```
clear
```

Question 3.3.3 Policy Evaluation

What happens to macroeconomic aggregates (Y; K; C), to equilibrium prices (w; r) and the equilibrium distributions for earnings (1 -#)wyl, income (1 - #)wyl + ra, assets a and consumption c.

```
% For the distributions, you may want to calculate Gini coefficients
% or if possible, plot the Lorenz curves, under the two different
 specifications.

% Is UBI welfare-improving? To answer this question you may want to
 compare the
% value functions v(a; y) under the two policies for some combinations
 of (a; y);
% or aggregate (utilitarian) social welfare

load('withoutUBI.mat')

vWage = zeros(1,2);
vRate = zeros(1,2);
vAggY = zeros(1,2);
vAggK = zeros(1,2);
vAggConsumption = zeros(1,2);
vAggValue = zeros(1,2);

vDistribution = zeros(nGridShocks*nAssets,2);
vIndEarnings = zeros(nGridShocks*nAssets,2);
vIndIncome = zeros(nGridShocks*nAssets,2);
vIndAsset = zeros(nGridShocks*nAssets,2);
vIndConsumption = zeros(nGridShocks*nAssets,2);
vIndValue = zeros(nGridShocks*nAssets,2);

vGiniCoefficientsEarnings = zeros(1,2);
vGiniCoefficientsIncome = zeros(1,2);
vGiniCoefficientsAssets = zeros(1,2);
vGiniCoefficientsConsumption = zeros(1,2);
vGiniCoefficientsValue = zeros(1,2);

%=======================================

vDistribution(:,1) = vStationaryDistribution;

vWage(1) = wage;
vRate(1) = r;
vAggK(1) = capitalSupply;
vAggY(1) = capitalSupply^aalphaK * laborSupplyEffective^(1-aalphaK);

vConsumption = mConsumptionPolicy(:);
vAggConsumption(1) = vStationaryDistribution' * vConsumption;
```

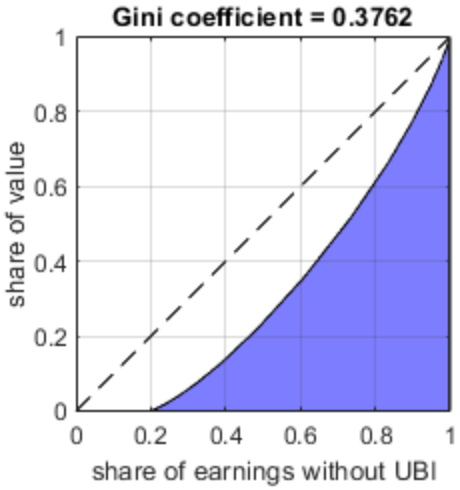
```
vValue = mValue(:);
vAggValue(1) = vStationaryDistribution' * vValue;


mIndEarnings = mLaborPolicy.*vIncomeShocks';
mIndIncome = mIndEarnings + r * vGridAsset;
mIndAsset = repmat(vGridAsset,1,nGridShocks);
vIndEarnings(:,1) = mIndEarnings(:);
vIndIncome(:,1) = mIndIncome(:);
vIndAsset(:,1) = mIndAsset(:);
vIndConsumption(:,1) = vConsumption;
vIndValue(:,1)=mValue(:);
% vGiniCoefficients(1) = % to be calculated

%=========================================
load('withUBI.mat')
vDistribution(:,2) = vStationaryDistribution;

vWage(2) = wage;
vRate(2) = r;
vAggK(2) = capitalSupply;
vAggY(2) = capitalSupply^aalphaK * laborSupplyEffective^(1-aalphaK);

vConsumption = mConsumptionPolicy(:);
vAggConsumption(2) = vStationaryDistribution' * vConsumption;

vValue = mValue(:);
vAggValue(2) = vStationaryDistribution' * vValue;

mIndEarnings = (1-ttao) * mLaborPolicy.*vIncomeShocks';
mIndIncome = mIndEarnings + r * vGridAsset;
mIndAsset = repmat(vGridAsset,1,nGridShocks);

vIndEarnings(:,2) = mIndEarnings(:);
vIndIncome(:,2) = mIndIncome(:);
vIndAsset(:,2) = mIndAsset(:);
vIndConsumption(:,2) = vConsumption;
vIndValue(:,2)=mValue(:);

% vGiniCoefficients(2) = % to be calculated
```

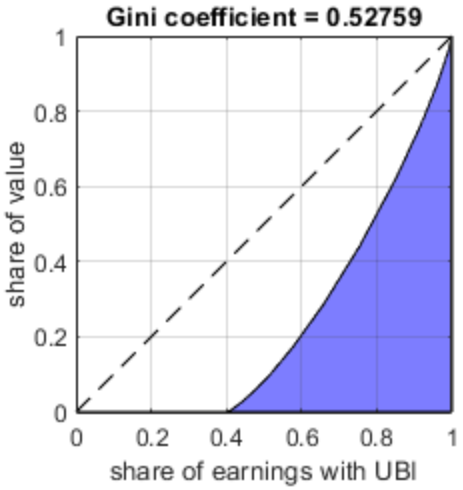
Inequality Figures

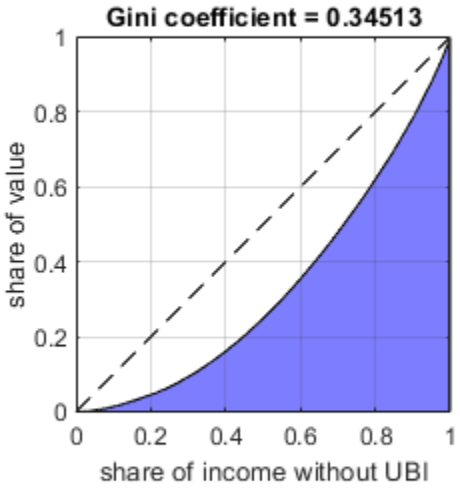
```
figure
subplot(1,2,1)
vGiniCoefficientsEarnings(1) =
 giniFunction(vDistribution(:,1),vIndEarnings(:,1),true); % Copyright
 (c) 2010, Yvan Lengwiler
xlabel('share of earnings without UBI');
subplot(1,2,2)
vGiniCoefficientsEarnings(2) =
 giniFunction(vDistribution(:,2),vIndEarnings(:,2),true); % Copyright
 (c) 2010, Yvan Lengwiler
```

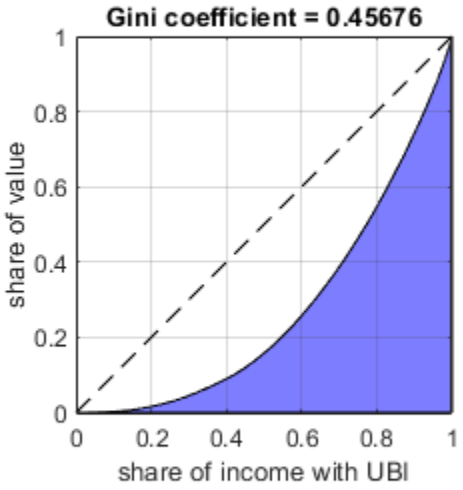
```
xlabel('share of earnings with UBI');
savefig('giniEarnings')


figure
subplot(1,2,1)
vGiniCoefficientsIncome(1) =
 giniFunction(vDistribution(:,1),vIndIncome(:,1) ,true); % Copyright
 (c) 2010, Yvan Lengwiler
xlabel('share of income without UBI');
subplot(1,2,2)
vGiniCoefficientsIncome(2) =
 giniFunction(vDistribution(:,2),vIndIncome(:,2) ,true); % Copyright
 (c) 2010, Yvan Lengwiler
xlabel('share of income with UBI');
savefig('giniIncome')

figure
subplot(1,2,1)
vGiniCoefficientsAssets(1) =
 giniFunction(vDistribution(:,1),vIndAsset(:,1),true) ;% Copyright (c)
 2010, Yvan Lengwiler
xlabel('share of assets without UBI');
subplot(1,2,2)
vGiniCoefficientsAssets(2) =
 giniFunction(vDistribution(:,2),vIndAsset(:,2),true); % Copyright (c)
 2010, Yvan Lengwiler
xlabel('share of assets with UBI');
savefig('giniAssets')

figure
subplot(1,2,1)
vGiniCoefficientsConsumption(1) =
 giniFunction(vDistribution(:,1),max(0,vIndConsumption(:,1)) ,true) ;%
 Copyright (c) 2010, Yvan Lengwiler
xlabel('share of consumption without UBI');
subplot(1,2,2)
vGiniCoefficientsConsumption(2) =
 giniFunction(vDistribution(:,2),max(vIndConsumption(:,2) ,0),true) ;%
 Copyright (c) 2010, Yvan Lengwiler
xlabel('share of consumption with UBI');
savefig('giniConsumption')

figure
subplot(1,2,1)
vGiniCoefficientsValue(1) =
 giniFunction(vDistribution(:,1),exp(vIndValue(:,1)),true) ;%
 Copyright (c) 2010, Yvan Lengwiler
xlabel('share of value exponent without UBI');
subplot(1,2,2)
vGiniCoefficientsValue(2) =
 giniFunction(vDistribution(:,2),exp(vIndValue(:,2)),true); %
 Copyright (c) 2010, Yvan Lengwiler
xlabel('share of value exponent with UBI');
```

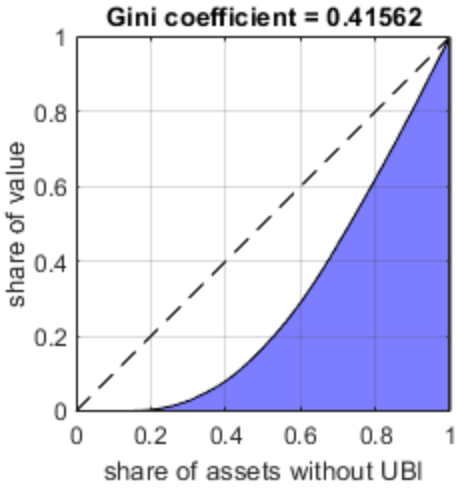
```
savefig('giniExpValue')

table(vWage,vRate)
table(vAggY,vAggK,vAggConsumption,vAggValue)
table(vGiniCoefficientsEarnings,vGiniCoefficientsIncome,vGiniCoefficientsAssets,vG
table(vGiniCoefficientsValue)


ans =

  1×2 table

        vWage                 vRate
    ________________    ____________________

    1.1927    1.2169    0.039032    0.034855


ans =

  1×4 table

        vAggY                vAggK            vAggConsumption
 vAggValue
    ________________    ________________    ________________
 ________________

    1.6947    1.3661    5.1197    4.2819    1.1936    0.92718
 -16.159    -16.577


ans =

  1×4 table

    vGiniCoefficientsEarnings    vGiniCoefficientsIncome
 vGiniCoefficientsAssets    vGiniCoefficientsConsumption
    _________________________    ________________________
 ________________________    ________________________

        0.3762    0.52759          0.34513    0.45676          0.41562
   0.45973             0.2532    0.32265


ans =

  table

    vGiniCoefficientsValue
    ______________________

      0.99003    0.97497
```

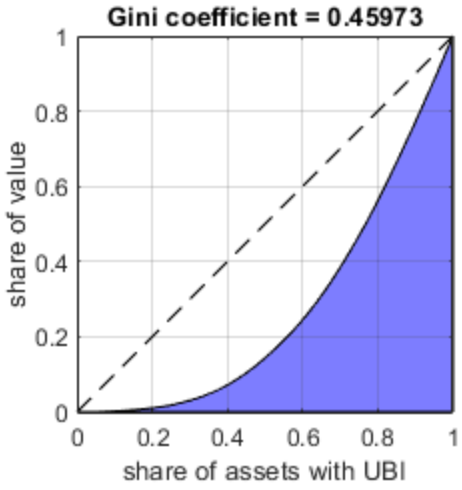

Gini coefficient = 0.3762
share of value
share of earnings without UBI
0
0.2
0.4
0.6
0.8
1

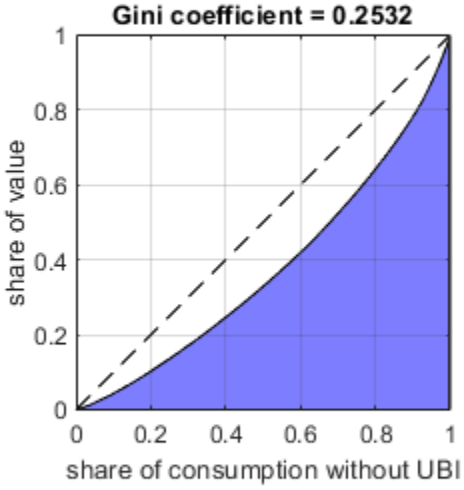

Gini coefficient = 0.52759
share of value
share of earnings with UBI
0
0.2
0.4
0.6
0.8
1

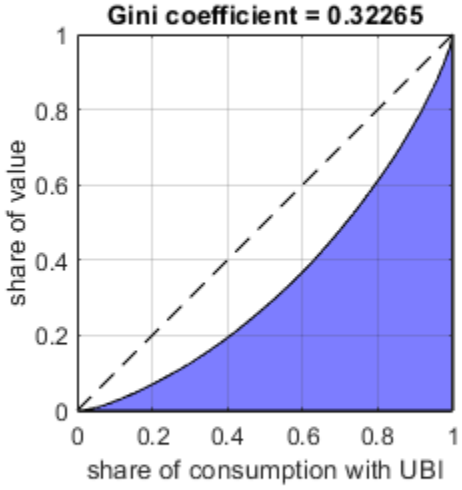

Gini coefficient = 0.34513
share of value
share of income without UBI
0
0.2
0.4
0.6
0.8
1

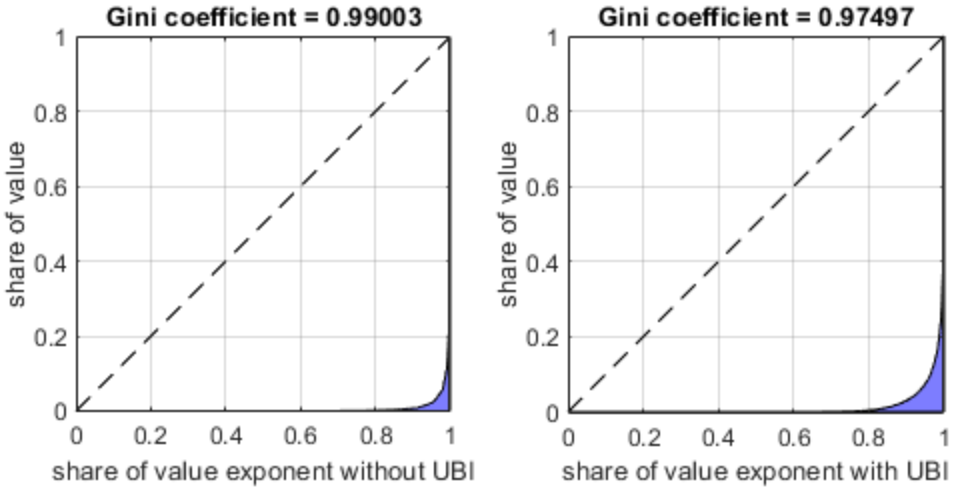

Gini coefficient = 0.45676
share of value
share of income with UBI
0
0.2
0.4
0.6
0.8
1


Gini coefficient = 0.41562
share of value
share of assets without UBI
0
0.2
0.4
0.6
0.8
1


Gini coefficient = 0.45973
share of value
share of assets with UBI
0
0.2
0.4
0.6
0.8
1


Gini coefficient = 0.2532
share of value
share of consumption without UBI
0
0.2
0.4
0.6
0.8
1


Gini coefficient = 0.32265
share of value
share of consumption with UBI
0
0.2
0.4
0.6
0.8
1



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