

## *The Principles of Taxation*

### ***1. Introduction***

Taxation is a payment levied by government for which no good or service is received directly in return - that is, the amount of tax people pay is not related directly to the benefit people obtain from the provision of a particular good or service.

Up until the early 1930s, it was universally accepted in principle that governments should balance their budgets. Thus, the principle reason for taxation was to pay for government expenditure. Of course, governments had, from time to time, resorted to borrowing in order to pay for their expenditure and government borrowing was relatively quite large during some war periods. Government borrowing may be from the private sector of the economy or from abroad. Alternatively, governments may borrow from the central bank of the country. This is equivalent to financing government expenditure by printing money. Both forms of borrowing occurred but this did not destroy the balanced budget principle. Under Keynesian theory and practice budget deficits became respectable and for many years from 1945 on budget deficits were the norm in the UK, rather than the outcome of special events.

Governments have also financed expenditure in recent years through the sale of publicly owned assets (the privatization of nationalized industries, the sale of council houses). Although asset sales were an important source of funds to the UK government in the 1980s, they are necessarily limited since assets can only be sold once.

Thus, governments still had to raise most of the revenue needed to finance their expenditure through taxation or by charging directly for government services (user charges). User charges exist in a number of areas of government activity although it may be difficult to distinguish between a user charge and a tax (consider the case of NHS prescription charges). However, in many areas of government expenditure, it would be extremely difficult to levy user charges. Thus, there is no doubt that most government expenditure must be paid for through the taxation system and it is reasonable to see this as the principle function of taxation. Yet there have always been a variety of subsidiary objectives of taxation. These have included:

- (a) as a means of altering the distribution of income and/or wealth;
- (b) as a means of discouraging the consumption of goods and services with high social costs or demerit goods (e.g. taxes on cigarettes and alcohol, higher taxes on leaded than on unleaded petrol, taxes on imported goods);
- (c) to influence the level of aggregate demand in the economy.

Not only do taxes as a whole have significant impacts on the allocation of resources, the distribution of income and aggregate demand in an economy but also each type of taxation has a different impact. Thus, the issue of taxation involves a number of economic principles.

### ***2. Tax classifications and tax vocabulary***

Such a wide variety of taxes exist that it is useful to attempt to classify them. A standard, but not very useful classification of taxes is into direct and indirect taxation. Before we say much about this, we need to look at the notion of tax incidence.

The simplest notion of tax incidence (formal incidence) concerns the question of

who is assessed to pay a tax. Thus, the formal incidence of an income tax falls on the income earner; the formal incidence of a petrol tax falls on the petrol company. This is not at all informative from an economic point of view. Obviously, in the latter case, the petrol company may pass on an increase in tax in the form of higher prices. By so doing the company shifts the burden of the tax on to the consumer (this is known as forward shifting of the tax burden). We might then say that the effective incidence or economic incidence of the tax falls on motor vehicle owners. However, if we look more deeply we may be able to distinguish a number of other effects. Some vehicle owners (taxi-drivers, bus companies, carrying firms) may be able to pass the increased cost of petrol on to others. Thus, part of the effective incidence of an increase in petrol tax may be on bus passengers or on consumers of food transported by lorries

. Yet again, suppose the consequent increase in bus fares causes a reduction in bus travel. Bus companies may respond by reducing the number of buses they run on some routes and may reduce the working hours of some bus drivers who then bear part of the burden of the increased petrol tax. Again, bus company profits may be reduced leading to lower dividends being paid to shareholders.

It is possible to come to some theoretical conclusions about the possibility of shifting the tax burden. For instance, it can be shown that if a tax were applied to a good that was perfectly inelastic in demand, producers would be able to shift the full burden of the tax on to consumers. On the other hand, with perfectly elastic demand, it would be impossible for producers to increase the price of the product to take account of the tax - the tax burden would be borne fully by the producer. Of course, in the usual cases where demand is somewhere between perfectly elastic and perfectly inelastic, the burden would be divided amongst consumer and producer but the more price-inelastic was demand, the more of the burden would be shifted on to the consumer.

But theoretical propositions such as these are not a great deal of help in sorting out what the actual incidence of a particular tax is since the effects of a tax may be very widespread, reaching to all parts of the economy. It is certainly clear that the effective incidence of a tax may have very little to do with who actually hands the money over to government in the first instance.

The usual distinction between direct and indirect taxes, then, is that a direct tax is one for which the formal and economic incidence are essentially the same - that is, the taxpayer is not able to pass the burden on to someone else. Thus income tax counts as a direct tax but VAT counts as an indirect tax because the tax burden may easily be passed on. This is not satisfactory in economic terms because whether or not an increase in VAT can actually be passed on in the form of higher prices will depend on market conditions. VAT may, in principle, be passed on but there may be many occasions in which this is not done. Again, during periods of very tight labour markets, some workers may well be able to demand higher wages to make up for increased income tax, in effect passing the tax on to employers and hence, through higher prices, on to consumers.

Hence, it is usual to acknowledge the direct/indirect distinction but to go on to use some other classification. One possibility is to follow Sandford and classify taxes as taxes on (a) income; (b) capital (wealth); or outlay (expenditure). Musgrave and Musgrave distinguish between taxes on people and taxes on things. Another distinction sometimes made is between taxes on stocks (wealth) and taxes on flows (income,

expenditure). Both Brown and Jackson (1990, pp. 306-7) and James and Nobes (1998, pp. 12-13) reproduce the much more complex OECD classification which includes seven principal headings with a number of sub-headings under each one. The seven principal headings are:

- 1000 Taxes on goods and services
- 2000 Taxes on incomes, profits and capital gains
- 3000 Social security contributions
- 4000 Taxes on employers based on payroll or manpower
- 5000 Taxes on net wealth and immovable property
- 6000 Taxes and stamp duties on gifts, inheritances and on capital and financial transactions
- 7000 Other taxes

Taxes involve two elements: the tax base and the tax rate. The tax base describes what the tax is levied on. Thus, the tax base of VAT is the value added at each stage of production to all goods and services minus those goods which are exempt and those that are taxed at a zero rate. Tax rates are then applied to the tax base to determine the amount of tax payments to be made. The majority of taxes are ad valorem taxes - that is, taxes are based on values. Excise duties are specific taxes - that is, the base is not the value of a product but a physical quantity (so much tax per pint of beer or per packet of twenty cigarettes). There is one type of tax, a poll tax, where the tax payable is not related at all to the tax base. A poll tax or head tax is a tax in which all taxpayers pay the same amount irrespective of their income or wealth.

### ***3. The principles of taxation***

The two central principles of taxation relate to the impact of tax on efficiency (concerned with the allocation of resources) and equity (concerned with the distribution of income). Other principles relate to the cost of operation of the tax system, to its flexibility and certainty. The costs of operation are divided into two types - administrative costs and compliance costs.

Administrative costs are the costs to the government (and ultimately to the taxpayer) of collecting tax revenue. Thus they include the costs of enforcing tax rules and attempting to catch and to prosecute people breaking tax rules. The more complex a tax system is, the more easily can experts find their way around the rules. The more difficult it then becomes for the tax authorities to tighten the rules to try to ensure that people cannot avoid making the tax payments which the government thinks they should. Compliance costs, on the other hand, are the costs (other than the taxes themselves) of making tax payments to the government. Sandford (1992) divides compliance costs into three groups:

(a) money costs such as the fees of a tax adviser, the cost of tax guides, postage; (b) time costs; (c) psychological costs.

### ***4. Taxation and efficiency***

It is generally accepted that almost all forms of taxation, with the possible exception of a poll tax (see 4.1 below), have some impact on the efficiency of resource allocation because taxes change the relative prices faced by consumers and producers. They thus

alter the pattern of consumer and producer choices. The underlying assumption here, of course, is that, in the absence of taxation the economy would operate perfectly efficiently. That is, we are back to our perfectly competitive model in which consumers make decisions to ensure that the marginal utility obtained from the last penny of expenditure is equal for all goods and services purchased. Again, producers make decisions regarding their use of resources to ensure that the marginal cost is the same of the last unit of each resource employed. All of this ensures the equality of the marginal rate of substitution with the marginal rate of transformation and the equality of the price of each good or service with its marginal cost.

Accepting this model, for the moment, we can see that a tax on product A will increase the price of A so that its price is no longer equal to marginal cost. Equally, it changes the relative price between goods A and B and causes consumers to shift their consumption from A to B. For this reason, taxes are sometimes said to act as a wedge between consumers and producers, thus reducing the efficiency of the economy. This applies to all economic decisions. Thus, an income tax is said to reduce the net wage rate received by workers, reducing the opportunity cost of leisure and potentially causing workers to work less.

This idea is usually referred to as the excess burden or dead-weight loss of a tax. The notion is that this interference with choice resulting from taxation is a burden on consumers in addition to the actual money handed over in the payment of a tax; this burden provides no benefit to anyone else in the economy and so represents a straightforward loss. This can be appreciated by considering the case of a taxpayer who succeeds in avoiding the payment of a tax. One of the classic examples is the 18th century window tax. Governments sought to impose a tax that would be paid by richer members of the community - the number of windows gives a rough guide to the size of a house that in turn is related to the amount of land owned. The tax could, however, be avoided by the blocking up of windows. Someone who was crazy enough to block up all of his windows would have paid no tax but the tax would have imposed an excess burden in the form of constant tripping over the furniture. This cost would not have been offset by a benefit accruing to anyone.

This is a deliberately extreme example. The idea has general application - a tax interferes with choice and thus causes a loss of utility by pushing the choice patterns of consumers and producers away from the ideal. It is usual to illustrate excess burden in a partial equilibrium diagram. The standard diagram may be found in Figure 3.1 on p. 24 of James and Nobes (1999/00 edition) or in the left-hand half of Figure 11.2 on p. 321 of Brown & Jackson (4th edn); in Figure 4.5 on p. 62 of Bailey (1995); in Figure 8.1 on p. 190 of Sandford (1990) or in Figure 7.3 on p. 187 of Cullis and Jones (1992). The excess burden is shown by the triangle (labelled ACB in James and Nobes) which represents that part of the losses of consumer surplus and producer surplus caused by the tax which is not balanced by tax revenue received by the government.

It can easily be demonstrated that the excess burden of a tax will be greater the more price-elastic are the demand and supply curves of the good in question (the area of the excess burden triangle will be larger relative to the tax revenues generated by the tax). This reflects the simple idea that greater price-elasticity of demand and supply reflects the greater availability of substitutes. Thus, a small tax that raises the price of a good will cause consumers to switch away from products with price-elastic demand. Equally, producers, following the fall in the net-of-tax price they receive for their

product, will be easily able to switch away from the production of goods that are price-elastic in supply. Remember that it is the change of decision induced by the tax that is the source of excess burden. Where demand is price-inelastic, the increase in price resulting from a tax will not cause many consumers to switch to another product and thus the excess burden (dead-weight loss) will be low. In the extreme case of a perfectly price-inelastic (vertical) demand curve (where there is, by definition, no available substitute), the tax will not carry any excess burden.

This argument leads to the view that, on efficiency grounds, it is better to tax goods and services which are in price-inelastic demand or supply than those for which demand and supply are elastic. Thus, on efficiency grounds, it makes sense to tax products such as petrol, cigarettes and alcohol rather than products with high price elasticity. This argument can be broadened. It is clearly the case that the more goods a tax applies to, the less possibility there will be of consumers switching to substitute goods. Thus, a tax on cornflakes only would have high excess burden because the tax would cause a large switch to alternative breakfast cereals. The excess burden would be less if the tax applied to all breakfast cereals, although people may still switch to other breakfast foods or may, indeed, reduce the size of their breakfasts in favour of larger lunches or dinners. The excess burden of a tax on all foods would be lower again and the application of the tax to all goods and services would produce a lower excess burden still. We can generalize this argument by saying that, on efficiency grounds, it is better to apply a tax to a broad tax base than to a narrow tax base.

This form of analysis can also be used to make points regarding different kinds of taxes. A case in point is the analysis of income taxes versus a specific tax (for the relevant diagram see James and Nobes p.27). In a partial equilibrium framework, income taxes come out better since the income tax is a general tax which does not distinguish between different goods and thus involves no excess burden through inducing a switch from a taxed product to an untaxed product as occurs if an excise tax is applied to one product and not to others. The same case can be generated in a general equilibrium framework (Figure 3.3, page 28 in James and Nobes).

As we have suggested above, this form of analysis assumes that, in the absence of taxation, the economy will always be at a Pareto optimum. We have referred to this as the point at which the Marginal Rate of Transformation (MRT) = the Marginal Rate of Substitution (MRS) for all pairs of goods (or where Price = Marginal Cost for all goods). James and Nobes refer to the MRT as the social opportunity cost. In the real world, where all economies will be in sub-optimal positions, the above argument against specific taxes can be reversed. Thus, consider two goods, X and Y. Assume that the production and consumption of X would generate negative externalities (social costs) but that these are not taken into account by the pricing system that reflects only private costs and benefits. The result would be that prices of the two goods would not allow an optimal position to be reached. More X and less Y would be consumed than if prices had reflected social benefits and costs. In this case, a specific tax applied to good X could reverse the effect and move the economy to an optimal position whereas an income tax that did not affect the relative prices of X and Y would leave the economy in a sub-optimal position.

The argument in favour of income taxes above also does not take into account the possible impact of an income tax on the supply of labour. This is because simple partial equilibrium analysis assumes that the supply of labour is fixed. Removing this

assumption leads to the possibility that income taxes change the relative prices of goods and leisure and by so doing distort the choice between them. Income taxes may also influence the allocation of production between different industries. This effect can be generated in a simple model that assumes that higher wages are paid for jobs that are difficult, dangerous, unpleasant or insecure. Thus the 'wage differential' paid to such jobs is necessary to attract workers into them.

#### **4.1 The poll tax**

As mentioned above, a poll tax, an equal tax on all people irrespective of their economic circumstances or behaviour, should not cause people to change their behaviour (since they cannot avoid paying the tax by so doing) and thus should carry no excess burden. Such a tax would only appropriate the economic rent earned by a factor of production and would not affect marginal cost, marginal revenue, the wage rate or the rate of profit (the economic rent is the excess earnings over the amount necessary to keep a factor of production employed as it currently is). Of course, even a poll tax could affect behaviour. A poll tax in one country could, for example, cause some people to emigrate or, indeed, commit suicide. If it were applied to all residents, including children, it could affect decisions about family size.

There is, however, a more compelling case against poll taxes - that is, that, being strongly regressive, they are so inequitable that they are bound to be very unpopular with citizens and thus have seldom been implemented. This was demonstrated by the Community Charge which was applied by the Conservative Government in the UK in the early 1990s and which was commonly known as 'the poll tax' - it quickly became clear to the government that this tax was a political liability and thus it was soon withdrawn. It should be noted, however, that the Community Charge was by no means a pure poll tax. Most importantly, the Community Charge varied a great deal from one local authority area to another and thus had an impact on relative property prices and on the decision as to where to live.

Nonetheless, the poll tax is an important theoretical idea and is much referred to in taxation textbooks. For example, on page 34, James and Nobes use a simple numerical example to compare a poll tax which with a proportional income tax. They show that whereas a poll tax would leave wage differentials at the same absolute level, a proportional income tax would reduce the absolute size of the differential and might thus discourage workers from taking on more difficult or dangerous jobs.

### ***5. Taxation and incentives***

We have seen that it can be argued that taxation changes relative prices in the economy and thus distorts consumer and producer choice. One form of this argument is that taxation reduces market incentives within the economy, to the detriment of the economy. Thus, taxation may reduce the incentive to work by reducing the relative price of leisure (Income and hence goods foregone). We have seen another version that suggests that tax reduces the incentive to take difficult or dangerous jobs by reducing the differential paid to people for undertaking such jobs. These arguments can also be applied to the capital market, leading to the idea that taxation can be held to reduce the return to entrepreneurs for taking risk and hence to reduce their willingness to take those risks necessary for the progress and success of a capitalist economy.

However, we have seen that these arguments depend on theoretical models that

contain the unlikely assumption that taxes provide the only interference with choice in a market economy.

## 5.1 Tax and the labour supply - theory

We can see a rather different kind of theoretical problem by looking in some detail at the labour market case. Here it is assumed that there are only two uses of time: market work and leisure. People only engage in market work for one purpose - to allow the purchase of market goods. Thus, their only interest is in real wages. We assume a perfect market such that the Real Wage is equal to the value of the Marginal Physical Product of Labour ( $VMPP_L$ ) or Money Wage = Marginal Revenue Product ( $MRP_L$ ). We then assume that a proportional income tax is applied, reducing the real wage below  $VMPP_L$ . The question is what effect this reduction in real wage would have on the supply of labour.

The problem is that there are both income and substitution effects and these work in opposite directions. The substitution effect is to lower the opportunity cost of leisure and thus to increase leisure. *Ceteris paribus*, the tax causes a reduction in labour supply. However, the proportional tax also has the effect of reducing income. Thus, for the same quantity of work, people receive fewer goods. To receive the same quantity of goods as before, they would need to work more. Thus, considering the income effect alone, we would expect the tax to cause workers to work longer hours in an attempt to maintain their previous standard of living. The answer overall then depends on the relative strength of the income and substitution effects. If the substitution effect were stronger than the income effect, the tax would act as a disincentive to work; but if the income effect were the stronger, the tax would act as an incentive to work! It should be noted here that the substitution effect is influenced by the marginal rate of tax while the income effect results from changes in the average rate of tax.

Traditionally, labour economists have drawn the labour supply curve as a backward-sloping curve. This reflects changing strengths of income and substitution effects at different wage rates. Thus, at low wage rates, the benefits arising from an increased wage rate are likely to be taken mainly in the form of more goods since the marginal utility acquired from consuming more goods is likely to be greater than the utility lost by giving up leisure. However, as the wage rate rises further, there will be diminishing marginal utility associated with acquiring more goods but the marginal utility associated with an extra hour of leisure will increase as the amount of leisure falls. Consequently, at some relatively high wage rate we might expect workers to take most of the benefit arising from a wage rate increase in the form of more leisure rather than more goods. The curve will bend backwards at the point where workers respond to a wage rate increase by working fewer hours (note that their income will still be rising).

This type of curve is drawn in James and Nobes (Figure 4.2 p. 51) and in Bailey (1995, p. 65). The implication of a backward-bending labour supply curve is that a tax increase imposed on a worker on the forward sloping part of the labour supply curve will act as a disincentive since the worker will move back down the curve to the left, offering fewer hours of work. For these workers, the substitution effect is stronger than the income effect. However, a worker who is on the backward-sloping part of the curve will increase the number of hours of work offered to the market as they move down the curve to the right. Thus, for those workers the income effect is stronger than the substitution effect and taxation will be acting as an incentive to work.

This does not help us much in deciding on the likely impact on the labour supply as a whole. To know that, we would need to know the shape of the labour supply curve for each worker and whether each worker was currently on the forward-sloping or backward-sloping part of the curve. The issue is complicated if we try to consider the impact of progressive tax schedules. Changing from a proportional tax to a progressive tax that produces the same amount of revenue for the government would have a clear impact on some workers but an uncertain impact on others and the overall result would be uncertain. This can be seen by considering three groups of workers:

- A. those on low incomes for whom the move to a progressive system will mean both a lower marginal tax rate and a lower amount of tax paid;
- B. those on high incomes for whom the change to a progressive system will mean both a higher marginal tax rate and a higher amount of tax paid;
- C. those on middle incomes who may face a higher marginal tax rate but pay less taxation as a result of the change.

The impact on people in A or B will be uncertain as the income and substitution effects will operate in opposite directions as in the proportional tax rate case. However, for people in group C, the change to a progressive system will clearly act as a disincentive since the income and substitution effects will both be influencing the worker in the direction of working fewer hours. On page 56, James and Nobes provide an example to illustrate this case, using five groups of workers rather than three. The point of the exercise is that, since most income tax systems are to some extent progressive, the existence of group C might suggest a greater possibility that a tax increase might act as a disincentive on workers as a whole. However, this is far from certain. The only reasonable conclusion that can be reached from the theory is that we cannot know *a priori* whether a tax increase will act as an incentive or a disincentive on work effort.

This has led to a great deal of empirical work to see if we can discover what happens in practice.

## **5.2 Taxation and the Labour Supply - Empirical Evidence**

Attempts to show a link between taxation and the incentive to work have taken three forms:

- ◆ Interview studies
- ◆ Econometric testing
- ◆ Experimental studies.

### ***Interview studies***

In interview studies people are asked questions that try to get at the relationship between tax and the supply of labour. There are several problems here. Firstly, people have strong (generally negative) views about the idea of taxation. Thus, questionnaires that mention the word taxation may very well produce biased responses. People don't like the notion of taxation and thus tend to assume that changes in tax rates affect their labour supply decisions to a greater extent than they appear to do in practice. There are two ways of attempting to overcome this. One way is to ask questions about the impact on labour supply of a reduction in take home pay without identifying the cause of that



reduction. The second way is to ask the same question (the effect of a tax increase on labour supply) in a number of different ways throughout the questionnaire and to check for consistency of response. Thus, if the responder claims that a small increase in tax rates will cause him to sharply reduce his labour supply; but later suggests that an equivalent cut in wage rates by his employer will have a different effect, the response may not be taken into account on the grounds of inconsistency.

A rather different problem is that people are often very ignorant about their current tax obligations. Thus, if a question is asked of the impact of a change in the basic tax rate to 25 pence in the £ (carefully avoiding the emotive words 'an increase in the tax rate'), many people might actually think that this is lower than the existing rate of tax. Also, we have seen that the important tax rate from the point of view of incentives is the *marginal rate of tax*. However, many people do not understand the concept of a marginal rate or the distinction between a change in the marginal tax rate and a change in the average tax rate. Questionnaire-based surveys also require a sufficiently large and representative sample.

Nonetheless, many questionnaire-based studies have been carried out. One way to reduce the requirement for a representative sample is to direct the studies at either low-income or high-income groups. Brown and Jackson (1990) report the interview evidence in this way. In their discussion of studies of low-income groups, they report the results of two large studies: that of the British Royal Commission on the Taxation of Profit and Incomes (1954) and a study by Brown and Levin (1974).

The Royal Commission study sought to distinguish between three types of respondents:

- 1) people with accurate knowledge of the factors;
- 2) people with incorrect information that they believed to be true;
- 3) people whose attitudes were not directly associated with any specific facts at all.

The Commission attempted to concentrate on the first of these groups and concluded that amongst such people there was no evidence of productive effort being inhibited by income taxation. However, as Brown and Jackson point out the question they were asked was not suitable. The question was:

"Would it be worth your while to earn more if it meant going on to a higher rate of tax?"  
*What is wrong with this question?*<sup>1</sup>

Brown and Levin tried to get at the marginal issue by asking carefully worded questions as to whether workers would be prepared to work additional overtime with changed tax rates or changed wage rates. They also tried to take into account the fact that some workers are not paid extra for overtime, while others are paid extra but are not free to vary the amount of overtime they do because they are constrained by their employers or by personal commitments. Their conclusion was that the aggregate effect of tax on overtime was small. If anything, they suggested, tax caused people to work **more** overtime - that is, the income effect of the tax outweighed the substitution effect.

Interview studies among high-income workers have also been inconclusive. The two best known large studies were carried out amongst lawyers and accountants by Break (1956) and Fields and Stanbury (1969). Break found that a small but significant number of persons experienced net tax effects but that the disincentive effect did not

outweigh the incentive effect. Thus, he concluded that any aggregate effect was too small to worry about.

Field and Stanbury claimed to be repeating Break's study. However, they found a much stronger disincentive effect than break and suggested that the disincentive effect of taxation might be growing stronger over time. However, as Brown and Jackson (1990) point out there were important differences between the two studies.

James and Nobes (pp. 62-63) report the findings of a number of other interview studies. Their conclusion is:

"... there appears to be no substantial disincentive effects from taxation. Instead, it appears that there are both small incentive and small disincentive effects which tend, of course, to offset each other, so that the net effect on the taxation of labour is likely to be small." (p. 63).

### ***Econometric studies***

These involve the econometric analysis of labour market statistics in an attempt to establish a relationship between wage rates and hours worked across the economy as a whole. Thus, it is being assumed that the reason for a lower or higher wage being paid is of no importance. If it can be established that there is a significant and econometrically robust positive relationship between wage rates and hours worked (that is, that higher wages are associated with increases in labour supply), then an increase in tax rates, which would lower the net wage rate of workers, must act as a disincentive.

The big problem here is that what we must try to establish is a *ceteris paribus* relationship. That is, we wish to know the nature of the relationship between wage rates and labour supply, when *nothing else that might affect labour supply changes*. However, since we are using past statistics over a number of years, other factors affecting the labour supply will be changing at the same time as wages are changing. Labour supply might, for example, be influenced by changing levels of education, changing wealth, changes in the demand for labour, or changing social attitudes. Econometricians seek to identify these other variables and use econometric techniques to isolate the wage rate/labour supply relationship from them. This is, however, difficult to do and econometric models constructed for this purpose make a series of assumptions. These assumptions can often be criticised.

The outcome is that results of different econometric studies have frequently conflicted. None the less, general conclusions have been reached from these studies. Perhaps the most interesting results have been those that indicated a different labour market response between men and women. The studies suggest that taxation does not act as a disincentive to men, but does do so to married women. This, as James and Nobes suggest (p.61) implies the desirability of an increase in tax rates on men and a reduction in tax rates on married women.

The usual explanation for the difference in response to wage changes between men and women is that married women see their earnings as additional to the family income and are likely to compare the extra income available from paid work with the loss of family utility associated with their absence from home. This means that marginal tax rate (responsible for the substitution effect) is much more important for them than the average tax rate (responsible for the income effect).

There are two possible problems here. Firstly, the major studies that produced these effects were carried out in the 1970s and so were based on statistics from the

1960s, 1950s and before. In the 1950s and 1960s, male unemployment was very low. This has not been so in many of the years since then. Further, in the 1980s and 1990s, the attitudes of women to work and their role in the work force may well have changed, although studies carried out in the 1990s find that women with children still perceive themselves as care-givers while their male partners see themselves as the 'breadwinners'. This leads us on to the second possible problem - whether the econometric studies make sufficient allowance for other factors influencing the labour supply decisions of women in their attempt to isolate the impact of changes in wage rates. One such factor sometimes ignored is the age of children in the household.

### **5.3 Taxation and other incentives**

Most of the work carried out by economists has dealt with the impact of taxation on the supply of labour. However, in principle, taxation can have effects on many other choices, such as on savings and capital formation; and on enterprise and risk-taking.

#### **5.3.1 Taxation, savings and capital formation**

#### **5.3.2 Taxation, enterprise and risk-taking**

<sup>1</sup> See either Brown and Jackson (1990) page 443 or the accompanying tutorial sheet.