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G1) $\max u_1 = c_1 c_1'$ compra diner

p béns / diner

s.a. $c_1 + p m_1 = 1$

$c_1' = p' m_1$ ← ven diner

$\max_{m_1} u_1 = (1 - p m_1) p' m_1$

$0 = \frac{du_1}{dm_1} = p' - 2pp' m_1 = 0$

$\boxed{m_1 = \frac{1}{2p}}$

$\boxed{c_1 = \frac{1}{2}}$ $\boxed{c_1' = \frac{p'}{2p}}$

dotació: $(1, 0)$

G2) $\max u_2 = c_2 \cdot c_2'$ ven diner

$c_2 = 2 + p \cdot m_2$

$c_2' + p' m_2' = 2$

compra diner

$0 \le m_2 \le 1$

$0 \le m_2' \le 1 - m_2$

diner dóna utilitat

$\max u_2' = c_2' \cdot \bar{m}_2$

$c_2' + p' m_2' = 2$

diner $\bar{m}_2 = 1 - m_2 + m_2'$

dotació: $(2, 2)$

$\boxed{\text{més 1 unit. diner}}$ de jove (acumulable)

$\max_{m_2} u_2 = (2 + p m_2)(2 - p' m_2')$

$= (2 + p m_2)\left(2 - \cancel{p'}\left(\frac{2 - p'(1 - m_2)}{2\cancel{p'}}\right)\right)$

$= (2 + p m_2)\left(1 + \frac{p'}{2}(1 - m_2)\right)$

$\max_{m_2'} (2 - p' m_2')(1 - m_2 + m_2')$

$\frac{du_2'}{dm_2'} = -p'(1 - m_2 + m_2') + (2 - p' m_2')$

$-p'(1 - m_2) - 2p' m_2' + 2 = 0$

$\boxed{\frac{2 - p'(1 - m_2)}{2p'} = m_2'}$

$m_2' = \frac{1}{p'} - \frac{1 - m_2}{2}$

$\frac{du_2}{dm_2} = p\left(1 + \frac{p'}{2}(1 - m_2)\right) + (2 + p m_2)\left(-\frac{p'}{2}\right) = 0$

$p(2 + p'(1 - m_2)) = 2p' + p' p m_2$

$2p + p'p - pp' m_2$

$\boxed{m_2 = \frac{2p - 2p' + p'p}{2pp'} = \frac{1}{p'} - \frac{1}{p} + \frac{1}{2}}$

$m_2' = \frac{1}{p'} - \frac{1}{2} + \frac{1}{2p'} - \frac{1}{2p} + \frac{1}{4}$

$\boxed{m_2' = \frac{1}{4} + \frac{3}{2p'} - \frac{1}{2p}}$

G1 ☐ — m_1 oferta

G2 ☐ — m_2' demanda

demanda ← G1 m_1 — ☐

oferta ← G2 m_2 — ☐

mercat béns

$c_1 + c_1' + c_2 + c_2' = 5$

$\frac{1}{2} + \frac{p'}{2p} + \left(1 + \frac{p}{p'} + \frac{p}{2}\right) + \left(\frac{1}{2} - \frac{p'}{4} + \frac{p'}{2p}\right) = 5$

$\boxed{3 = \frac{p'}{p} + \frac{p}{p'} + \frac{p}{2} - \frac{p'}{4}}$

$p = p' \to 3 = 2 + \frac{p}{2} - \frac{p}{4}$

$1 = \frac{p}{4}$ $p = 4$

$c_2 = 2 + p \cdot m_2 = 2 + p\left(\frac{1}{p'} - \frac{1}{p} + \frac{1}{2}\right) = 2 + \frac{p}{p'} - 1 + \frac{p}{2} = 1 + \frac{p}{p'} + \frac{p}{2}$

$c_2' = 2 - p' m_2' = 2 - \frac{p'}{4} - \frac{3}{2} + \frac{p'}{2p} = \frac{1}{2} - \frac{p'}{4} + \frac{p'}{2p}$

$\boxed{\text{eq. mercat diner}}$

oferta: $m_1 + m_2$ = demanda: $m_1 + m_2$

gran G1, jove G2, jove G1, gran G2

si els béns són dif. en t i $t+1$

• $c_1 + c_2 = 3 \to p = 1$ $(p = p')$

• $c_1' + c_2' = 2 \to -\frac{p}{4} = \frac{1}{2} \to$ impossible

$\hookrightarrow \boxed{\frac{3}{2} + \frac{p}{4} = \frac{p'}{p}} \to \boxed{p = 2}$

$m_2 = m_2' \to \boxed{p/p' + p/2 = 3/2}$

$\bar{m}_2 = 1 \to u_2' = c_2' \to p' m_2' = 0$

$\boxed{p = 2 \to p' = 4}$

$m_2 = \frac{1}{4} - \frac{1}{2} + \frac{1}{2} = \frac{1}{4}$ ∄

$m_2' = \frac{1}{4} + \frac{3}{2 \cdot 4} - \frac{1}{4} = \frac{3}{8}$

$m_1 = 0$?

$m_2' = 0 \to m_2 = 0$

$p' = 0$? $\to m_1 = 0$

INCOMPATIBLE

$pp' = 2p + 2p'$

$p' = \frac{2p}{p - 2}$

$m_2 = m_2'$

$\frac{1}{p'} - \frac{1}{p} + \frac{1}{2} = \frac{1}{4} + \frac{3/2}{p'} - \frac{1/2}{p}$

$\frac{1}{4} = \frac{1/2}{p'} + \frac{1/2}{p}$

$\boxed{\frac{1}{2} = \frac{1}{p'} + \frac{1}{p}}$

si $p = p' \to \frac{1}{2} = \frac{2}{p}$ $\boxed{p = 4}$

$m_1 = \frac{1}{8}$

$m_2 = \frac{1}{2}$

$m_2' = \frac{1}{2}$

G1) $\max u_1 = c_1 c_1'$

$c_1 + p m_1 = 1$

$c_1' = p' m_1' \qquad m_1' \le m_1$

$\max u_1' = c_1' \cdot \bar{m}_1$

$c_1' = p' m_1' \rightarrow \max\limits_{m_1'} u_1' = p' m_1' (m_1 - m_1')$

$\bar{m}_1 = m_1 - m_1'$

$$\frac{du_1'}{dm_1'} = p' m_1 - 2p' m_1' = 0 \qquad \boxed{m_1' = \frac{m_1}{2}}$$

$$m_1' = \frac{1}{4p} \rightarrow \boxed{c_1' = \frac{p'}{4p}}$$

$$\max_{m_1} u_1 = (1 - p m_1) p' m_1' = (1 - p m_1) p' \frac{m_1}{2} = \frac{p'}{2} (1 - p m_1) \cdot m_1$$

$$\frac{du_1}{dm_1} = \frac{1}{2} p' \left[1 - 2p m_1\right] = 0 \qquad \boxed{m_1 = \frac{1}{2p}} \rightarrow c_1 = \frac{1}{2}$$

G2 sempre ven diner

$$\max u_2' = (2 + p' m_2')(1 - m_2 - m_2')$$

si $m_2' < 0$ (vendrà diner quan G2 s gran)

$c_2' = 2 + p' m_2'$

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$$\frac{du_2'}{dm_2'} = p'(1 - m_2 - m_2') - (2 + p' m_2') = 0$$

$$p'(1 - m_2) - 2 = 2p' m_2'$$

$$\boxed{m_2' = \frac{1 - m_2}{2} - \frac{1}{p'}}$$

$$\max u_2 = (2 + p m_2)(2 + p' m_2') = (2 + p m_2)\left(2 + \frac{p'(1 - m_2)}{2} - 1\right)$$

$$\frac{du_2}{dm_2} = p\left(1 + \frac{p'}{2}(1 - m_2)\right) + (2 + p m_2)\left(-\frac{p'}{2}\right) = 0 \qquad 1 + \frac{p'}{2}(1 - m_2)$$

$$p + \frac{pp'}{2} - \frac{pp'}{2} m_2 - p' - \frac{p' p m_2}{2} = 0$$

$$\frac{p - p' + \frac{pp'}{2}}{pp'} = m_2$$

$$\boxed{m_2 = \frac{1}{p'} - \frac{1}{p} + \frac{1}{2}}$$

$$\rightarrow m_2' = \frac{1}{2} - \frac{1}{p'} - \frac{1}{4p'} - \frac{1}{4} + \frac{1}{2p}$$

$$\boxed{m_2' = \frac{1}{4} - \frac{3}{2p'} + \frac{1}{2p}}$$

G2) $m_2 = \frac{1}{p'} - \frac{1}{p} + \frac{1}{2}$

$m_2' = \frac{1}{4} + \frac{3}{2p'} - \frac{1}{2p}$

mercat diner

$$\boxed{m_1' + m_2 = m_1 + m_2'}$$

$$\frac{m_1}{2} + \left(\frac{1}{p'} - \frac{1}{p} + \frac{1}{2}\right) = m_1 + \left(\frac{1}{4} + \frac{3}{2p'} - \frac{1}{2p}\right) \qquad m_1 = \frac{1}{2p}$$

$$p = p' \rightarrow \quad \frac{1}{2} = \frac{1}{4p} + \frac{1}{4} + \frac{3}{2p} - \frac{1}{2p}$$

$$\frac{1}{4} = \frac{1}{4p} + \frac{1}{p}$$

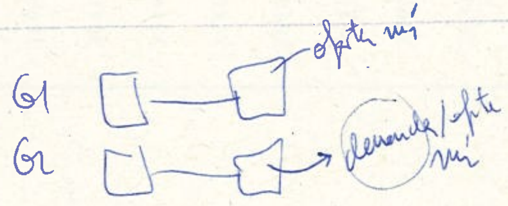
$p = 1 + 4 \qquad p = 5$

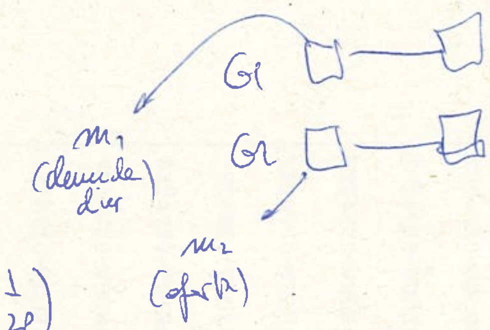
$m_1 = \frac{1}{10} = \frac{2}{20}$

$m_1' = \frac{1}{20}$

$m_2 = \frac{1}{2} = \frac{10}{20} \qquad \frac{11}{20} \qquad -\frac{1}{20}$

$m_2' = \frac{1}{4} + \frac{1}{5} = \frac{9}{20}$





mercat béns

$$\boxed{c_1 + c_1' + c_2 + c_2' = 5}$$

$$\frac{1}{2} + \frac{p'}{4p} + \left(1 + \frac{p}{p'} + \frac{p}{2}\right) + \left(\frac{1}{2} - \frac{p'}{4} + \frac{p'}{2p}\right) = 5$$

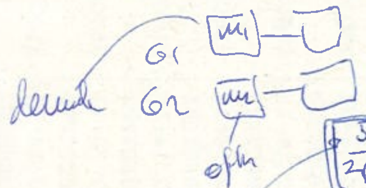
$p = p'$

$$3 = \left(\frac{1}{4} + 1 + \frac{p}{2} - \frac{p}{4} + \frac{1}{2}\right)$$

$$3 - \frac{7}{4} = \frac{5}{4} = \frac{p}{4}$$

$p = 5$

mercat diner



$$\boxed{\frac{3}{2p'} + \frac{1}{4} = \frac{3}{2p}}$$

$m_1 + m_2' + m_2 = m_1$

$\downarrow$

$m_2' + m_2 = 0$

$$\rightarrow \frac{1}{p'} - \frac{1}{p} + \frac{1}{2} = \frac{1}{4} - \frac{3}{4p'} + \frac{1}{2p} \qquad p = p' \quad \frac{1}{4} = -\frac{1}{p}$$

$\cancel{p - p' + \frac{pp'}{4}} =$