

# A numerical example of ad valorem tax

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# 1. Starting point

- Let
  - $I = 18$
  - $P_C = 3$  and  $P_F = 3$
- Budget line now is
  - $18 = 3F + 3C$
- Assume that the consumer consumes at
  - $(F^*, C^*) = (3, 3)$

## 2. Collection of ad valorem tax

- There is a tax in F  
 $t_F = 50\%$
- The consumer's budget constraint changes  
 $18 = 3F + (1/2)(3F) + 3C$   
 $18 = (4.5)F + 3C$
- Assume that the consumer consumes at  
 $(F^*, C^*) = (2, 3)$
- What is the amount of tax?  
 $(1/2)(3)(2) = 3$  baht

### 3. Lump sum tax

- Now consider the case that the government collects lump sum tax for 3 baht
- The consumer's budget constraint changes
$$(18 - 3) = 3F + 3C$$
$$15 = 3F + 3C$$
- Check that this line pass through
$$(F^*, C^*) = (2, 3)$$
- However, at  $(2, 3)$ 
$$MRS \neq (P_F/P_C)$$