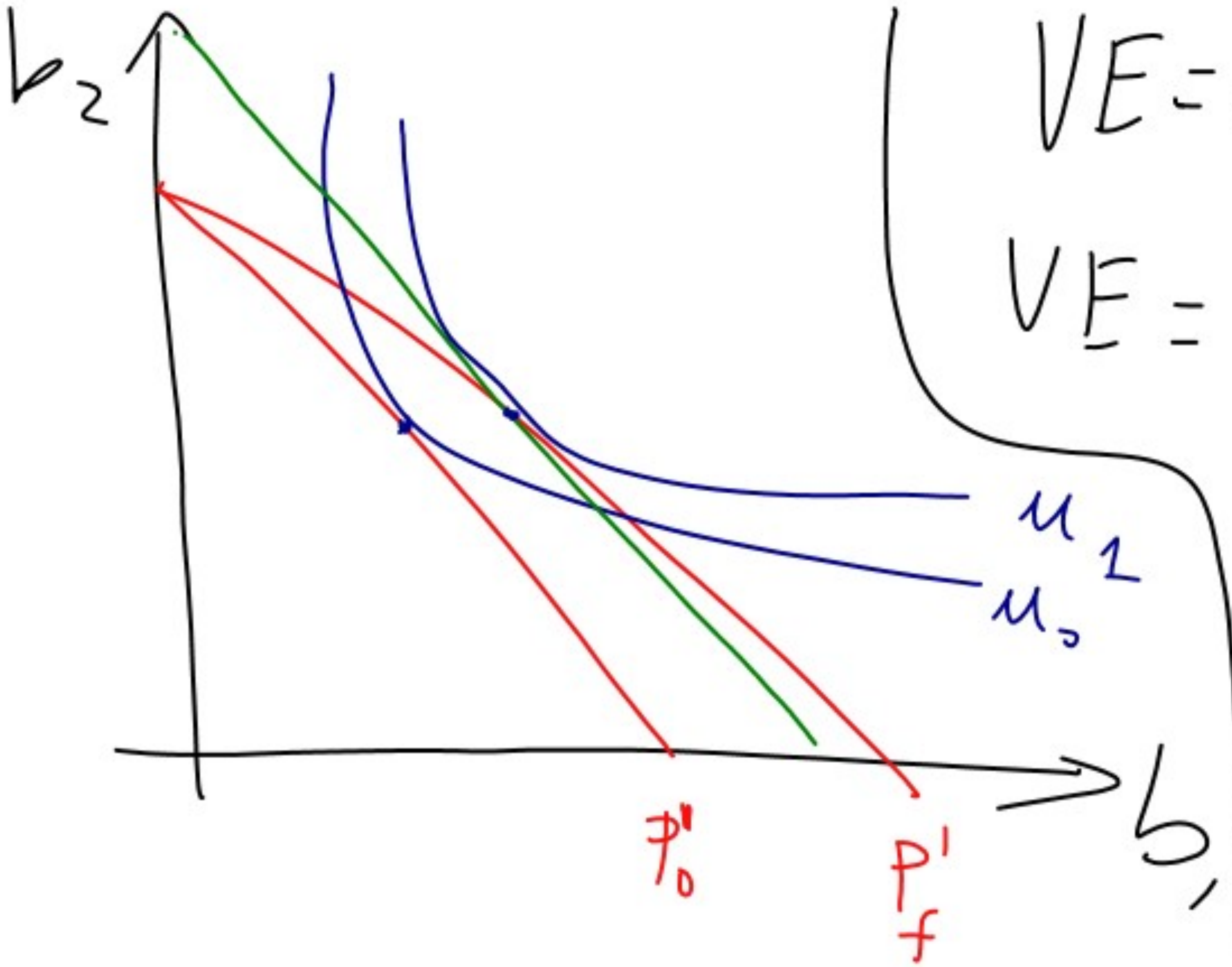
$p^2 = 1$



$$VE = e(p_0, u_1) - e(p_0, u_0)$$

$$VE = e(p_0, v(p_1, I)) - e(p_0, v(p_0, I))$$

$$VE = e(p_0, v(p_1, I)) - I$$

① LEONTIEF:

$$u(X) = \min\{X_1, X_2, \dots, X_m\}$$

$X \in \mathbb{R}^m$ s.a. $\sum_i P_i X_i = I \longrightarrow I = \sum_i P_i x^*$

$x^* = X_i^* = X_j^* \quad \forall i, j = 1, 2, \dots m$ $\Rightarrow x^* = \dfrac{I}{\sum_i P_i}$

$$V(P, I) = u\left(x^* = I / \textstyle\sum_i P_i \,,\, i = 1, 2, \dots m \right) = \frac{I}{\sum_i P_i}$$

$$v = \frac{I}{\sum_i P_i}$$

$$e = \bar{u} \sum_i p_i$$

$$p^o = \begin{pmatrix} p_1^o \\ p_2^o \\ \vdots \\ p_m^o \end{pmatrix} \qquad p^f = \begin{pmatrix} p_1^f \\ p_2^f \\ \vdots \\ p_m^f \end{pmatrix}$$

$$VE = e(p^o, v(p^f, I)) - I$$

$$v(p^f, I) = \frac{I}{\sum_i p_i^f}$$

$$e\left(p^o, \frac{I}{\sum_i p_i^f}\right) = \frac{I}{\sum_i p_i^f} \cdot \sum_i p_i^o$$

$$VE = I\left[\frac{\sum_i p_i^o}{\sum_i p_i^f} - 1\right] = I\left[\frac{\sum_i (p_i^o - p_i^f)}{\sum_i p_i^f}\right]$$

$$\boxed{I\left[\frac{-\sum_i p_i^o - \cancel{2 p_i^o}}{2\sum_i \cancel{2} p_i^o}\right] \quad -I/2}$$

② COBB-DOUGLAS

$$u(x_1, x_2, \dots, x_n) = \prod_{i=1}^{n} x_i^{\alpha_i}$$

$$\sum \alpha_i = 1$$

$$x_i^* = \frac{\alpha_i I}{p_i}$$

$$\bar{u} = \prod_{i=1}^{n} \left(\frac{\alpha_i I}{p_i}\right)^{\alpha_i} = e \prod_i \left(\frac{\alpha_i}{p_i}\right)^{\alpha_i}$$

$$e(p, \bar{u}) = \bar{u} \prod_i \left(\frac{p_i}{\alpha_i}\right)^{\alpha_i}$$

$$VE = e(p^0, u_1) - I$$

$$u_1 = I \prod_i \left(\frac{\alpha_i}{p_i^f}\right)^{\alpha_i}$$

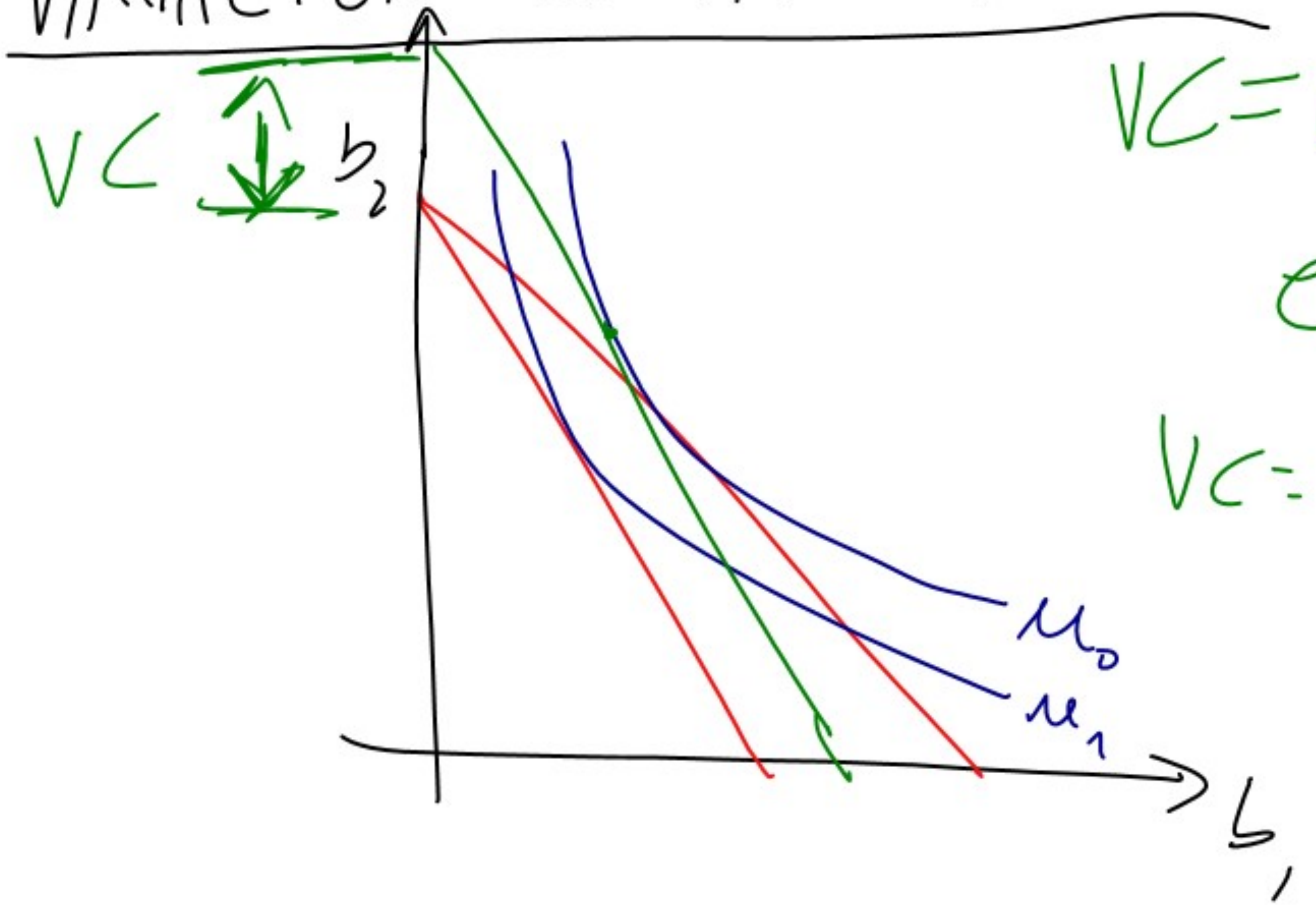
$$e(p^0, u_1) = \left(I \prod_i \left(\frac{\cancel{\alpha_i}}{p_i^f}\right)^{\alpha_i}\right) \prod_i \left(\frac{p_i^0}{\cancel{\alpha_i}}\right)^{\alpha_i}$$

$$= I \prod_i \left(\frac{p_i^0}{p_i^f}\right)^{\alpha_i}$$

$$VE = I\left[\prod_{i=1}^{m}\left(\frac{p_i^0}{2p_i^0}\right)^{r_i} - 1\right]$$

$$= I\left[\frac{1}{2} - 1\right] = -I/2$$

VARIACIÓN COMPENSADA VC



$$VC = e(p^f, u_1) - e(p^f, u_0)$$

$$e(p^f, v(p^f, I)) = I$$

$$VC = I - e(p^f, v(p^0, I))$$

$$V_C = I - e(p^f, v(p^i, I))$$

$$x^* = \frac{I}{\sum p_i}$$

$$e(p, \bar{u}) = \bar{u} \cdot \sum p_i$$

$$V_C = I - \sum p_f \frac{I}{\sum p_i}$$

$$I - \sum p_f \frac{I}{\sum p_i}$$

$$\underbrace{I\left(1 - \sum p_f \cdot \frac{1}{\sum p_i}\right)}$$

$$\frac{\sum (p_i^0 - p_f)}{\sum p_i^0} \cdot I = V_C$$

$$VC = I - I \prod_{i=1}^{n} \left(\frac{P_i^f}{P_i^0}\right)^{\alpha_i}$$

$$e(P, \bar{u}) = \bar{u} \prod_i \left(\frac{P_i}{\alpha_i}\right)^{\alpha_i} \qquad VC = I \left[1 - \prod_{i=1}^{n} \left(\frac{P_i^f}{P_i^0}\right)^{\alpha_i}\right]$$

$$v(P^0, I) = I \prod \left(\frac{\alpha_i}{P_i^0}\right)^{\alpha_i}$$

$$e(P^f, v(P^0, I)) = I \prod_{i=1}^{n} \left(\frac{\cancel{\alpha_i}}{P_i^0}\right)^{\alpha_i} \cdot \prod_i \left(\frac{P_i^f}{\cancel{\alpha_i}}\right)^{\alpha_i}$$

$$e(P^f, v(P_i^0, I)) = I \prod_{i=1}^{n} \left(\frac{P_i^f}{P_i^0}\right)^{\alpha_i}$$