

Fiscal Policy

Who pays taxes? A short introduction to tax incidence

*You may think you know who pays taxes, but economics may have some surprises for you, as explained by **Antoine Bozio**, of the Institute for Fiscal Studies*



The most inelastic side of the market pays the tax

Who pays taxes? This may sound like a simple question, but many politicians don't seem to know the answer. Nor do a great many journalists. In fact, if there's one important economic concept which almost no-one in the general public seems to understand, it's "tax-incidence" – the economic study of who really pays taxes.

This ignorance has big implications for public debate about tax policy. Politicians, journalists and lawyers often make statements about taxation that simply don't make sense. Voters often favour policies which have the opposite effect to the one they expect. It is therefore an absolute "must" for any economics student to understand tax incidence and, if possible, to be able to explain it to friends and family.

The basics of tax incidence

You might think it's easy to work out who pays a tax – just look at who's handing over the money. Beer-drinkers pay alcohol duties when they buy a pint; businesses pay corporation tax when they file their accounts, and so on – it all seems straightforward. But here's where an economist has to dig a bit deeper.

The first step is to understand that the person handing over their cash to the government is not *necessarily* the person who is really paying the tax. To use the economic jargon, there is a difference between 'statutory incidence' (who the *law* says pays the tax) and 'economic incidence' (who is *really* made worse off by the tax).

Take an example: companies in the UK are supposed to pay a tax (called 'National Insurance employer's contribution') for each of their employees. As the name suggests, this tax is supposed to be paid by the company, not the worker. Which sounds like a great idea – politicians are keen for businesses to 'pay their fair share', after all. But what if the company simply lowers the worker's wage by the amount of

the tax? Then the tax isn't really being paid for by the company at all – it's being paid for by the worker, through lower wages. So the company hands over the money ('statutory incidence') but the *worker* is made worse off ('economic incidence').

Is this what really happens in practice? Study after study suggest that it is. When countries increase their payroll taxes (like National Insurance) it leads to a reduction of wages and not a reduction in profits. So even when the law says the company must pay, it's the worker who is made worse off. The first rule of tax incidence is therefore that the statutory incidence is different from the economic incidence, and it is the latter that matters.

To see what happens when politicians fail to understand this idea, consider the case of Illinois's health care tax. Earlier this year the Governor of Illinois decided to introduce a payroll tax to pay for health care and he was adamant that companies should pay it, not workers. The draft law even states that the tax "shall not be withheld from wages, or otherwise collected from employees, or reduce the compensation paid to employees". This may sound perfectly sensible but, as we shall see, it's a bit like making a law stating that apples should fall upwards, not downwards. Just as no apple can defy the laws of gravity, no policy can defy the law of supply and demand.

To understand who is really paying a tax, we have to understand that both sides of the market (producers and consumers, or employers and employees) are trying to shift the burden of the tax onto the other side. No-one likes paying taxes, after all. The producer will try to shift taxes onto the consumer by increasing prices, the employer will shift taxes onto employees by reducing wages. Ultimately the tax burden will be *shared* – but who pays the biggest share will depend on how easy it is for both sides to avoid the taxed activity.

Let's look at this in a more rigorous way. Figure 1 shows what would happen to the market for vodka if the government (possibly worried about drunkenness) introduced a Vodka Tax. Suppose the tax is meant to be paid by the consumer when he buys his bottle of Smirnoff at the off-licence. In Figure 1, the price received by the producer (as shown by the supply curve) is less than the price paid by the consumer – which includes the tax on vodka (shown by the Supply curve + tax). The equilibrium without tax would have been at E, but with the tax it would be E'.

Fig 1: Tax incidence in the market for vodka

But here's the critical point: the price paid by the vodka-drinker doesn't go up by the *whole* amount of the tax. The effect of the tax is to move us along the vodka-drinkers' demand curve, so that a new price equilibrium is reached with consumers paying a higher price (P2), but producers receiving a lower price (P1). Which means that the burden of the tax is *shared* between producers and consumers.

The amount of tax paid by the consumer is the difference between the after-tax price and the price before the introduction of the tax (P2-P) while the tax paid by the producer is the difference between the equilibrium price before and the price before-tax received by the producer (P-P1).

So we know that the tax is shared, regardless of who the government says pays the tax. But how do we know who pays more, the consumer or the producer? The answer is very simple: it depends on how easy each side finds it to shift the tax onto the other. If consumers are very sensitive to prices, then firms will find it hard to pass

taxes onto them. But if consumers are unresponsive to prices, then they'll probably end up paying the lion's share of any tax.

Economists have a jargon word (don't they always) for 'sensitivity to price' – 'elasticity'. If demand is very sensitive to price, economists say that 'the demand curve is highly elastic'. Demand for Diet Coke, for example, is likely to be very elastic, because Diet Coke drinkers can always switch to Diet Pepsi. So if Diet Coke gets expensive compared to Diet Pepsi, demand for Diet Coke will fall sharply. In a supply and demand diagram, an 'elastic' curve is quite flat – a small change in price leads to a large change in quantity.

Demand for cigarettes, in contrast, is likely to be 'inelastic'. Smokers tend to be addicted, so they don't respond very much to price differences. A very inelastic supply/demand curve is quite steep – even a large change in price doesn't have much effect on quantity.

This brings us on to the most important rule of tax incidence – if you understand this, then you already understand taxes better than 99% of politicians, voters and journalists. The general rule of tax incidence is this: **it is the most inelastic side of the market that pays the most tax**. Let's look at Figure 2 to see why.

Figure 2: Tax incidence with different demand and supply elasticity

In Figure 2 (a) we see a market with elastic demand (like Diet Coke). If a tax on Diet Coke is introduced, Coca Cola can't shift the tax onto consumers (who will switch to Diet Pepsi), so they have no choice but to pay most of it themselves. In Figure 2 (b), by contrast, we see a market with inelastic demand (like cigarettes). Smokers want their cigarettes no matter what, so tobacco companies find it easy to shift any tobacco taxes onto the consumer.

Applied analysis: who is paying each tax?

That's the basic theory of tax incidence, but measuring tax incidence in practice is not easy. Many things happen in the economy that can affect prices, wages and profits and that are not related to taxation. To be able to identify exactly the tax incidence, one needs to be able to isolate what is purely a tax effect from what is due to macroeconomic shocks. So empirical studies tend to come to solid conclusions with some taxes but more uncertain answers with others.

The payroll tax, as we've already seen, seems to be robustly paid by employees (or paid by labour). Increases of this tax in different countries have all led to a reduction of net wage and not a reduction in profits.

The sales and excise taxes (like VAT and alcohol duties) are usually seen as being paid by consumers through higher prices, but some recent research has shown that the tax incidence depends a lot on the degree of competition among suppliers.

The incidence of the corporate tax is a more debated issue. A common but wrong assumption is that corporations pay the tax – wrong because *corporations cannot pay taxes* (another fact poorly understood by politicians). Owners of corporations (capital), employees of corporations (labour) or consumers can all pay the corporation tax, but no robust study has measured who is finally paying the corporation tax.

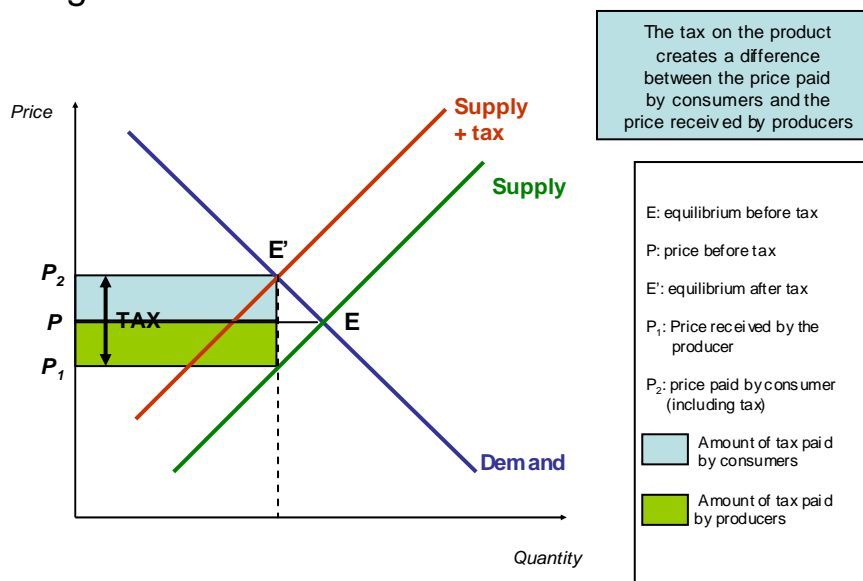
Finally, income tax is traditionally viewed as being paid by those who hand over their money to the Inland Revenue, but the reality is probably different. The fact

that banks offer a higher rate of interest on taxable savings accounts than on tax-free ones is a sign that some of the tax burden is shared with other groups of the economy.

Tax incidence matters. It is a theory, confirmed and validated by numerous empirical studies that has wide ranging policy implications. The key point to remember is that the one who is paying a tax is rarely the one who writes the cheque to the Treasury. It is the one who is unable to shift the tax to others in the economy. **The most inelastic side of the market pays the tax.**

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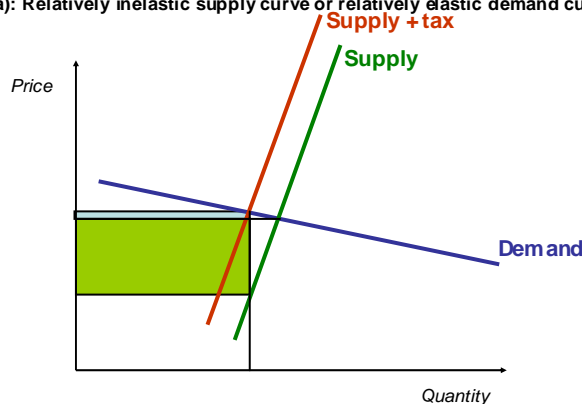
Figure 1: Tax incidence in the market for vodka



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Figure 2: Tax incidence with different demand and supply elasticity

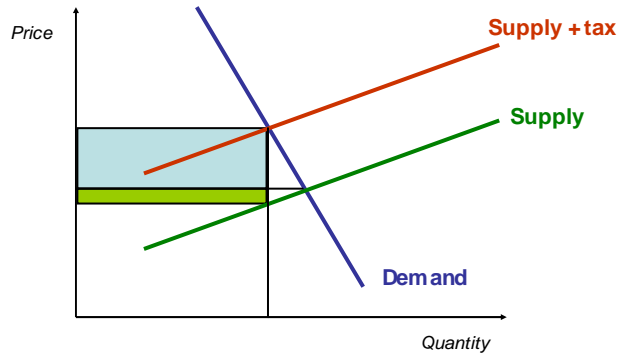
(a): Relatively inelastic supply curve or relatively elastic demand curve



The tax burden falls on the producer side. For instance, taxes on housing fall mostly on landlords, as the supply of housing is very inelastic. But it is not completely inelastic in the long term, so the tax is also borne by tenants at some point.

Figure 2

(b): Relatively elastic supply curve or relatively inelastic demand curve



The tax burden falls on the consumer side.
For instance, the demand for cigarettes is very inelastic (people are addicted and tend to consume the same quantity even with a higher price).