WASTE COLLECTION, DOUBLE TAXATION AND LOCAL FINANCE

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1. Introduction

Over recent years a vocal lobby has been campaigning against what they call the 'bin tax'. Their argument is that this is a form of double taxation and as such is not fair and should be scrapped. Indeed they claim that this is another 'stealth tax', which has increased the tax burden while not improving services. Instead, waste collection services should be funded out of general taxation. On the other hand, there has been a move towards a more market-orientated system of waste collection with local authorities outsourcing the service or fully privatising it to licensed operators. These developments have also led to changes in the nature of the charges towards weights or volume base charges. This means that in contrast to general taxation or flat charges householders are now able to reduce their waste charges through more environmentally friendly behaviour.

Changes in the way waste collection services are operated and charged for have been driven by a number of factors. First, with the increase in the population and incomes, waste generation has increased substantially. Second, EU directives have forced higher standards on landfill site, which necessarily imply higher costs. Finally, local authorities have been obliged under the Waste Management Act, 1996 to make provision for the collection of household waste, a function which they previously carried out only partially in that public household waste collection service was not available in many rural areas. Now local authorities are automatically licensed to carry out the waste collection, or in conjunction with the Environmental Protection Agency, issue licences to private operators to carry out the service.

While waste charges have been proposed by a number of studies that were concerned with methods of implementing the polluter pays principle (e.g., Barrett, Lawlor and Scott, 1997) or in research that dealt with the workings of the solid waste market (e.g., Barrett and Lawlor, 1995), the more general public choice issues and their relationship to local authority financing has not been analysed in the

Irish context. This paper addresses these issues by first considering the impact of different financing systems on efficiency and cost effectiveness of the provision of waste collection services. This involves analysing the objectives of the local authorities and householders.

On the local authority side a number of different theories have been put forward that suggests that these, as well as central government, have an inherent tendency to be inefficient either in cost terms or in terms of the quantity of goods and services supplied. The question then is whether waste collection charges could help in making local government more efficient and thereby reduce local budgets or improve services. Similarly, if the correct incentives are not available, then households will consume more or less of a good or service than optimal. In the case of household waste, they might not attempt to reduce the amount of waste that is produced and recycle less.

Since there has been a move towards a more market-based system of waste collection it is also important to consider whether the public sector should be involved in this activity at all, and this is considered using the basic concepts of public economics. This paper questions the role for government involvement in providing the service, by considering the public goods qualities of the waste collection service. In general it is not clear why governments should provide a private good or service even if a market failure exists since, as Coase (1960) has shown, this can be internalised through the market.

Apart from these theoretical considerations it is also important to analyse the trends in terms of local authority finance of waste collection. This is particularly interesting since Irish local authorities have very limited revenue raising powers that are confined to commercial rates, charging for goods and services, development levies and rent, with the bulk of funding coming in grants from central government.[1] In principle the introduction of a charge should reduce general taxation, but since general taxation is raised by central government and not by local government this need not be the case. Thus, a more important question is the degree to which local authority revenues have changed. In this respect it is useful to assess the level of revenue generated through charges as well as any change in funding of local government from central funds.

This paper is organised as follows. In Section 2 we consider the case for the public provision of waste collection services. In Section 3 the efficiency of public provision is analysed, while in Section 4 the private incentives to reduce waste are outlined. Section 5 aims to identify the local government finance implications of the introduction of waste collection charges and Section 6 summarises the main findings and draws some conclusions.

[1] While vehicle taxes are also retained for local authority funding, these are part of the Local Government Fund and County Councils do not have the power to alter the rates at which these taxes are levied.

2. Should Waste Collection be Publicly Provided?

To start with it is useful to consider whether waste collection services should be publicly provided at all. We base our analysis on the public economics literature. Here we focus particularly on the relevant function of government namely the provision of public goods[2] and consider whether waste collection is a public good.

It is the allocation function that is of relevance for the purposes of this paper. In particular it is important to consider whether waste collection is a public good, since the rationale for public provision is more compelling for public goods. A public good is a good or service, which if supplied to one person is still available to another person. This implies that a public good is non-rival in consumption and non-excludable (see Cornes and Sandler, 1996). If one considers waste collection against these criteria it is clear that this is not a pure public good since it is straightforward to exclude individuals from the service, as has been the case for those that have not paid their waste collection charges. Furthermore, it is not a truly non-rival service in the sense that householders are not consuming the same unit of service (i.e., different bins are collected), even though the consumption of the service does not necessarily detract from the benefits derived by others from the service.

However, waste collection is intrinsically desirable as for example there are public health reasons why waste should be collected and not be allowed to accumulate. The unsystematic disposal of waste by individuals could result in pollution and thus have externalities. This does not only apply to illegal dumping but also to the burning of refuse as this releases a high level of toxins such as dioxins. Thus, it is the irresponsible actions of individuals in the absence of waste collection that are generating an externality not the waste collection service itself. This suggests that it is more appropriate to consider waste collection a merit good – one that is seen by the majority to be beneficial to society and one that should be consumed by everyone.

If consumers are not willing to purchase the merit good then they should be compelled or encouraged to do so. The rationale for this arises out of the impact that the failure of purchasing waste collection service could have since the domestic waste that is produced has to be discarded in some way. Of course individuals could do this in a responsible manner by bringing it to a landfill site or incinerator or by increased recycling and waste reduction. On the other hand the waste could be disposed of in a way that has a negative impact on the environment and therefore generates a negative externality for the general public.

[2] Musgrave (1959), identified stabilisation, allocation and redistribution as the functions of government. The first function simply refers to the fact that economies are subject to cycles and thus are unlikely to have stable and high levels of output, employment and stable prices at all time. The allocation function refers to the likelihood that due to positive externalities, the market is unlikely to allocate sufficient public goods so that these would be undersupplied. Finally, the redistribution function refers to the possibility that without government there was unlikely to be an equitable distribution of income and resources.

This suggests that waste collection need not be publicly provided. Of course the private sector will only carry out such a service if they are able to make profits out of running the service. This implies that the private sector either charges the public sector or householders directly. In the latter case it is particularly important an effective disincentive to littering is in place, since as argued above, the incentives are to litter and thereby generate negative externalities.

Dobbs (1991) highlights the link between charges for waste collection and littering. He argues that user charges on their own will not yield a welfare maximising outcome and he thus argues that a cost to littering is best introduced as a subsidy (negative user charge) that should be imposed in conjunction with user charges. While this is welfare maximising in a theoretical model, in practice such a scheme is only feasible in certain circumstance, mainly confined to recyclables such as refundable deposits for bottles, which have been successfully used in many countries.

Having established that waste collection does not need to be publicly provided it is clear that charging for such a service cannot be considered taxation. Rather it is the price charged for a specific service. Of course this service was previously heavily subsidised or even fully subsidised. Furthermore, even if one were to consider waste collection charges a tax, one cannot consider them a form of double taxation, since tax relief is available for service charges including waste collection charges.[3]

3. Inefficiency in Public Provision of Services

While the arguments above are simply based on the nature of the service supplied, it is also important to consider whether public provision would be efficient. In this section we consider the various theoretical approaches in the public choice literature that are relevant for the analysis of waste charges. In particular we focus on factors that determine the efficiency/inefficiency of the provision of public services, which is summarised in Bierhanzl and Downing (1998).

Traditionally the public provision of services has also implied that these are provided by a public monopoly. As is well known, monopoly provision is not efficient in the sense that prices will be higher due to the market power that is exercised by the monopoly. This result assumes that monopolies aim to maximise profits. However, since bureaucrats, who do not maximise profits, run the public sector the conventional monopoly theory is not relevant. Rather, it is necessary to consider alternative aims, which might lead to an inefficient outcome.

[3] Water charges and sewerage disposal are also subject to tax relief. Tax relief for service charges has been available since 1996/97, having been introduced in the 1995 Finance Act. In fact the tax relief granted is not available on arrears and thus incorporates an incentive to pay on time.

One type of theory that has been put forward is referred to as bureaucracy theory (see Niskanen, 1971). In contrast to standard monopoly theory, bureaucracy theory suggests that bureaucrats aim to maximise their budgets or other variables that determine their power such as the number of staff or the size of their budgets. This can result in competition among bureaucrats for larger budgets and larger departments. However, if only one agency has a remit to provide a particular service then competition is limited. If the demand for the service is relatively unresponsive to changes in the price of that service then it is possible to extract a significantly higher expenditure by raising the price. This higher price is achieved through lower efficiency, which is only feasible if there is no competition and if it is difficult to identify this inefficiency (ambiguous technology). It is important to note that the pricing mechanism that generates this outcome is one where all the information is held by the service provider and budgeting takes place in advance of the provision of the service. Bureaucracy theory is particularly appropriate where an agency produces multiple outputs, which implies that it is even more difficult for customers to know the true cost of the service and to be able to relate the cost to the quality and quantity of the service provided. Of course, if the cost of the service is made explicit by charging for each service separately, inefficiencies are easier to identify.

A second theory, namely agenda theory can also be applied to the issue and this again shows that an inefficient outcome is likely. The fundamental aspect of this theory is that budgets are voted on and the voting mechanism can be 'hijacked' by agenda setters. Agenda setters will seek to control the alternatives that are being voted on. In particular they will seek to offer a range of alternatives that are substantially off the median voters' reservation level. In such a scenario the least unfavourable alternative will be chosen. Again the level of information is important since if agenda setters have better information than the other representatives then the likelihood of their being successful is increased. As before the mechanism by which the service is funded is crucial to the inefficient outcome coming about, since explicit charges yield contain information about the degree of inefficiency. Once agenda setters have gained control of the agenda, we have a situation of regulatory capture, which suggests that those charged with bringing in new schemes and legislation will have little incentive to do so (see Helm (2001) for examples).

Another explanation for inefficiency in the public sector is to do with the incentives that are available to bureaucrats, since their pay is not generally related to performance[4] (see Dixit (2002) for a review of the theoretical literature). Thus, there is little incentive to operate

[4] Of course one can argue that in the Irish context benchmarking has introduced some degree of performance related pay increases, but importantly, the wage increases were applied across whole organisation (e.g. Government departments) rather than to individual efficient civil servants.

at an efficient level, and even less to improve efficiency. Again, the pricing mechanism is important since the inefficiency is less apparent when the service is not directly paid for.

In the literature the usual approach is to set the price that is to be charged directly equal to the long-run marginal cost of providing the service. This turns out to be an efficient user charge since it sets an incentive to householders not to over consume the service while on the other hand forcing bureaucrats away from inefficient allocations by forcing them off their inefficient price, or because control of the agenda is lost as actual costs are being made public.

3.1 EFFICIENCY EFFECTS

Whatever the source of inefficiency, an appropriate pricing scheme and competition are expected to decrease the inefficiencies. In particular a funding scheme that relies on accurate cost information will yield a more efficient outcome since this will provide all actors with the information to make the right decisions.

In relation to efficiency in waste collection, a number of studies have been published. For example, Cubbin *et al.* (1987) estimate Farrell efficiency measures for refuse collection in England and Wales. They found that the technical efficiency for contracted out refuse collection was 17 per cent higher than that for non-tendered local authority collection and that this accounted for the bulk of the cost savings which amounted to 22 per cent. If agency theory is at work then one would expect budgets to be higher and indeed, Bierhanzl and Downing (1998) show empirically that local authorities that rely more on user charges have lower budgets. This suggests that the transparency provided by user charges limits the degree of inefficiency in terms of the size of the budgets.

In the Irish context the organisation of household waste collection in Ireland has been subject to some changes and some local authorities have outsourced or even privatised this service. The effect this has had on efficiency has been investigated by Reeves and Barrow (2000). Their data which was collected through a number of surveys in 1996 was used in regression analysis. In this analysis costs are related to a range of authority specific variables such as the density of units from which waste was collected and the nature of the service provided i.e., contracted out. The analysis showed that there was a 45 per cent cost saving for contracting out the service so that the efficiency gains are very substantial.

4. Inefficiency in Consumption

The previous two examples have highlighted the role of the public sector provider in achieving an inefficient outcome. However, consumers can also be responsible for an inefficient outcome. If there is no link between the quantity of a good or service that is consumed and the payment for that good or service then the consumers have no incentive to keep the level of consumption to an efficient level (Besley, 1991).

In the case of waste collection consumers are likely to generate more waste and require more collections than would otherwise be the case, and they are unlikely to recycle waste. This is exaggerated if householders suffer from fiscal illusion, that is they systematically underestimate their tax burden, so that the consequences of this over-consumption are even less apparent. Fiscal illusion can arise if the actual tax payments are either very fragmented into lots of different taxes so that none is very large or if taxes are paid on a monthly or weekly basis so that no one payment is very large. Again the funding mechanism is crucial to the inefficiency result. Here in particular a funding mechanism that properly charges at the margin for the service that is provided is needed to overcome the inefficiency, since in the case of a flat charge for the service say €300 a year the marginal cost to the householder of creating more waste is zero. In other words, once the householder has paid his fee he has no incentive to reduce the weight or volume of the waste created – putting out an extra amount of waste will not cost him more.

User charges also have distributional consequences if they are implemented instead of a general taxation financed system since in the latter only those that actually pay taxes pay for the service while in the former all households pay unless there is some kind of waiver scheme. The absence of such a waiver scheme would undoubtedly result in some resistance to the introduction of a user charge system since it would negatively impact on the poor. However, a simple waiver implies that no incentive is available to the poor to reduce their level of waste. An alternative would be to increase their income (pensions, social welfare, etc.) by an amount that would pay for the socially optimum level of waste collection (see Balestrino (1999) for a similar argument). Distributional aspects are also considered from a more practical point of view in Scott and Eakins (2001) who also advise against a waiver scheme and in favour of increased rates of social welfare, pensions and family income supplement. With regard to the latter it is well known that the take up is low but this is not an argument against using this instrument in order to ensure efficiency rather it is an argument for the better implementation of that scheme.

4.1 BEHAVIOURAL RESPONSES

The introduction of taxes or charges should have an impact on the behaviour of individuals that are subject to these charges. In the Irish context this has already been shown in the case of the plastic bag tax, which has drastically reduced the usage of plastic bags. Thus, it is also interesting to consider the degree to which the waste collection charges have had an impact on behaviour. Charging, and especially volume or weights based charging should result in the reduction of waste created. This reduction can be due to increased recycling or less production of overall waste.

Two approaches can be used to assess the behavioural response. On the one hand one can collect data at the household level, which allows for a more thorough analysis. Thus, data on various

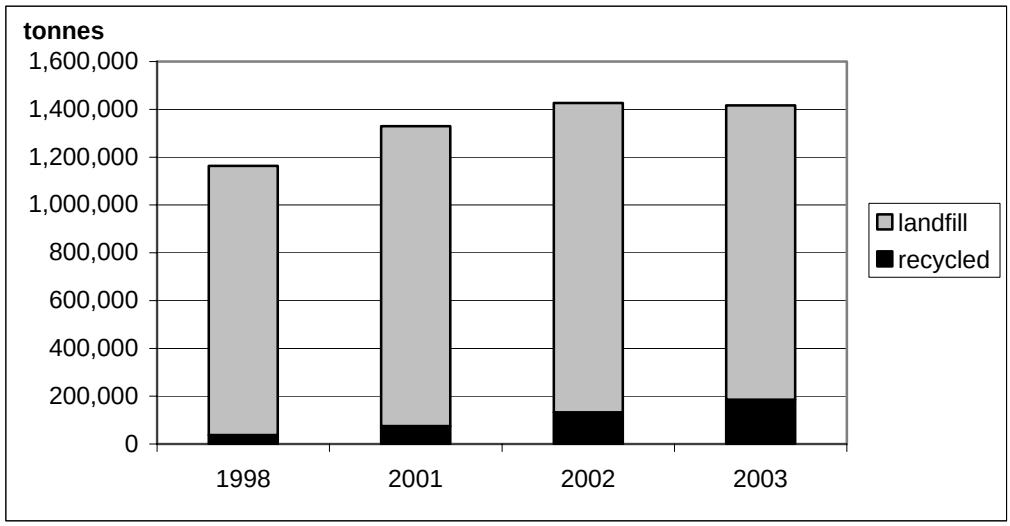
household characteristics can be collected which can be used to identify which households are more responsive. The second approach uses aggregate published data to identify any possible changes in waste creation trends.

At this point no completed micro-level analysis is available for Ireland but, preliminary results from ongoing research also show a substantial reduction of waste collected. However, evidence for other countries is available.[5] Fullerton and Kinnemann (1996) investigated the impact of charging per bag in US municipalities in the early 1990s. They found that following the introduction of volume based charging the weight of waste collected per household decreased by 14 per cent and the volume decreased by 37 per cent, while the weight of recyclebales collected increased by 16 per cent. They also found that illegal dumping increased. Of course, since the charging was on a per volume basis the greatest impact was on the volume rather than the weight, so that householders compressed their waste to fit more into a bag. An analysis for a municipality in southwestern Sweden (Sterner and Bartelings, 1999), which introduced a weights-based charging system shows a reduction in weight of 29 per cent due to the introduction of the charging system. A more recent paper on the impact of weights based charging in the Netherlands was published by Linderhof *et al.* (2001). They show that in the first year after the introduction of a weights-based charging system total waste presented for collection was down by 56 per cent after three years with a particularly big reduction in the presentation of recyclable waste by 42 per cent. They also found that an effective monitoring and fining system has kept illegal dumping small. In summary this research shows that weights and volume based charging has a significant effect on the amount of waste collected. But the introduction of such a system may also result in increased illegal dumping, littering and burning of waste.

While there is no published micro-evidence on the impact of charges on Irish householders, aggregate data is available from the Environmental Protection Agency (EPA). Figure 1 shows that household waste collected has continued over the period 1998 to 2002, but that there was a slight decline from 2002 to 2003. Thus, there has been no dramatic reduction of overall waste creation even though charges have increased. However, this is not inconsistent with the literature since weights- and volume-based charging was only introduced recently so that the right incentives have so far not been available. Furthermore, there has been a very substantial increase in the amount of waste that is being recycled so that the proportion of recycled waste has grown from 3 per cent in 1998 to 13 per cent in 2003. This is of course also a behavioural response.

[5] See Linderhof *et al.,* for a summary of the results of numerous studies.

Figure 1: Household Waste by Waste Stream



Source: EPA Waste Database various years. Note that the figure here relates to the disposal and recovery data provided by the EPA rather than the total waste arising.

5. The Local Government Finance Background

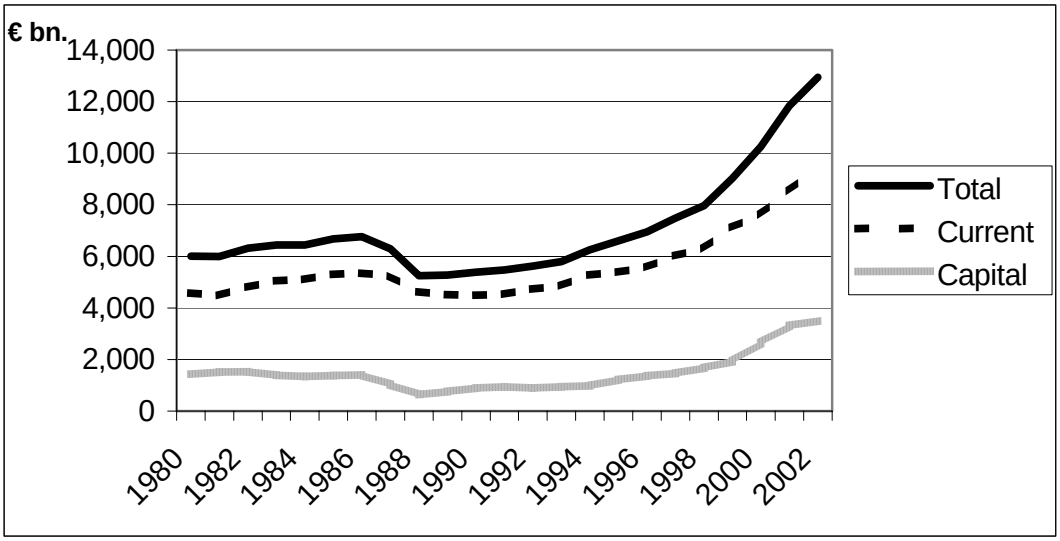
Having considered the theoretical rationale for user charges, which favours the implementation of weights- or volume-based charges for waste collection we turn to the issue of local authority finance. Clearly, the changes in the waste collection regime have implications for local finance. First, introduction of charges mean that cost recovery should be higher in local authorities, and that these will require a lower level of resources from central funds. This in turn should be reflected in lower general taxation all things being equal. Second, as the waste collection service is increasingly being provided by the private sector, local authorities are loosing this source of revenue. It is, therefore, useful to consider what has happened to local authority finance.

Local Government finance has been a topic that has been discussed periodically at least since the mid-1970s when residential rates were removed, and central government paid the rates (e.g., NESC, 1985; Foundation for Fiscal Studies, 1990; Ridge, 1992). While residential rates have not been replaced as a source of direct local authority finance, as of 1997 the rates support grant, domestic water and sewerage charges have been replaced by the General fund, which was replaced by the Local Government Fund in 1999. Until 1983 a cap was in place that restricted the rate of increase of the fund. Furthermore, greater powers to charge for services were given to local authorities. But in practice central government began to reduce the rates support grant.

Overall, as Figure 2 shows, real total local government receipts (Current and Capital) increasing slightly over the first half of the 1980s, then declining strongly in the late 1980s and then rising at an accelerating pace until 2002. The graph also shows that the bulk of

expenditure is on the current side with the capital side never exceeding 27 per cent of total receipts. Overall, the local current expenditure accounted for 36.4 per cent of government current expenditure in 1980 but this declined to less than 27 per cent in 1990. More recently the local government proportion of current government expenditure has risen again to reach 34 per cent in 2002.

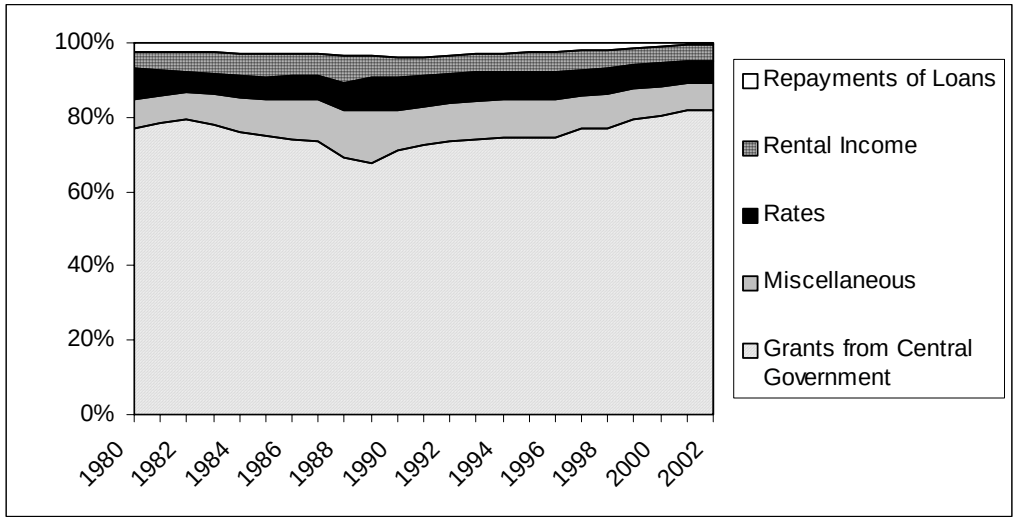
Figure 2: Real Receipts by Local Government (Deflated by Public Authorities' Current Expenditure Deflator)



Source: CSO National Income and Expenditure, various issues.

While receipts have increased strongly over recent years, this might be completely unrelated to the charging for services. Considering the different revenue streams of local authorities can partly identify the importance of revenue from service charges. Specifically, miscellaneous current receipts are significantly made up of income from the provision of goods and service including waste collection charges. Figure 3 shows the importance of the different revenue streams. Most noticeable is the very high importance of grants from central government, which on average was 76 per cent of total current revenue. Interestingly, this share has been increasing over recent years so that the dependence of local authorities on central government is increasing. Thus, rather than becoming less dependent on central government, through charges for services provided, local authorities are actually becoming more dependent on central government. The miscellaneous category, which includes receipts from the provision of goods and services, increased in importance over the 1980s but has been declining over the 1990s. This might suggest that in fact the privatisation of services is reducing the importance of independent revenue streams for local authorities.

Figure 3: Sources of Local Authority Current Revenue (% of Total Current Revenue)



Source: CSO National Income and Expenditure, various issues.

Considering the specific revenues and expenditures on waste disposal by local authorities, one finds that first, those have increased strongly in real terms. These cost increases are largely due to the cost of operating landfill infrastructure, which has increased due to higher environmental and management standards as a result of the introduction of EU directives. Second, the rate of cost recovery is increasing, although, on average only 62 per cent of expenditure is met by revenues in this area so that local authorities continue to subsidise waste disposal services.

The brief analysis of the local finance implications of the changes in the waste collection service show that while cost recovery is increasing, the dependence of local authorities on central government is also increasing. Thus, the introduction of waste collection charges does not seem to have made the local authorities more financially independent.

6. Conclusions

This paper has shown that there are no strong reasons to provide a waste collection system through the public sector. Rather, than being a pure public good, waste collection is a merit good, the consumption of which should be encouraged. Thus, the charging for the public provision of this private good cannot be considered taxation and given the fact that tax relief is available for these charges it is wrong to consider waste collection charges a form of double taxation.

The private provision of the service is also supported by the literature on inefficiencies in the public sector. The inefficiency of the public sector can easily be hidden if the cost of a service is not immediately apparent. Thus, waste charges can yield more efficient services since they imply greater transparency. Substantial evidence exists that shows the efficiency benefits of contracting out waste collection services. For Ireland, Reeves and Barrow (2000) have

shown that the outsourcing and privatisation of waste collection service in Ireland has resulted in efficiency gains.

The public choice literature is very strongly supportive of user charges rather than general taxation as a funding mechanism for waste collection services. The literature highlights the importance of charging on a per-use basis rather than using flat rate charging. A flat rate leaves the marginal cost, that is the cost of an additional amount, of waste equal to zero so that there is no incentive for householders to reduce waste creation and increase recycling. Regarding the latter, the literature suggest that rather than charging for recycling services, these should be subsidised so as to create the right incentive structure.

From the average householders' point of view, user charges are clearly beneficial as this allows them to reduce their tax burden through the appropriate behaviour, assuming that general taxation is reduced accordingly. In the Irish context this means that while charges are introduced locally, central government has to reduce general taxation since local authorities have no general taxation powers. This, however, highlights the disconnect between the local charges and central taxation which could result in these benefits not being passed on to householders. The evidence available here shows that charges for goods and services are declining in importance as a source of local revenue relative to grants from central government. However, the per-capita charges for waste disposal have increased substantially over recent years even though these still do not meet the cost to local authorities to provide waste disposal services, which of course are increasingly limited to the operation of landfill sites.

Given the strong arguments in favour of waste collection charges and in particular for weights-based charging, it is surprising that there remains strong opposition to these among a small group. While this opposition might be purely on ideological grounds some studies have also considered other reasons. For example Hall, Emmerson and Brook (1998) investigated the attitudes to local taxes and local spending using data collected as part of the British Social Attitudes (BSA) survey. They found that there is little demand for additional taxing powers at the local level, but that householders preferred local authorities to be making the final spending decisions. This suggests that fiscal illusion might be a factor in the opposition to the charges. For Ireland evidence is presented by Scott and Eakins (2001). They show that the vast majority of individuals would prefer to pay for waste collection, with the more recent survey results showing that of those the majority would like to be charged by the amount.

While our focus here has been on waste collection, similar arguments apply to other use charges such as water charges, wastewater charges and congestion charges. Overall, given a choice between general taxation to fund a service, where no account is taken of the level of usage by the individual or household, and a use charge where the level is related to usage and can thus be reduced through behaviour, the latter is preferable both at the individual and societal level.

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