

the tax added to a sale and the arithmetic of owning a small piece of a company

The tax on goods and services *

- the tax is charged on the **taxable value**, the price before tax, and is then added on top of it
- the **rate** is a **percentage** fixed for each kind of good, so $\text{tax} = \text{taxable value} \times \text{rate}$
- for a sale **within one state** the tax splits into two equal halves, one for the centre and one for the state, each at **half the total rate**
- for a sale **between two states** a single combined tax is charged at the **full rate** instead of being split
- so an 18% rate means 9% plus 9% within a state, and a single 18% across state lines. The **total is the same** either way
- the **invoice value** is the taxable value plus the tax, which is what the buyer actually pays

The relations used in every sum

tax charged on a sale $T = \frac{r}{100} \times V$

invoice value, what the buyer pays

$$I = V + T = V(1 + \frac{r}{100})$$

recovering the taxable value from the invoice

$$V = \frac{I}{1 + \frac{r}{100}}$$

within one state, the rate splits in half

$$\frac{r}{2} + \frac{r}{2} = r$$

tax the dealer actually pays over $T_{\text{net}} = T_{\text{out}} - T_{\text{in}}$

Consumer _____

Retailer _____

Wholesaler _____

Manufacturer _____



the four stages an item passes through, each rung a higher price than the one below: every dealer along the way hands over tax only on the step they added, and the consumer on the top rung is the one who finally bears the whole amount

the last line is the whole idea of the credit: a dealer pays tax only on the value that they themselves added, since the tax already paid on their purchase is set against the tax collected on their sale