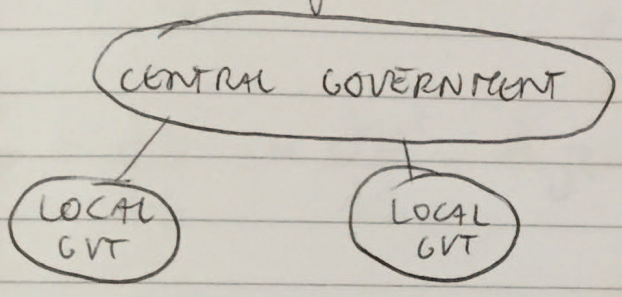
20/03/2017

WELFARE AND ECONOMIC INTEGRATION OF THE EU

Fiscal Federalism

$\max U(x_1, x_2)$

Open eyes to government



GOVERNMENT will do different things

The central government can't do everything

TRY TO INVESTIGATE THE CENTRAL ASPECTS:

- TAXATION C
- EDUCATION (L)
- HEALTH C
- ROADS (L)
- PARKS (L)

public goods

local government knows better the quality of goods that should be provided

DEFENSE
POLICE C

LOOK at PUBLIC GOODS

Pure public goods (2 CONDITIONS): FOR EXAMPLE THE PARK

- NON RIVALRY (we can consume it even if another person use it)
  - NON-CONGESTION
- NON EXCLUDABILITY if the park is opened, I can't exclude anyone from getting in the park

(C)

↑

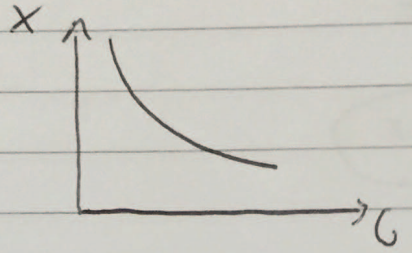
DEFENSE
POLICE
~~EDUCATION~~
HEALTH
} pure public goods typically provided by central government; the other are decentralized

PUBLIC GOOD MODEL

There are two people (PUBLIC VS PRIVATE)

$U^1(x^1, G)$

quality of private good — public good



$U^2(x^2, G)$

TOTAL RESOURCE AVAILABLE: $W^1 + W^2 = x^1 + x^2 + G$

TRADE BETWEEN PRIVATE AND PUBLIC CONSUMPTION IS 1

HOW MUCH OF PUBLIC GOOD SHOULD BE PROVIDED?

EFFICIENT AMOUNT OF PUBLIC GOOD (OPTIMAL ALLOCATION)

PARETO-EFFICIENT ALLOCATION

If I can make improve the efficiency of one person without reducing the utility of the other person

$\max U^1(x^1, G)$ s.t. $U^2(x^2, G) \geq \bar{U}^2$

$\max U(x_1, x_2)$

s.t.

$P_1 x_1 + P_2 x_2 = W$

LAGRANGE FUNCTION

$$\mathcal{L} = U^1(x^1, G) + \mu\{U^2(x^2, G) - \bar{U}^2\} + \lambda\{w^1 + w^2 - x^1 - x^2 - G\}$$

$$\frac{\partial \mathcal{L}}{\partial x^1} = \frac{\partial U^1}{\partial x^1} - \lambda = 0 \Rightarrow \lambda = \frac{\partial U^1}{\partial x^1} \rightarrow \text{MARGINAL UTILITY OF PERSON ONE}$$

MARGINAL UTILITY: HOW UTILITY INCREASE OR REDUCE WHEN 1 CHANGE QUANTITY

$\frac{\partial U^1}{\partial x^1}$ MARGINAL UTILITY $U^1_{x^1}$

$$\frac{\partial \mathcal{L}}{\partial x^2} = \mu \frac{\partial U^2}{\partial x^2} - \lambda = 0 \Rightarrow \mu \frac{\partial U^2}{\partial x^2} = \lambda$$

$$\frac{\partial \mathcal{L}}{\partial G} = \frac{\partial U^1}{\partial G} + \mu \frac{\partial U^2}{\partial G} - \lambda = 0$$

$$\frac{\partial U^1}{\partial G} + \mu \frac{\partial U^2}{\partial G}$$

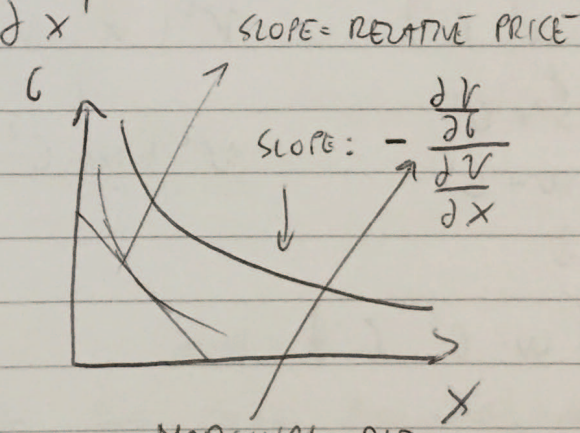
$$\lambda \frac{1}{\frac{\partial U^2}{\partial x^2}} = \lambda \frac{\partial G}{\partial U^2} = \lambda = \frac{\partial U^1}{\partial x^1}$$

$$\frac{\frac{\partial U^1}{\partial G}}{\frac{\partial U^1}{\partial x^1}} + \frac{\frac{\partial U^2}{\partial G}}{\frac{\partial U^2}{\partial x^2}} \times = 1$$

$\frac{\partial U^1}{\partial x^1}$

person one — person two

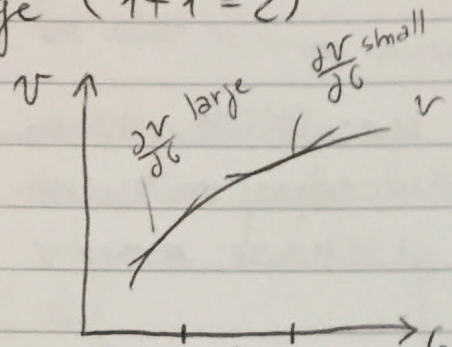
MARGINAL RATE OF TRANSFORMATION (= RELATIVE PRICE) (NON-CONGESTION)



SUM OF MRS = MRT $\Rightarrow$ **SAMUELSON RULE**

decentralized economy

If I try to do the SUM in a private economy, it is too large (1+1=2)



PURE GOODS AS HEALTH, DEFENSE AND POLICE SHOULD BE PROVIDED BY CENTRAL GOVERNMENT

decentralized economy

G too low in private economy (under provided public goods)

Which kind of public good should be provided by central government and which by the local?

LOCAL PUBLIC GOODS (IMPURE PUBLIC GOODS)
should benefit individuals

REGION 1

$v^1(x^1, G^1)$

$w = x^1 + G^1$

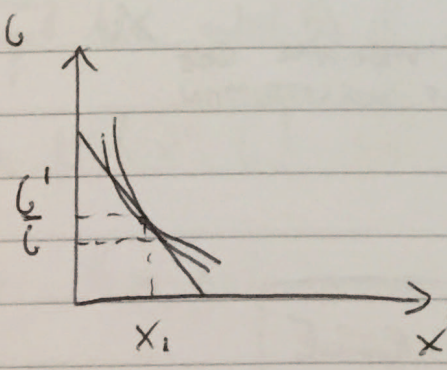
$x^1 = w - G^1$

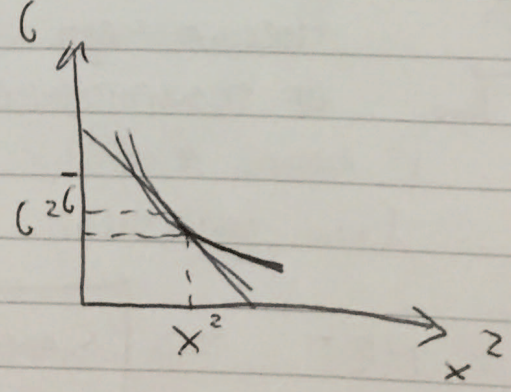
$v^1(w - G^1, G^1)$

REGION 2

$v^2(x^2, G^2)$

$v^2(w - G^2, G^2)$

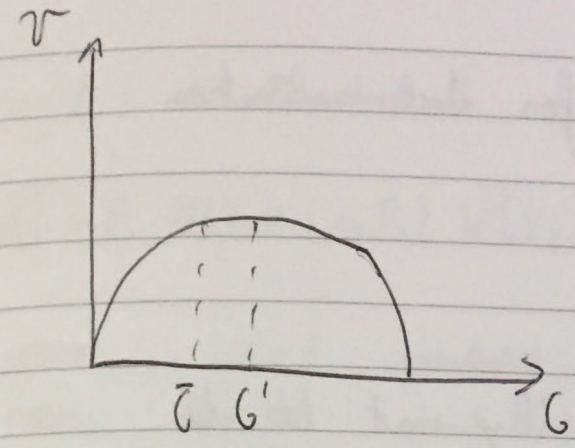


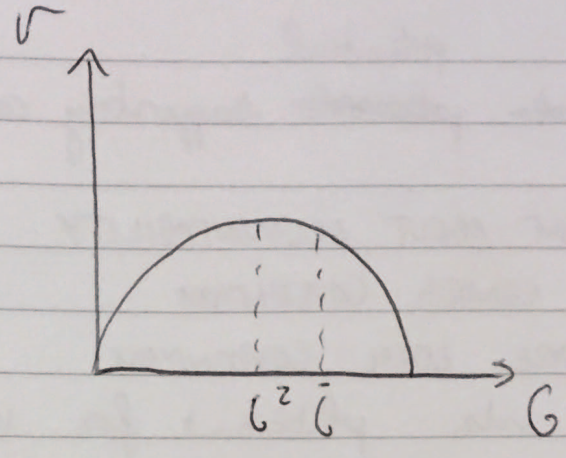


Welfare gain by decentralizing

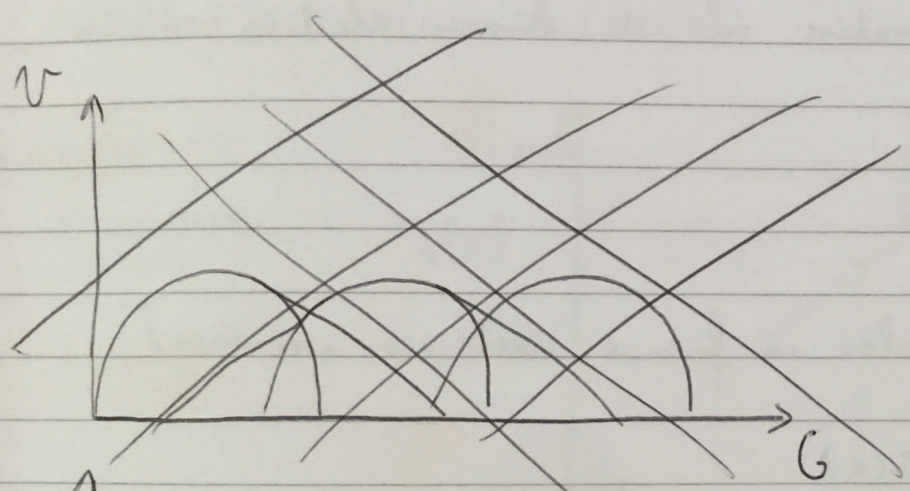
It is difficult to know the preferences of the regions

ARGUMENT FOR DECENTRALIZATION

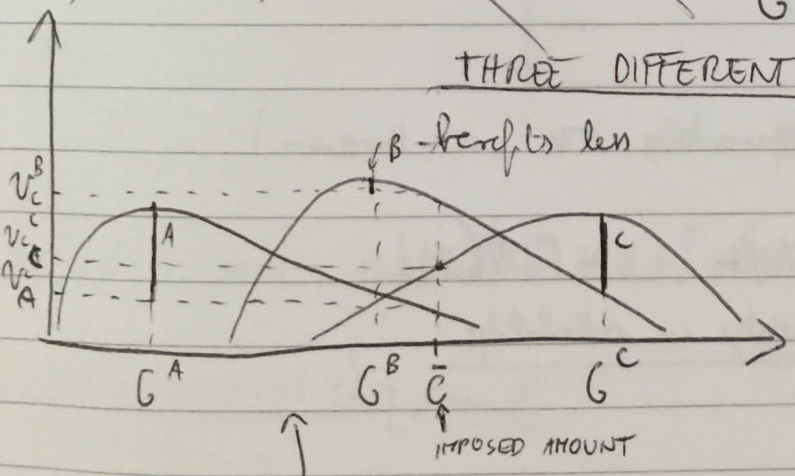




$\bar{G}$ = if I force the local government to have the same amount



THREE DIFFERENT AGENTS:



cost = 1

A, C prefer decentralization

B not (MAJORITY ACCORD DECENTRALIZATION)

If we impose central government

What will be the costs of decentralization?

MAX COST EACH REGION PREPARED TO PAY FOR DECENTRALIZATION?

The region are prepared to pay the MOST FOR DECENTRALIZATION

~~Support~~ potential supporting costs for decentralization

ARGUMENT ABOUT ACCOUNTABILITY.
- 1 CENTRAL GOVERNMENT
- MORE LOCAL GOVERNMENT

People vote politicians for what they want to do

~~[illegible]~~

MAJORITY VOTING EQUILIBRIUM: policy which cannot lose against any other alternative in a binary election (centralize or not decentralize)

21/03/2017

RISK SHARING

Quantity are uncertain (also in finance assets are uncertain)

Think about preferences (TRICK)

EXPECTED UTILITY FUNCTIONS (quantity are not known)

$$E[U(y)] = \underbrace{p_1}_{0<p<1} \cdot U(y_1) + p_2 U(y_2) + \dots + p_6 U(y_6)$$

p_1: probability of state 1

linearity in probability

$$\sum_i p_i = 1$$

We use expected utility for two possible outcomes:

$$E[U(y)] = p_1 \cdot U(y_1) + p_2 \cdot U(y_2)$$

$p_1 + p_2 = 1 \Rightarrow p_2 = 1 - p_1$

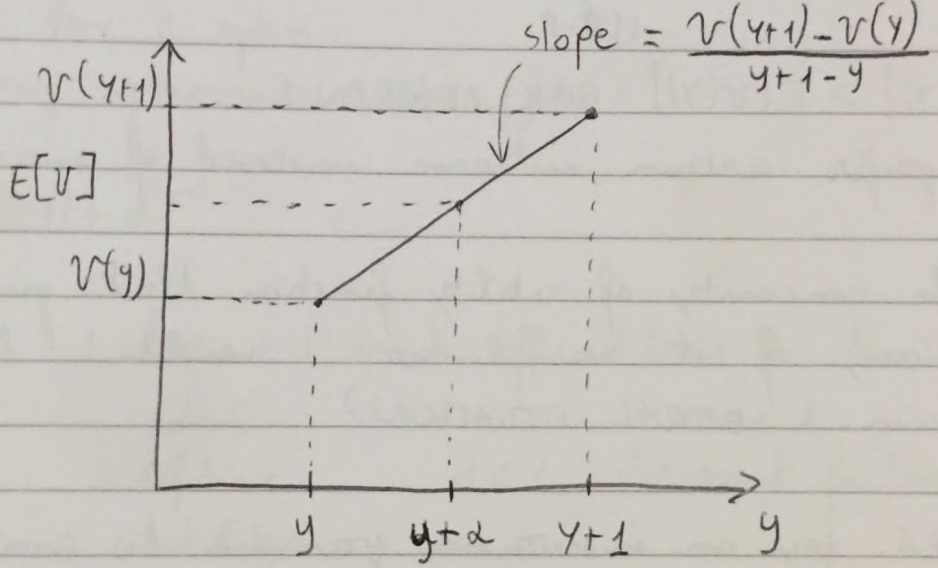
$E[v(y)] = p_1 \cdot v(y_1) + (1-p_1) \cdot v(y_2)$

{ GOOD STATE $y+1$ probability $= \alpha$
{ BAD STATE y prob. $= 1-\alpha$

If we don't have any risk sharing:

$E[v(y)] = \alpha \cdot v(y+1) + (1-\alpha) v(y)$

ASSUMPTION:
v is concave



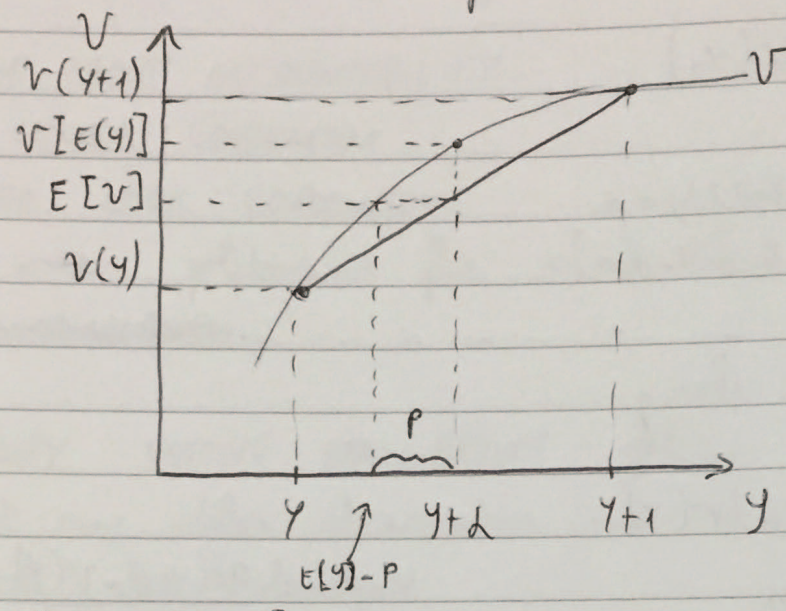
$E[v(y)] = \alpha \, v(y+1) + (1-\alpha) v(y) = vy + [v(y+1) - vy] \cdot \alpha =$

$= v(y) + \frac{v(y+1)-v(y)}{y+1-y} [y+\alpha-y]$

What the point $y+\alpha$ is?

$E[y] = \alpha(y+1) + (1-\alpha) \cdot y = \cancel{\alpha y} + \alpha + y - \cancel{\alpha y} = y + \alpha$ <u>expected income</u>

V is concave, so I'm gonna have something like that:



$V[E(Y)] > E[V(Y)]$ RISK ADVERSION

I prefer certain outcome instead of uncertain

Is the concavity of utility function that gives me risk aversion; if it was linear, I wouldn't have risk aversion (NEUTRAL SITUATION)

I could pay an insurance premium to avoid the risk:

$V(\underbrace{E[Y]-P}_{\text{CERTAINTY EQUIVALENT}}) = E[V(Y)]$ MARKOWITZ RISK PREMIUM = P

(TWO REGIONS)

We assume that $Y_1 = Y_2 = Y$

$Y_1 + Y_2 + 1$ constant

↓
stock is 1

$\alpha = \frac{1}{2}$ probability to have good income