FRIDAY GRAPH: THE DEADWEIGHT COST OF TAXATION
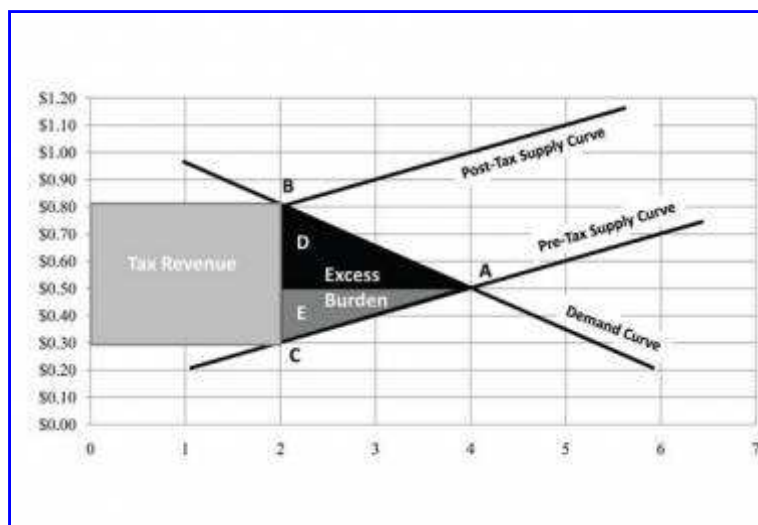
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The graph below, taken from this Cato Institute *Policy Analysis*, 'Congress Should Account for the Excess Burden of Taxation' (October 13, 2010) illustrates an important economic concept.

Figure 1

The Excess Burden of a Hypothetical Excise Tax on Apples

(click to enlarge)

As the paper explains:

> A well established principle of public finance holds that taxes impose costs on society beyond the amount of revenue government collects. When the government taxes Peter to pay Paul, Peter views his tax payment as a loss. Those tax payments do not represent a net welfare loss from a societal perspective because Paul experiences an offsetting gain. Taxes do impose costs on society at large, however, in that they encourage Peter not to engage in economic activities that would have benefited him and others. The loss of that economic output is what economists call the "excess burden" or "deadweight loss" of taxation. Virtually all taxes impose deadweight losses…

> Economists have confirmed empirically what most laymen understand intuitively: "whatever you tax, you get less of." Taxes on labor, such as income and payroll taxes, tend to reduce the amount people will work. Consumption taxes, like sales, excise, and value-added taxes, reduce the consumption of the taxed items. Capital taxes, such as those on property, dividends, or capital gains, decrease the desirability of investing and reduce the amount of savings available for capital investment. All of these predictable changes in human behavior reduce output (present or future) in some form, thereby reducing the economic welfare of consumers, producers, or both.

Economists measure this loss in terms of reductions in consumer and producer surpluses. In a competitive market, the equilibrium price at which supply matches demand permits many consumers to purchase goods at a cheaper price than they are willing to pay. Imagine you can purchase an apple in the market for 50 cents. If you were willing to pay 50 cents, there would be no net value to you from the transaction: you would give up 50 cents, and receive the equivalent value in the form of an apple. You would be indifferent about keeping your money or buying the apple. But if you were willing to pay 90 cents for the apple, buying an apple for 50 cents increases your net welfare by 40 cents. The amount by which a consumer's willingness to pay exceeds the price is what economists call the "consumer surplus." A parallel calculation applies to producers. In a competitive market, some producers may have been willing to supply apples for only 25 cents, but because the price they get in the market is 50 cents, they enjoy a "producer surplus" of 25 cents.

A sales tax of 50 cents on apples will shift the supply curve up by that amount since producers will still have the same cost per apple as under the old supply curve, but will have to remit 50 cents to the government for each apple sold. This shift in supply will result in consumers demanding a smaller quantity of apples, since the new equilibrium price will be higher (say, 80 cents). Consumers who previously had been willing to pay between 51 and 79 cents for an apple will no longer purchase them. Their loss in welfare—the reduction in their consumer surplus—will be the difference between their willingness to pay and the pretax market price. For each apple no longer purchased, there would be a parallel, though not necessarily equal, reduction in producer surplus that arises due to lower sales of apples.

Figure 1 illustrates these ideas. The pre-tax supply curve intersects the demand curve at point A, where apples sell for 50 cents. An excise tax of 50 cents shifts the supply curve upward to a new equilibrium point B that is 50 cents higher than point C on the pre-tax supply curve. The shaded rectangle shows the amount of tax revenue collected by the government, while triangles D and E respectively show the lost consumer and producer surplus resulting from the tax.

The conventional way of measuring excess burdens is to compare them to the amount of taxes raised. In Figure 1, these losses are approximately one third of total taxes collected. Note that the amount of these welfare losses is smaller than the full market value of whatever production is lost to taxation. This amount is the average excess burden for the hypothetical excise tax.

… a far useful concept for assessing the welfare losses associated with increased taxes is the *marginal excess burden* (MEB). In Figure 1, suppose we increased the 50-cent excise tax to 60 cents. As one moves higher up the demand curve, the ratio of the *additional* deadweight loss to the *additional* tax revenue collected will be higher than the previous ratio, which represents the average deadweight loss. Using the *average* ratio of deadweight losses to tax revenue will therefore understate the actual welfare loss associated with that tax increase. The MEB is thus the more accurate and appropriate measure.

The marginal excess burden of many taxes is large. A 1994 Business Roundtable study found that it was around 18 cents for the marginal dollar of labour taxation and around 14 percent for the marginal dollar of consumption tax. More recently, the Treasury has recommended an MEB of 20 percent for cost benefit analysis of government projects.

In the context of financing the reconstruction of Christchurch, a recent *New Zealand Herald* editorial advocated higher taxes on the grounds that they would not harm the economy unless they reduced the

budget deficit (a Keynesian idea). This is incorrect: any feasible tax is harmful to growth. Some taxes are more harmful than others, and the higher the taxes the greater the economic harm. For income taxes, deadweight costs rise more than proportionately as the rate of tax increases. For example, if the rate of tax doubles, deadweight costs quadruple. Taxation should be viewed as a scarce resource, and there needs to be a high pay-off (taking deadweight costs into account) from tax-financed government spending.