Taxation and Economic Welfare

AEDE 4003

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Excess Burden of Taxation

- **Taxes transfer spending power from taxpayer to government – an *income* effect, which does not necessarily result in economic inefficiency**

- **Taxes may also distort consumer choices between goods – a *substitution* effect due to changes in relative prices**

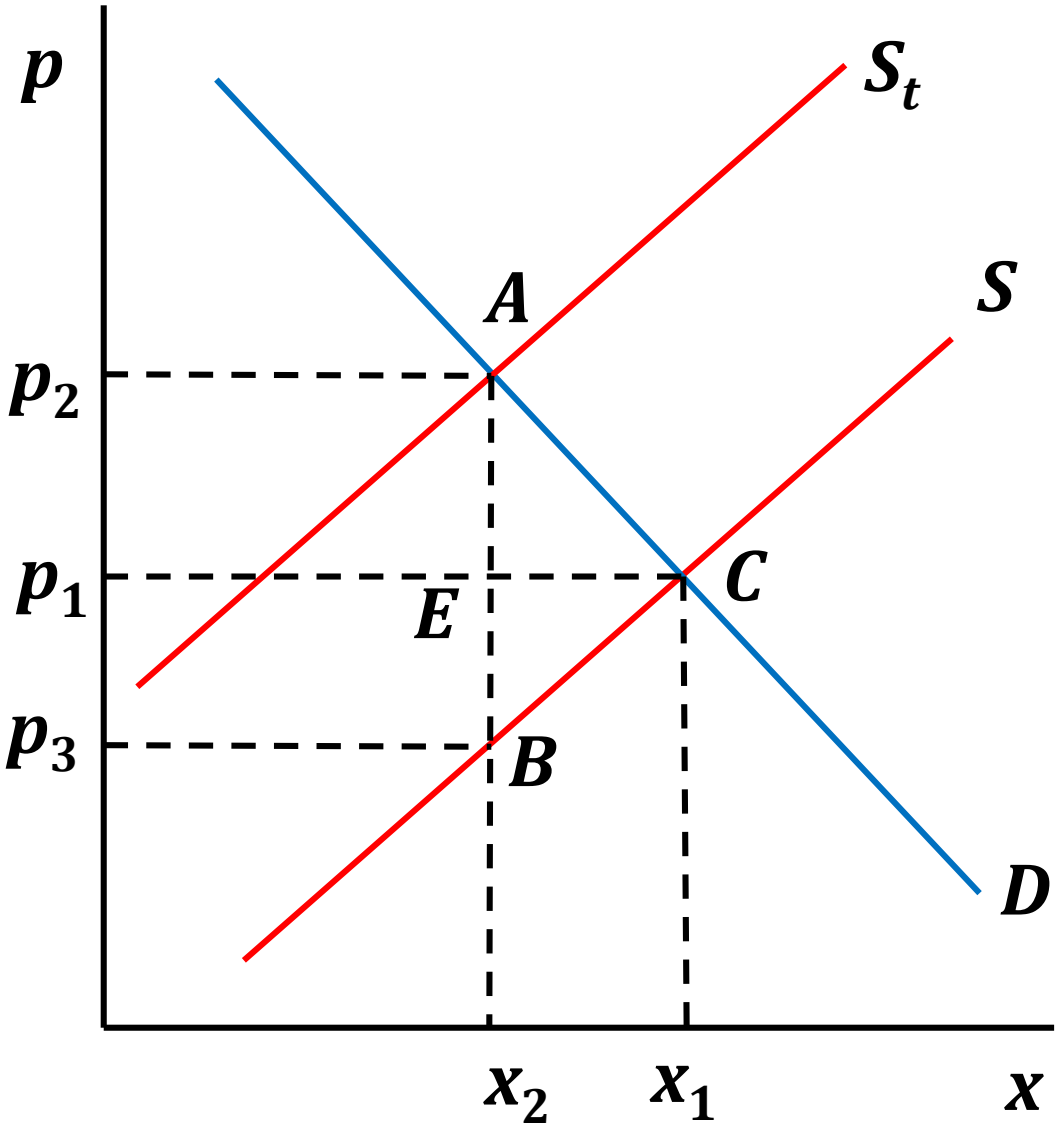
- **Interference with consumer choice can generate an *excess burden* of taxation**

- **In Figure 1, examine case of *specific* tax on single good *x*, where supply curve *S* reflects cost of producing *x*, and demand curve *D* indicates benefits of consuming *x***

- **Initial equilibrium is at p_1 x_1, where marginal cost of producing *x* is just equal to marginal benefit of consuming *x***

- **Sum of *consumer* and *producer surplus* is maximized at equilibrium**

Figure 1



- **Suppose tax t is imposed on every unit of x that is produced, which shifts supply curve to S_t**

- **Market price increases to p_2, which is borne by consumer, but firm receives p_3, given by (p_2-t), equilibrium output being x_2**

- **Consumers are worse off by p_2ACp_1, while firms are worse off by p_3BCp_1**

- **Tax revenue is area p_2ABp_3, excess burden of taxation being area (AEC + BEC)**

- **Another way of viewing loss of welfare is to notice that output falls from x_1 to x_2, yet these units would confer more benefit on consumers than their cost**

- **Tax essentially prevents opportunities for profitable trade**

- **Typically, all taxes, except lump-sum taxes on individuals have some effect on allocation of resources**

Income vs. Goods Taxes

- **Argued that income taxes impose lower excess burden than goods taxes – they do not distort consumer choices between goods**

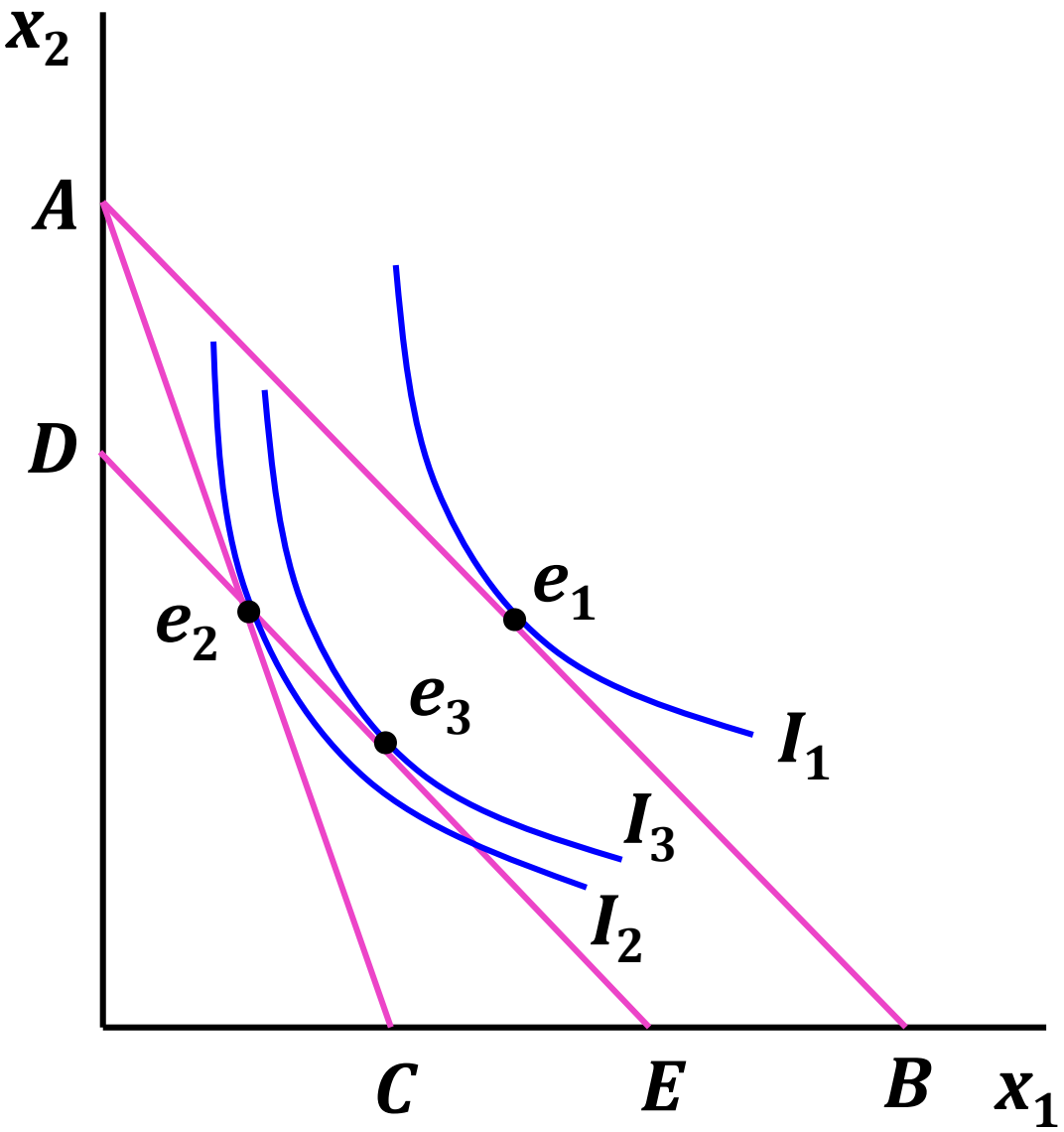
- **Suppose all consumers are the same, which rules out distributional implications, i.e., same income and preferences**

- **Same amount of revenue, has to be raised whichever tax is used, and government spending on public goods is the same in both cases**

- **Taxes applied in a two-good world, x_1 and x_2, and choice of taxes is between a *commodity tax* levied on x_1, and a *proportional tax* levied on income**

- **In Figure 2, use *partial equilibrium* analysis (ignores production), where consumer faces initial budget constraint *AB*, where slope of *AB* reflects pre-tax prices of p_1/p_2**

Figure 2



- **Consumer maximizes utility subject to their budget constraint at e_1 on indifference curve I_1**

- **If a specific tax t is imposed on x_1, it causes budget constraint to rotate from AB to AC, given that p_1 now includes tax, i.e., relative prices have been distorted**

- **The new equilibrium is at e_2 on indifference curve I_2, the consumer being worse off as a result of imposition of t**

- **In comparison, a proportional income tax i does not distort relative prices, instead it shifts budget constraint back parallel to itself to DE, i.e., consumer can afford less of both goods**

- **Given income tax i has to raise same amount or revenue as tax t, budget constraint passes through e_2, i.e., consumer has to be able to purchase same bundle of goods under both taxes**

- **However, with budget constraint *DE*, consumer is able to reach e_3 on higher indifference curve I_3**

- **Clearly, consumer is better off under income tax *i* than the specific tax *t***

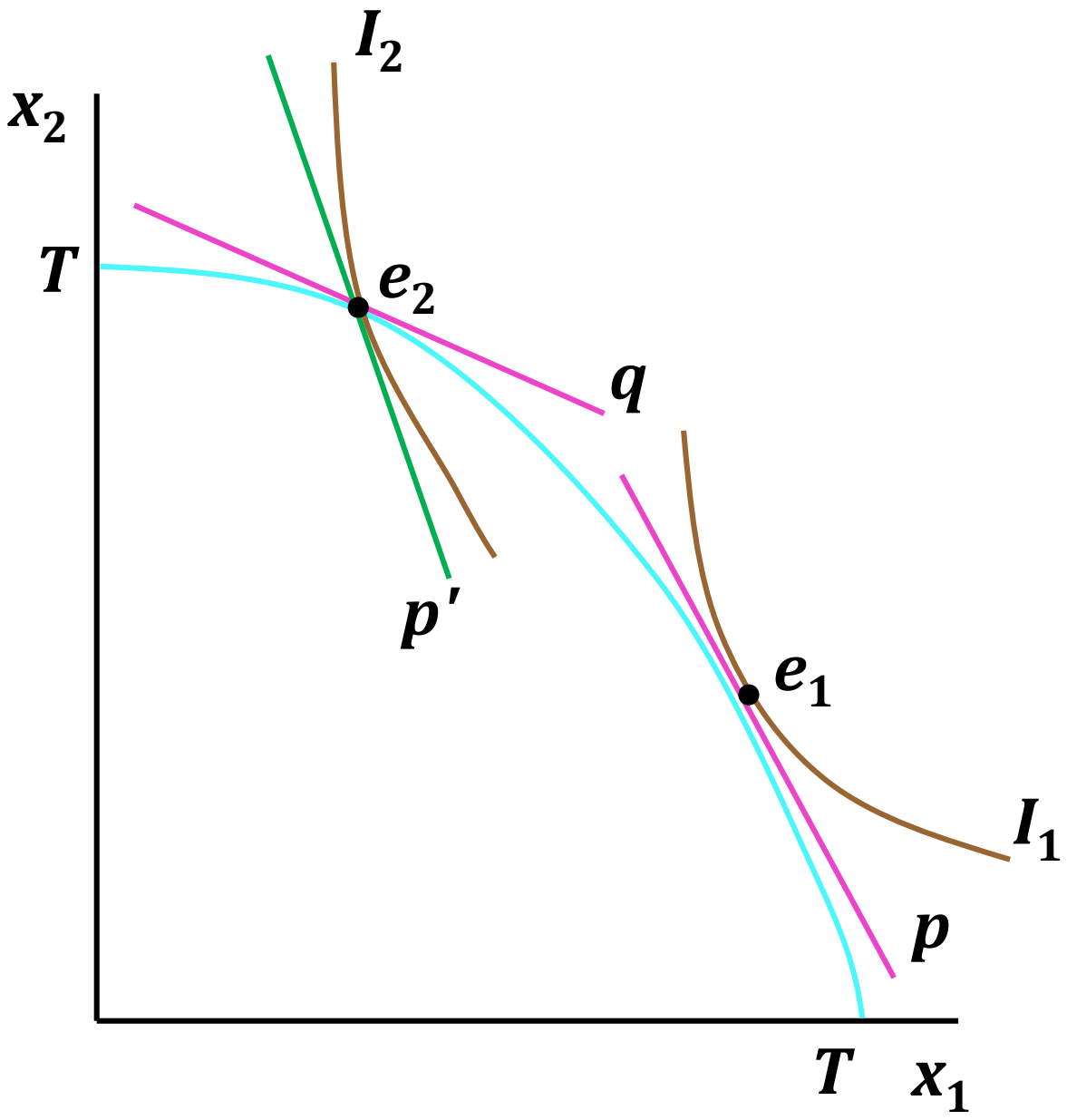
- **Under these assumptions, *i* generates a lower excess burden than *t*, because it interferes with consumer choice less**

- **If a specific tax were imposed on both goods, the analysis would be the same as for the income tax – the key point here is extent to which taxes distort prices**

- **Implication is that if taxes are collected over a broad range of goods, interferes less with consumer choice as compared to targeting a small set of goods**

- **Analysis ignores production side of economy, so need to examine *general equilibrium* effects**

Figure 3



- **In Figure 3, TT is production possibility frontier for economy, its slope measuring the marginal cost of producing and extra unit of x_1 in terms of foregone x_2**

- **For sake of argument, assume all tax revenue returned to economy so that it remains on TT**

- **Before taxes are implemented, equilibrium at e_1 where community indifference curve I_1 is tangent to TT at e_1, relative prices being p**

- **If a specific tax is levied on good x_1, relative prices facing consumers get steeper, i.e., p' – consumers purchasing less x_1 and more x_2 at equilibrium e_2 on indifference curve I_2**

- **At new equilibrium, relative prices facing firms given by q, i.e., a wedge has been driven between consumer and producer relative prices by the tax**