INDIRECT TAXATION – AN OPTIMAL SYSTEM?

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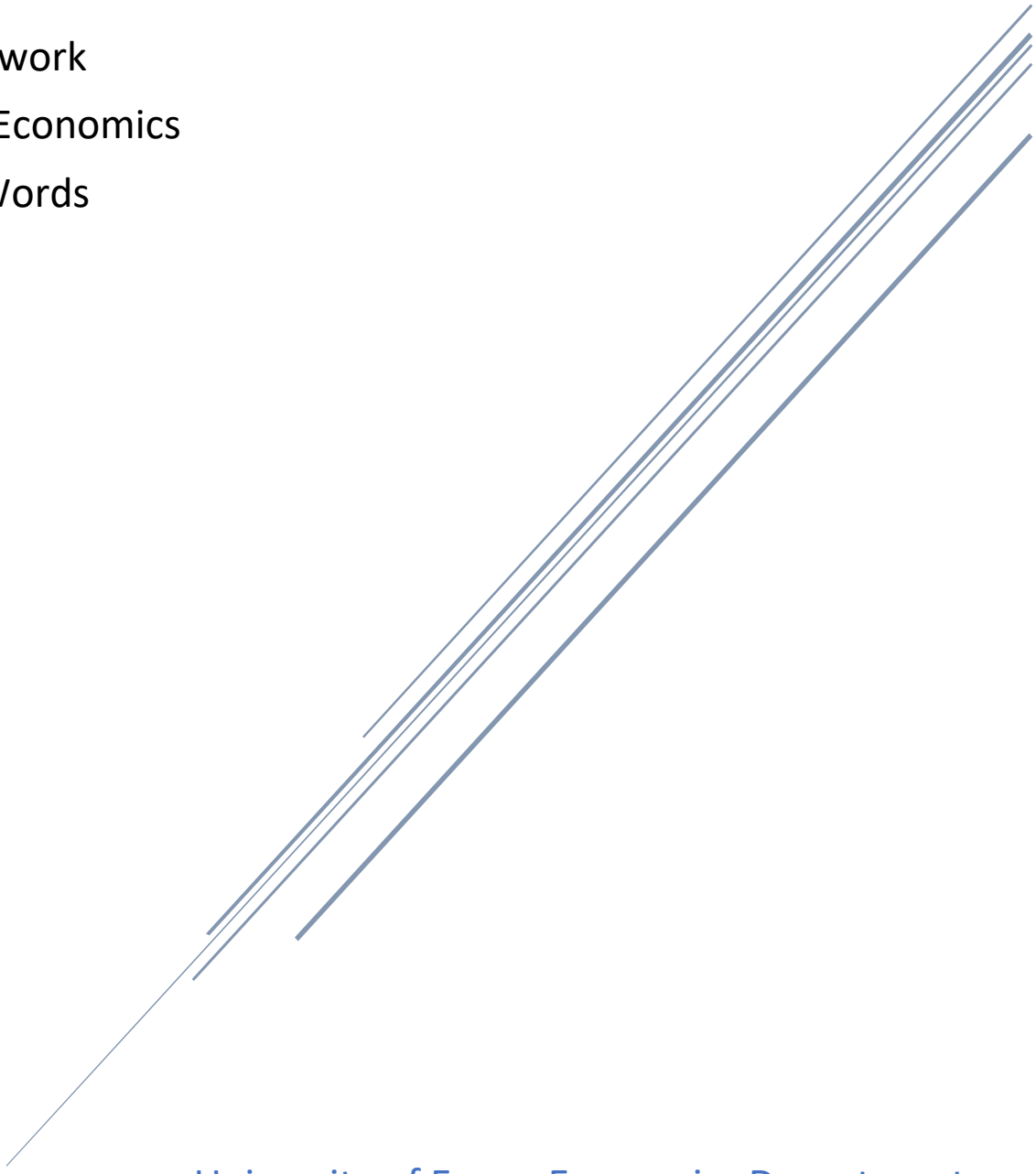
EC355

Coursework

Public Economics

2485 Words



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Friday 7th May 2021

Introduction

Government's must raise revenues from taxation to fund public expansionary policies as well as welfare systems. There are two main types of taxation policy, indirect and direct.

Direct taxation refers to a tax placed upon incomes, profits and/or wealth, whereas indirect taxes are imposed on consumption of agents in an economy. The UK government uses both types, with income tax ranging from twenty to forty-five percent depending on the level of income, as well as corporation tax currently at nineteen percent (although due to increase) and indirect taxes such as VAT (value added tax) on most goods and excise duties placed on particular goods like fuel (fuel tax generating £27.57bn in 2019/20 (Statista, 2021)).

Consumption taxes are paid when purchasing goods or services, and is included in the purchase price, which increases the final price to consumers. The statutory burden paid to the government by a seller, can be passed on via market adjustments through changing prices, so that the buyer bears at least some of the tax incidence. Whether it is the producer or consumer carrying the statutory burden, the incidence is shared in the same proportion.

With consumption (also known as commodity) taxes, there are two different forms: excise and ad-valorem tax. Excise taxes (also known as specific taxes) consist of a specific value of tax to be paid, whereas ad-valorem imposes a tax as a percentage of the price of the good.

Indirect taxes not only raise government revenue for investment in the likes of public goods, but also correct market failures where externalities arise such as with car travel, and so an excise duty on fuel adds onto the price the social costs that would otherwise not be compensated for.

We will first discuss different situations where the tax incidence varies, as well as the effect of elasticity on the tax burden. Then optimal taxation policy is examined with an initial focus on efficiency, expanding to include the topic of equity. An evaluation of indirect taxation is then undertaken, providing a balanced view for the benefits and drawbacks compared to other taxation options, before concluding with how policy makers may best implement such a policy.

Indirect Tax Incidence

Whether a specific tax is placed on a producer or consumer the burden is shared in the same way. When taxing consumers on the demand side of a market, the effect of a price increase through a tax can be evaluated with regards to the income and substitution effects. The income effect being where the increase in price leads to lower disposable income and as such demand falls, meanwhile the substitution effect is the consequence of consumers looking to purchase alternative goods instead. When taxing producers we experience a contraction of supply from S_1 to S_2 in Figure 1, which results in a movement along the demand curve, moving to equilibrium D where the burden of the tax is shared between the consumer and producer. Figure 2 demonstrates a scenario where tax is placed on consumers which shifts demand in and results in the same burden of tax share.

Elasticity

Price elasticity of demand "is the percentage change in the quantity demanded, Q, in response to a given percentage change in price, p" (Perloff, 2011), and elasticity of supply is the responsiveness of supply to changes in price. Elasticity of a good or service in both supply and demand affects whether the consumer or producer bears the burden of a tax and thus is important to the success of an indirect tax. A good which is inelastic in demand like energy bills, a necessity, with a specific tax will result in the consumer bearing most of the tax, and with a perfectly inelastic good as seen in Figure 3, where quantity does not fall in any change in price, the consumer will always bear all of the tax. The inference here is key, as for low-income households which spend most of their disposable income on necessities, a tax as described will affect this household much more than a wealthier family. As such, it is important to consider which goods an indirect tax is placed upon, so that low-income groups do not pay proportionally more tax as a percentage of their income. Indeed, energy price caps have been introduced by the government and set by Ofgem, to "ensure the price you pay is fair, and protects you from being overcharged" (Ofgem, 2021). Additionally, another necessity for women are sanitary products which had been subject to VAT but has been abolished as a result of political pressure, which was a "move made possible by end of the transition period and freedom from EU law mandating VAT on sanitary products" (Gov.uk, Tampon Tax, 2021).

On the other hand, a good such as chocolate will have a more elastic demand, such that consumers are more reactive to changes in prices. Therefore, as seen in Figure 4, with a tax placed on the good the quantity demanded falls from Q_1 to Q_2, but the price does not (remaining at P_1), resulting in the full burden of the tax being placed on producers.

Responsiveness of supply to changes in price also impacts who bears most of the tax burden. A tax on a producer with inelastic supply leads to a small price rise, so the producers bear most of the tax, whereas a tax on a producer with elastic supply leads to a much greater rise in price, meaning that the consumer bears most of the tax. Elasticity has intertemporal implications with elasticity changing over time, as the previously mentioned substitution effect can take time to come to fruition.

When designing and implementing tax policy as we will discuss, elasticity of supply and demand is key to determine whether a tax will be optimal for equity as well as efficiency.

Productive Efficiency

As we have examined, elasticity can impact who bears the burden of a tax and has equality implications too. We will now look at the Diamond-Mirrlees production efficiency theorem as a way to maintain productive efficiency whilst imposing indirect taxation on a market. The theorem states that an optimal commodity tax system should not hinder productive efficiency. To achieve this the "taxation must be on the boundary of the production set and all distortions are focused on consumer choice" (Hindriks and Myles, 2006). Being on the boundary of the production set is the result of maximising output from a given set of inputs, any other position inside the set would not be efficient and result in lower output. In addition, the distortions referenced are the result of switching consumption from a good with a higher tax level to another with lower tax, this substitution does however also cause welfare losses (more on this later). Therefore, "the optimal tax structure includes no intermediate good taxes, since these would prevent efficiency" (Diamond and Mirrlees, 1971), as this would move away from the boundary of the production set. VAT is a good example where the policy makes sure just the end consumer pays the tax as although VAT is collected at each stage of a supply chain, business claim back the tax paid on their inputs and so do not pay the indirect tax themselves. Remaining at a productively efficient level is important as taxing intermediate goods could reduce the incentive to carry out multiple stage production of an end good.

Multiple Product Economy

Where an economy has multiple commodities, policy makers for indirect taxation must decide what to tax and at what rate. With a single consumer in an economy, the optimal tax system is the most efficient tax system, whereas for many consumers indirect taxation affects both efficiency and equity, we will consider equity further once the inverse elasticity rule and Ramsey rule have been discussed.

The inverse elasticity rule is where the tax rate, $t = \frac{k(t+p)}{\varepsilon^c}$, where p is the pre-tax price, k is the desired tax revenue and ε is the elasticity of a particular good. Clearly from this equation we see that a higher elasticity will result in a lower tax rate according to this rule, the implication being that necessities with low elasticities of demand should be taxed more than luxuries with higher elasticities. This rule is efficient to minimise the distortion of substituting from one good to another, however, is not equitable.

Another rule that gives a similar result is the Ramsey rule, the difference now is that we can account for cross-price effects in demand, effectively allowing the rule to take into account consumers substituting from one good to another. The result of this rule is that goods which are unresponsive to price changes must bear higher taxes, the implication once more being that this is likely to result in low-income groups bearing a disproportionally large share of the tax burden.

For policymakers, finding an efficient taxation policy for commodities is possible by following these rules providing there is full information. However, what is more challenging is including equity considerations and trading this against a loss in efficiency resulting in a deadweight loss. We can build equity into the Ramsey rule, with the result that a policymaker should tax goods consumed by the poor less than those bought by high income individuals.

Evaluating Indirect Taxation

We have discussed how one may go about achieving efficiency and trading this against equity, and we will now evaluate why this type of taxation may be better than alternatives such as income taxation.

Firstly, compared to direct taxation methods, there is no distortion of intertemporal choices with indirect taxation, as we are taxing consumption rather than income or savings.

Furthermore, a practical advantage with commodity taxes is the observability of consumption. Governments are more able to observe and monitor consumption than labour, due to informal work, therefore this type of tax cannot be evaded and is easier to collect as the good is either purchased and tax is paid, or not purchased at all. In addition, with taxation there is a desire to tax those who have higher living standards such that the government can redistribute to those with less, and consumption is likely to be a better indicator of well-being and potentially living standards than income and therefore taxing goods are more equitable. Indirect taxation can target the likes of luxuries such as expensive watches which are not necessities meaning lower income consumers are not penalised. Meanwhile targeting specific commodities also gives governments the opportunity to correct market failures, which is not a possibility with lump-sum transfers or income tax. By taxing fuel with both VAT at 20% and fuel duty at 57.95 pence per litre for car fuel (Gov.uk, VAT, 2021), the government is attempting to not only raise revenue, but correct the market failure of driving a car and polluting emissions into the air, thus internalising the externality to the consumer driving. We should note that Covid-19 initially led to fuel duty receipts falling by almost 50% up to May 2020 before recovering again, causing a strain on the public budget (ONS, 2021).

When comparing indirect taxation to direct taxation, an advantage with the former is that it does not change incentives to work. With direct taxation on income, we are likely to see a disincentive to work for higher levels of tax, especially when high earners pay more tax. Therefore, taxing consumption does not affect the labour input that individuals make into the economy and is of less contention with regards to the redistribution nature of tiered income tax levels.

On the other hand, there are drawbacks of using indirect taxation. Firstly, compared to a lump-sum taxation, total welfare is reduced as a result of commodity taxation as it distorts consumer's choices and causes inefficiency as demand shifts from high taxed goods to lower taxed goods through the substitution effect. In addition, Murty and Ray's (1978) results show the "extreme sensitivity of optimal commodity taxes to departure from leisure/goods separability in the consumer's utility function and to a priori changes in the assumed wage rate", demonstrating that an advantage being that labour supply is unaffected by this type of tax may not always hold. Indirect taxation is a regressive tax, which is a result of the same amount of tax being paid by a consumer regardless of their income or wealth level, and thus

as a percentage of income, a poorer individual will pay more tax. Consequently, a drawback of indirect taxation is that by its nature it is not equitable, however, we can look to reduce this issue when taxing particular commodities which lower income individuals have lower demand for. For policymakers, having an idea of the revenue a tax will collect is important for budgets, however, indirect taxation has uncertain outcomes for revenue as unless necessities are taxed (which we have discussed would be highly unequitable), we cannot be sure how much demand will contract for a good and thus what the tax receipt will be.

Designing and Implementing Indirect Taxes

A number of the advantages discussed for indirect taxes require empirical evidence to choose what commodities to tax and by how much. For example, to reduce externalities such as in the tobacco market, one must be able to quantify the effects of smoking, but in fact "the evidence is highly controversial" (Crawford et al, 2007). Therefore, although it may be difficult for policymakers to find the absolute optimal taxation, estimating the monetary cost of the externality to internalise it to the buyer is likely a preferred option than direct taxation in which intertemporal choices are distorted. Furthermore, when designing indirect taxation policy, for countries with land borders and free trade, it is important to look at the tax policy of neighbours. Having different levels of a tax such as VAT across a border could well result in "cross-border shopping and with the various forms of illegal smuggling and tax evasion that are encourage by significant tax differences" (Crawford et al, 2007), as such harmonisation with neighbouring countries is seen as a good compromise to avoid this issue.

We conclude that both indirect and direct taxes have a place for policymakers and can be used well together. For example, to counteract the disincentives of labour taxation, one could tax commodities that are substitutes for work and for complements provide subsidies, aiming to offset the negative impact of the income tax. When designing indirect taxes, we recognise and support the importance that Diamond and Mirrlees (1971) presented through not taxing intermediate goods, to ensure the tax remains solely on consumption rather than business too. Finally, taxation policy must look beyond just the efficiency implications of different policy options and in fact equity concerns are only growing, with greater disparities in income and wealth. As such, despite the inverse elasticity and Ramsey rules, it may be important to tax necessities less than luxury goods to meet other government objectives relating to redistribution, as opposed to maximising government revenue through taxation.

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Figures

Figure 1

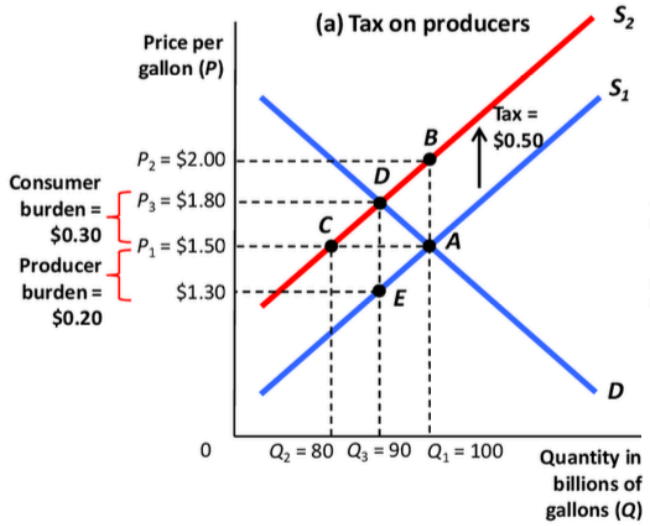

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Figure 2

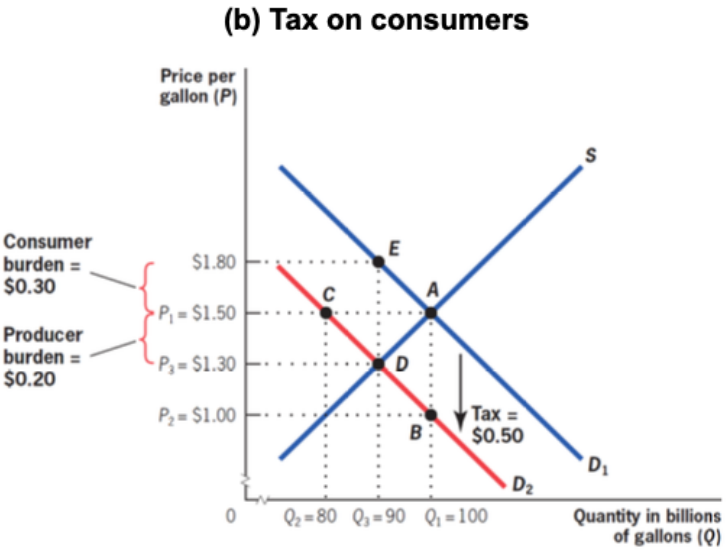

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Figure 3

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Figure 4

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