

# Difference between formal and effective incidence of tax economics essay



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The 'incidence' of a tax refers to who bears the burden of the tax. We can distinguish between two types of tax incidence: formal incidence, meaning who is legally obliged to pay the tax, and effective incidence, meaning who actually bears the economic burden of the tax. The formal incidence and effective incidence of a tax will often be different owing to the potential for the tax burden to be passed on through the operation of the price mechanism. As will be shown below, the extent to which the tax burden can be shifted depends on a number of different factors.

In the UK context, one example of a tax where the effective incidence may differ substantially from the formal incidence is the National Insurance contributions tax. Employees are required to pay National Insurance contributions from the age of 16 until they reach state pension age, at a rate of 11% on earnings between £110 and £844 per week and 1% thereafter. Employers are required to pay additional National Insurance contributions at a rate of 12.8% of earnings above £110 per week. The formal incidence of National Insurance contributions therefore falls on both employees and employers in roughly equal proportions for earnings of up to £844 per week; for earnings above that amount, the formal incidence falls mostly on employers. In order to determine who bears the effective incidence of the tax however, it is necessary to consider the impact of National Insurance contributions on demand and supply for labour.

Figure 1 below depicts simplified hypothetical market demand and supply curves for labour in the United Kingdom, assuming perfectly competitive conditions. For simplicity, the upper limit of the wage rate is assumed to be £844 per week. Here, the supply curve for labour is shown as being relatively

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elastic compared to the demand curve for labour. The equilibrium wage level is shown at point E0. The effect of the imposition of a National Insurance contribution tax on employees is to shift the labour supply curve downwards, as the tax can be conceptualised as increasing the costs of production. The effect of the imposition of a National Insurance contribution tax on employers is to shift the labour demand curve downwards. The new equilibrium wage rate is shown at point E1. The aggregate tax revenue collected by the government is shown by the area within the large black rectangle. Of this, the blue shaded area is paid by employees and the pink shaded area by employers. In this case, it is clear that most of the tax burden falls on employers rather than employees. Hence, whilst the formal incidence of National Insurance contributions is borne roughly equally by employers and employees, the effective incidence is borne mostly by employers.

Conversely, if we assume that the supply of labour is relatively inelastic compared to demand for labour, then employees will bear more of the tax burden. This is illustrated in Figure 2 below.

Another example of a UK tax where the formal incidence differs substantially from the effective incidence is UK corporation tax. UK corporation tax is a flat rate tax levied on the taxable profits of limited companies and certain other organisations. Whereas the formal incidence of corporation tax falls on UK corporations, the effective incidence of the tax is borne by others including consumers, workers and shareholders. However, it is not clear how the tax burden is shared among these actors.

In the context of US corporation tax, the American economist Arnold Harberger devised a model to examine the long run effects<sup>[1]</sup> of corporate taxation, assuming a closed economy with a fixed supply of capital and labour and perfect mobility of capital between the corporate and non-corporate sectors (Harberger, 1964 and 1974). The Harberger model predicts that lower returns to capital in the corporate sector will drive capital into the non-corporate sector, increasing the demand for labour (as substitute for capital) in the corporate sector. In turn, labour will move out of the non-corporate sector and into the corporate sector. As a corporation tax increases the costs of production, the price of goods produced by the corporate sector will increase, leading to a contraction in demand. This will result in a decrease in output for the corporate sector and, if the corporate sector in the corporate sector is more labour intensive than the non-corporate sector, the overall demand for labour will shrink, resulting in lower wages. When the economy is in equilibrium, the overall tax burden will be borne by consumers (through price rises), workers (through wage reductions) and the holders of capital (through reductions to the return to capital in both the corporate and non-corporate sectors). The long-run effects will ultimately depend on the relative elasticity of demand and supply for goods and factors of production, on how easily capital can be substituted for labour, and on relative labour intensity between firms in the corporate and non-corporate sectors (Stiglitz, 2000).

In a more recent paper, Harberger revisits the general equilibrium model and shows how a four-sector open economy model (with corporate and non-corporate, tradeable and non-tradeable sectors) yields different results from

the two-sector closed economy model (Harberger, 2007). Because of the open-economy assumption, a change in the country's corporate tax rate cannot affect the return to capital (as capital can be sourced internationally); nor can it effect the international prices of tradeable goods and services. Accordingly, the tax burden can only be reflected in reduced wages and in the prices of non-tradeable goods and services (Harberger, 2007).

Harberger's revised model and its underlying assumptions remain open to criticism on the basis of over-simplification. Although acknowledging that the model is highly stylised, Harberger points out that in a "real-world setting", the complexity of the general-equilibrium relationships "across sectors, among factors and across product markets" makes it difficult to accurately measure the incidence of corporate income tax (Harberger, 2007, pp. 7-8). Hence, he concludes that it may be preferable to speak about corporate tax incidence in general terms only using a simplified model.

The implications of Harberger's revised model are endorsed in the current Mirrlees Review of the UK tax system launched by the Institute for Fiscal Studies under the chairmanship of Sir James Mirrlees. In the current working draft chapter on corporate taxation in the international context, the authors note the following in respect of source-based corporate income tax (Mirrlees et al, 2010, pp. 9-10, citations omitted, emphasis added):

... [I]n a small open economy with perfect capital mobility, shareholders are not affected at all by the presence of the source-based corporate income tax. Shareholders continue to earn the same after-tax rate of return on their investments ... with or without this tax. They simply invest less capital in the country with the source-based tax, and more capital elsewhere. With perfect

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capital mobility, the effective incidence of the tax is fully shifted away from owners of capital, and on to owners of other inputs that are less mobile. With immobile labour, the effective incidence of the source-based corporate income tax is likely to be borne largely by domestic workers. Lower investment implies less capital per worker and therefore less output per worker, which will result in a lower real wage. Under these conditions, the source-based corporate income tax then acts as a roundabout way of taxing domestic workers. While these assumptions may still be considered extreme, they have certainly become more realistic over time, as the world economy in general, and capital markets in particular, have become more integrated.

Mirrlees et al go on to cite recent empirical research by Hassett and Mathur (2006) and Arulampalam, Devereux, and Maffini (2007) confirming the prediction that higher source-based corporate income taxes are likely to depress domestic real wages. The authors conclude that it is preferable, from the point of view of economic efficiency, if the normal rate of return on capital is exempted from source based corporate taxation and replaced with higher direct taxes on labour income.

This paper has shown that the formal incidence of taxation can differ substantially from the effective incidence of taxation. The extent to which employers and employees share in the effective burden of the National Insurance contributions tax will ultimately depend on the relative elasticity of supply and demand for labour, rather than who is legally obliged to pay. The effective burden of corporate taxation is more difficult to ascertain and will depend on a multiplicity of factors, including the relative mobility of capital and labour. Ultimately, the tax system introduces distortions in a market

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economy and it is important that governments pay attention to which economic actors ultimately bear the costs of these distortions through an informed understanding of effective tax incidence.