

附录

正文未报告部分

MATLAB do 文件

%% 本程序旨在计算 1999 年全球价值链背景下一国（地区）出口功能专业化指数，其他年份可类似得到。

```
clear
clc
%读取基本矩阵和向量
lab = xlsread('labor shares 1999_2011.xlsx','data','D2:D1436');%读取劳动报酬份额数据
bf = xlsread('business function shares 1999_2011.xlsx','data','D2:G1436');%读取不同职业占劳动报酬的份额数据
IO = xlsread('WIOT-1999.xlsx','WIOT_1999','E7:BKG1449');%读取全球投入产出表
A = IO(1:1435,1:1435);%中间流量矩阵
D = IO(1:1435,1436:1640);%最终需求矩阵
x = IO(1:1435,1641);%总产出列向量
va =(x'-sum(A));%增加值列向量

%计算出口
post_fd = eye(41);
for i = 1:41
    postagg_fd = kron(post_fd(:,i),ones(5,1));
    fd_v(:,i) = D * postagg_fd;
end
for i = 1:41
    postagg_m = kron(post_fd(:,i),ones(35,1));
    m_v(:,i) = A * postagg_m;
end
test = ones(41,41);
for i = 1:41
    test(i,i)=0;
end
test1 = kron(test,ones(35,1));
exports = ((m_v + fd_v) .* test1) * ones(41,1);

% 中间投入系数
coef =A./(repmat(x',1435,1));
coef(isnan(coef))=0;
coef_dom = coef .* kron(eye(41),ones(35,35)); % 国内中间投入系数矩阵

% 功能工资份额
```

```

s_MGT = bf(:,1);%management 份额
s_RD = bf(:,2);%research and development 份额
s_MAR = bf(:,3);%marketing 份额
s_FAB = bf(:,4);%fabrication 份额
s_sum= s_MGT + s_RD + s_MAR + s_FAB;
sh_MGT = s_MGT./s_sum;nan_locations = find(isnan(sh_MGT));sh_MGT(nan_locations) = 0;
sh_RD = s_RD./s_sum;nan_locations = find(isnan(sh_RD));sh_RD(nan_locations) = 0;
sh_MAR = s_MAR./s_sum;nan_locations = find(isnan(sh_MAR));sh_MAR(nan_locations) = 0;
sh_FAB = s_FAB./s_sum;nan_locations = find(isnan(sh_FAB));sh_FAB(nan_locations) = 0;

```

```

LAB=lab;%劳动报酬份额
lab_MGT = sh_MGT .* LAB;
lab_RD = sh_RD .* LAB;
lab_MAR = sh_MAR .* LAB;
lab_FAB = sh_FAB .* LAB;

```

```

v = (va./x)'; % 增加值率
v(isnan(v))=0;
VAX_D=diag(v)*inv(eye(1435)-coef_dom)*exports;% 出口国内增加值

```

```

w_MGT = lab_MGT.*va;
v_MGT = (w_MGT./x)';
v_MGT(isnan(v_MGT))=0;
VAX_MGT = diag(v_MGT)*inv(eye(1435)-coef_dom)*exports;

```

```

w_RD = lab_RD.*va;
v_RD = (w_RD./x)';
v_RD(isnan(v_RD))=0;
VAX_RD = diag(v_RD)*inv(eye(1435)-coef_dom)*exports;

```

```

w_MAR = lab_MAR.*va;
v_MAR = (w_MAR./x)';
v_MAR(isnan(v_MAR))=0;
VAX_MAR = diag(v_MAR)*inv(eye(1435)-coef_dom)*exports;

```

```

w_FAB = lab_FAB.*va;
v_FAB = (w_FAB./x)';
v_FAB(isnan(v_FAB))=0;
VAX_FAB = diag(v_FAB)*inv(eye(1435)-coef_dom)*exports;

```

%将增加值以及不同功能的工资由国家-部门层面加总至国家层面

```
VAX_D_Region = zeros(41,1);
```

```
for i = 1:41
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    j = 35*i;
```

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VAX_D_Region(i,:) = sum(VAX_D((j-34):j,:));
end
VAX_MGT_Region = zeros(41,1);
for i = 1:41
    j = 35*i;
    VAX_MGT_Region(i,:) = sum(VAX_MGT((j-34):j,:));
end
VAX_RD_Region = zeros(41,1);
for i = 1:41
    j = 35*i;
    VAX_RD_Region(i,:) = sum(VAX_RD((j-34):j,:));
end
VAX_MAR_Region = zeros(41,1);
for i = 1:41
    j = 35*i;
    VAX_MAR_Region(i,:) = sum(VAX_MAR((j-34):j,:));
end
VAX_FAB_Region = zeros(41,1);
for i = 1:41
    j = 35*i;
    VAX_FAB_Region(i,:) = sum(VAX_FAB((j-34):j,:));
end

%计算基于不同功能的增加值的 FS 指数
VAX_Wage = VAX_MGT+VAX_RD+VAX_MAR+VAX_FAB;
VAX_Wage_Region = zeros(41,1);
for i = 1:41
    j = 35*i;
    VAX_Wage_Region(i,:) = sum(VAX_Wage((j-34):j,:));
end

% MGT
Up_VAX_MGT_Region = VAX_MGT_Region./VAX_Wage_Region;
Down_VAX_MGT_Region = repmat(sum(VAX_MGT_Region)./sum(VAX_Wage_Region),41,1);
FS_MGT_Region = Up_VAX_MGT_Region./Down_VAX_MGT_Region;

% RD
Up_VAX_RD_Region = VAX_RD_Region./VAX_Wage_Region;
Down_VAX_RD_Region = repmat(sum(VAX_RD_Region)./sum(VAX_Wage_Region),41,1);
FS_RD_Region = Up_VAX_RD_Region./Down_VAX_RD_Region;

% MAR
Up_VAX_MAR_Region = VAX_MAR_Region./VAX_Wage_Region;
Down_VAX_MAR_Region = repmat(sum(VAX_MAR_Region)./sum(VAX_Wage_Region),41,1);
```

```
FS_MAR_Region = Up_VAX_MAR_Region./Down_VAX_MAR_Region;
```

```
% FAB
```

```
Up_VAX_FAB_Region = VAX_FAB_Region./VAX_Wage_Region;
```

```
Down_VAX_FAB_Region = repmat(sum(VAX_FAB_Region)./sum(VAX_Wage_Region),41,1);
```

```
FS_FAB_Region = Up_VAX_FAB_Region./Down_VAX_FAB_Region;
```

%% 本程序旨在计算 1999 年全球价值链背景下一国（地区）产业层面的出口功能专业化指数，其他年份可类似得到。

```

clear
clc
%读取基本矩阵和向量
lab = xlsread('labor shares 1999_2011.xlsx','data','D2:D1436');%读取劳动报酬份额数据
bf = xlsread('business function shares 1999_2011.xlsx','data','D2:G1436');%读取不同职业占劳动报酬的份额数据
IO = xlsread('WIOT-1999.xlsx','WIOT_1999','E7:BKG1449');%读取全球投入产出表
A = IO(1:1435,1:1435);%中间流量矩阵
D = IO(1:1435,1436:1640);%最终需求矩阵
x = IO(1:1435,1641);%总产出列向量
va =(x'-sum(A));%增加值列向量

% 总出口
post_fd = eye(41);
for i = 1:41
    postagg_fd = kron(post_fd(:,i),ones(5,1));
    fd_v(:,i) = D * postagg_fd;
end
for i = 1:41
    postagg_m = kron(post_fd(:,i),ones(35,1));
    m_v(:,i) = A * postagg_m;
end
test = ones(41,41);
for i = 1:41
    test(i,i)=0;
end
test1 = kron(test,ones(35,1));
exports = ((m_v + fd_v) .* test1) * ones(41,1);

% 中间投入系数
coef =A./(repmat(x',1435,1));
coef(isnan(coef))=0;
coef_dom = coef .* kron(eye(41),ones(35,35)); % 国内中间投入系数矩阵

% 功能工资份额
s_MGT = bf(:,1);%management 份额
s_RD = bf(:,2);%research and development 份额
s_MAR = bf(:,3);%marketing 份额
s_FAB = bf(:,4);%fabrication 份额

s_sum= s_MGT + s_RD + s_MAR + s_FAB;

```

```

sh_MGT = s_MGT./s_sum;nan_locations = find(isnan(sh_MGT));sh_MGT(nan_locations) = 0;
sh_RD = s_RD./s_sum;nan_locations = find(isnan(sh_RD));sh_RD(nan_locations) = 0;
sh_MAR = s_MAR./s_sum;nan_locations = find(isnan(sh_MAR));sh_MAR(nan_locations) = 0;
sh_FAB = s_FAB./s_sum;nan_locations = find(isnan(sh_FAB));sh_FAB(nan_locations) = 0;

```

```

LAB=lab;%劳动报酬份额
lab_MGT = sh_MGT .* LAB;
lab_RD = sh_RD .* LAB;
lab_MAR = sh_MAR .* LAB;
lab_FAB = sh_FAB .* LAB;

```

```

v = (va./x)'; % 增加值率
v(isnan(v))=0;
VAX_D=diag(v)*inv(eye(1435)-coef_dom)*exports;% 出口国内增加值

```

```

w_MGT = lab_MGT.*va;
v_MGT = (w_MGT./x)';
v_MGT(isnan(v_MGT))=0;
VAX_MGT = diag(v_MGT)*inv(eye(1435)-coef_dom)*exports;

```

```

w_RD = lab_RD.*va;
v_RD = (w_RD./x)';
v_RD(isnan(v_RD))=0;
VAX_RD = diag(v_RD)*inv(eye(1435)-coef_dom)*exports;

```

```

w_MAR = lab_MAR.*va;
v_MAR = (w_MAR./x)';
v_MAR(isnan(v_MAR))=0;
VAX_MAR = diag(v_MAR)*inv(eye(1435)-coef_dom)*exports;

```

```

w_FAB = lab_FAB.*va;
v_FAB = (w_FAB./x)';
v_FAB(isnan(v_FAB))=0;
VAX_FAB = diag(v_FAB)*inv(eye(1435)-coef_dom)*exports;

```

```

%计算基于增加值的 RCA 指数
VAX_D_AggtoReg=zeros(1435,1);
for i=1:41
    j=35*i;
    VAX_D_AggtoReg((j-34):j,:)=repmat(sum(VAX_D((j-34):j,:)),35,1);
end
Up_VAX_D=VAX_D./VAX_D_AggtoReg;
VAX_D_AggtoSec=zeros(35,1);
for i=1:41

```

```

        j=35*i;
        VAX_D_AggtoSeci=VAX_D((j-34):j,:);
        VAX_D_AggtoSec=VAX_D_AggtoSec+VAX_D_AggtoSeci;
    end
    Down_VAX_D= repmat((VAX_D_AggtoSec./repmat(sum(VAX_D_AggtoSec),35,1)),41,1);
    VRAC=Up_VAX_D./Down_VAX_D;

%计算基于不同功能的增加值的 FS 指数
VAX_Wage=VAX_MGT+VAX_RD+VAX_MAR+VAX_FAB;
% MGT
VAX_MGT_AggtoReg=zeros(1435,1);
for i=1:41
    j=35*i;
    VAX_MGT_AggtoReg((j-34):j,:)=repmat(sum(VAX_Wage((j-34):j,:)),35,1);
end
Up_VAX_MGT=VAX_MGT./VAX_MGT_AggtoReg;
VAX_MGT_AggtoSec=zeros(35,1);
for i=1:41
    j=35*i;
    VAX_MGT_AggtoSeci=VAX_MGT((j-34):j,:);
    VAX_MGT_AggtoSec=VAX_MGT_AggtoSec+VAX_MGT_AggtoSeci;
end
Down_VAX_MGT=repmat((VAX_MGT_AggtoSec./repmat(sum(VAX_Wage),35,1)),41,1);
FS_MGT=Up_VAX_MGT./Down_VAX_MGT;

% RD
VAX_RD_AggtoReg=zeros(1435,1);
for i=1:41
    j=35*i;
    VAX_RD_AggtoReg((j-34):j,:)=repmat(sum(VAX_Wage((j-34):j,:)),35,1);
end
Up_VAX_RD=VAX_RD./VAX_RD_AggtoReg;
VAX_RD_AggtoSec=zeros(35,1);
for i=1:41
    j=35*i;
    VAX_RD_AggtoSeci=VAX_RD((j-34):j,:);
    VAX_RD_AggtoSec=VAX_RD_AggtoSec+VAX_RD_AggtoSeci;
end
Down_VAX_RD=repmat((VAX_RD_AggtoSec./repmat(sum(VAX_Wage),35,1)),41,1);
FS_RD=Up_VAX_RD./Down_VAX_RD;

% MAR
VAX_MAR_AggtoReg=zeros(1435,1);
for i=1:41

```

```

j=35*i;
VAX_MAR_AggtoReg((j-34):j,:)=repmat(sum(VAX_Wage((j-34):j,:),35,1);
end
Up_VAX_MAR=VAX_MAR./VAX_MAR_AggtoReg;
VAX_MAR_AggtoSec=zeros(35,1);
for i=1:41
j=35*i;
VAX_MAR_AggtoSeci=VAX_MAR((j-34):j,:);
VAX_MAR_AggtoSec=VAX_MAR_AggtoSec+VAX_MAR_AggtoSeci;
end
Down_VAX_MAR=repmat((VAX_MAR_AggtoSec./repmat(sum(VAX_Wage),35,1)),41,1);
FS_MAR=Up_VAX_MAR./Down_VAX_MAR;

% FAB
VAX_FAB_AggtoReg=zeros(1435,1);
for i=1:41
j=35*i;
VAX_FAB_AggtoReg((j-34):j,:)=repmat(sum(VAX_Wage((j-34):j,:),35,1);
end
Up_VAX_FAB=VAX_FAB./VAX_FAB_AggtoReg;
VAX_FAB_AggtoSec=zeros(35,1);
for i=1:41
j=35*i;
VAX_FAB_AggtoSeci=VAX_FAB((j-34):j,:);
VAX_FAB_AggtoSec=VAX_FAB_AggtoSec+VAX_FAB_AggtoSeci;
end
Down_VAX_FAB=repmat((VAX_FAB_AggtoSec./repmat(sum(VAX_Wage),35,1)),41,1);
FS_FAB=Up_VAX_FAB./Down_VAX_FAB;

```

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参考文献引用范例：

[1] 朱军. 技术吸收、政府推动与中国全要素生产率提升[J]. 中国工业经济. 2017, (1) :5-24.

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