Tax Facts

A knowledge-based series by the Tax and Transfer Policy Institute

Economic Fundamentals: Deadweight Loss

Tax policy experts often talk about 'good' and 'bad' taxes. But what does this mean? Why are some taxes better than others? How can you tell? Deadweight loss is one of the most important concepts used to answer these questions. Deadweight loss is also used to help economists understand the costs of monopolies, externalities, subsidies and price-controls; here we will only consider deadweight loss and taxes.

What is deadweight loss?

The economy is made up of a series of transactions or 'trades'. For example, a trade takes place when a person buys food, sells their work for a wage, or buys insurance. In a properly functioning competitive market, trades take place when both people participating benefit. If the price of a good or service is higher than it is worth to the consumer, they will choose not to buy it. If the price of a good or service is too low to sell without making a loss, the producer will choose not to produce or sell it. This means that every trade that takes place in an economy should make both parties to the trade better off. Each trade increases the overall level of well-being in the economy. These transactions are important: A large proportion of people's well-being and consumption come from these types of trades.

Now suppose the government introduces a tax. Taxes almost always result in increased prices for consumers and lower revenues for producers –the *tax incidence*– regardless of who the law requires to pay the tax. This means that if the product was previously only just within a consumer's price-range, the tax would make it too expensive. The consumer will choose not to buy it or to buy less of it. If the producer was previously only just able to produce and sell their product without making a loss, the tax would mean that they would make a loss. They will choose not to produce the product or to produce less of it. Both buyers and sellers benefited before the tax, but its introduction means that the trade does not take place and neither benefits. This reduces the overall level of well-being in the economy.

The term *deadweight loss* is used to describe the loss of benefits for consumers and producers that occurs when something prevents mutually beneficial trades from taking place. This is often also referred to as an 'efficiency loss'.

How can deadweight loss from tax be avoided?

Deadweight loss reduces the overall level of well-being in the economy, so it is desirable to minimise it. At the same time, governments need to raise revenue in order to provide public goods that contribute to well-being, to regulate and ensure the smooth functioning of the economy and to create a social safety net. To raise revenue without causing deadweight loss, a government would need to levy a tax that ensured all mutually beneficial trades took place. This is hard to achieve in practice. A tax that requires everyone to pay the same amount, with no exceptions, would have no behavioural impact. This means it would have no deadweight loss. However, implementing a tax like this is infeasible in practice. Individuals with no means to pay would still be liable for the tax, collecting the tax is extremely difficult and the tax would raise equity concerns. The problems with implementing such a tax are illustrated by the unpopularity of the 'poll tax' introduced in the United Kingdom in 1987 and repealed in 1992.

Other types of taxes usually result in some form of behavioural change, meaning they result in deadweight loss. If a government levies a tax on people's wages, some people will choose to work less even though they previously were content working more. If the government chooses to levy the tax on people who invest in the stock market, people might make alternative investments, such as property, even though the stock market was previously the most worthwhile investment.

To minimise deadweight loss, taxes should be levied on goods or services that are still likely to be traded even if the price changes (based on their *elasticity*). If a government levies a high tax on one specific product, people will buy other, less preferred products. For example, if the government taxed orange juice, more people might buy apple juice instead. That would cause deadweight loss, with some orange juice vendors and some orange juice drinkers losing benefits. If instead, the government levied a lower tax on all juices, people would be less likely to switch juices to avoid the tax (but they might consume more soft drinks or milk). Even better, the government could levy a very low tax on everything in the supermarket, so that people's shopping baskets did not change at all [see our tax fact on **broadening the tax base and lowering tax rates**]. This would still have some deadweight loss, as people might choose not to buy as many groceries as they would have preferred, but the efficiency loss is likely to be much lower than if the tax was levied on one specific product. This principle underlies much of the economics of taxation policy: taxes should be levied in a way that is least likely to change people's behaviour. The Australian goods and services tax (GST) was designed based on this principle.

There are important exceptions to this principle. For example, when a market failure exists a tax can be used to try to correct this market failure [see our tax fact on **taxing negative externalities**]. The Australian GST deviates from the broad-base principle by excluding certain foods and medical services based on the belief that these goods and services are beneficial to society (that is, there are positive externalities). But if there is no market failure, and the goal is to raise revenue, a 'good' tax will do it in a way that changes the decisions of most consumers or producers as little as possible.

How does deadweight loss tie into the economic concept of supply and demand?

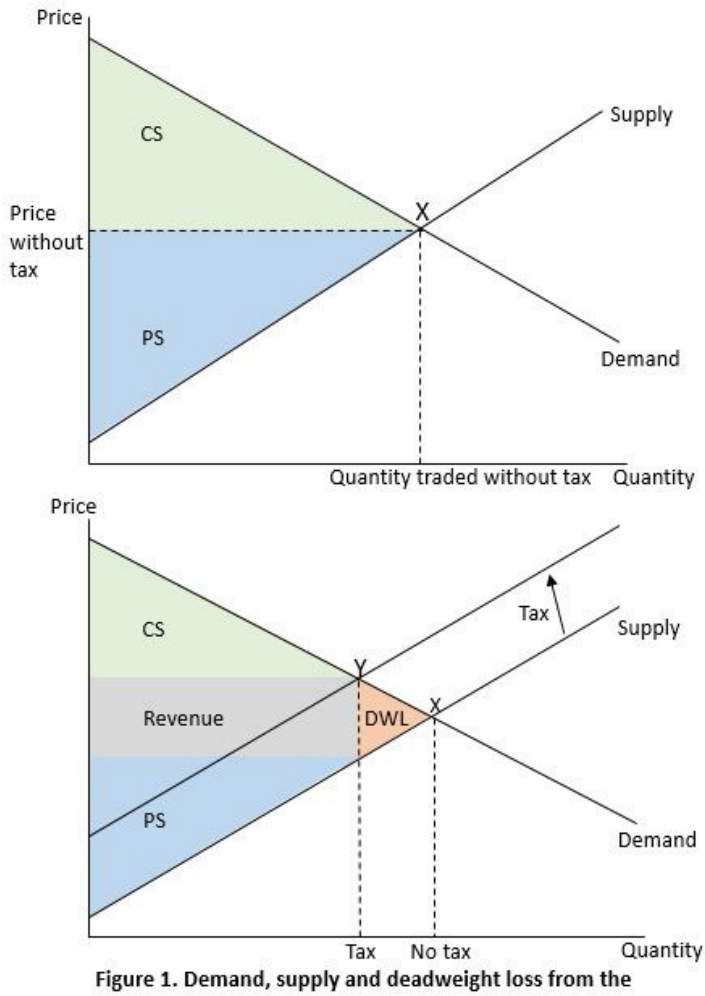

Figure 1. Demand, supply and deadweight loss from the introduction of a tax

Figure 1 shows a demand and supply diagram for the introduction of a tax. Without a tax, the market will be in equilibrium (producers will produce exactly the amount that consumers are willing to buy) at point X. Consumer surplus (the green triangle) is the benefit that consumers get from buying a good for a lower price than they were willing to pay. Producer surplus (the blue triangle) shows the benefit that producers get from selling the good for a higher price than they were willing to take.

Introducing a tax drives up the price of the good, as shown by the arrow. Now consumers will consume less of the good, leading to a new equilibrium at point Y. The tax revenue will equal the value of the tax multiplied by the (changed) quantity of the good consumed (the grey box).

Without a tax, there was no government revenue, but there was also a larger quantity of the good traded and larger producer and consumer surpluses. The tax means that a certain quantity of the good is no longer traded, which results in the orange shaded area. That portion of the consumer and producer benefits is lost. It is also not captured as revenue, because that quantity of the good is no longer being traded, so it cannot be taxed. This orange area graphically represents the deadweight loss.

Figure 1 also demonstrates why raising taxes efficiently matters. Deadweight loss does not only reduce the benefits available to producers and consumers, it also reduces the tax revenue that can be collected to spend on public goods and the social safety net.

Cite as: TTPI (2019), *Economic Fundamentals: Deadweight Loss*, Tax Fact #2, Tax and Transfer Policy Institute, Canberra.

More information

Contact the director at robert.breunig@anu.edu.au | Contact us at tax.policy@anu.edu.au
https://taxpolicy.crawford.anu.edu.au/

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