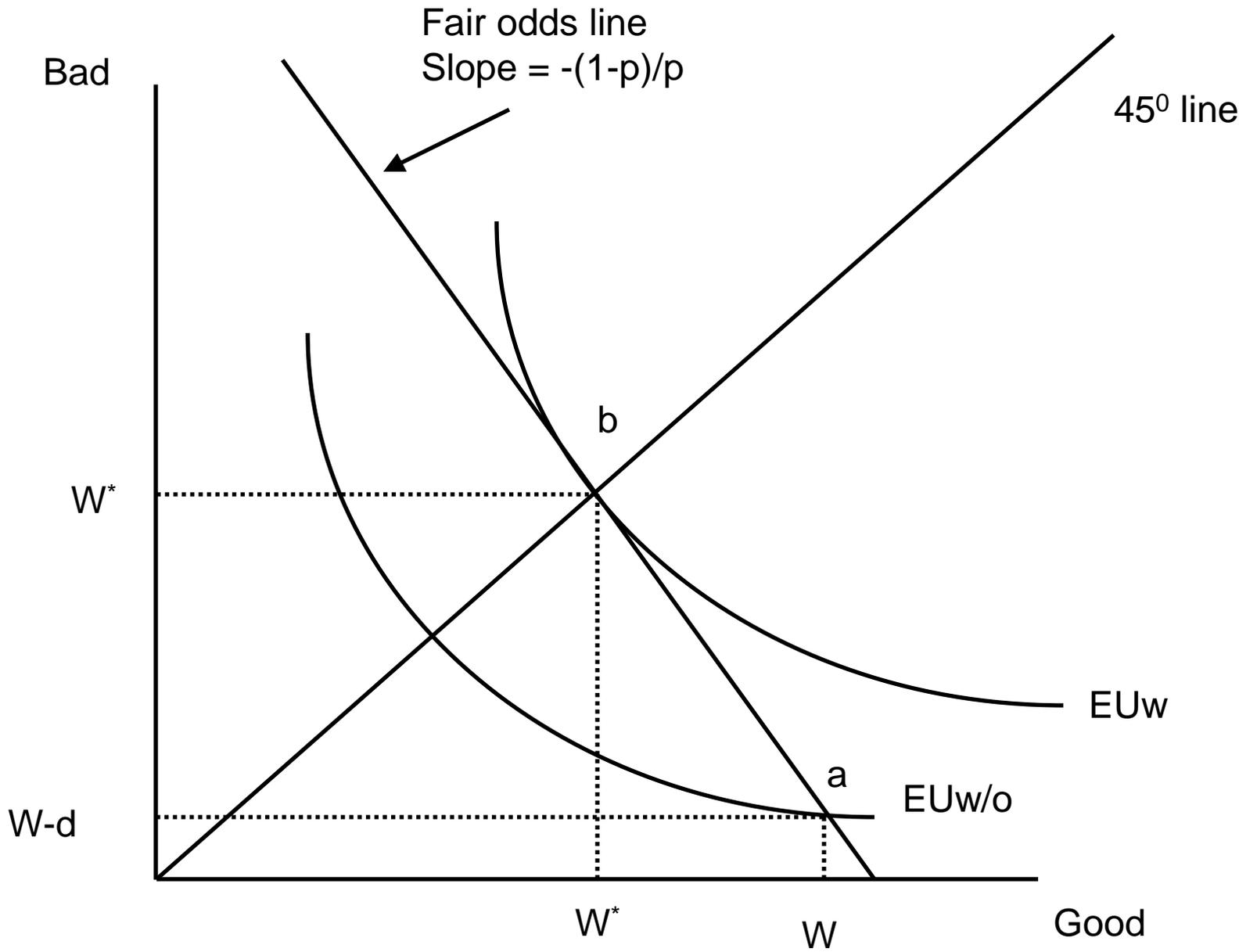


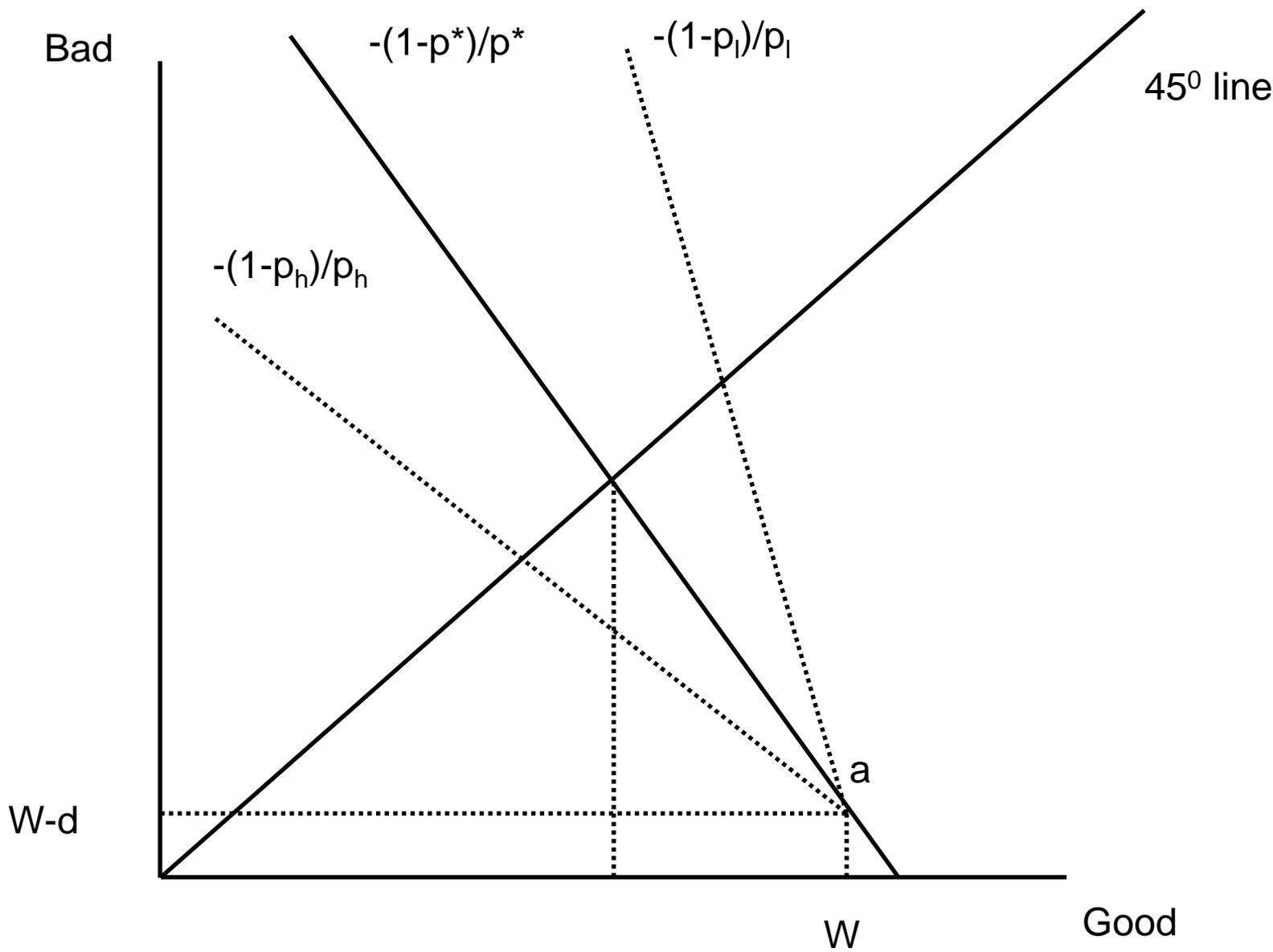
# Rothschild-Stiglitz

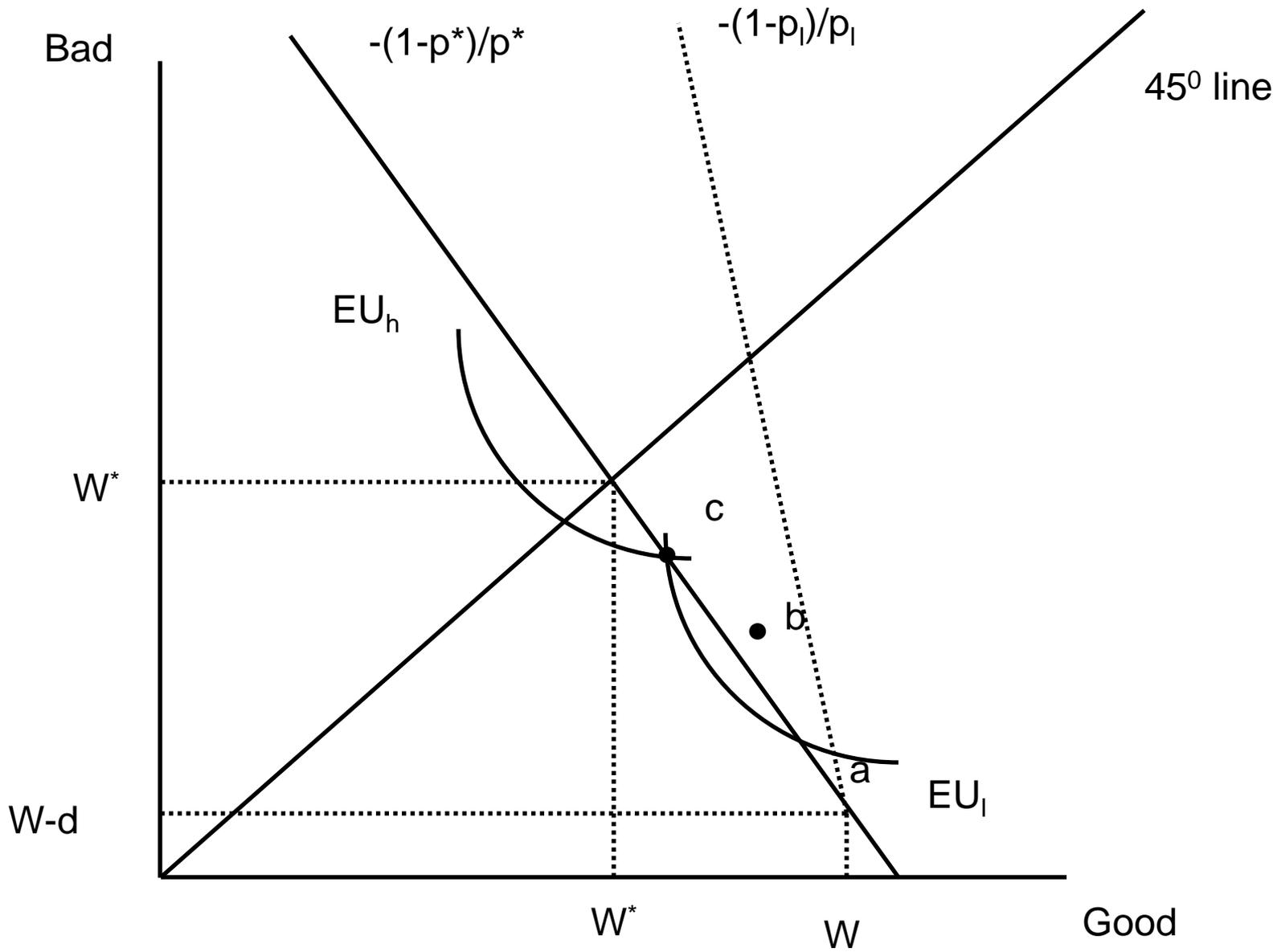
Insurance markets  
and adverse selection

# Notation

- $W$  = wealth
- $d$  = loss
- $p$  = probability of loss
- Insurance costs  $q$  per €1 insured
- If coverage is  $\alpha$ :
  - No loss:  $W - \alpha q$
  - Loss:  $W - \alpha q + \alpha - d$
- With no As. Info: Actuarially fair price:  $q = p$
- Full coverage:  $\alpha = d$



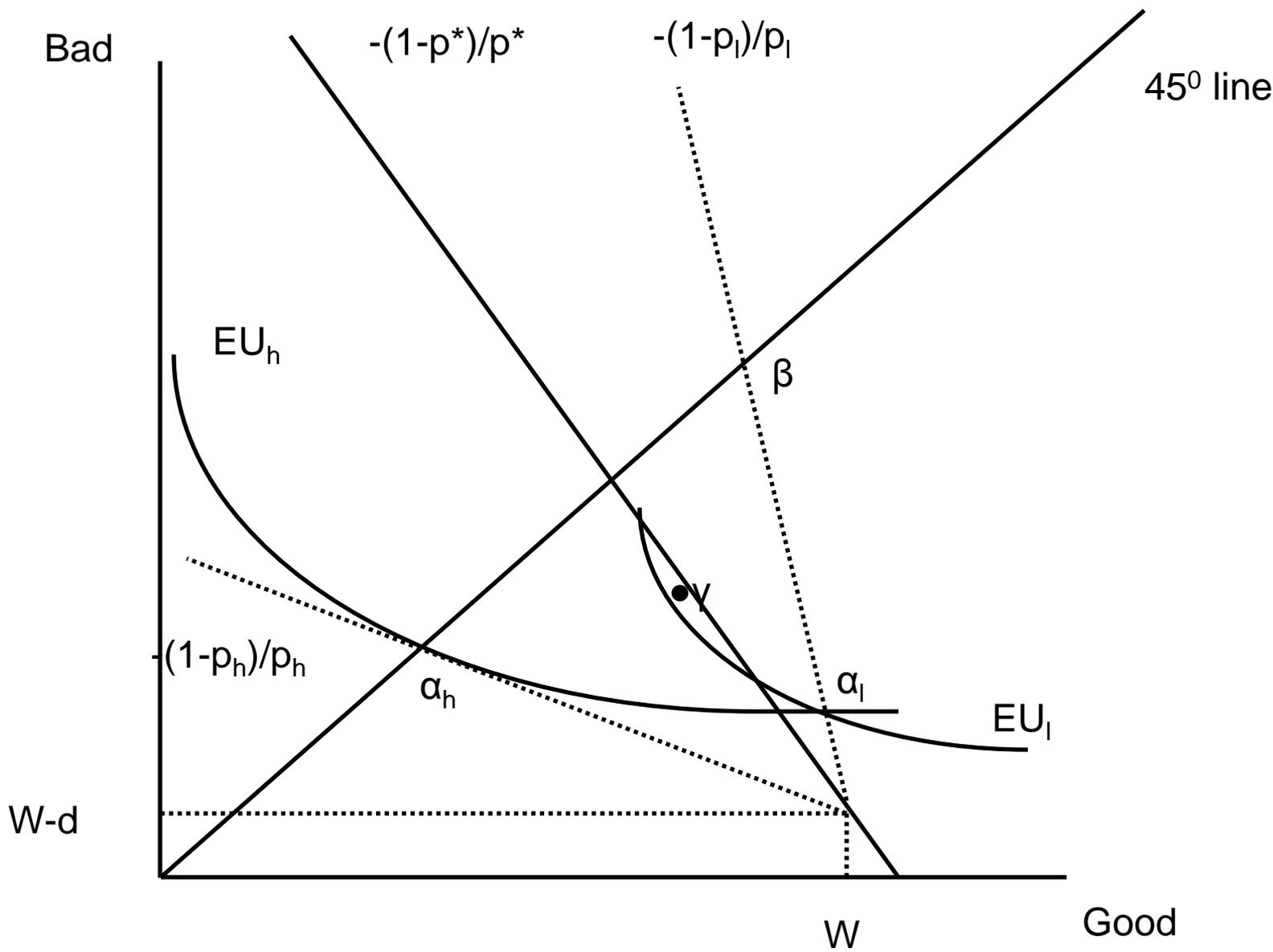




# Pooling equilibrium

- Given PC assumption, all pooled contracts must lie along fair odds line.
- Consider option (c).
- Holding  $W_1$  and  $W_2$  constant,  $|MRS_h| < |MRS_l|$  (single crossing).
- Consider plan (b). This plan would be preferred by low risk people (to the north east). So if offered, low risk would accept.

- High risk would not consider (b).
- Since (b) lies below the fair odds line for L, it would make profits.
- The exit of the low risk from plan (c) would make it unprofitable so this will not be offered.
- The existence of (b) contradicts the definition of an equilibrium, so a pooling equilibrium does not exist.



# Separating equilibrium

- Contract ( $\alpha_h$  and  $\beta$ )
  - $\alpha_h$  provides full insurance in PC situation for H, while  $\beta$  does the same for L
  - But H would prefer  $\beta$
  - Insurers would lose money pricing  $\beta$  for L and getting H customers
  - Not a possible equilibrium

# Constructing a separating equilibrium

- Any contract north of  $EU_h$  would be preferred to  $\alpha_h$ .
- Any contract between  $\beta$  and  $\alpha_l$  will be picked by the high risk person, so the low risk option will not occur there.
- The optimal contract for L must be to southeast of  $\alpha_l$  to prevent the high risk from picking.
- But any point to the southeast of  $\alpha_l$  will not be picked by the low risk person.
- Only possible solution is  $(\alpha_h, \alpha_l)$ .

# Existence

- Candidate solution is  $(\alpha_h, \alpha_l)$
- Note however that at  $\alpha_l$ , which has zero profits, one can offer  $\gamma$  and make greater profits – sell to both customers – since it is below the fair odds line, will make a profit.
- No separating equilibrium (depends where the average fair odds line lies).