762	0.0006
0.0107	0.0008
0.0700	-0.0037
-0.0147	-0.0057
0.6601	0.0053
1.4277	-0.0153
-1.7403	0.0423
0.1976	-0.0022
0.0120	-0.0011
0.2367	0.0059
0.1248	0.0010
0.1347	0.0015
1.3317	0.0189
1.3283	-0.0075
0.2303	0.0016
0.1073	0.0007
0.3353	-0.0029
0.5113	0.0065
8.6675	-0.0436

i =

8

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.2777
0.2777	1.0000

ans =

1.0e+006 *

-1.7373	-0.0007
-0.8117	-0.0016
-1.9138	-0.0027
-0.2144	-0.0014
-0.4994	-0.0017
-0.5208	-0.0034
-0.0599	-0.0015
-0.2257	-0.0001
-0.2803	-0.0037
-0.1380	0.0013
-0.0689	-0.0080
-0.0014	0.0018
-0.2887	-0.0079
0.0041	-0.0050
-0.2304	-0.0028
0.0231	0.0028
-0.0758	-0.0059
-0.0072	-0.0090
0.1119	0.0115
-0.4674	-0.0360

1.3782	0.0881
0.1409	-0.0025
-0.0063	-0.0029
0.1435	0.0167
0.0068	0.0035
-0.0988	0.0057
0.9087	0.0451
0.3985	-0.0115
0.0086	0.0067
0.0231	0.0012
0.1907	-0.0039
0.0669	0.0220
4.2426	-0.0927

i =

9

ans =

correlation of predicted and actual factor content

ans =

1.0000	0.7703
0.7703	1.0000

ans =

1.0e+004 *

-0.0070	-0.0220
-0.3114	0.0279
-0.7749	-0.0051
-0.0172	-0.0009
0.4286	0.2503
-2.6770	0.1269
-0.0890	0.0022
-0.3181	0.0239
-0.0031	-0.0742
-1.2390	0.0909
-0.3221	-0.0058
-0.2138	0.1839
-0.2472	-0.0688
0.0509	-0.0139
-0.1369	-0.3006
-0.9857	0.3912
0.0941	-0.0538
0.0460	-0.0661
0.4827	-1.0700
0.6581	-0.7125
4.2379	-1.4287
0.2669	-0.1121
-0.0069	-0.0421
1.1836	0.6300
0.2651	0.0276
0.5962	0.3419
1.7716	-1.0134
1.9248	0.3770
0.3267	-0.0891

0.2629	0.0169
0.2207	-0.1380
-0.5493	0.3783
-6.2177	1.0485

Optimization terminated: relative function value
changing by less than OPTIONS.TolFun.

delta =

0.0312
0.0751
0.0966
0.0788
0.0940
0.1213
0.2795
0.2838
0.2186
0.0409
0.4479
0.4329
0.4373
0.5129
0.3990
0.1570
0.6204
0.5635
0.6149
0.6094
0.7189
0.6664
0.5295
0.5956
0.6419
0.5463
0.7859
0.7131
0.5658
0.6897
0.8209
0.4896
1.0000

ans =

1.0000	0.5337
0.5337	1.0000