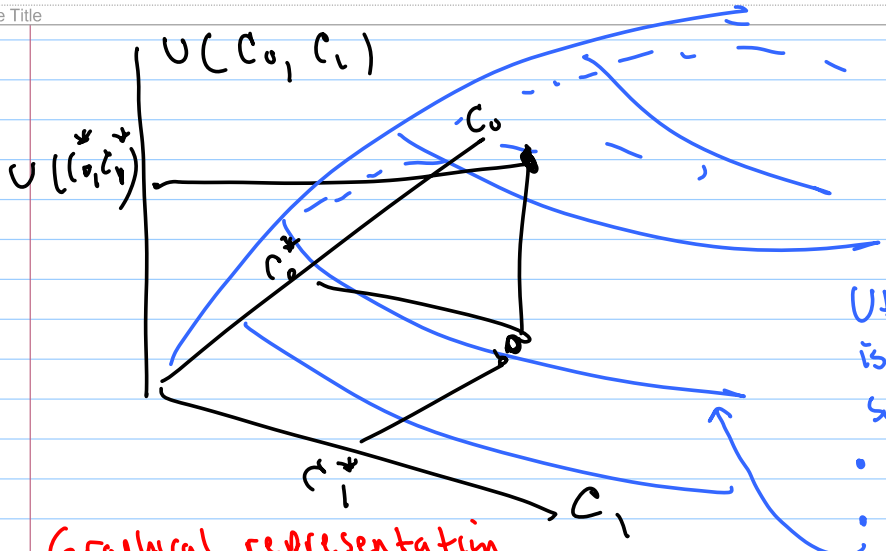
Econ 422 — Lec 1

Note Title 7/22/2010

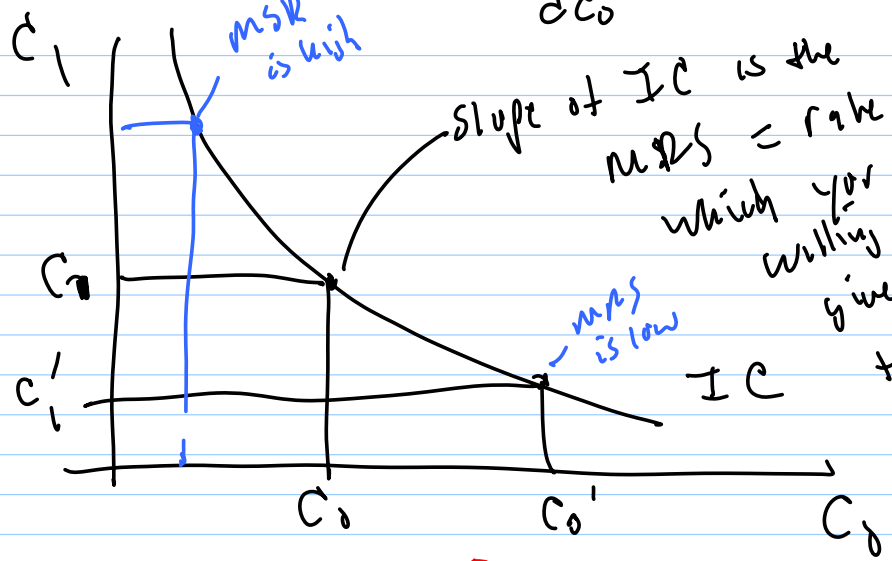


Graphical representation of utility. See Example Excel spreadsheet.

Utility function is 3 dimensional surface
- increasing in C_0, C_1
- level sets are indifference curves (ICs)

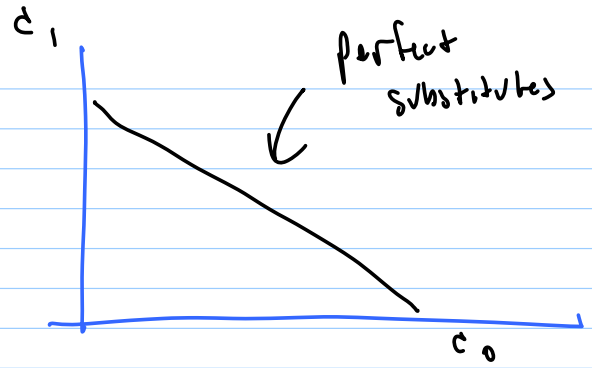
Indifference Curves

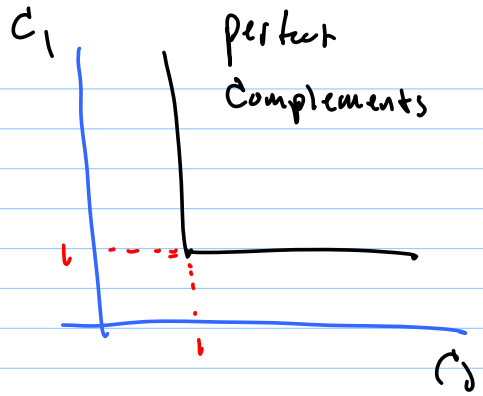
$\frac{dC_1}{dC_0}$ = slope of IC



Slope of IC is the MRS = rate at which you are willing to give up C_1 to get C_0

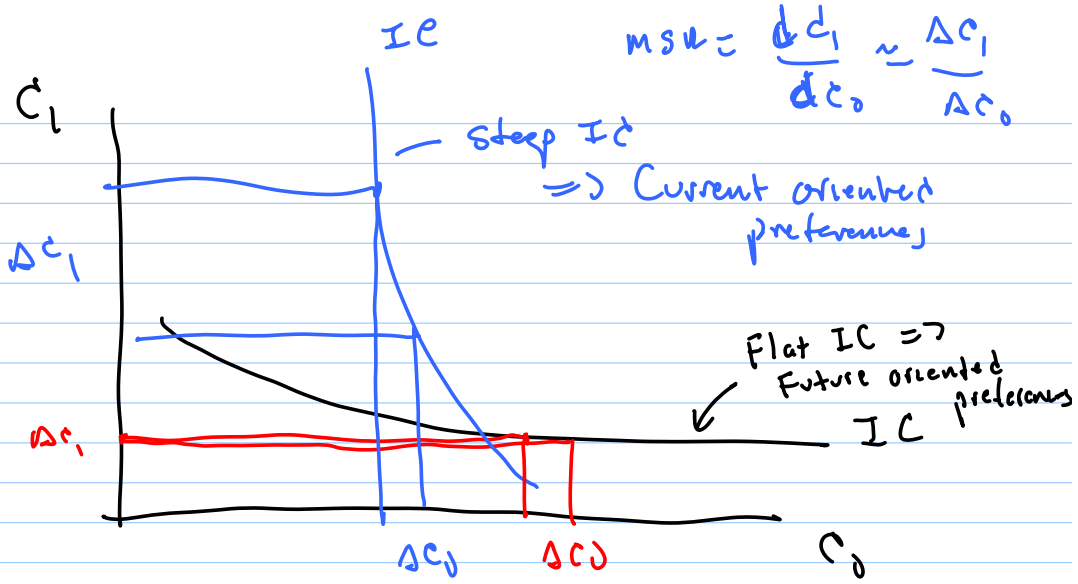
Note: IC is convex to origin





Slope $= -1$ everywhere

$\Rightarrow \frac{dc_1}{dc_0} = -1$ at all pairs (c_0, c_1)



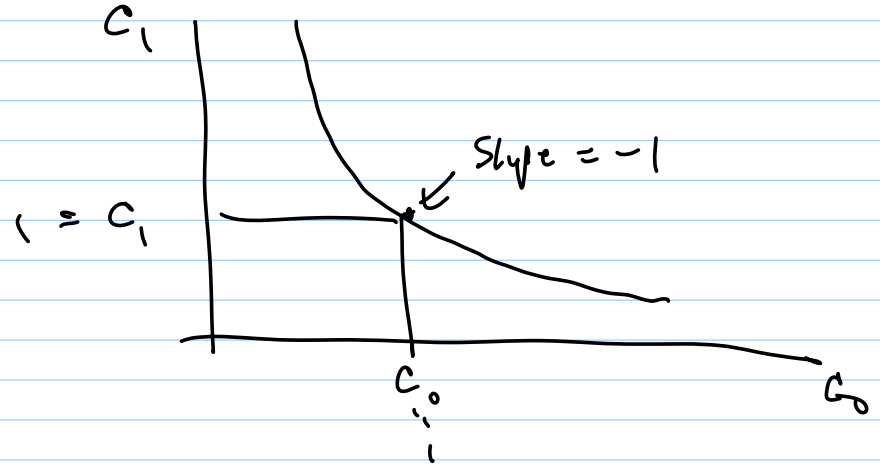
$MRS = \frac{dc_1}{dc_0} \approx \frac{\Delta c_1}{\Delta c_0}$

Give up a lot of c_1 to get 1 unit of c_0 ($\Delta c_0 = 1$)
$\Rightarrow$ c_0 is much preferred to c_1

Give up little c_1 to get 1 unit of c_0 $\Rightarrow$ c_0 is less preferred to c_1

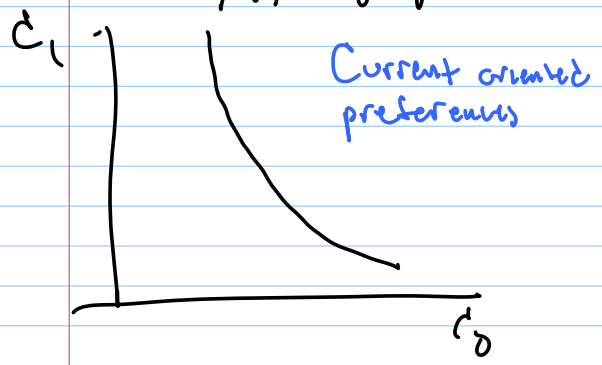
Example

$$U(C_0, C_1) = C_0^{1/2} C_1^{1/2}$$

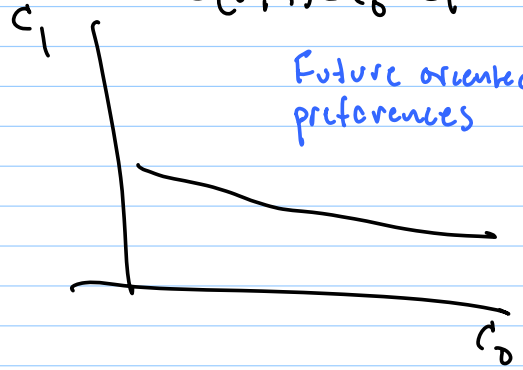


See Example Excel spreadsheet

$U(C_0, C_1) = C_0^{2/3} C_1^{1/2}$



$U(C_0, C_1) = C_0^{1/3} C_1^{2/3}$



IC: values of C_0 & C_1 s.t. utility is constant:

Set $U = 1$: $C_0^{1/2} \cdot C_1^{1/2} = 1 \Rightarrow C_0^{1/2} = C_1^{-1/2}$

$\Rightarrow C_0 = C_1^{-1}$

Example: Derive MRS for

$$U(C_0, C_1) = C_0^{1/2} \cdot C_1^{1/2}$$

$$MRS = -\frac{U_0}{U_1}$$

$$U_0 = \frac{\partial U}{\partial C_0} = \frac{1}{2} C_0^{-\frac{1}{2}} \cdot C_1^{1/2}$$

$$U_1 = \frac{\partial U}{\partial C_1} = \frac{1}{2} C_0^{\frac{1}{2}} \cdot C_1^{-1/2}$$

$$MRS = -\frac{U_0}{U_1} = -\frac{\frac{1}{2} C_0^{-1/2} \cdot C_1^{1/2}}{\frac{1}{2} C_0^{1/2} \cdot C_1^{-1/2}}$$

$$MRS = -\frac{C_1}{C_0}$$