

**Challenging Conventional Wisdom:  
Theoretical (Ir)relevance of Statutory Incidence of Ad Valorem Taxes**

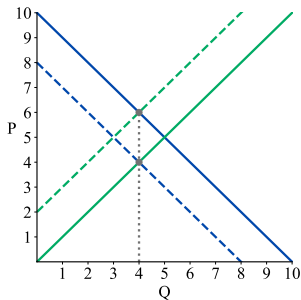
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Working Paper

## (Ir)relevance of statutory incidence for per unit vs. ad valorem taxes

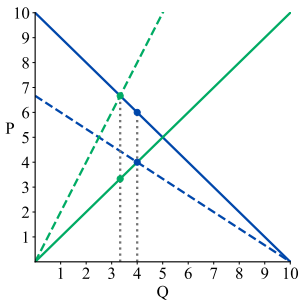
(a) Irrelevance per unit tax

$$(t_D = t_S)$$



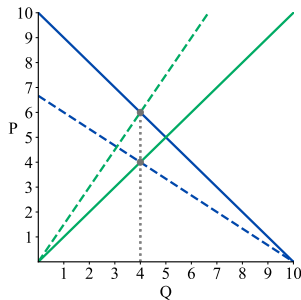
(b) Strong relevance ad valorem

$$(\tau_D = \tau_S)$$



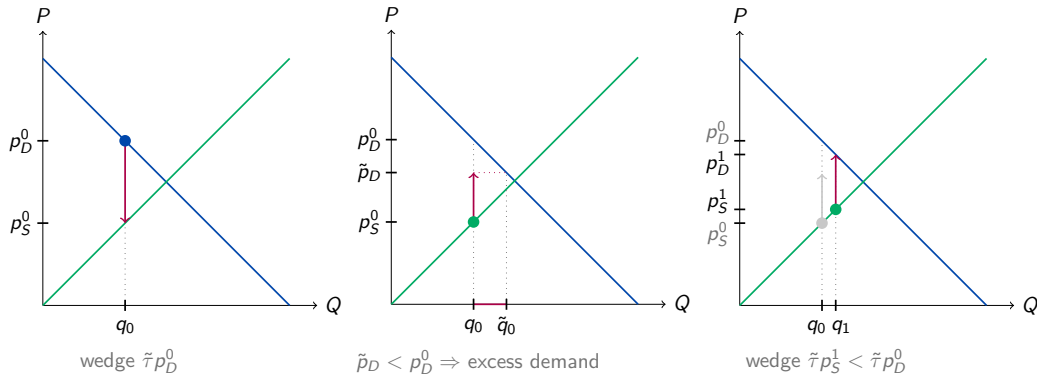
(c) Weak irrelevance ad valorem

$$(\tau_D > \tau_S)$$



**Notes:** This figure illustrates in classic price-quantity diagrams the (ir)relevance of statutory tax incidence for per unit and ad valorem taxes. Downward-sloping, solid blue lines correspond to inverse linear demand curves. Upward-sloping, solid green lines correspond to inverse linear supply curves. Dashed blue and green lines account for taxes when levied on the supply and demand side, respectively. Panel (a) shows that for a per unit tax ( $t_D = t_S$ ), the statutory incidence does neither affect equilibrium quantity nor prices. Panel (b) demonstrates the economic relevance of statutory tax incidence for fixed ad valorem tax rates ( $\tau_D = \tau_S$ ). Panel (c) illustrates the case where different ad valorem tax rates on the supply side and the demand side ( $\tau_D > \tau_S$ ) lead to the same equilibrium (the case of weak irrelevance).

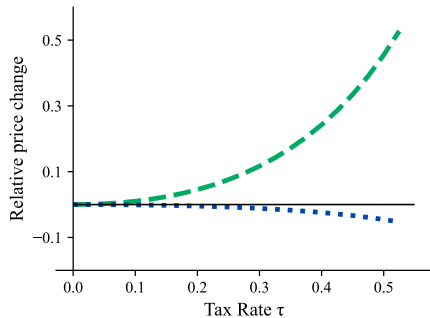
## Intuition for failure of strong irrelevance of statutory incidence



**Notes:** This figure illustrates in classic price-quantity diagrams the intuition for the failure of strong irrelevance of statutory incidence for ad valorem taxes. Downward-sloping, solid blue lines depict (inverse) linear demand curves. Upward-sloping, solid green lines correspond to (inverse) linear supply curves. Panel (a) shows the equilibrium if the tax is levied fully on the supply side. Panel (b) shows the effect immediately after shifting the statutory incidence entirely on the demand side, including corresponding excess demand for consumer-facing  $\tilde{p}_D$ . Panel (c) shows the response to excess demand, letting the supplier price increase until demand equals supply again (note that  $p_D^1 > \tilde{p}_D$ ).

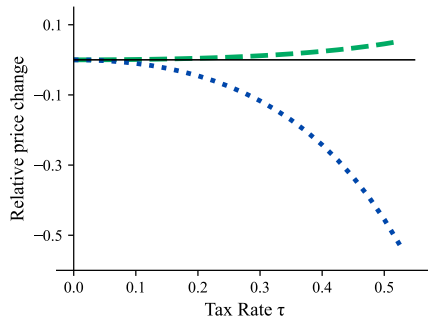
## Effect of shifting the statutory incidence from the supply to the demand side

(a)  $\epsilon^S = 0.1, \epsilon^D = -1$



—  $\frac{dp_S}{p_S}$       ···  $\frac{dp_D}{p_D}$

(b)  $\epsilon^S = 0.1, \epsilon^D = -0.01$

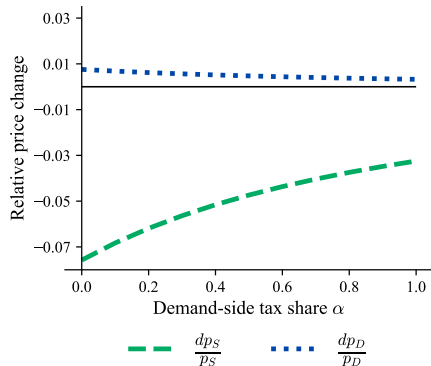


—  $\frac{dp_S}{p_S}$       ···  $\frac{dp_D}{p_D}$

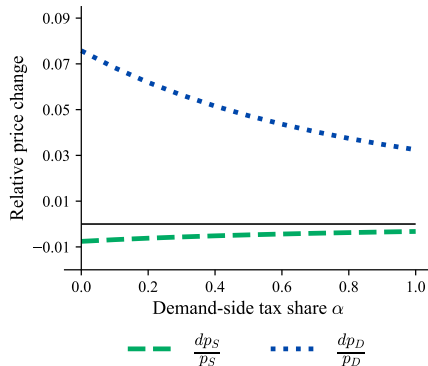
**Notes:** This figure shows numerical examples for the effect of changing the demand-side statutory incidence from  $\alpha = 0$  to  $\alpha = 1$  on relative price changes. Each panel shows the effect on the relative supply-side price change in blue and on the relative demand-side change in green for different levels of the tax rate  $\tau$ .

## Numerical Examples for Effect of a Change in Tax Rate on Relative Price Changes

(a)  $\epsilon^S = 0.1, \epsilon^D = -1$



(b)  $\epsilon^S = 0.1, \epsilon^D = -0.01$



**Notes:** This figure shows numerical examples for the effect of changing the tax rate from 0.4 to 0.45 on relative price changes. Each panel shows the effect on the relative supply-side price change in blue and on the relative demand-side change in green for different levels of the demand-side tax share  $\alpha$ .