INTERTEMPORAL CHOICE

c_1 consumption at $t = 1$

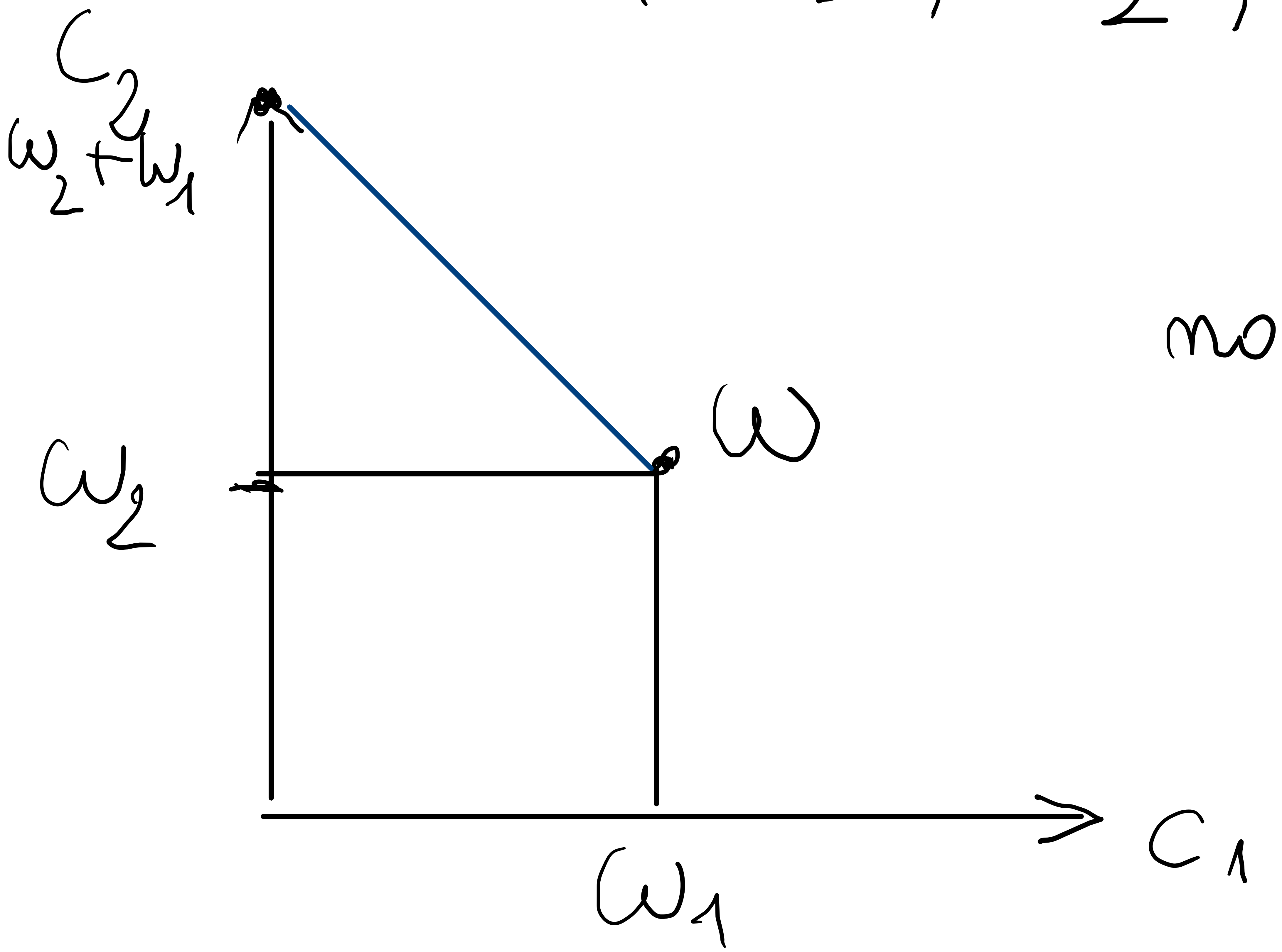
c_2 " " at $t = 2$

PHYSICAL ENDOWMENT

$$\omega = (\omega_1, \omega_2)$$

money prices

$$p_1 = p_2 = 1$$



no credit market : CONSUMPTION CANNOT BE TRANSFERED FROM THE FUTURE TO THE PRESENT

$$(\omega_1 - c_1)\, p_1 = \omega_1 - c_1$$

$$c_2 = \omega_2 + (\omega_1 - c_1)$$

Credit market

r nominal (money) interest rate

$\omega = (\omega_1, \omega_2)$

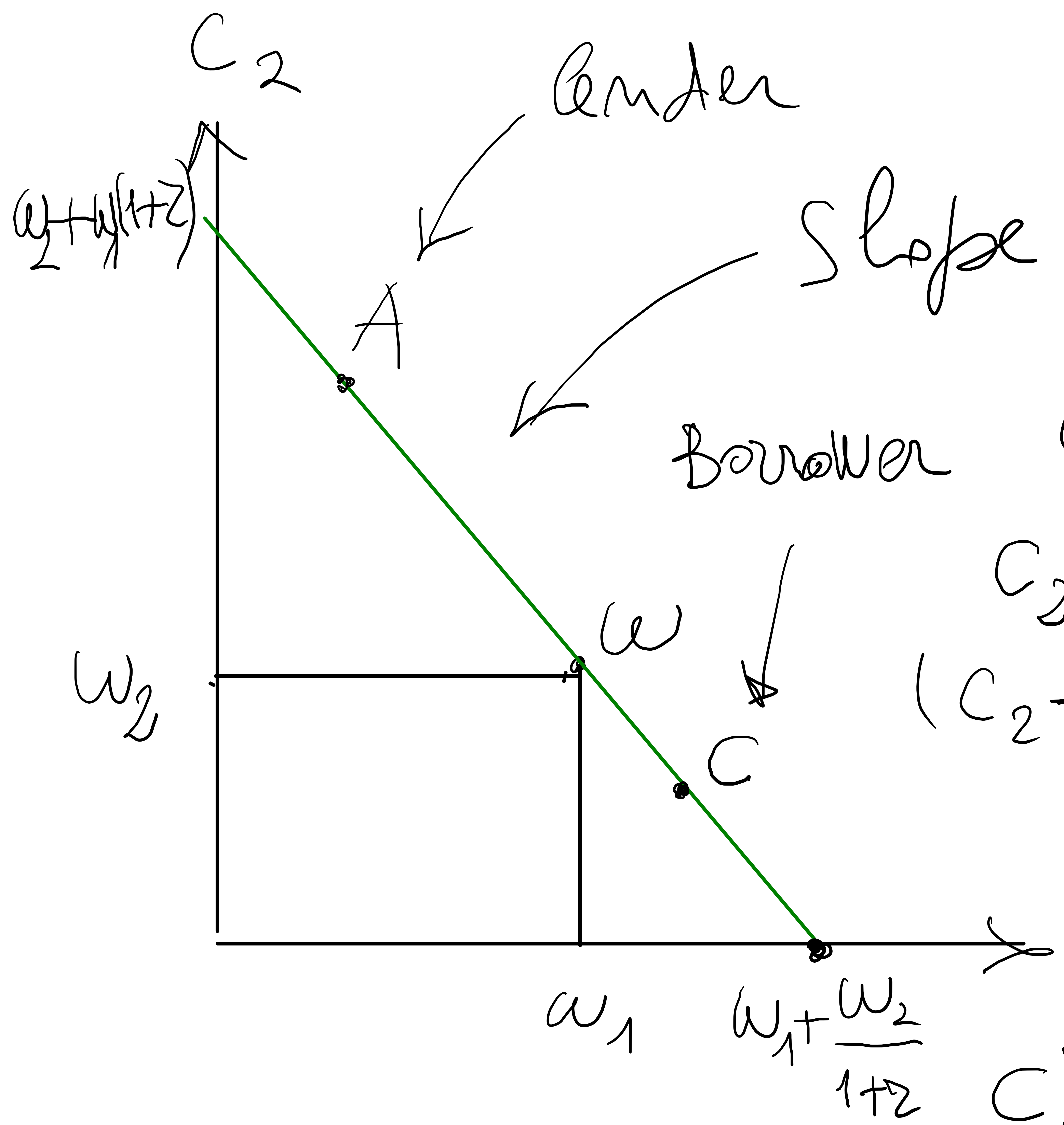
$p_1 = p_2 = 1$

$$c_2 = \omega_2 + (\omega_1 - c_1)(1+r)$$

$$c_2 - \omega_2 = (\omega_1 - c_1)(1+r) = -(c_1 - \omega_1)(1+r)$$

$$\frac{c_2 - \omega_2}{c_1 - \omega_1} = -(1+r)$$

$1+r =$ price of c_1 in terms of c_2



Slope $-(1+r)$

$\frac{1}{1+r}$ = price of C_2 in terms of C_1

$$c_2 = w_2 + (w_1 - c_1)(1+r)$$

$$c_2 - w_2 = -(c_1 - w_1)(1+r)$$

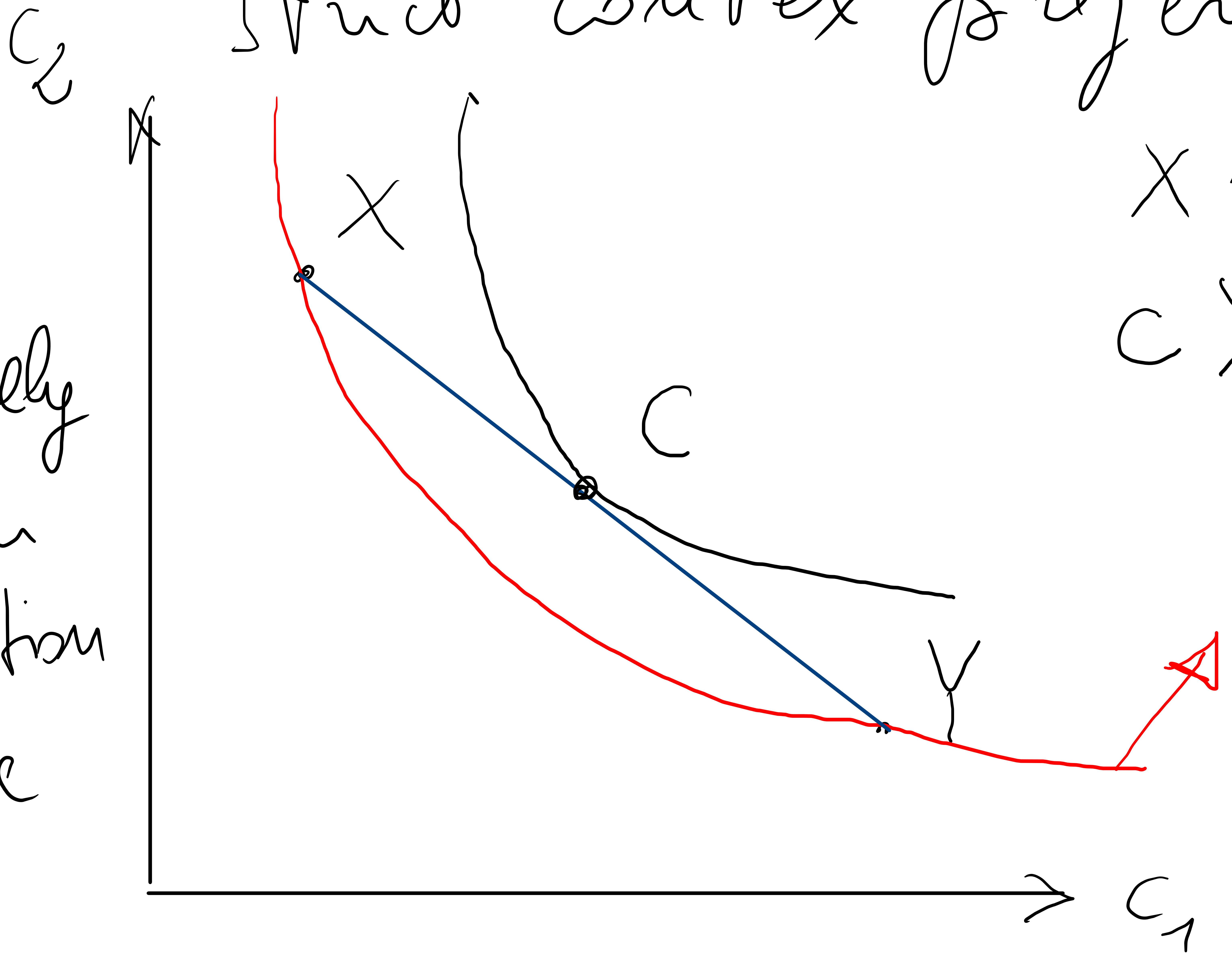
$$(c_2 - w_2) + (c_1 - w_1)(1+r) = 0$$

$$c_1 - w_1 = \frac{(w_2 - c_2)}{1+r}$$

$$C_1^{max} = w_1 + \frac{w_2}{1+r}$$

strict convex preferences

Preference for relatively uniform consumption over time

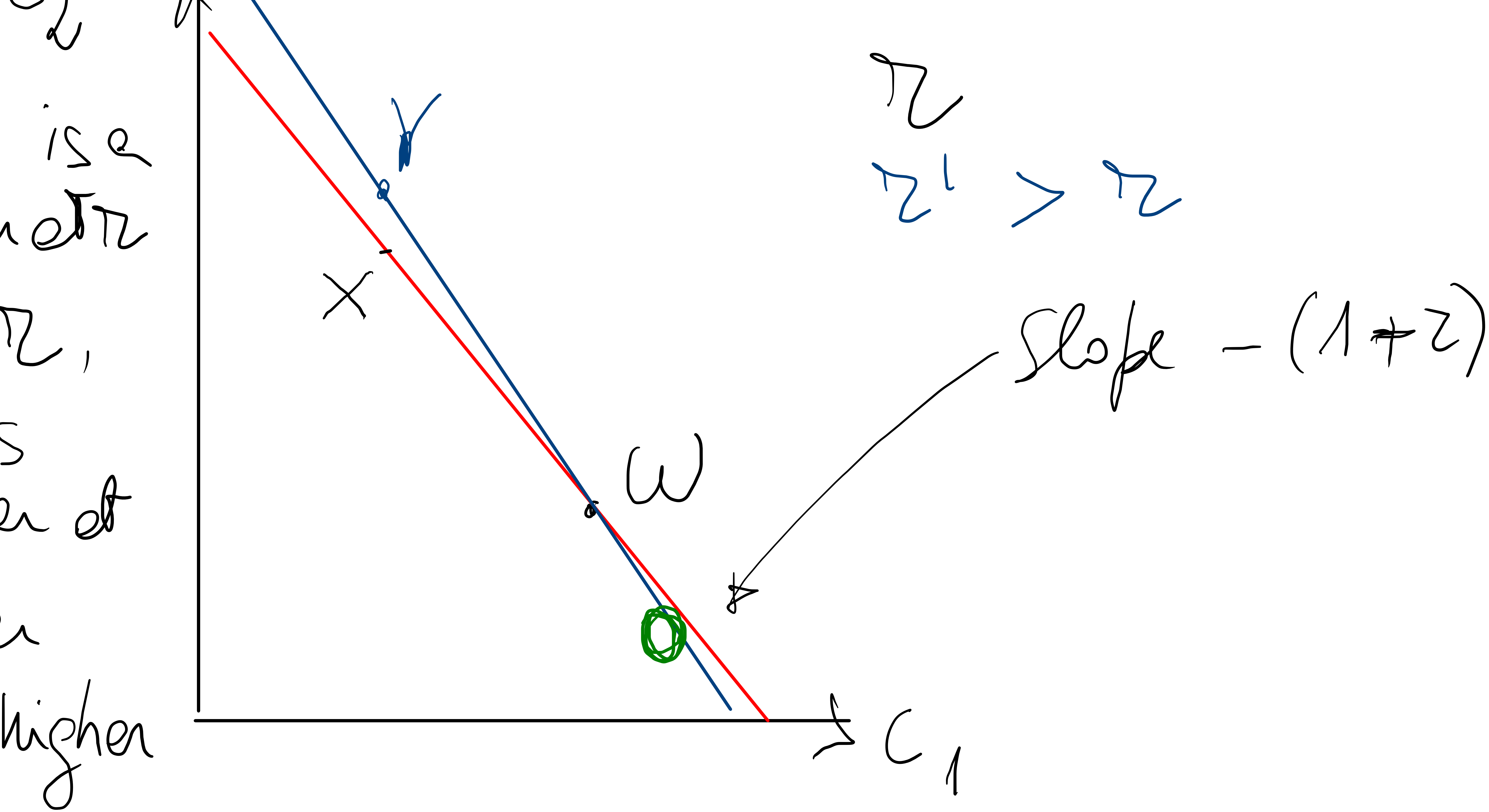


$X \sim Y$

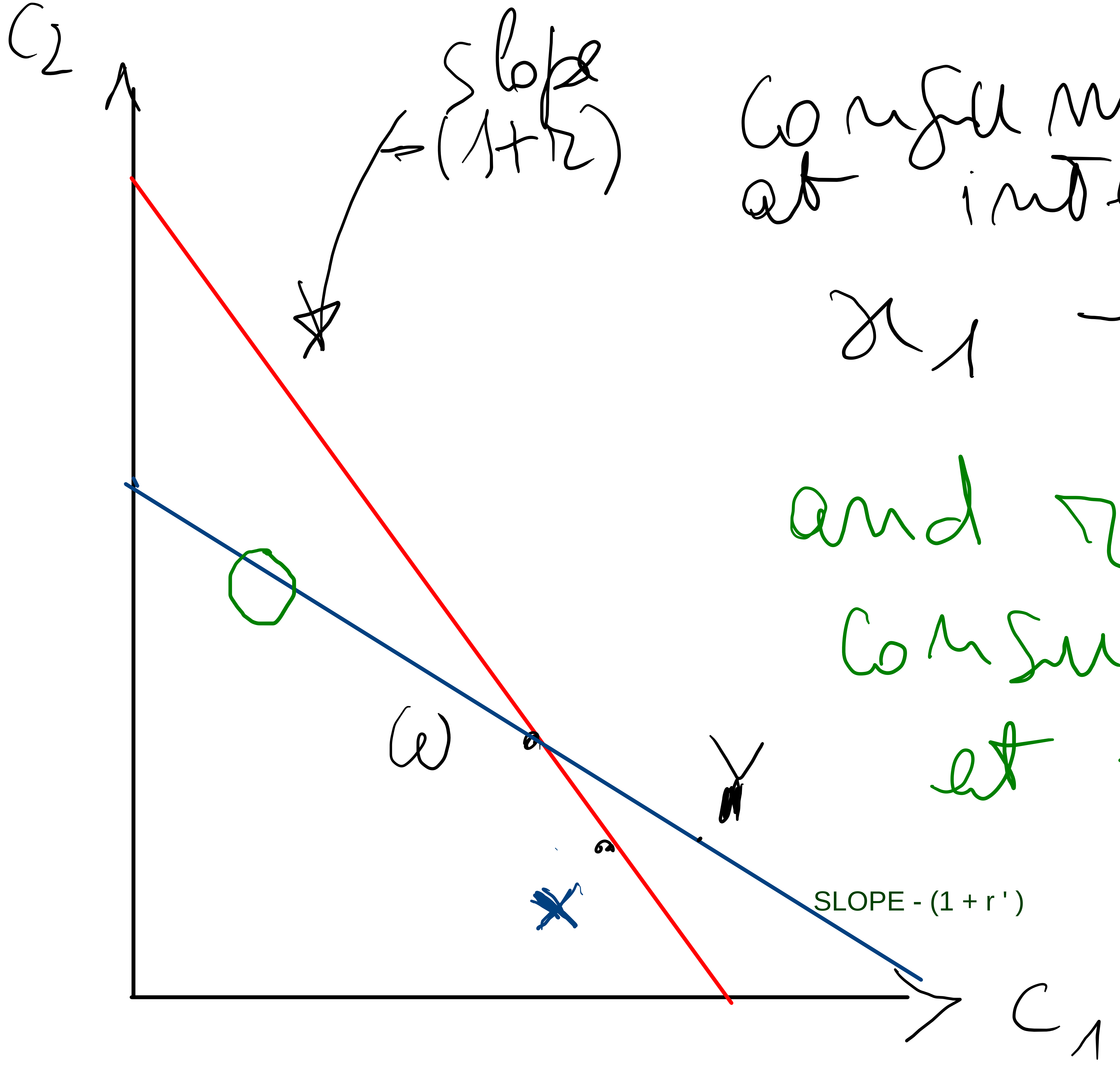
$C \succ X \sim Y$

Lender at r

if consumer is a net lender at r and r' > r, then she is a net lender at r' and her welfare is higher



WE CANNOT SAY IN GENERAL IF THE CONSUMER WILL OR WILL NOT LEND MORE AT r ' THAN AT r
THIS IS BECAUSE THE CONSUMER HAS POSITIVE NET SUPPLY OF GOOD 1 AT r



consumer is net borrower at interest rate r

$$x_1 - \omega_1 > 0$$

and $r' < r$ then consumer is net borrower at r', and welfare is higher

$$(1+r)$$

$$(1+r') < (1+r)$$

WE CAN SAY THATTHE CONSUMER WILL BORROW MORE AT r ' THAN AT r
BECAUSE THE CONSUMER HAS POSITIVE NET DEMAND OF GOOD 1 AT r

INFLATION

$$p_2 = p_1(1+\pi) \qquad \pi = \text{rate of money inflation}$$

$$p_2 c_2 = \omega_2 p_2 + p_1(\omega_1 - c_1)(1+r) \qquad p_1 = 1$$

$$c_2(1+\pi) = \omega_2(1+\pi) + (\omega_1 - c_1)(1+r) \qquad p_2 = (1+\pi)$$

$$c_2 = \omega_2 + (\omega_1 - c_1)\frac{1+r}{1+\pi}$$

price of c_1 in terms of c_2

$$\frac{c_2 - \omega_2}{c_1 - \omega_1} = -\frac{1+r}{1+\pi} = -(1+\rho) \qquad \rho = \text{real interest rate}$$

SLOPE OF BUDGET LINE

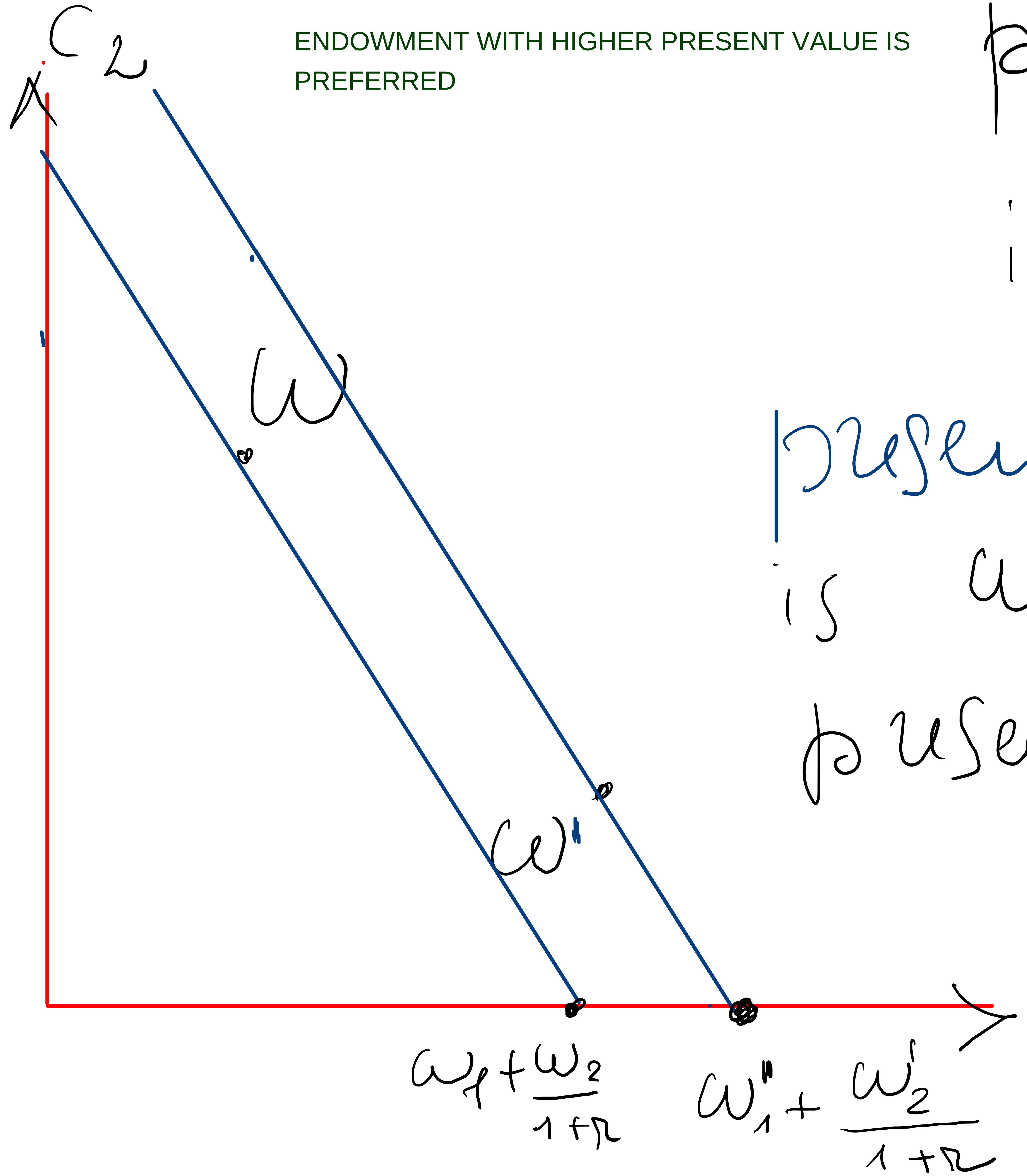
$$1+\rho = \frac{1+r}{1+\pi}$$

real interest rate $\rho = \frac{1+r}{1+\pi} - 1 = \frac{r-\pi}{1+\pi}$

if r and π are close to zero

$\rho \approx r - \pi$ $\quad 1+\pi \approx 1$

ENDOWMENT WITH HIGHER PRESENT VALUE IS PREFERRED



$p_1 = p_2 = 1$

interest rate r

present value of ω is $\omega_1 + \frac{\omega_2}{1+r}$

present value of ω' is $\omega'_1 + \frac{\omega'_2}{1+r}$

TIME 1 $\quad M_1 \quad N_1$

TIME 2 $\quad M_2 \quad N_2$

PRESENT VALUE = $M_1 + \dfrac{M_2}{1+r}$

PRESENT VALUE = $N_1 + \dfrac{N_2}{1+r}$

Present values of intertemporal money flows