

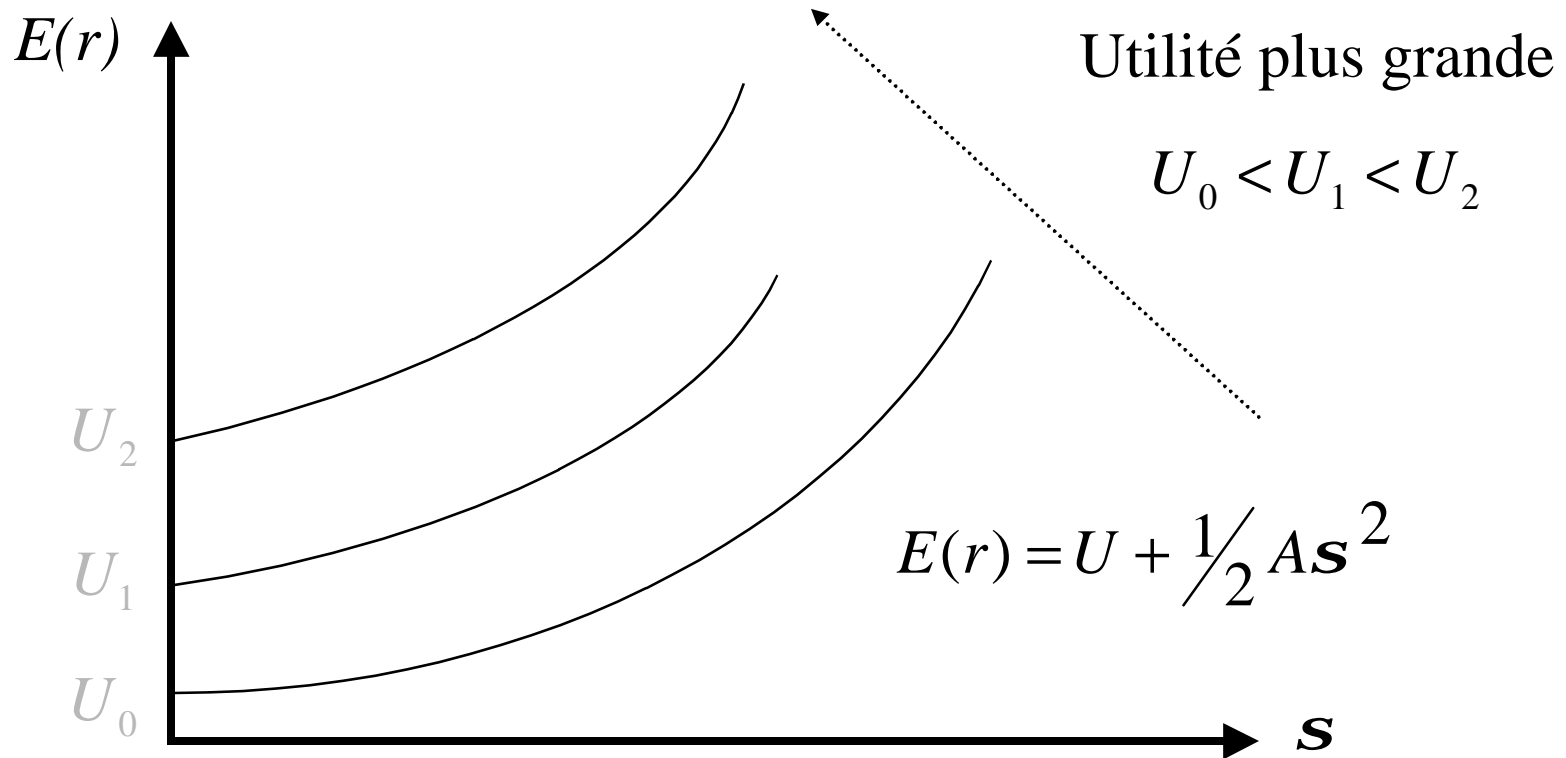
3-203 Gestion de Portefeuille.

Professeur: Kodjovi Assoé
Service de l'enseignement de la
finance, HEC

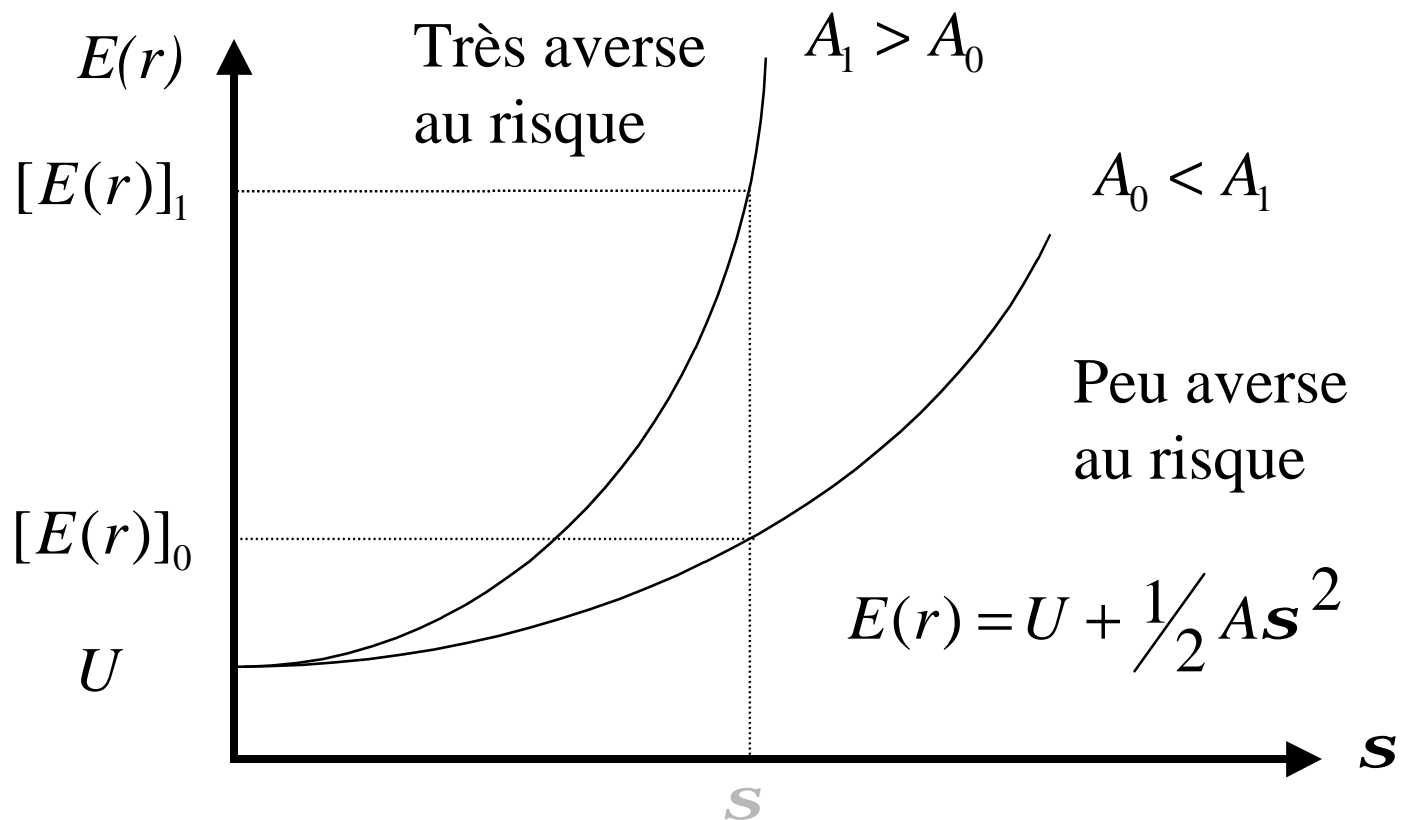
Cours 3 et 4

**Théories modernes de portefeuille
et évaluation des titres**

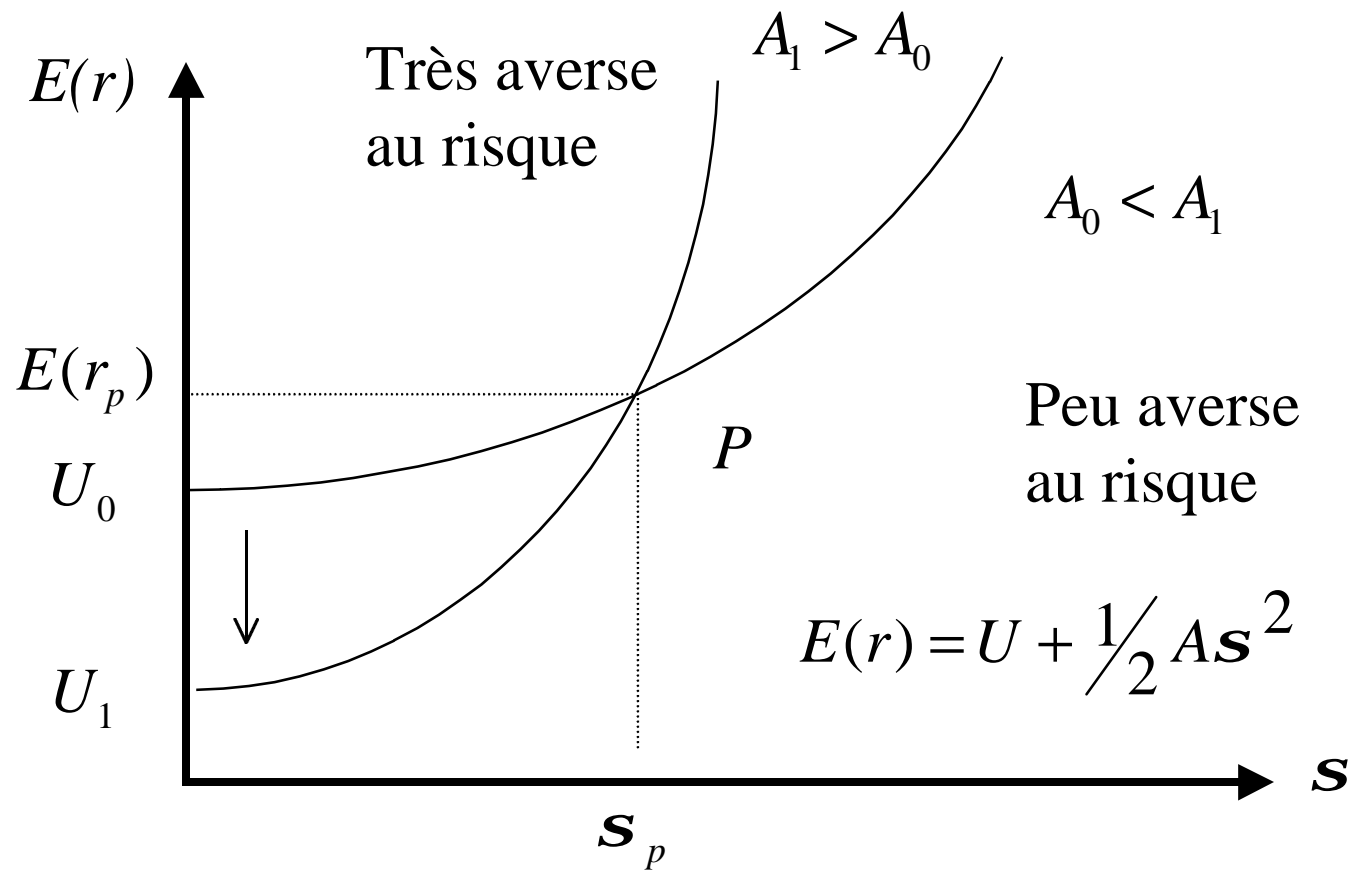
Courbes d'indifférence



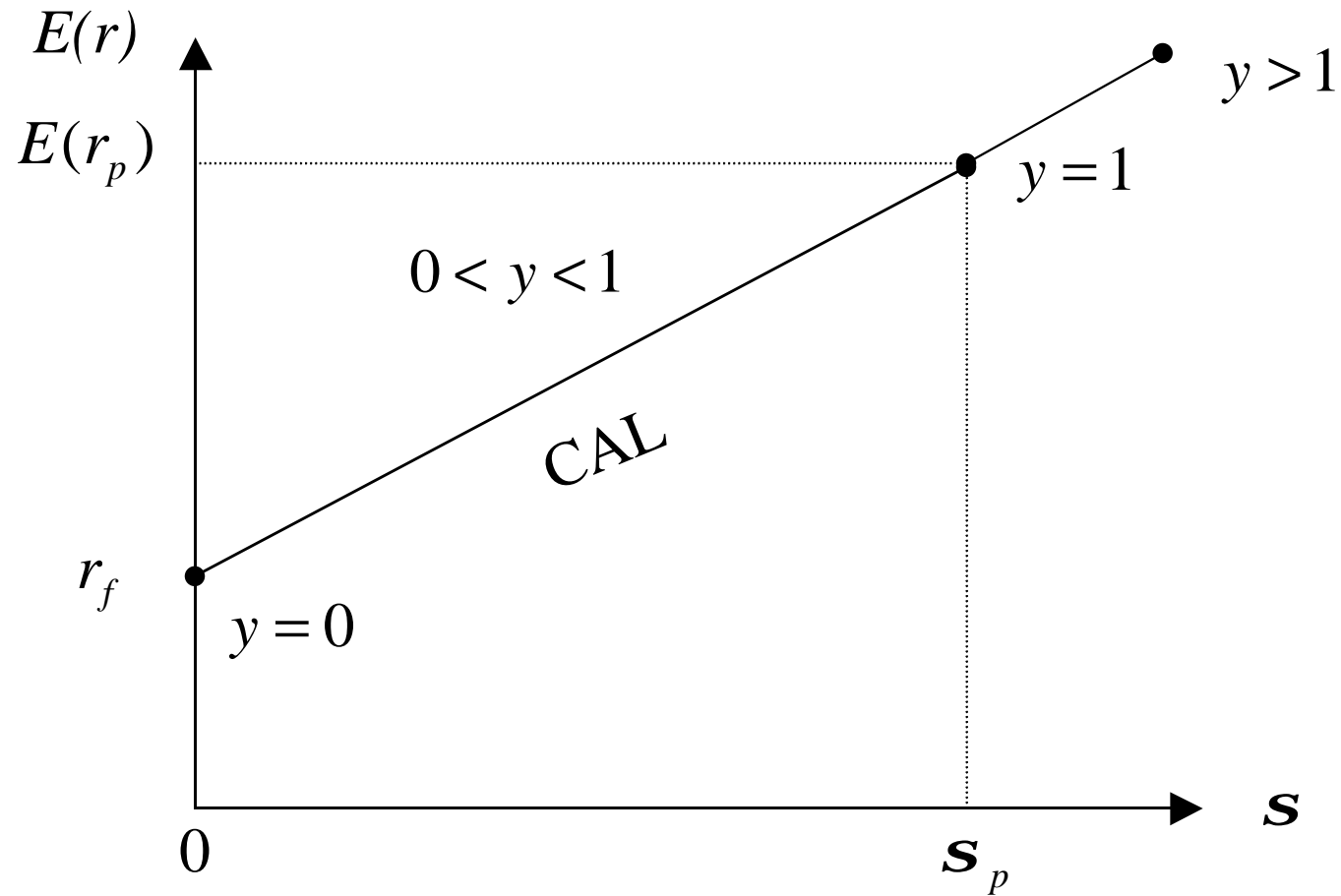
Aversion au risque



Équivalent certain



A. Ensemble des possibilités de placement



EXEMPLE 1

☛ Problème de l'investisseur:

rendement sûr : $r_f = 7\%$

portefeuille risqué : $E(r_p) = 15\%$, $\sigma_p = 22\%$

utilité : $U = E(r) - \frac{1}{2} A \sigma^2$, $A = 4$

EXEMPLE 1 (SUITE)

☛ Solution:

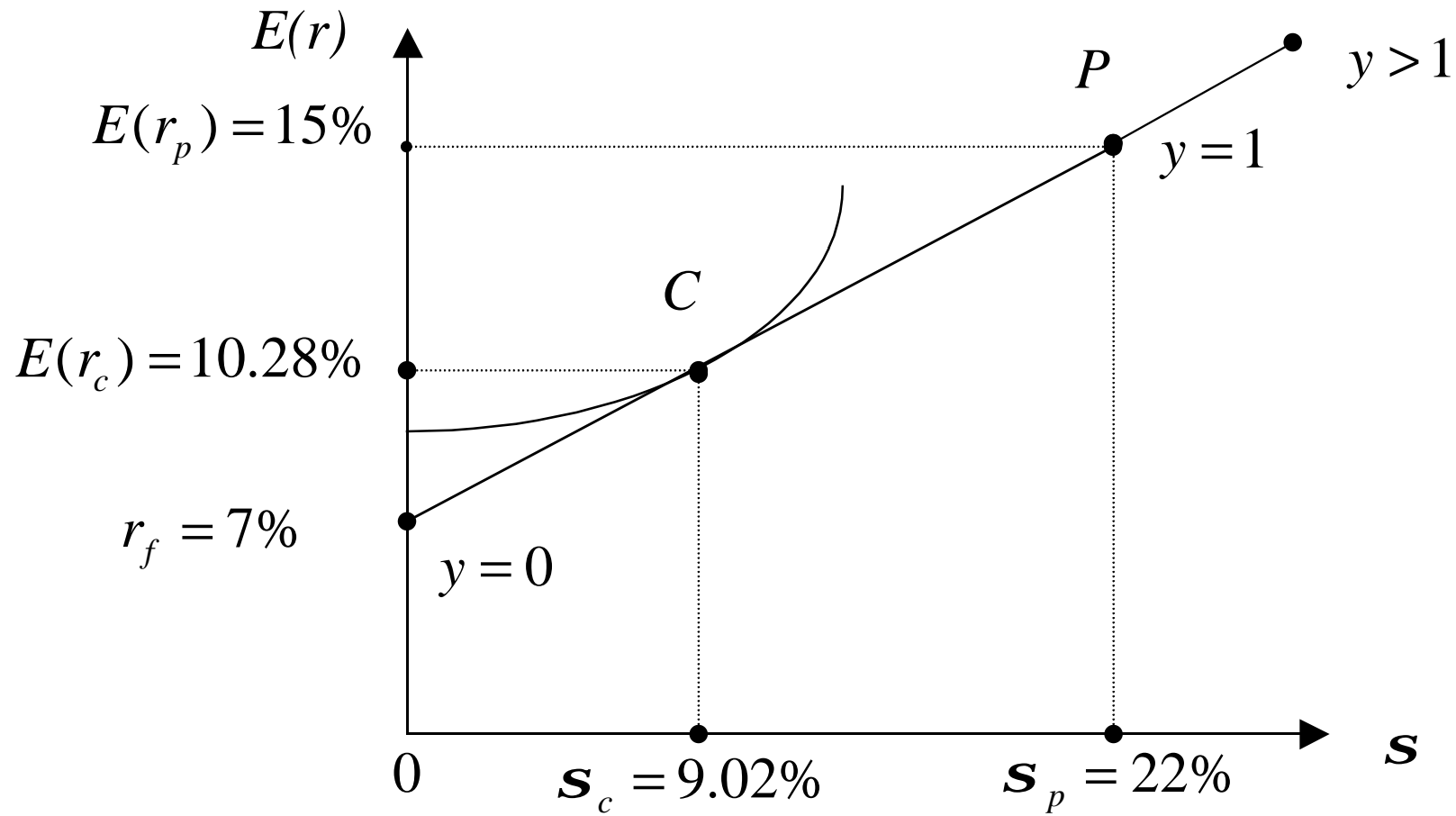
$$y^* = \frac{0.15 - 0.07}{4(0.22^2)} = 0.41$$

☛ Portefeuille optimal:

$$E(r_c) = 0.41 \times 15\% + 0.59 \times 7\% = 10.28\%$$

$$s_c = 0.41 \times 22\% = 9.02\%$$

EXEMPLE 1 (suite)



EXAMPLE 2

☛ Modification: $A = 1$:

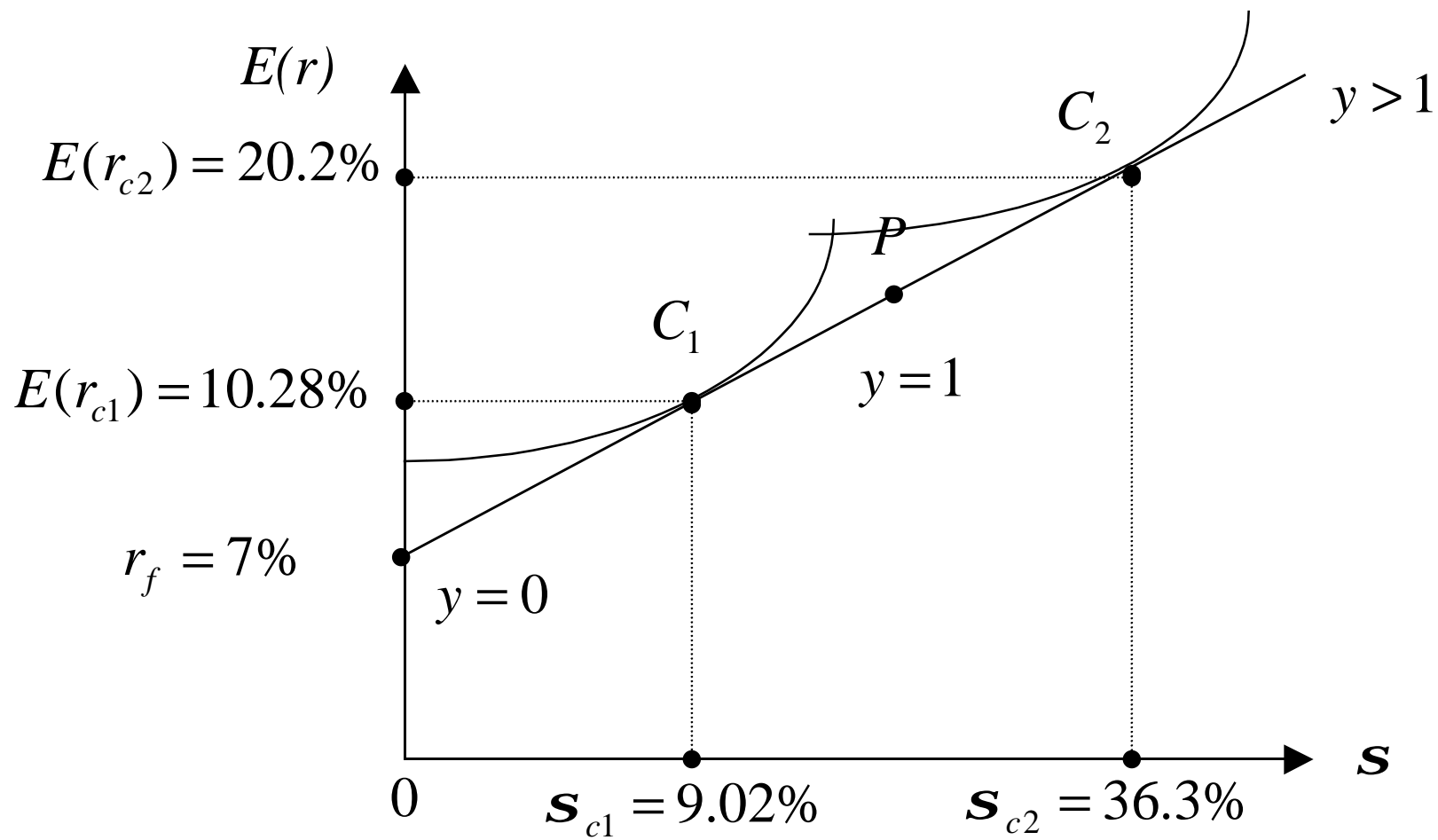
$$y^* = \frac{0.15 - 0.07}{1(0.22^2)} = 1.65 > 1$$

☛ Portefeuille optimal:

$$E(r_c) = 1.65 \times 15\% - 0.65 \times 7\% = 20.2\%$$

$$s_c = 1.65 \times 22\% = 36.3\%$$

EXEMPLE 2 (SUITE)



EXAMPLE 3

☛ Modification: $r_f = 9\%$:

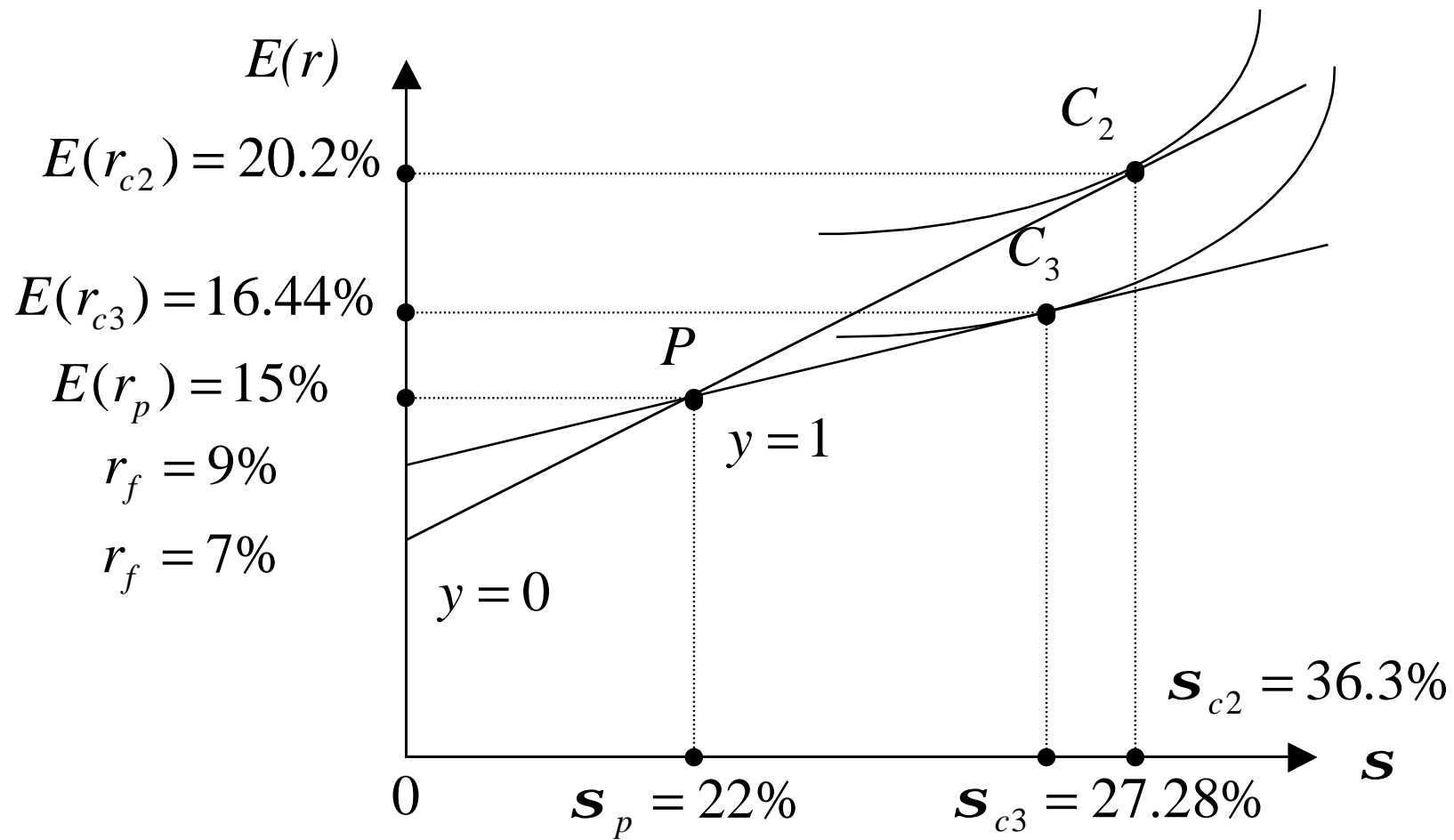
$$y^* = \frac{0.15 - 0.09}{1(0.22^2)} = 1.24 > 1$$

☛ Portefeuille optimal:

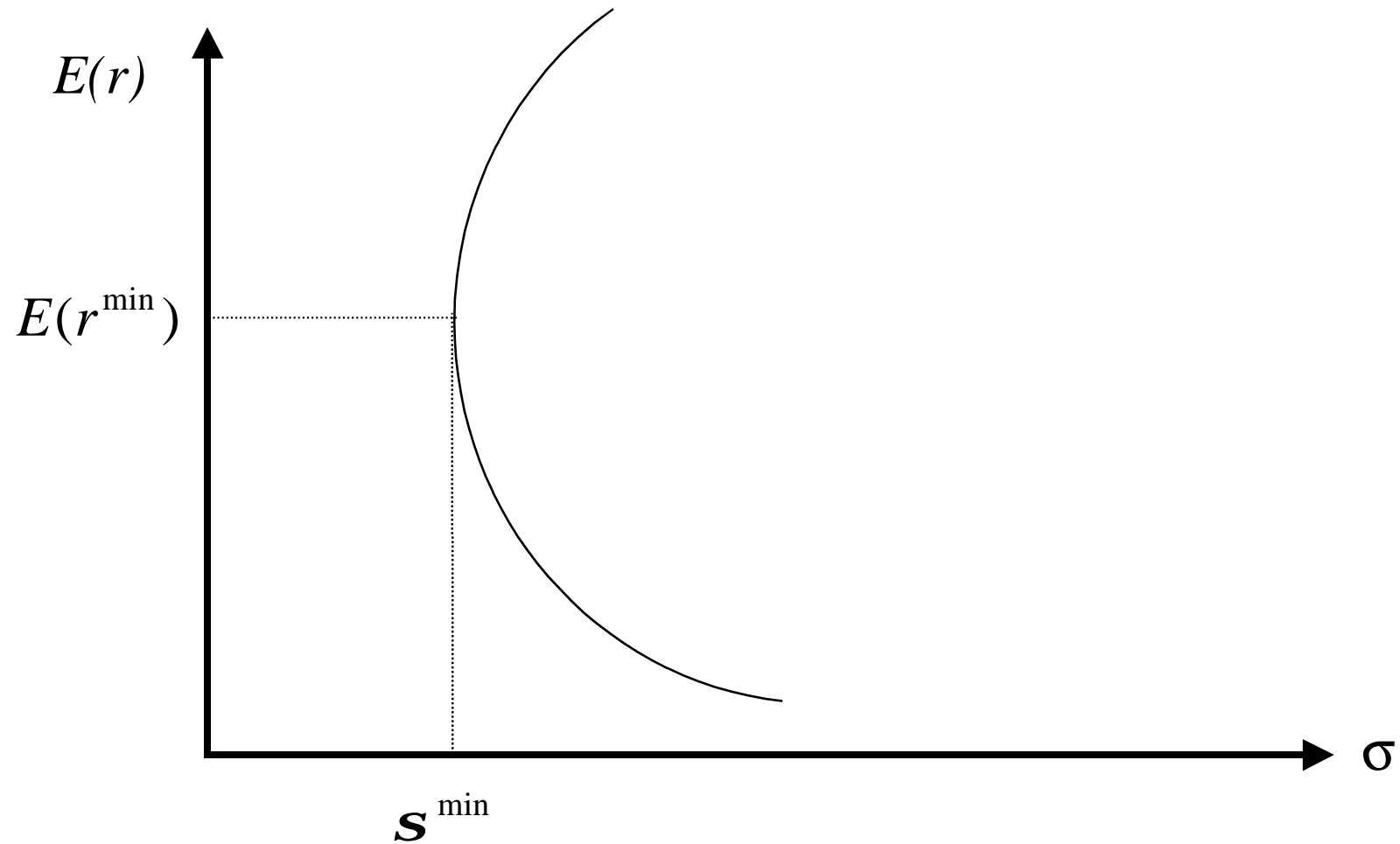
$$E(r_c) = 1.24 \times 15\% - 0.24 \times 9\% = 16.44\%$$

$$s_c = 1.24 \times 22\% = 27.28\%$$

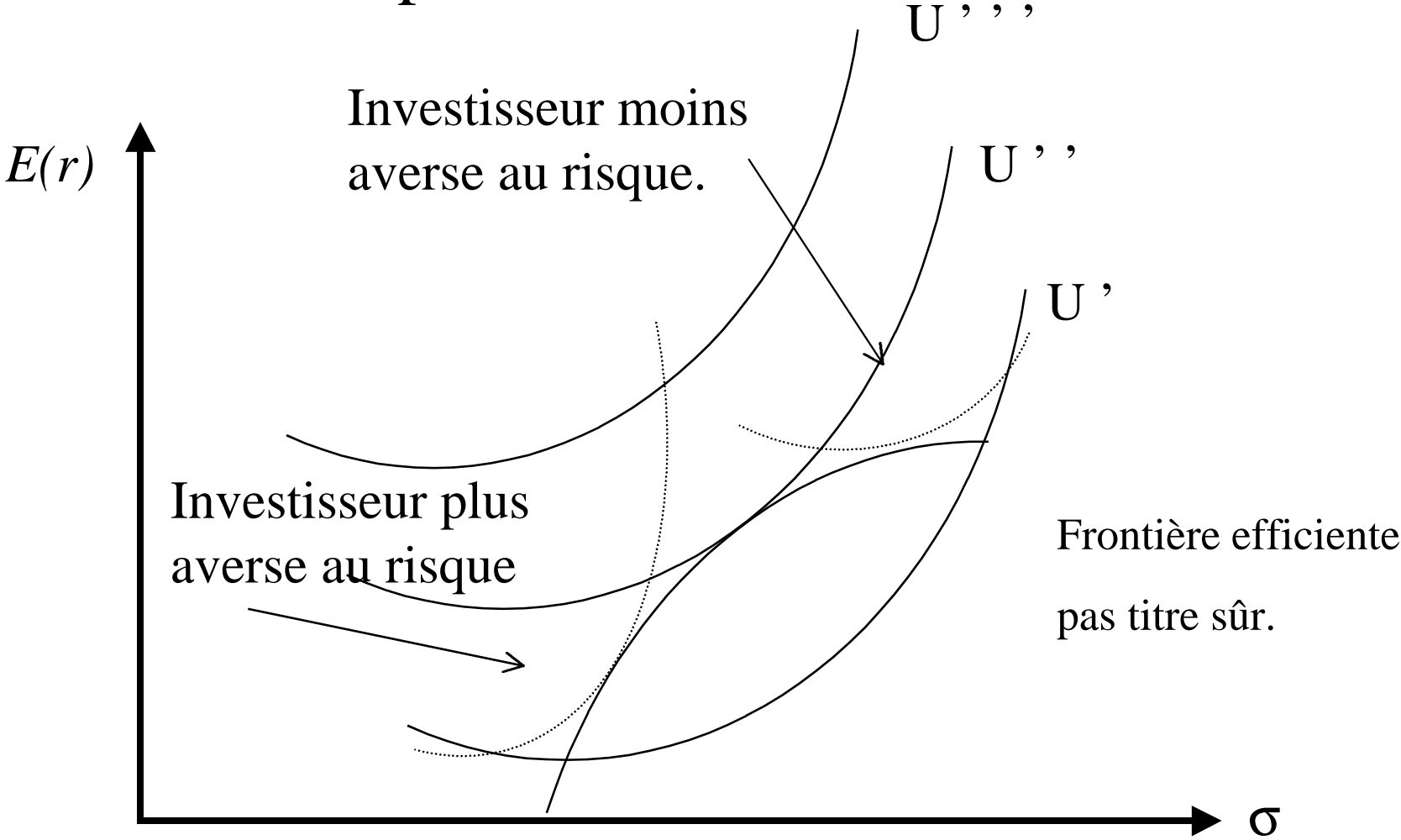
EXEMPLE 3 (SUITE)



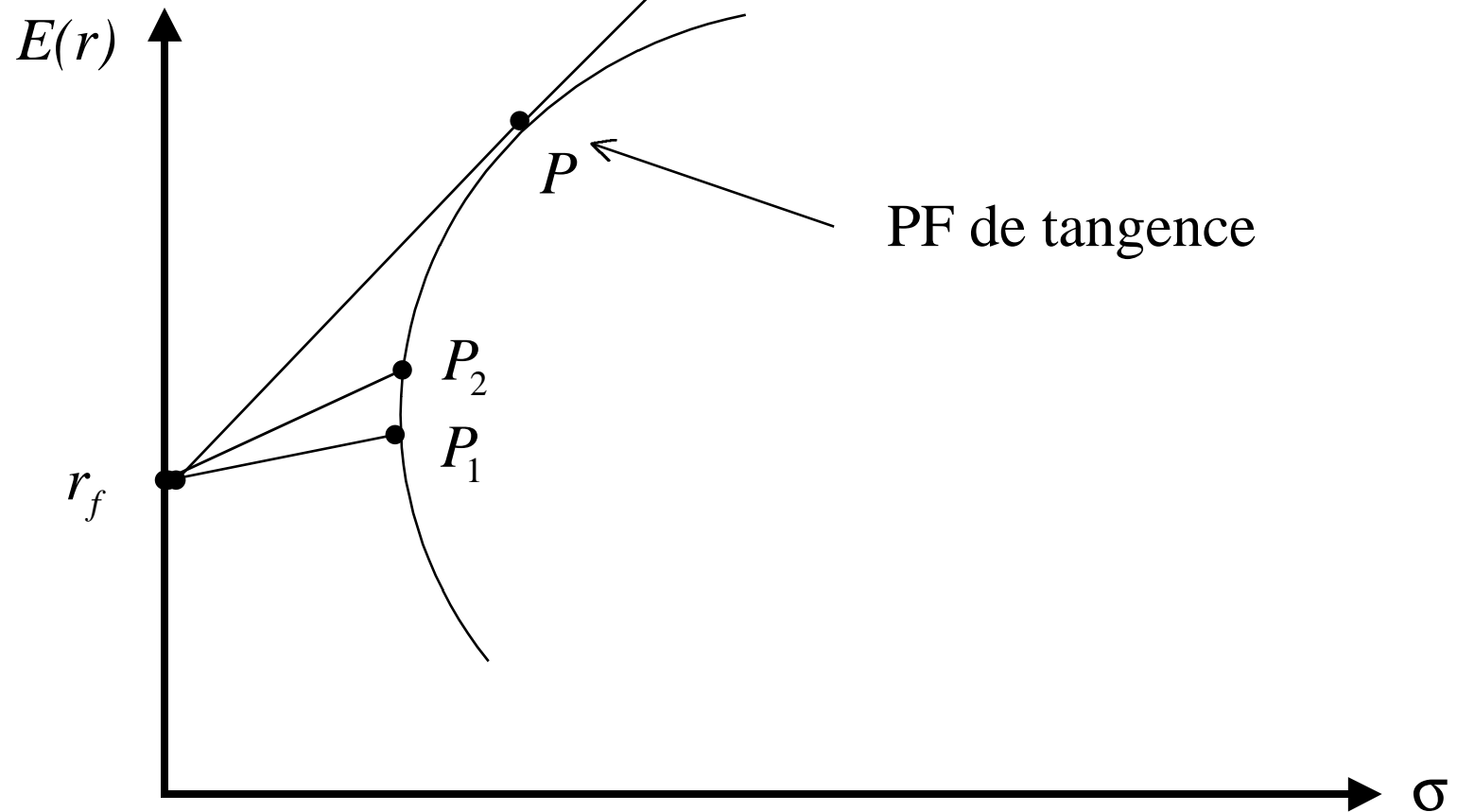
Portefeuille à variance minimale



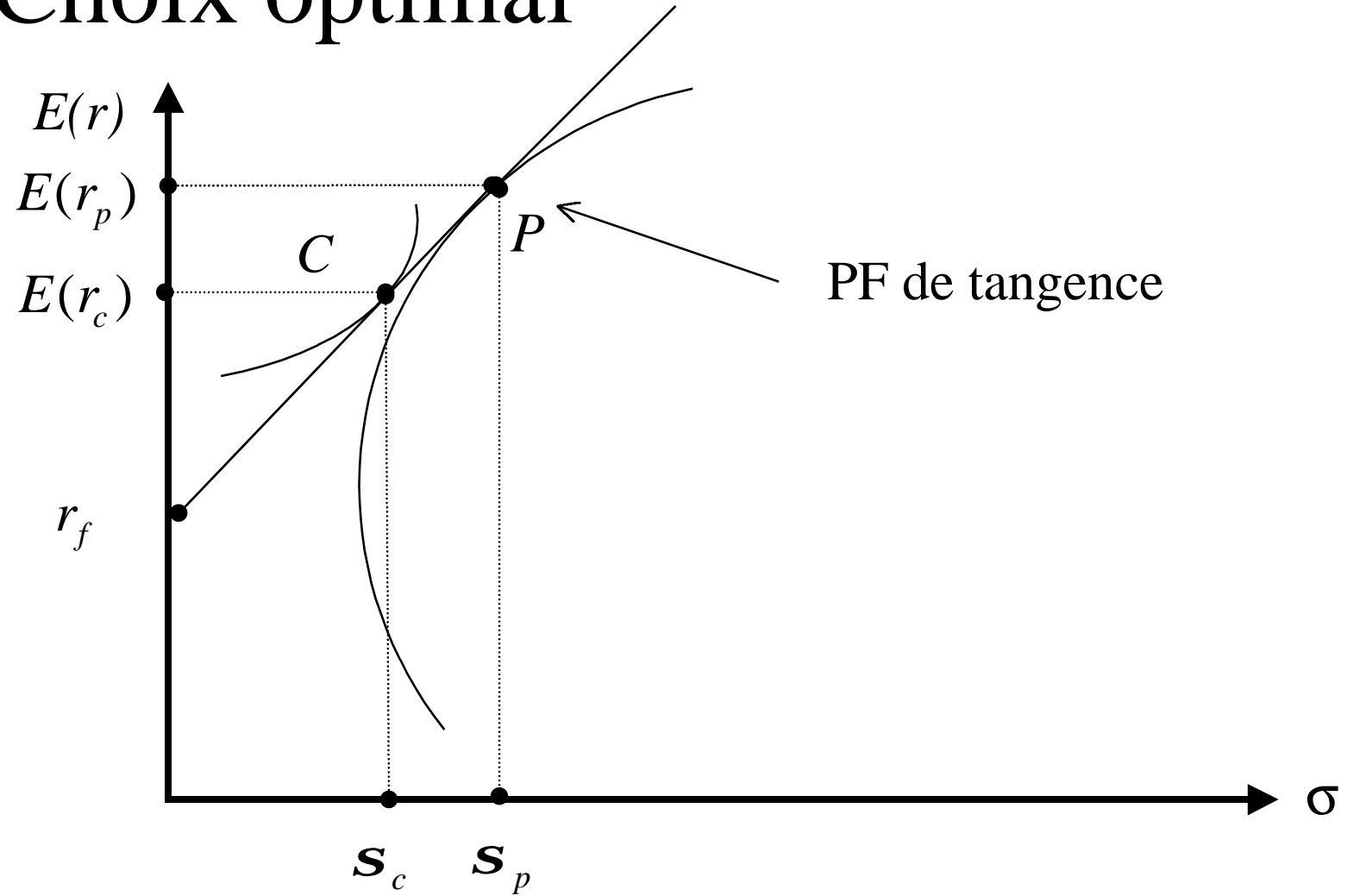
Combinaison optimale



Répartition 1 actif sûr et 2 risqués



Choix optimal



Rappel

☛ Portefeuille avec 2 actifs risqués:

$$w_d^{\min} = \frac{s_e^2 - s_{de}}{s_d^2 + s_e^2 - 2s_{de}} = \frac{s_e^2 - r_{de} s_d s_e}{s_d^2 + s_e^2 - 2r_{de} s_d s_e}$$

☛ Portefeuille optimal: pas d'actif sans risque

$$w_d^* = \frac{E(r_d) - E(r_e) + A(s_e^2 - s_{de})}{A(s_d^2 + s_e^2 - 2s_{de})}$$

☛ Ajout d'un actif sans risque:

- Portefeuille de tangence:

$$w_d = \frac{[E(r_d) - r_f] \sigma_e^2 - [E(r_e) - r_f] \sigma_{de}}{[E(r_d) - r_f] \sigma_e^2 + [E(r_e) - r_f] \sigma_d^2 - [E(r_d) - r_f + E(r_e) - r_f] \sigma_{de}}$$

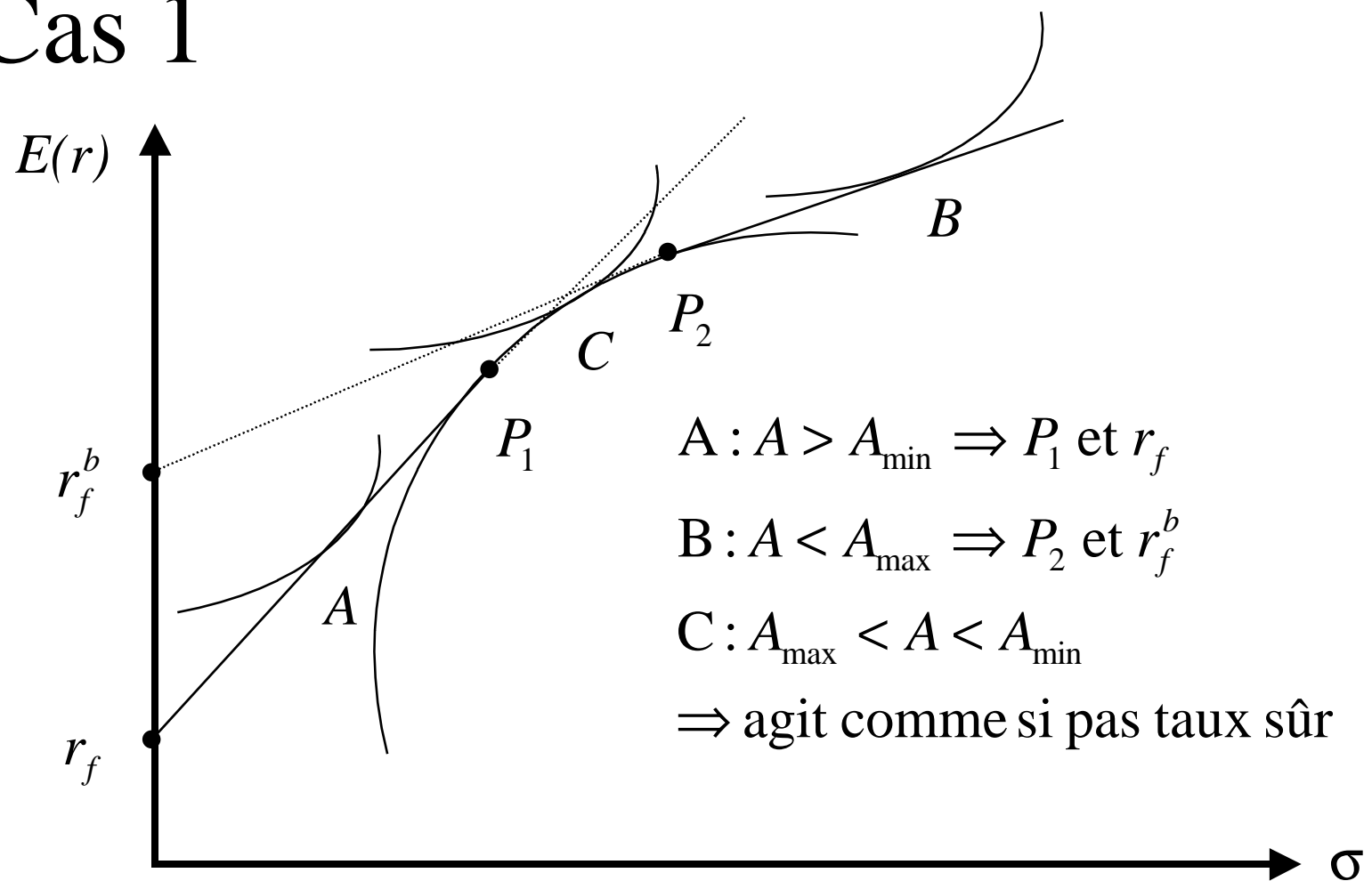
- Répartition du capital:

$$y^* = \frac{E(r_p) - r_f}{A \sigma_p^2}$$

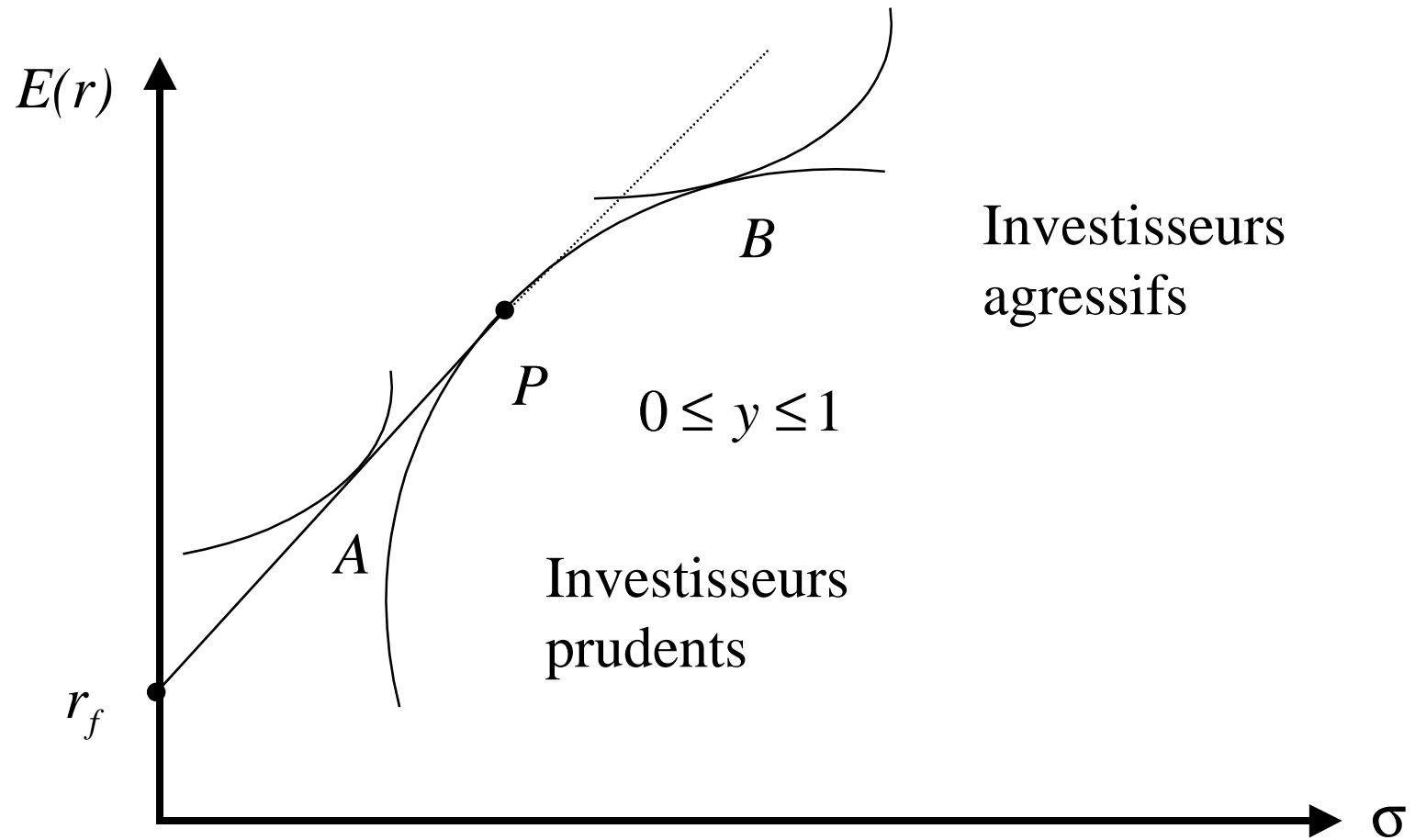
Synthèse

- ☛ Spécifier distribution titres risqués
- ☛ Ensemble combinaisons possibles titres risqués
- ☛ Composition portefeuille de tangence P
- ☛ Distribution portefeuille de tangence
- ☛ Répartition optimale du capital entre f et P

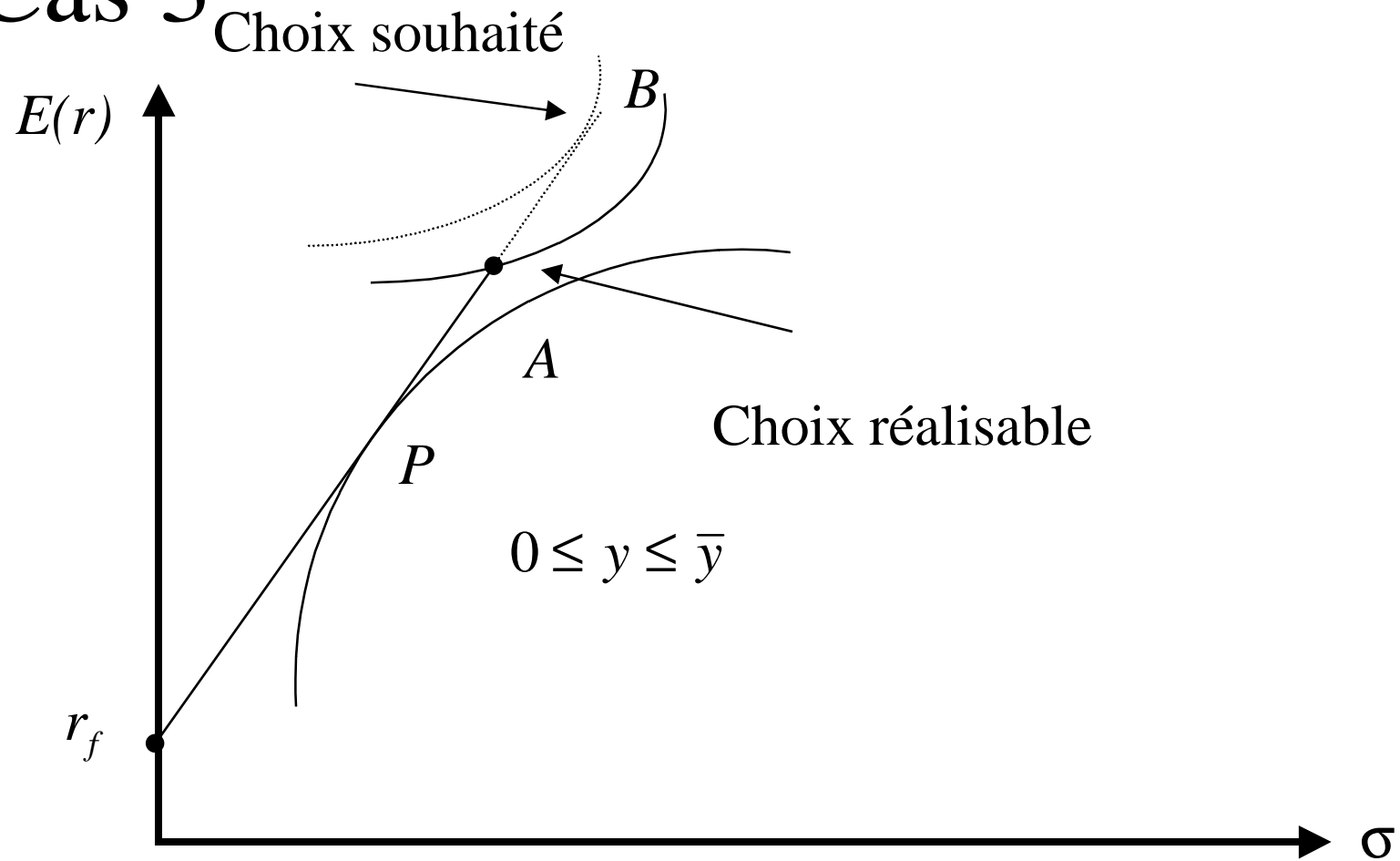
Cas 1



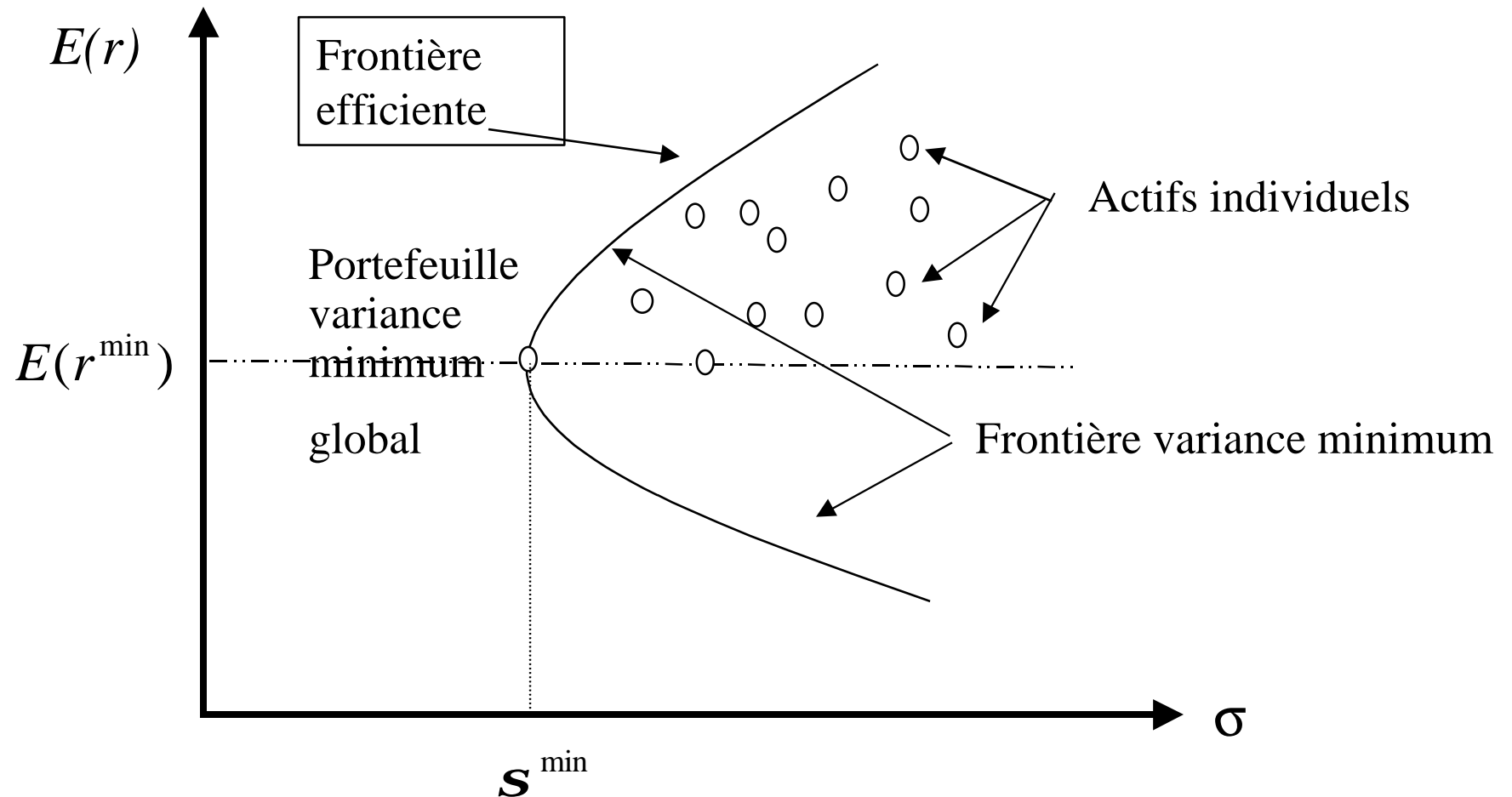
Cas 2



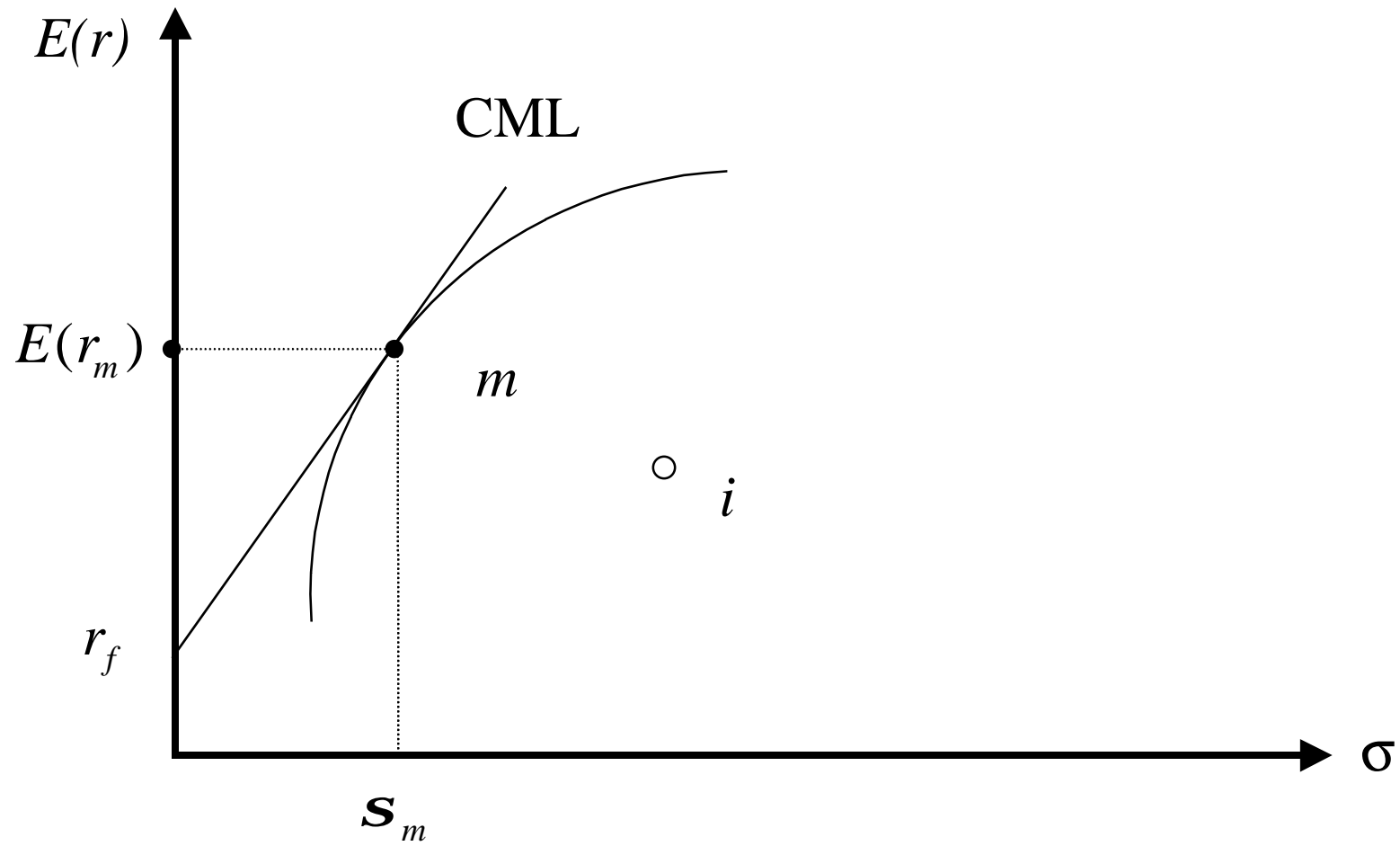
Cas 3



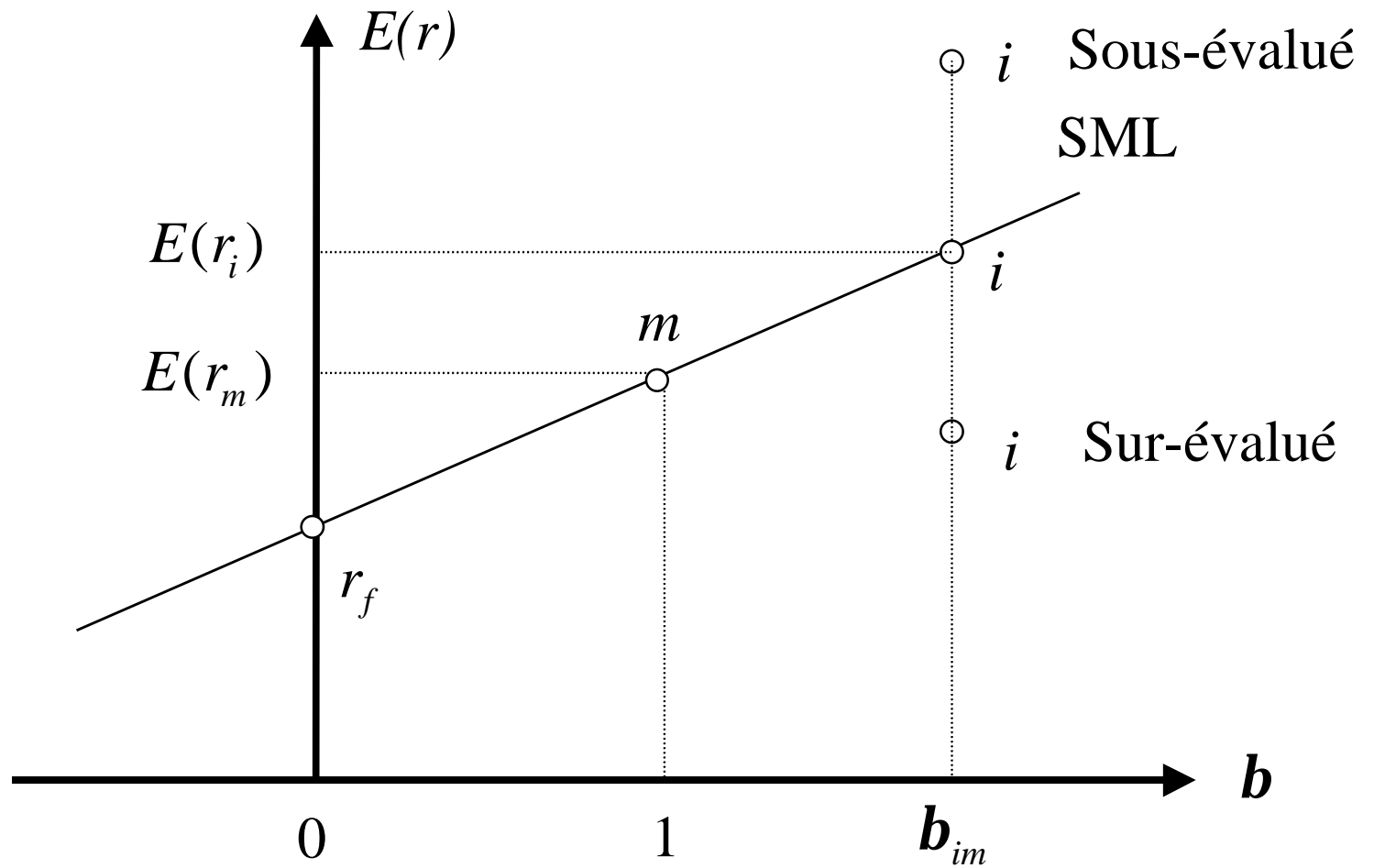
Frontière efficiente



CAPM



Security Market Line



CAPM Zéro-Beta

