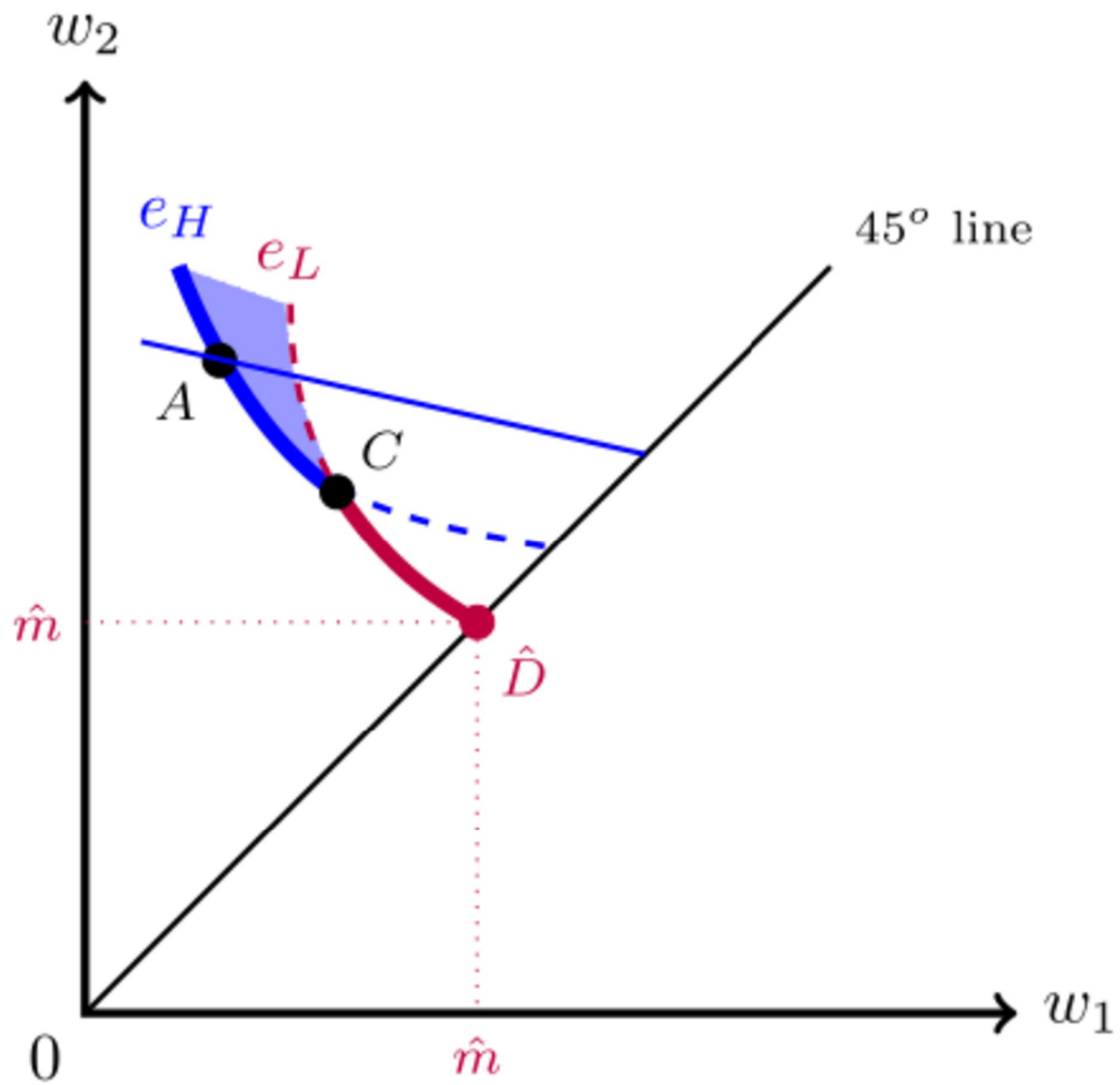
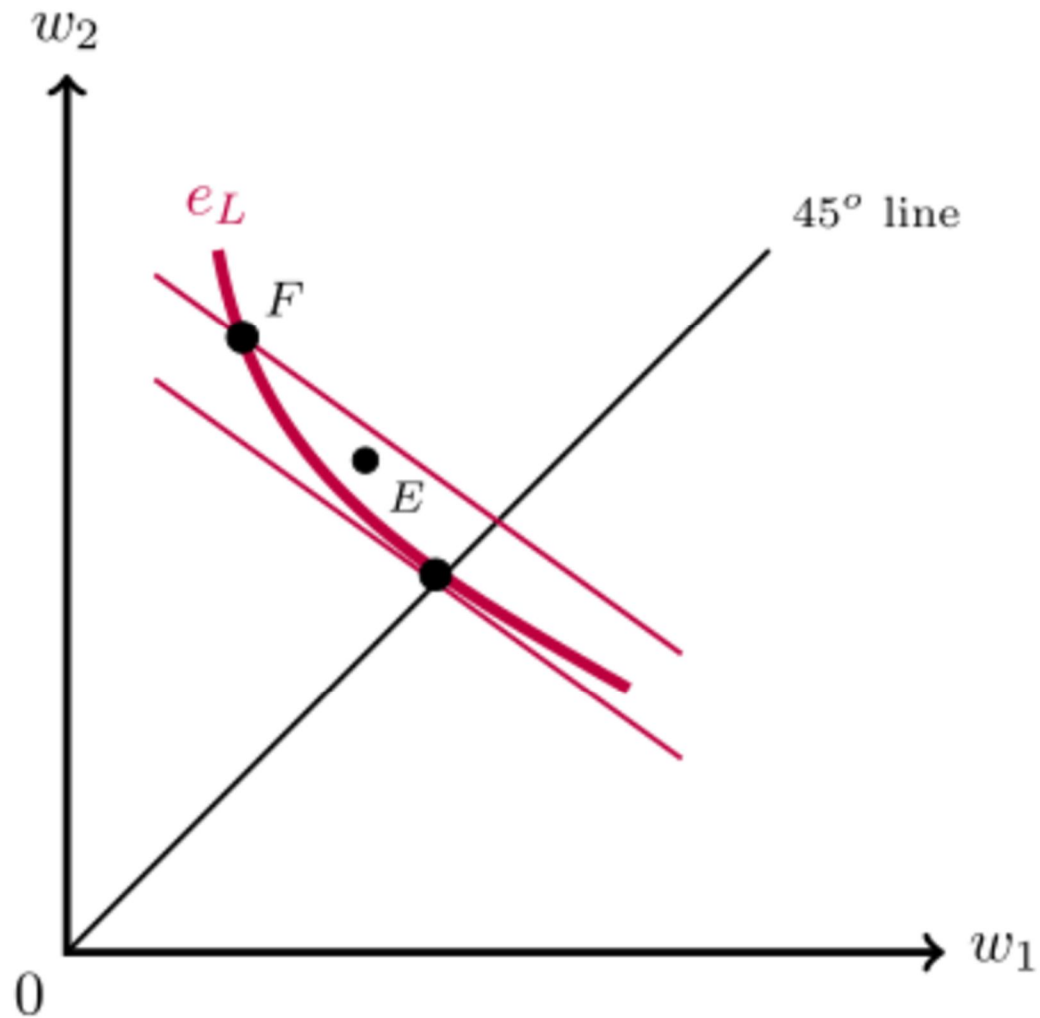
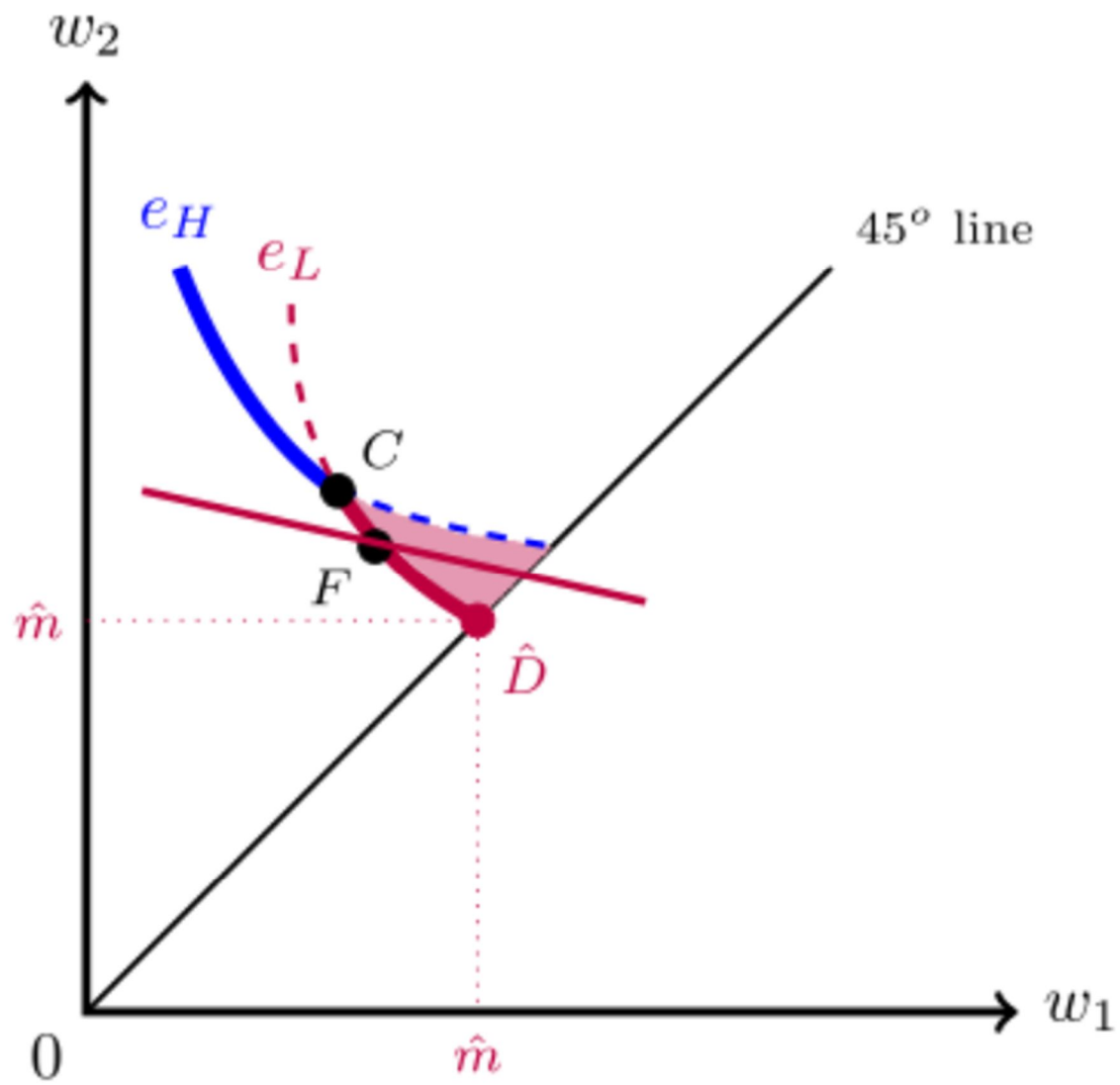


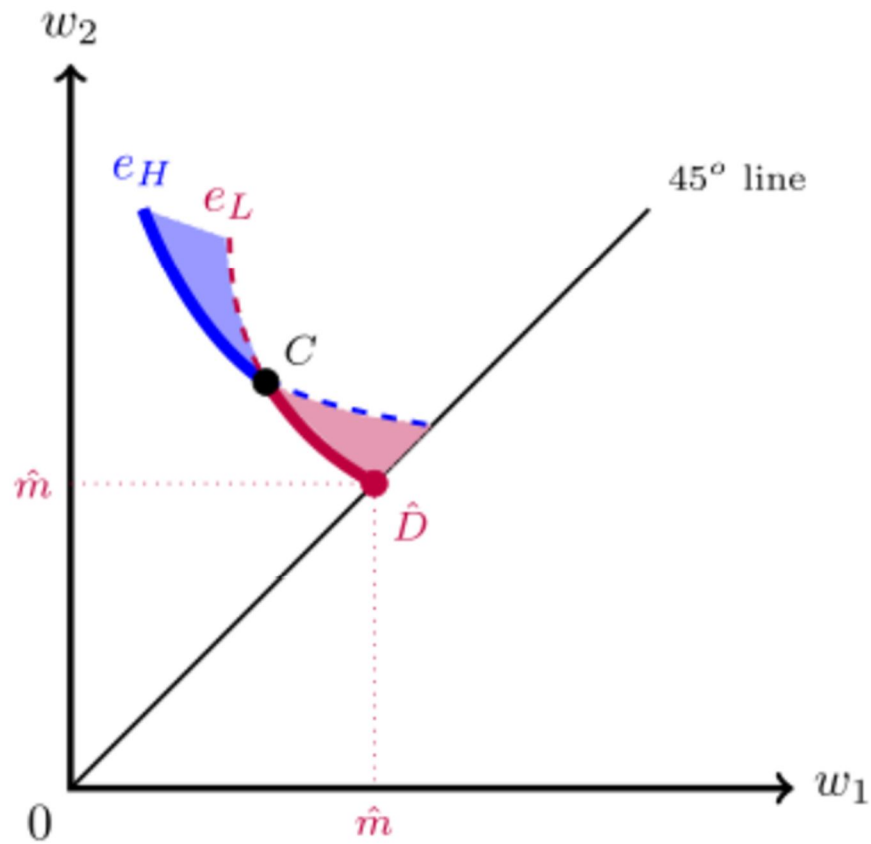
*If the Agent chooses  $e_H$  with both contracts  $A$  and  $B$ , then both Principal and Agent strictly prefer  $B$  to  $A$ .*





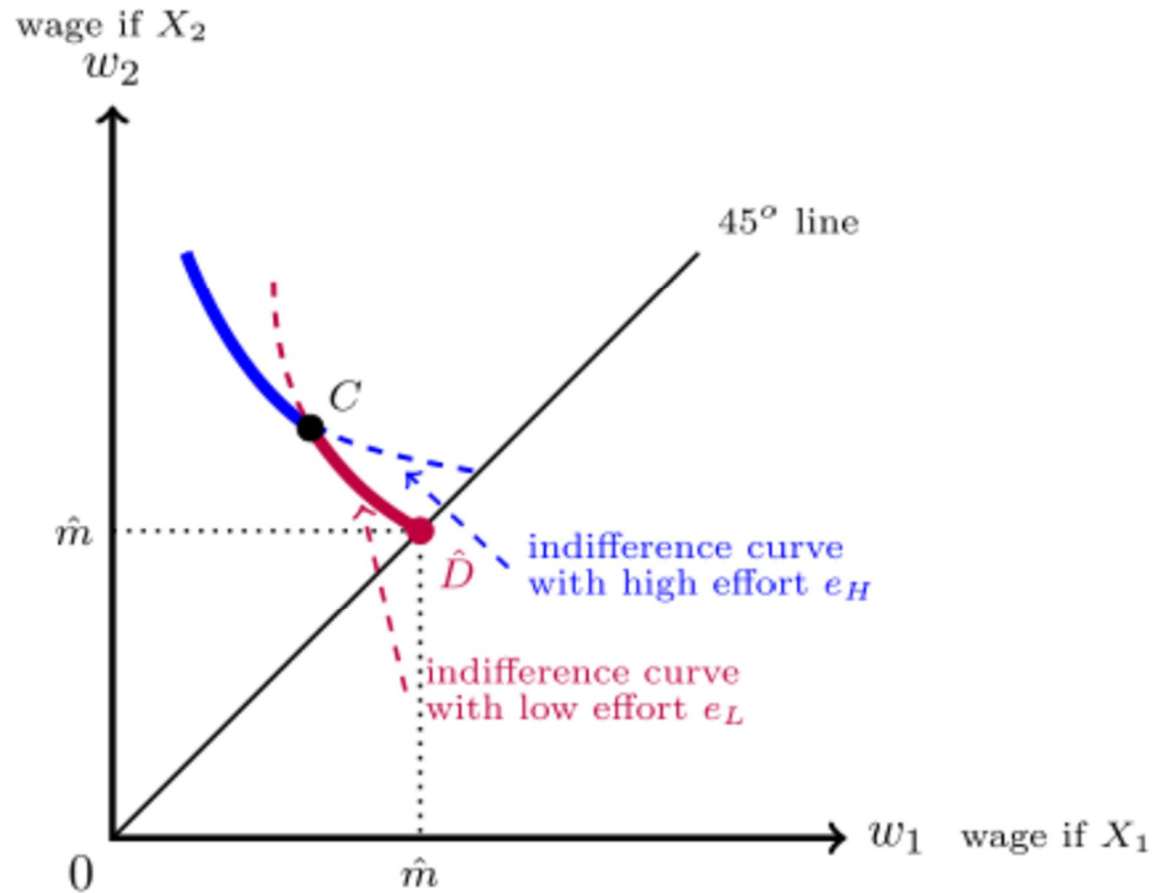
*If the Agent chooses  $e_L$  with both contracts  $E$  and  $F$ , then both Principal and Agent strictly prefer  $E$  to  $F$ .*





The only two candidates for Pareto efficiency on the  $\hat{u}$ -utility locus are  $C$  and  $\hat{D}$ . Which of the two is Pareto efficient depends on how the Principal ranks them:

- if  $\hat{D} \succ_P C$
- if  $C \succ_P \hat{D}$



The only two candidates for Pareto efficiency on the  $\hat{u}$ -utility locus are contracts  $C$  and  $\hat{D}$ .

- if  $\hat{D} \succ_p C$  then  $\hat{D}$  is the only Pareto efficient contract on the  $\hat{u}$ -utility-locus of the Agent
- if  $C \succ_p \hat{D}$  then  $C$  is the only Pareto efficient contract on the  $\hat{u}$ -utility-locus of the Agent



EXAMPLE.

$$X_1 = 300 \quad \text{and} \quad X_2 = 500 \quad e_L = 1 \quad \text{and} \quad e_H = 2$$

$$U_P(\$m) = m \quad U_A(m, e) = \sqrt{m} - e$$

$$\text{probability of } X_1 = \begin{cases} \frac{1}{2} & \text{if } e = 1 \\ \frac{1}{12} & \text{if } e = 2 \end{cases}$$

Find a Pareto efficient contract that gives utility 8 to the Agent.

# Principal-Agent optimal risk sharing with zero initial wealth

**Constrained Pareto-efficient contracts  
on the sides of the Edgeworth box**

**CASE 1: the Principal is risk averse, the Agent risk neutral**



$0_P$



$0_A$

**CASE 2: the Principal is risk neutral, the Agent risk averse**

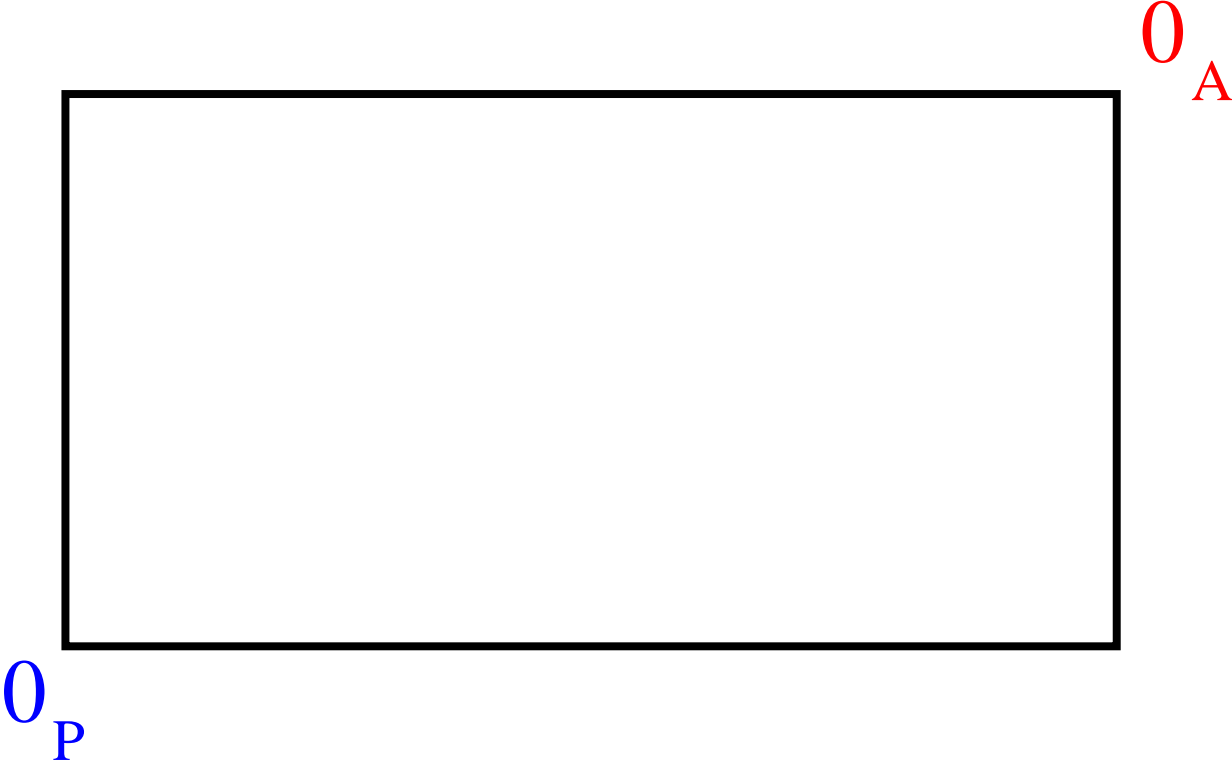


$0_P$



$0_A$

**CASE 3: both Principal and Agent are risk averse**



$0_P$



$0_A$