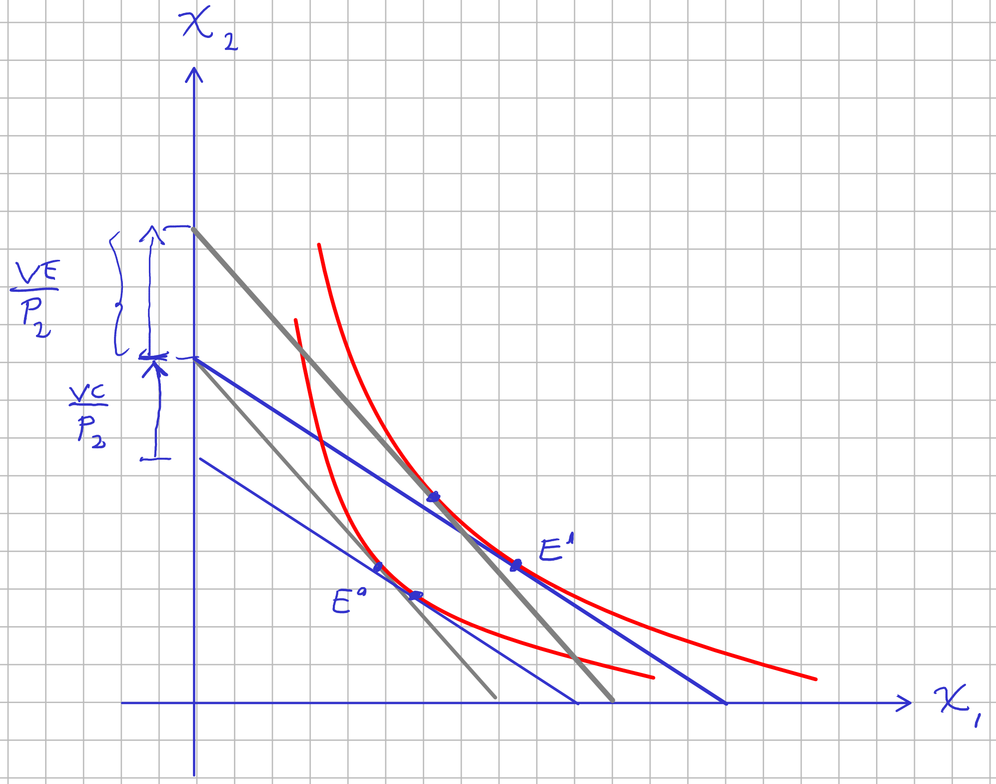

x_2
x_1
$\frac{VE}{P_2}$
$\frac{VC}{P_2}$
E^1
E^0

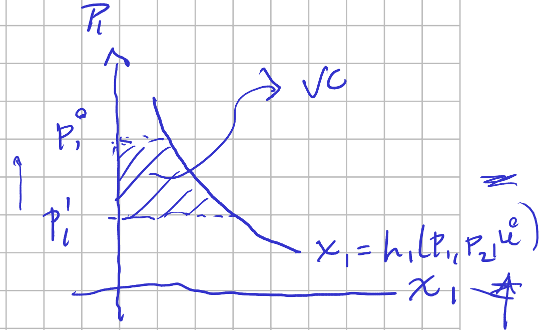
$$\underline{m^0 = m^1 = m}, \quad p_2^0 = p_2^1 = p_2, \quad p_1^0 \rightarrow p_1^1$$

$$u_0 = v(p_1^0, p_2, m) \qquad u_1 = v(p_1^1, p_2, m)$$

$$e[p_1^0, p_2, u^0] = e[p_1^0, p_2, v(p_1^0, p_2, m)] = m$$

$$e[p_1^1, p_2, u^1] = e[p_1^1, p_2, v(p_1^1, p_2, m)] = m$$

$$\Rightarrow \underline{e(p_1^0, p_2, u^0) = e(p_1^1, p_2, u^1) = m}$$

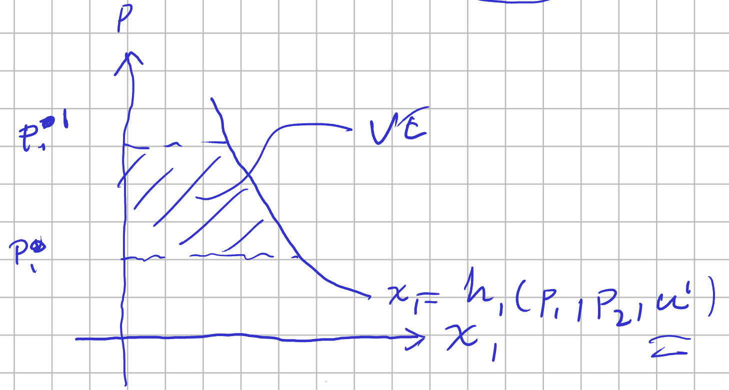


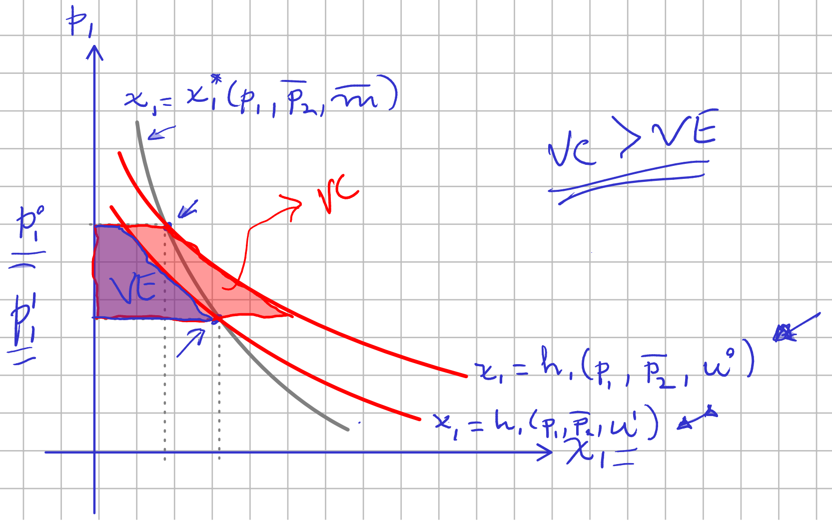
$$\boxed{VC = m - e(p_1^1, p_2, u^0) = e(p_1^0, p_2, u^0) - e(p_1^1, p_2, u^0)}$$

$$\frac{\partial e(p_1, p_2, u^0)}{\partial p_1} = h_1(p_1, p_2, u^0)$$

$$\int_{p_1^1}^{p_1^0} h_1(p_1, p_2, u^0)\, dp_1 = \Big[e(p_1, p_2, u^0)\Big]_{p_1 = p_1^1}^{p_1 = p_1^0} = e(p_1^0, p_2, u) - e(p_1^1, p_2, u) = VC$$

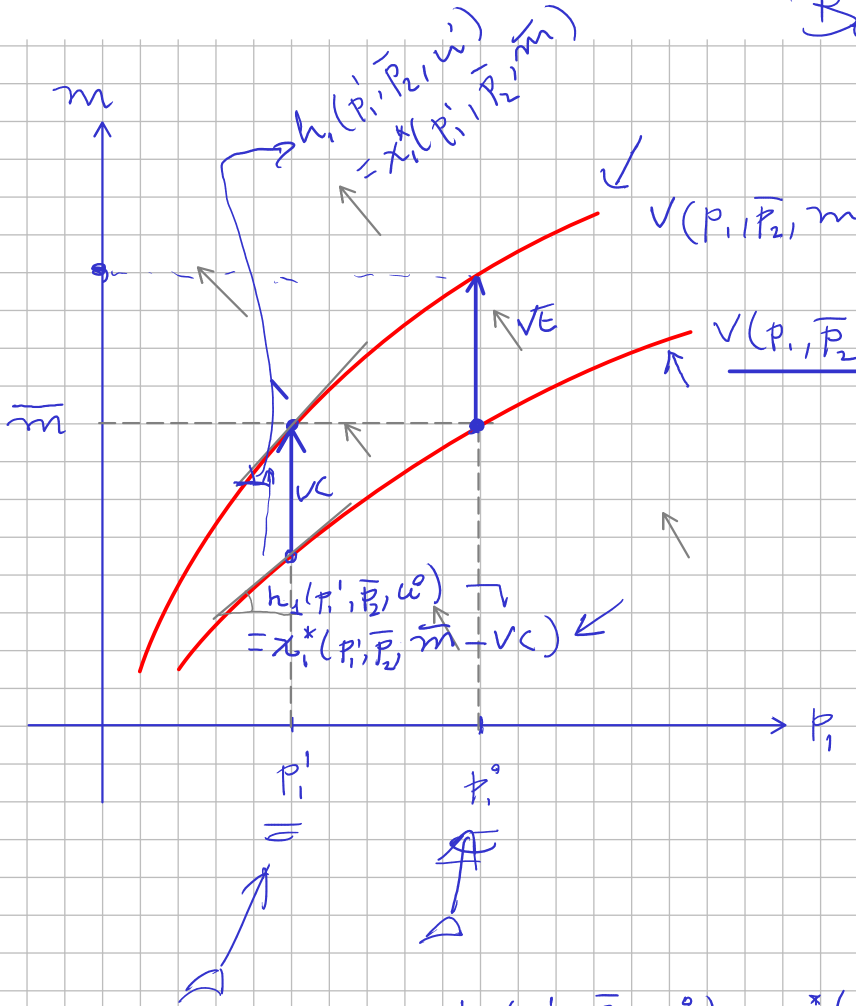
$$VE = \underbrace{e(p_1^0, p_2, u^1)} - \underbrace{m} = \underbrace{e(p_1^0, \underline{\underline{p_2}}, \underline{\underline{u^1}})} - \underbrace{e(p_1^1, \underline{\underline{p_2}}, \underline{\underline{u^1}})} = \int_{p_1^1}^{p_1^0} h_1(p_1, p_2, u^1)\, dp_1$$





$\underline{\underline{VC > VE}}$

Bem normal



$V(p_1, \bar{p}_2, m) = u'$ ou $m = e(p_1, \bar{p}_2, u')$

$\underline{V(p_1, \bar{p}_2, \bar{m}) = u^0}$ ou $\underline{m = e(p_1, \bar{p}_2, u^0)}$

$u^0 = V(p_1^0, \bar{p}_2, \bar{m})$

$u' = V(p_1', \bar{p}_2, \bar{m})$

$\bar{m} - e(p_1', \bar{p}_2, u^0) = VC \Rightarrow e(p_1', \bar{p}_2, u^0) = \bar{m} - VC$

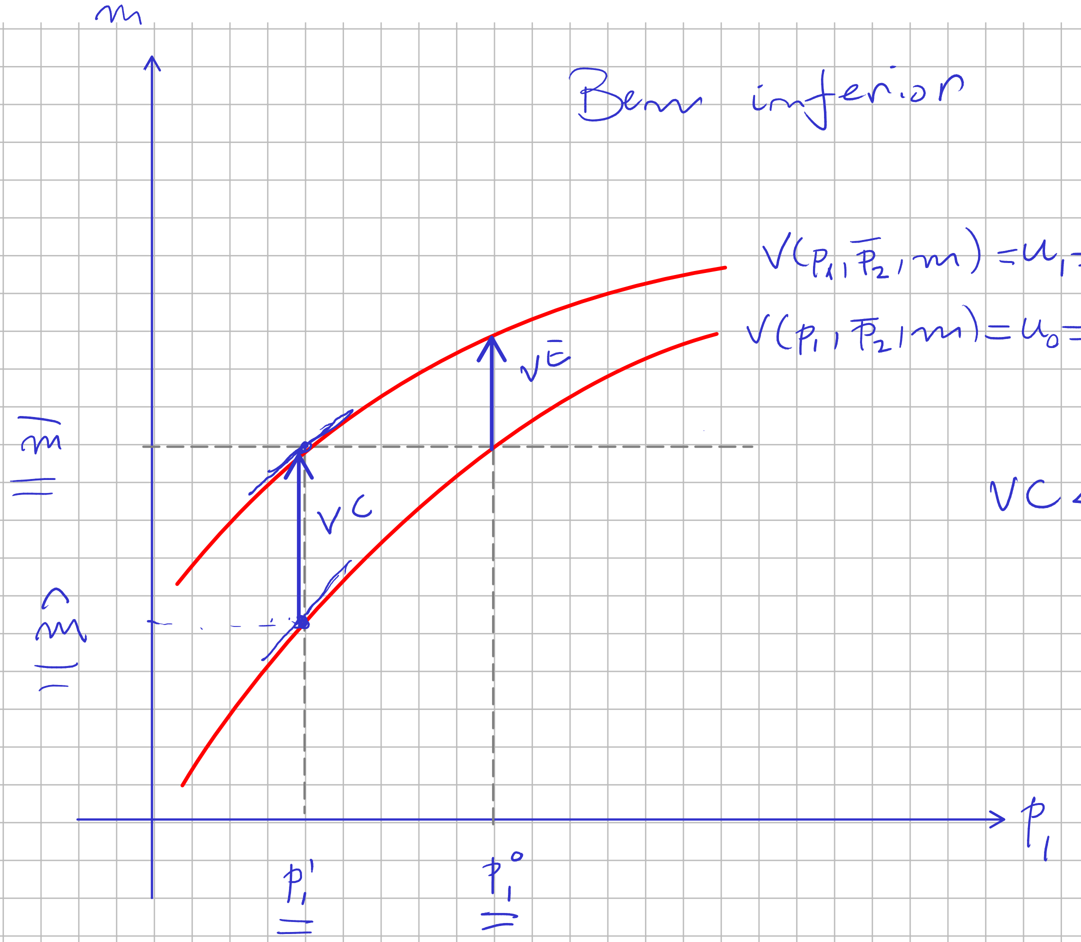
$e(p_1^0, \bar{p}_2, u') - \bar{m} = VE$

$h_1(p_1', \bar{p}_2, u^0) = x_1^*(p_1', \bar{p}_2, e(p_1', \bar{p}_2, u^0))$

$= x_1^*(p_1', \bar{p}_2, \bar{m} - VC) < x_1^*(p_1', \bar{p}_2, \bar{m})$ no caso de um bem normal.

$VC < VE$

Bem inferior



$V(p_1,\bar p_2,m)=u_1=V(p_1',\bar p_2,\bar m)$ ou $m=e(p_1,\bar p_2,u_1)$

$V(p_1,\bar p_2,m)=u_0=V(p_1^0,\bar p_2,\bar m)$ ou $m=e(p_1,\bar p_2,u_0)$

$VC < VE$

Exemplo:

$$U(x_1, x_2) = \underline{x_1}^{1/4} \, \underline{x_2}^{3/4} \; ; \quad m^0 = m^1 = 1000 \; ; \quad p_2^0 = p_2^1 = \underline{10} \; ; \quad p_1^0 = 10 \; ; \quad p_1^1 = 5$$

Calcular a VC, a VE e a variação na área sob a curva de demanda do bem 1.

$$x_1^*(p_1, p_2, m) = \frac{1}{4} \frac{m}{p_1} \; ; \quad x_2^*(p_1, p_2, m) = \frac{3}{4} \frac{m}{p_2} \, ,$$

$$V(p_1, p_2, m) = \left[\frac{1}{4} \frac{m}{p_1}\right]^{1/4} \left[\frac{3}{4} \frac{m}{p_2}\right]^{3/4} = m \left[\frac{1}{4 p_1}\right]^{\frac{1}{4}} \left[\frac{3}{4 p_2}\right]^{3/4} = \frac{m}{4} \frac{1}{p_1^{1/4}} \left(\frac{3}{p_2}\right)^{3/4} \leftarrow$$

$$e(p_1, p_2, u) = u \, (4p_1)^{\frac{1}{4}} \left(\frac{4}{3} p_2\right)^{3/4} = \underline{4u} \; p_1^{\frac{1}{4}} \left[\frac{p_2}{3}\right]^{3/4}$$

$$u^0 = V(p_1^0, p_2, m) = 250 \left(\frac{1}{10}\right)^{\frac{1}{4}} \left(\frac{3}{10}\right)^{3/4} = 25 \times 3^{3/4}$$

$$u^1 = V(p_1^1, p_2, m) = 250 \left(\frac{1}{5}\right)^{\frac{1}{4}} \left(\frac{3}{10}\right)^{3/4} = 50 \times \left(\frac{3}{2}\right)^{3/4}$$

$$\underline{VC} = m^1 - e(p_1^1, p_2^1, u^0) = 1000 - \overset{100}{\cancel{4 \times 25}} \times \cancel{3^{3/4}} \times 5^{1/4} \times \left(\frac{10}{\cancel{3}}\right)^{3/4} = 100\left(10 - 5^{\frac{1}{4}}\, 10^{\frac{3}{4}}\right) \cong \underline{159{,}104}$$

$$\underline{VE} = e(p_1^0, p_2^0, u^1) - m^0 = 200 \times \left(\frac{\cancel{3}}{2}\right)^{3/4} \times \frac{10}{\cancel{3^{3/4}}} - 1\,000 = \frac{2\,000}{2^{3/4}} - 1\,000 \cong \underline{189{,}207}$$

$$\Delta CS = \int_{p_1^1}^{p_1^0} x_1^*(p_1, p_2, m)\, dp_1 = \int_5^{10} \frac{\overset{250}{\cancel{1000}}}{\cancel{4}\, p_1}\, dp_1 = \Big[250 \ln p_1\Big]_5^{10} = \underline{173{,}287}$$

$VC = 159{,}104$; $\Delta CS = 173{,}287$; $VE = 189{,}207$